Über dieses Buch

Dies ist ein digitales Exemplar eines Buches, das seit Generationen in den Regalen der Bibliotheken aufbewahrt wurde, bevor es von Google im Rahmen eines Projekts, mit dem die Bücher dieser Welt online verfügbar gemacht werden sollen, sorgfältig gescannt wurde.

Das Buch hat das Urheberrecht überdauert und kann nun öffentlich zugänglich gemacht werden. Ein öffentlich zugängliches Buch ist ein Buch, das niemals Urheberrechten unterlag oder bei dem die Schutzfrist des Urheberrechts abgelaufen ist. Ob ein Buch öffentlich zugänglich ist, kann von Land zu Land unterschiedlich sein. Öffentlich zugängliche Bücher sind unser Tor zur Vergangenheit und stellen ein geschichtliches, kulturelles und wissenschaftliches Vermögen dar, das häufig nur schwierig zu entdecken ist.

Gebrauchsspuren, Anmerkungen und andere Randbemerkungen, die im Originalband enthalten sind, finden sich auch in dieser Datei – eine Erinnerung an die lange Reise, die das Buch vom Verleger zu einer Bibliothek und weiter zu Ihnen hinter sich gebracht hat.

Nutzungsrichtlinien

Google ist stolz, mit Bibliotheken in partnerschaftlicher Zusammenarbeit öffentlich zugängliches Material zu digitalisieren und einer breiten Masse zugänglich zu machen. Öffentlich zugängliche Bücher gehören der Öffentlichkeit, und wir sind nur ihre Hüter. Nichtsdestotrotz ist diese Arbeit kostspielig. Um diese Ressource weiterhin zur Verfügung stellen zu können, haben wir Schritte unternommen, um den Missbrauch durch kommerzielle Parteien zu verhindern. Dazu gehören technische Einschränkungen für automatisierte Abfragen.

Wir bitten Sie um Einhaltung folgender Richtlinien:

+ *Nutzung der Dateien zu nichtkommerziellen Zwecken* Wir haben Google Buchsuche für Endanwender konzipiert und möchten, dass Sie diese Dateien nur für persönliche, nichtkommerzielle Zwecke verwenden.
+ *Keine automatisierten Abfragen* Senden Sie keine automatisierten Abfragen irgendwelcher Art an das Google-System. Wenn Sie Recherchen über maschinelle Übersetzung, optische Zeichenerkennung oder andere Bereiche durchführen, in denen der Zugang zu Text in großen Mengen nützlich ist, wenden Sie sich bitte an uns. Wir fördern die Nutzung des öffentlich zugänglichen Materials für diese Zwecke und können Ihnen unter Umständen helfen.
+ *Beibehaltung von Google-Markenelementen* Das "Wasserzeichen" von Google, das Sie in jeder Datei finden, ist wichtig zur Information über dieses Projekt und hilft den Anwendern weiteres Material über Google Buchsuche zu finden. Bitte entfernen Sie das Wasserzeichen nicht.
+ *Bewegen Sie sich innerhalb der Legalität* Unabhängig von Ihrem Verwendungszweck müssen Sie sich Ihrer Verantwortung bewusst sein, sicherzustellen, dass Ihre Nutzung legal ist. Gehen Sie nicht davon aus, dass ein Buch, das nach unserem Dafürhalten für Nutzer in den USA öffentlich zugänglich ist, auch für Nutzer in anderen Ländern öffentlich zugänglich ist. Ob ein Buch noch dem Urheberrecht unterliegt, ist von Land zu Land verschieden. Wir können keine Beratung leisten, ob eine bestimmte Nutzung eines bestimmten Buches gesetzlich zulässig ist. Gehen Sie nicht davon aus, dass das Erscheinen eines Buchs in Google Buchsuche bedeutet, dass es in jeder Form und überall auf der Welt verwendet werden kann. Eine Urheberrechtsverletzung kann schwerwiegende Folgen haben.

Über Google Buchsuche

Das Ziel von Google besteht darin, die weltweiten Informationen zu organisieren und allgemein nutzbar und zugänglich zu machen. Google Buchsuche hilft Lesern dabei, die Bücher dieser Welt zu entdecken, und unterstützt Autoren und Verleger dabei, neue Zielgruppen zu erreichen. Den gesamten Buchtext können Sie im Internet unter `http://books.google.com` durchsuchen.

This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google books

https://books.google.com

Electric Railway Journal

Volume 54

July to December, 1919

McGraw-Hill Company, Inc.
Tenth Avenue at Thirty-sixth Street
New York City

PRINCETON UNIVERSITY LIBRARY
32101 026646008

Instructions for Use of Index

This index is essentially a subject index, not an index of titles, and articles treating a number of different subjects are indexed under each of them. In addition, a geographical reference is published wherever the article relates to any particular railway company, or to the state matters of any particular state. The geographical method of grouping serves to locate in the index any article descriptive of practices, conditions, events, etc., when the searcher knows the electric railway, city or state to which the article applies. Groupings are made under the name of the city in which the main office of the company is located, but an exception is made in the case of electrified sections of steam railroads, such entries being made direct under the name of the railroad. City or state affairs appear direct under the names of the city or state involved.

In the subject index, the alphabetical method is followed, and if there is a choice of two or three keywords the one most generally used has been selected, cross references being supplied. Below will be found a list of the common keywords used in the index to this volume. This list has been subdivided for convenience into thirteen general subjects, but the general subject headings, shown in capital letters, do not appear in the body of the index. As an example, if a reader wished to locate an article on power-driven tower wagons he would obviously look in the list under the general subject "Cars and other vehicles," and under this caption, only "Service and tower wagons" could apply to the article in question. The reader would therefore refer to this keyword under "S" in the body of the index.

In addition to the groups of articles covered by these headings the papers and reports from railway associations are grouped under the names of the various organizations. Proceedings of other societies are indexed only in accordance with the subject discussed. Short descriptions of machine tools appear only under the heading "Repair Shop Equipment" and are not indexed alphabetically, because of the wide choice in most cases of the proper keyword.

CLASSIFIED LIST OF KEYWORDS

ACCIDENTS AND ACCIDENT PREVENTION

Accidents (including wrecks)
Accident claim department
Safety-first movement

CARS AND OTHER VEHICLES

Car design
Cars (descriptive)
Cars, one man
Motor buses
Motor cars, gasoline
Service and tower wagons
Work and wrecking cars

CAR EQUIPMENT

Axles
Bearings
Brakes and compressors
Controllers
Couplers
Current collection
Gears and pinions
Motors
Trucks
Wheels

EMPLOYEES

Employees
Labor
Strikes and arbitrations
Wages
Wage increases

FARES

Fare collection (including apparatus)
Fares
Fares, analysis of cost
Fare increases (actual increases)
Fare increases, reasons for
Tickets
Transfers
Zone fare systems

FINANCIAL, LEGAL AND STATISTICS

Accounting
Appraisal of railway property
Financial
Franchises
Legal
Market conditions
Operating records and costs
Maintenance records and costs
Public service and regulative commissions

HEAVY ELECTRIC TRACTION

Heavy electric traction (general)
High voltage d.c. railways
Locomotives

MAINTENANCE OF EQUIPMENT

Paints and painting
Repair shop equipment
Repair shop practice
Repair shops
Tests of materials and equipment
Welding special methods

POWER

Energy checking devices
Energy consumption
Feeders
Overhead contact system
Poles
Power distribution
Power stations and equipment
Substations and equipment
Third-rail contact system
Transmission lines

STRUCTURES

Bridges
Carhouses and storage yards
Power stations and equipment
Repair shops
Substations and equipment
Waiting stations

TRACK

Pavement
Rails
Rail joints and bonds
Special work
Ties
Track construction
Track
Way

TRAFFIC AND TRANSPORTATION

Advertising
Freight and express
Operating practice
Publicity
Signals
Stopping of cars
Traffic promotion
Traffic surveys

MISCELLANEOUS

Management
Municipal ownership
Pavement
Standardization
Subways

INDEX TO VOLUME 54

PAGES BY WEEKS

No. 1, July 5	1	to	52
No. 2, July 12	53	to	102
No. 3, July 19	103	to	150
No. 4, July 26	151	to	206
No. 5, Aug. 2	207	to	266
No. 6, Aug. 9	267	to	308
No. 7, Aug. 16	309	to	368
No. 8, Aug. 23	369	to	420
No. 9, Aug. 30	421	to	462
No. 10, Sept. 6	463	to	508
No. 11, Sept. 13	509	to	552
No. 12, Sept. 20	553	to	606
No. 13, Sept. 27	607	to	682
No. 14, Oct. 4	683	to	704
No. 15* Oct. 11, (Report Number)	1	to	130
No. 15A, Oct. 11	705	to	742
No. 16, Oct. 18	743	to	780
No. 17, Oct. 25	781	to	812
No. 18, Nov. 1	813	to	848
No. 19, Nov. 8	849	to	880
No. 20. Nov. 8, 15, and 29 Dec. 6, Dec. 13	881	to	966
No. 21, Dec. 20	967	to	1028
No. 22, Dec. 27	1029	to	1070

*The publishers recommend that this Report Number be bound as an appendix at the end of the volume, as suggested in the notice about binding on page 705 of this volume.

A

Accident Claim Department:
—Claim adjuster's views on car operating economy [Giltner], 1045
—Discussed by Pacific Claim Agents Assn., 70
—Experience with one-man cars [Dixon], 720
—Psychology of claim adjustments [Handlon], 157

Accident Prevention:
—Comments on accident prevention campaigns [Proctor], 724
—Comments on safety-first movement, 510
—Co-operation of employees, *281
—Discussed by A. E. R. C. A., 718
—Discussed by National Safety Council, 790
—Human factor in safe operation and maintenance of rolling stock [Phillips], 793
—London's buses [Jackson], *820
—Methods in Philadelphia discussed before Federal Electric Railways Commission, r94
—Nationalization and standardization of accident prevention [Reid], 791
—Philadelphia Rapid Transit Co., school children campaign, *399
—Safety before and after the war [Schneider], 791
—Safety first campaign in Rochester [McDougall], 723
—Safety organizations needed by every electric railway [Proctor], 792
—Safety problem discussed by Pacific Claim Agents Assn., 69

Accidents:
—Comments on, by A. E. R. T. & T. Assn., r55
—Co-ordination of safety between transportation and equipment departments [Jeffries], 694
—Discussed by A. E. R. C. A., r83
—Electric railway hazards—causes, effects and remedies [McDougall], 693
—Fixed schedule for injured persons other than employees [Tynan], 721
—Liability limitation advocated, 718
—Minimized by one man cars [Walker], 162
—Norwich, Conn., statistics 1917-1918, *281
—Relation of speed to [Bennett], 723; [Carpenter], 722
—Telephone control system of assistance, *398

Accounting:
—Accounting for depreciation [Jirgal], 799
—Accounting measures to meet business depression in the industry [Saliers], r37
—Clerical work of figuring coasting percentages [Johnson], *277
—Preparation of data in connection with rate cases [Bitting], r29
—Milwaukee zone fare methods, *619
—Ticket department, Great Britain, London County Council [Jackson], *274

Accounts, Standard Classification:
—Report of Committee of A. E. R. A. A., r85

Advertising:
—Advantages of continuity [Wright], 287
—Comments on national campaign, 608
—Comments on quality advertising, 608
—Discussed by Illinois Elec. Rys. Assn., 159
—Effect upon reduction of accidents [Wright], 287
—For traffic [Buffe], *663
—National advertisers can help [Boyce], c696
—$3,600,000 notes sold over counter in Milwaukee, 734

Akron, O.:
—Northern Ohio Traction & Light Co.:
One day strike causes suspension of local union president, 133
Amalgamated Assn.:
—Comments on decisions, 609
—Comments of Mr. Huff on, 44
—Sixteenth convention, 527
American Association of City Representatives of Electric Railways:
—Constitution and by-laws, 725
American Electric Railway Accountants Assn.:
—Annual convention, *r85
American Electric Railway Association:
—Annual convention, *r2, r43
—Committee of One Hundred, organization, 33; Program, 54, 80; Report, r50; Work summarized, 943
—Federal Electric Railways Commission (see Federal Electric Railways Commission)
—Increase in dues approved, 1009
—Income and expense statement, for 1918-1919, 1010
—Mail pay (see Interstate Commerce Commission)
—Mid-Year meeting:
Comments on, 1029
Program, 1050
—Report of committees, r43
—Report on federal legislation, r45
—Revision of dues, Comments on, 881
—Status of manufacturers, Comments on, 510
—Valuation committee report, 222
American Electric Railway Claims Assn.:
—Annual convention, *718, r83
—Comments on efforts to reduce accidents, 705
American Electric Railway Engineering Assn.:
—Annual convention, *r69
—Committee assignments, 728
—Committee on standards, Meeting, 444
—Equipment committee, meeting of, 33
—Standards, Status of [Cram and Brown], *507; [Welch], 922; [Chance], 931
American Electric Railway Manufacturers Assn.:
—Annual convention, r86
—Association dissolves, r87
American Electric Railway Transportation & Traffic Assn.:
—Annual convention, *r53
American Gear Manufacturers Assn.:
—Semi-annual meeting, *889
American Institute of Electrical Engineers:
—Limitations in steam-turbine design, *923
—Size of turbo-generator units, 882
American Light & Traction Co. (see Muskegon, Mich.)
American Public Utility Co. (see Grand Rapids, Mich.)
American Railroad Assn.:
—Adopts overhead crossing specifications, 944
—Flat spots on wheels and worn axle collars discussed, 82
American Rys. (see Philadelphia, Pa.)
American Society for Testing Materials:
—Annual meeting, 25
Anderson, Ind.:
—Union Traction Co.:
Rehabilitating track joints with an arc welder, *82
Receiver requested, 700; Receiver denied, 772
Appraisal of Railway Property:
—Comments on, by A. E. R. A., r44
—Companies should know value of properties, Comments on, 882
—Discussed before Federal Electric Railways Commission, r103
—Economics and equity in valuation [Cooke], 911
—International Ry., Buffalo, N. Y., 90
—Inventorying materials and supplies [Yungbluth], *518
—Pittsburgh Rys., 409, 436, 1017
—Principles of valuation stated by A. E. R. A., 222
—Reproduction cost method, Discussion of, 208
—Valuation and accruing depreciation [Kealy], 530
—Valuation of electric railway properties [Taylor], 128
—Valuation to be determined by disinterested body [Sidl], r129
Argentine:
—Anglo-Argentine Tramway, Ltd.:
Earnings, 452
Ashes:
—Handling by steam conveyor vs. manual labor, 30
—Losses due to combustible in refuse, *1006
Atlanta, Ga.:
—Georgia Ry. & Pr. Co.:
Considers one man cars, 961

Auburn, N. Y.:
—Auburn & Syracuse Elec. R.R.:
Fare situation, 546

Auditing:
—Detroit, Mich., situation, 698

Aurora, Ill.:
—Aurora, Elgin & Chicago R.R.:
Receivership, 409

Australia:
—Brisbane, Graduated fare system [Badger], *481
—Melbourne lines prosperous, 954
—Melbourne Suburban Railways electrified, *902
—Principle of differential wages in awards [Pringle], *c943
—Zone fare system [Jackson], 434

Axles:
—Reclaiming worn motor axle bearings, 565
—Repairing worn axle collars by welding, 82
—Standard design of [Chance], 932

B

Baltimore, Md.:
—United Rys. & Elec. Co.:
Car vestibuling, 933
Fare increase granted, 736
Wage increase, 407
—Washington, Baltimore & Annapolis Electric R.R.:
Revenues jumped 86 per cent, 138
Bay State Street Ry. (see Boston, Mass.)
Bearings:
—Bearing jig for locating dowel pin holes, 290
—Insuring proper fits [Dean], 759
—Reclaiming worn motor axle bearings, *565
—Standard design of journals and journal bearing keys [Chance], 932
—Standardizations discussed by American Electric Railway Engineering Assn., *r77
Beaver Valley Traction Co. (see New Brighton, Pa.)
Belgium:
—Electrification proposals [McCallum], 474
Berkshire Street Ry. (see Pittsfield, Mass.)
Binghamton, N. Y.:
—Binghamton Ry.:
Fare increase barred, 957
Birmingham, Ala.:
—Birmingham Ry., Lt. & Pr. Co.:
One man cars, 1064
Wage increase and eight-hour day sought, 351

Boston, Mass.:
—Bay State Street Ry. (see Eastern Massachusetts Street Ry.)
—Boston Elevated Ry.:
Boycott and strike follow increase in fare, 198
Eight hour day and wage increase granted, 190
Fare situation, *547
Financial statement for June, 297
Investigation by special commission, 445
Plans for operation without telephones [Dana], *23
Statement for quarter ending Sept. 30, 783
Strike of car men, 134
Ten-cent fare, 45
—Comparison of investments in transit facilities Philadelphia and Boston, 1001
—Eastern Massachusetts Street Ry.:
Commutation ticket, 677
Declares war on jitneys, 593
Fare collection register, Hearing on, 413
Fare collection hand register prohibited for open cars, 598
Fare increase, 44
Monthly tickets, 600
Program with 100 one-man cars, 732
Report of operation by Board of Trustees, r96
Resumes service in Lawrence, 948, 1056
Service to cease in Lawrence unless jitney curbed, 877
Strikes threatened, 538
Transporting shipyard workers at Quincy [Conant], *61
—Former Commissioner Eastman testifies, 591
—Middlesex & Boston Street Ry.:
Ten-cent fare, 302
—Motor bus service proposed, 456
—Policemen's strike, Comments on, 553
Brakes and Compressors:
—Causes of brakeshoe wear, *938
—One man car used by Brooklyn Rapid Transit Co., *786
—Portable air compressor, *930
—Regenerative braking with single-phase commutator motors, *910
—Standard design of brakeshoes, brakeshoe heads and keys [Chance], 931
—Standardization of brakeshoes discussed by A. E. R. E. A., r79
—Troubles, *340
Braking:
—Transference of load in cars while braking [Burke], *750
Brazil:
—Brazilian Traction, Lt. & Pr. Co.:
Income account for 1918, 596
British Traction Co. (see Great Britain)
Brockton & Plymouth Street Ry. (see Plymouth, Mass.)

Brooklyn, N. Y.:
—Brooklyn City Ry.:
Extra fare charge abandoned, 962
Problem of deficit, 951
Stock, Condition of, 805
—Brooklyn Rapid Transit Co.:
Certificates offered, 451
Eight cent fare recommended by Stone & Webster, 842
Electrically heated oven installed, *746
One-man cars, Details *784
Receiver appointed, 138
Rentals in default, 676
Situation of security holders, 955
Strike unjustifiable, 267
Strike, 295
Strike settled, 352
Surface lines segregated, 737
Transfer case, 876
Two-cent transfer authorized, 199

Buffalo, N. Y.:
—International Ry.:
Appraisal of railway property, 90
Fare increase situation, 456, 598
Court of Appeals decides Public Service Commission can raise rates, 143
Public Service Commission grants fare increase, 876
Publicity campaign, 36

Buildings and Structures:
—Discussed by A. E. R. E. A., r78
—Standardization of [Cram], 567

Abbreviations: *Illustrated. c Communication. r Page in Report Number for Oct. 11.
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

RECAP
9145 322
JUL 30 1920
437641

C

Camden, N. J.:
—View of the New Jersey zone plan [Bleakly], r126

Capitalization:
—Discussed before Federal Electric Railways Commission, r102
—Recapitulation, Comments on [Becker], r125

Capital Traction Co. (see Washington, D. C.)

Car Construction:
—Fabrication of cars in Detroit United shops, *863, *920
—Light weight:
  Tendencies toward, 105
—Making over open cars for prepayment fare collection, *113
—Standard units, Comments on, 465
—Steel pilots for all year service, *939

Car Design:
—Car weight, Comments on, 883
—Car weight reduced 50 per cent [Dehore], *915
—Changes in Kansas City Safety car design, *998
—Construction features of Detroit cars, *863; 920
—Double-end pay-as-you-pass cars, *83
—Interchangeable roofs on Detroit cars, *863
—Italian car design experience, *909
—London, England, Metropolitan District Railway's cars, *345
—Longitudinal seats vs. cross seats, Comments on, 423
—Motor car used for subway operation in Madrid, Spain, *21
—One man cars used by Brooklyn Rapid Transit Co., *784
—Spring operated trap door lift, 1046
—Transference of load when braking [Burke], *750

Carhouses and Storage Yards:
—Chemical fire protection for the car-storage yard, *753
—Protection from fire, Comments on, 815

Cars:
—One man:
  Adaptability to zone fare system, 152
  Advocated by Beeler, 538
  Atlanta, Ga., Considered, 961
  Birmingham, Ala., 1064
  Change boards, *342
  Claim agents experience [Dixon], 720; [Winsor], 721
  Cost of maintenance, Comments on, 883
  Davenport, Ia., earnings in [Roderick], 26
  Details of cars used by Brooklyn Rapid Transit Co., *784
  Devices to speed up operation, 208
  Discussed by Amalgamated Assn., 762; A. E. R. T. & T. A., r54; Beeler, r, 124; C. E. R. A., *63; 64; Greenland, 67, 68; Illinois Elec. Rys. Assn., 160; Iowa Elec. Ry. Assn., 762; Jackson, r117; Kealy, r31; Moore, 131; Thirlwall, 233; Walker, 161, 662; Wells, r36, 983
  Earnings in various localities [Wells] 983
  Experiences in Virginia, *430
  Greater safety with less labor, 53
  Kansas City:
    Change in design, *998
    Successful [Kealy], r31
  Labor, Comments on, 370
  Los Angeles, Cal., Advised by commission, 959
  Mirror for interior view, 348
  Moving picture film to illustrate operation, *667
  Negro problem solved in Richmond, 842
  Objection answered [Wells], 983
  One hundred cars ordered by Eastern Massachusetts Street Ry., 732
  Operation discussed by A. E. R. T. & T. A., r58
  Race segregation not found difficult in Raleigh, N. C., 877
  San Diego, Cal., Urged by Commission, 961
  Service and jitney competition [Clifford], r35
  Solution for many difficulties, 209
  Standardization [Wells], r36
  Standardization, Comments on 743
  Stimulate summer riding, 153
  Terre Haute, Results in [Walker], 161

Cars:
—British Electric Traction Co. cars, description of types [Jackson], *156
—Car speed and equipment in Great Britain [Jackson], 432
—Melbourne (Australia) Suburban Railways, *906
—Time of passenger interchange on double end vs. Peter Witt cars [Sullivan], *656
—Types used in Portland, Me., *623
—(See Work and Wrecking Cars.)

Carolina Pr. & Lt. Co. (see Raleigh, N. C.)

Central Electric Ry. Assn:
—Boat trip, 1
—Fall meeting, *989, 1039
—Summer convention, 25
—Summer cruise, *63

Central Metropolitan Railway of Madrid (see Spain).

Charleston, W. Va.:
—Charleston Interurban R.R.:
  Fare increase sought, 678, 1293

Chicago, Ill.:
—Chicago Elevated Ry.:
  Coasting results [Johnson], *277
  Chemical fire protection for the car-storage yard, *753
  Communication to Federal Electric Railways Commission, c236

Chicago, Ill. (Continued):
—Engineers report on earnings, 1016
  Improved lubrication with changed motor axle boxes, *757
  Lines tied up by strike, 249
  Strike settled, *293
  Wage and fare increase situation, 134, 189, 360
—Chicago, Milwaukee and St. Paul Ry.:
  Cascade electrification, Comments on, 782, 815
  Locomotive tested, *827
  Watt-hour meter, Duplex dial, *402
—Chicago Surface Lines:
  Commission orders reduced rate, 958
  Commission refuses to suspend 7-cent fare, 842
  Fare increase showing returns, 700
  Lines tied up by strike, 249
  Strike settled, *293
  Valuation filed, 542
  Wage and fare increase situation, 134, 189, 361, 738
—Fares in Chicago, Cleveland and Philadelphia compared [Busby], 795
—Municipal ownership urged by mayor, 535, 769
—Public takes an interest in wage increase, 207

Cincinnati, O.:
—Cincinnati & Columbus Traction Co. abandons lines, 496
—Cincinnati, Lawrenceburg & Aurora Electric Street Ry.:
  Cutting down operating expenses [Dehore], *915
—Cincinnati Traction Co.:
  Elements of franchise [Draper], *r18
—Ohio Elec. Ry.:
  Awarded judgment, 772

Circuit Breakers:
—Erratic setting, 749
—Open air exhaust, *487

Cities Service Co. (see New York City)

City planning:
—Effect of fares on discussed by Dr. Whitten, 831

Claim adjustment (see Accident Claim Department).

Cleveland, O.:
—Cleveland and Youngstown R.R.:
  Inspected by Cleveland Engineering Society, 590
—Cleveland Railway Co.:
  Arbitration increase dividend, 1018
  Disposal of new issue of stock, 104
  Operating statistics compared with Philadelphia and Milwaukee, 1918, r110
  Service-at-cost plan, Operation of, 172
  Wage dispute, 38, 85
  Elements in a satisfactory substation building [Lloyd], *833
—Fares in Chicago, Cleveland and Philadelphia compared [Busby], 795
—Lake Shore Electric Railway System:
  Income statement and operating statistics, 1917-1918, 542
—Public Service Commission:
  Comments on railway situation, *383
—Railway situation discussed by Sect'y Baker, 329
—Rapid transit report, *71
—Transit plans for future traffic, 1012, 1054

Coal:
—Arrangements made for coal supply, 768
—Consumers urged to stock coal, 204
—Conveyor at New Haven Power Station [Wood], *312
—Economical handling of (Finn.), 1047
—Plan to combat coal famine, Comments on, 968
—Prices up, quality down [Emery], *396

Columbia, S. C.:
—Columbia Railway, Gas & Elec. Co.:
  Fare and wage increase, 142
  Offers to sell to the city, 946

Columbus, O.:
—Columbus Ry., Pr. & Lt. Co.:
  Fare increase defeated, 414
  Strike settled, 535

Commutator Slotter:
—Device, *347
—Device for use with double-spindle lathe, *578

Competition:
—Are high costs of service likely to develop permanent competition [Palmer], r9

Compressors (see Brakes and Compressors).

Concrete:
—Use of fine-grained sand, 760

Connecticut:
—Connecticut Public Utilities Commission:
  Comments on railway situation, 333
  Report, 592

Connecticut Co. (see New Haven, Conn.)

Constabulary:
—London buses special constabulary [Jaskson], *821

Contracts for Joint Use of Track:
—Obligations discussed by T. & T. Assn., r66

Controllers:
—Troubles, 341, *577

Cost of Living:
—Changes 1914-1919, 438

Couplers:
—Standard design of automatic couplers [Chance], 931
—Swing of radial coupler on curves [Seelar], *488

Credit:
—Discussed before Federal Electric Railways Commission, r97, r112

Cumberland County Pr. & Lt. Co. (see Portland, Me.)

D

Dallas, Tex.:
—Dallas Ry.:
  First surplus under service-at-cost franchise, 1019
  Municipal ownership recommended, 291
  Service-at-cost plan, Operation, 173, 430, 713; deficit, 952

Davenport, Ia.:
—Clinton, Davenport & Muscatine Ry.:
  Officials arrested for suspending service, 674
—Tri-City Ry.:
  Earnings of safety cars [Roderick], 26
  Fare increase situation, 86, 93, 413
  Strike settled, 352
  Tie nipper for reducing spiking difficulties, *891

Denver, Col.:
—Denver Tramway Co.:
  City to regrant temporary six-cent fare, 129
  Fare collection [Doty], 40
  Fare situation, 95
  Mayor signs six-cent fare ordinance, 871
  Traction issues at special election defeated, 730
—Fare situation, Comments on, 781
—Referendum a failure in deciding fare situation, 814

Depreciation:
—Accounting for depreciation [Jirgal], 799
—Accrued depreciation discussed by valuation committee, 224
—Comments by former Commissioner Eastman, 591
—Valuation and accruing depreciation [Kealy], 530

Des Moines, Ia.:
—Des Moines City Ry.:
  Adjuster for gear-case cover springs, *566
  Fare and wage situation, 354
  Open air exhaust for circuit breakers, *487
  Portable rivet heater, *488
  Reclaiming worn motor axle bearings, *565
  Strike settled, 446
—Inter-Urban Ry.:
  Car maintenance records facilitate work [McMahon], *119

Detroit, Mich.:
—Bond issue urged, 1054
—Council upholds Mayor's opposition to service-at-cost, 1013
—Council wishes to negotiate with Detroit United Ry., 951
—Detroit United Ry.:
  Completing audit, 698
  Construction features of new cars, *863
  Fare increase, 360
  Mechanical aids in handling fares, *217
  Restrained from increasing fare, 736
  Service-at-cost recommended by Board of Street Railway Commissioners, 730
  Shop methods used in building cars, *921
—Mayor disagrees with commission, 802
—Rejects Tayler plan of railway operation, 872
—Service-at-cost plan for fare arbitration, 84
—Subway situation, 248, 673, 699

District of Columbia:
—District of Columbia Public Utilities Commission:
  Comments on railway situation, 331

E

Education:
—University endowment campaigns, Comments on, 684

Eastern Massachusetts Street Ry. (see Boston, Mass.)

East St. Louis, Ill.:
—East St. Louis Ry.:
  Fare case valuation, 841
—Southern Traction Co.:
  Security holders seek redress, 952

Electrification (see Heavy Electric Traction)
Empire State R.R. Corp. (see Syracuse, N. Y.)

Employees:
—Anti-strike bill killed in Mass., 1014
—Conductors point-of-view of car operating economy [Connely], 1042
—Conductors to be instructed by traveling agents in Los Angeles, Cal., 807
—Contracts with, discussed at Washington hearing, r100.
—Co-operation in zone-fare system, Connecticut Co., 857
—Co-operation of employee and employer, Comments on, 684
—Co-operation of the public, company and the men, 105
—Co-operation with company, London's buses [Jackson], *820
—Courtesy campaign started in Indianapolis, 877
—Dispatcher's view of car operation economies [Harris], 1044
—Effort of Twin City Rapid Transit Co. to make men citizens, *279
—Headquarters in Chicago, *442
—How a motorman can help in car operating economy [Sunderland], 1042
—How the master mechanic looks at car operating economy [Scullin], 1044
—Line seniority to continue in Kansas City (Mo.), 257
—London County Council Tramways shares coal saving with car operators, 214
—Operating department's training school, London's buses [Jackson], *822
—Refuse ownership in Reading, Pa., 836

Employees (Continued):
—Representation in management discussed by Sect'y Baker, 330
—Request cancellation of union contract in Kansas City, 536
—Sentiment against union in Los Angeles, 493
—Service code in New Brighton, Pa., 503
—Street inspector [Dana], •372
—Training of welders. Comments on, 968
—Wages extorted under threat, 207
—Welfare work, Comments on, by T. & T. Assn., r54
—Women workers on electric railways disappearing in New York City, 838
—Working hours of motormen and conductors in Philadelphia [Mitten], cr110
—(See also Labor)
Energy Checking Devices:
—Report forms, •522
—Successful in Great Britain and Ireland, •521
—Watt-hour meter, Duplex dial, •402
Energy Consumption:
—Coasting results on Chicago Elevated [Johnson], •277
—Energy saving campaign, Springfield Street Ry., 246
—Light weight cars [Greenland], 68
—London County Council Tramways shares with employees saving in coal due to more efficient car operation, •214
—Safety cars [Roderick], 26
Energy-Saving Devices:
—Comments on, by T. & T. Assn., r54

F

Face Plates:
—Bending and straightening special work, •559
Fairmont, W. Va.:
—Monongahela Valley Traction Co.:
  Fare increase, 144
  Heavy freight service on a single-track, high-speed passenger line [Cole], •866
Fans:
—Car fan used by New York Municipal Ry. Corp., 1009
Fare Box Vaults:
—Safe for, •758
Fare Collection:
—Boston, Mass., Hearing on Rooke register, 413
—Change boards on one-man cars, •342
—Collection and registration of fares discussed by T. & T. Assn., r61
—Collection of zone fares [Kuemmerlin], r68
—Comments on [Nash], 651
—Comments on by A. E. R. T. & T. A., r54
—Comments on improvements, 706
—Denver, Col., Methods [Doty], r40
—Discussed [Sullivan], •653
—Efficiency of fare box [Sullivan], •655
—Fare registering and ticket issuing devices, •669
—Great Britain [Jackson], 433
—Hand register prohibited for open air cars in Mass., 598
—Making over open cars for prepayment fare collection, •113
—Mechanical aids in sorting and wrapping used by Detroit United Ry., •217
—Methods with frequent changes in rate [Doty], r40
—Milwaukee, Zone fare collection, •616
—Newark, N. J., Zone fare, •640
—Portland, Me., methods, •625
—Springfield, Mass., methods, •632
—Systems compared at Washington hearings, •376
—Ticket issuing machine for fare collection, •245
—Zone fare scheme in New Jersey, 283
Fare increases:
—Auburn, N. Y., situation, 546
—Baltimore, Md., granted, 736
—Binghamton, N. Y., barred, 957
—Boston, Mass., situation, 44, 45, 302, •547
—Boycott and strike follows fare increase, 148
—Brooklyn, N. Y., abandons extra fare charge, 962
—Buffalo, N. Y., situation, 143, 456, 598, 876
—Charleston, W. Va., sought, 678, 1065
—Chicago, Ill., situation, 189, 361, 738, 842, 958
—Columbia, S. C., 142
—Columbus, O., defeated, 414
—Connecticut, Report of Public Utilities Commission, 592
—Croydon, England, Effect of [Jackson], •468
—Davenport, La., situation, 86, 93, 412
—Denver, Col., situation, 129, 730, 871
—Detroit, Mich., situation, 360, 736
—St Louis, Mo., situation, 502, 599
—England, Leeds [Jackson], •56
—Gary, Ind., granted, 875
—Great Britain, Effect of [Jackson], 433
—Great Britain, London County Council, three section penny stage with no fractional fare tickets [Jackson], •270
—Holland, 80-100 per cent increase during war, 215
—Kansas City, Kan.: Arbitrators recommend, 776
—Eight-cent fare, 303
—Granted by Court, 957
—Massachusetts situation [Macleod], 428
—Milwaukee, Wis.:
  Granted by Wisconsin Railroad Commission, 891
  Seven cents, 808
—Muskegon, Mich., service suspended, 362
—Necessity discussed by Pennsylvania Assn., 14
—Newark, N. J.:
  History of recent fare increases, 282
  Seven-cent flat rate, 1022
—New York City situation, 503, 546, 701, 738
Fare Increases (Continued):
—Norfolk, Va., six-cent fare sought, 301
—Omaha, Neb., 362
—Pennsylvania, Court sustains fare increase, 197
—Philadelphia, Pa., earnings, 167
—Pittsburg, Pa., earnings, 165
—Pittsburg, Pa., on basis of valuation, 93
—Portland, Me., earnings, 166
—Portland, Ore., Urged to save company from bankruptcy, 1021
—Providence, R. I., situation, 412, 702
—Quincy, Ill., seven-cent fare, 96
—Racine, Wis., fare decision in abeyance, 843
—Results in several localities, 15
—Rochester, N. Y., fare decision stands, 737
—Roslyn, N. Y., situation, 738
—Saginaw, Mich., voters approve fare increase, 776
—St. Joseph, Mo., 1021
—Sherbrooke, Can., People vote favorably, 677
—Sought, 776
—Syracuse, N. Y., 142
—Value of good service, 1
—Vancouver, Can., situation, 600
—Washington, D. C., situation, 142, 736
—Waverly, N. Y., seven cents granted by P. S. C., 197
—West Virginia, situation, 545
Fare increases, Reasons for:
—Assets must be conserved [Sallers], r38
—Comments [Storrs], 175
—Credit and cost of capital [Sisson], 178
—More passengers better than too high fares [Thomas], c727
—Politicians try to befog the issue, 510
—Ten-cent fare, 302
Fares:
—Adjustment of charges [Jackson], 435
—Basis for fares, 15
—Can service costs be collected from traveling public? [Mortimer], •r14
—Comments on [Becker], r124
—Comments on fare question [Hedges], •r8
—Commutation tickets in Fall River, Mass., 677
—Continuance of 5-cent fare in Philadelphia [Mitten], cr111
—Des Moines, Ia., situation, 355
—Effect of changes in fare scheme [Mortimer], r16
—Effect of dead capital on, •1001
—Effect of ten-cent and seven-cent fares discussed before Federal Electric Railways Commission, 239
—Fare scheme must keep traffic cream, 465
—Increased fare movement:
  Consumer must pay the cost, Discussed by Central Electric Railway Assn., 65
—Motor bus fares in London, England [Jackson], •708
—New York State, Reports from different cities, 689
—One dollar weekly pass in Racine, 502
—Pennsylvania Commission says public must understand service versus revenues, 269
—Philadelphia & Milwaukee situation discussed before Federal Electric Railways Commission by Mr. Mortimer, r108
—Plans suggested before Federal Electric Railways Commission, 237
—Political issue in Massachusetts, 769
—Public pay deficits by taxation [Macleod], 429
—Public Service Railway (see Newark, N. J.)
—Pyschological vs. mathematical means of increasing receipts, 949
—Questionnaire of Federal Electric Railways Commission, 573
—Readiness-to-serve system [Nash], •647
—Rush-hour vs. off-hour passenger, c349
—Sell transportation in small quantities, 289
—Views on fare question, 960
—Tickets used by British Electric Traction Co. increase travel [Jackson], •155
—Unit fares discourage short hauls [Jackson], 392
—Wage and rate problems inter-dependent, 269
—Zone fares (see zone fare systems)
Fares, Analysis of Cost:
—Comments on [Nash], 647
—Comparisons based on insufficient data are useless, 851
—Discussion before Federal Electric Railways Commission, 163, 165, 228
—Eight-cent fare recommended for Brooklyn, N. Y., 842
—Estimates of Wisconsin Railroad Commission, 891, 893
—Fares in Chicago, Cleveland and Philadelphia compared [Busby], 795
—Five-cent fare may be possible by reducing certain operating costs [Rifenberick], 66
—Five cents will pay for only a five-cent ride, 783
—Flat fare system summarized, 610
—Flat rate vs. zone fare from city planning standpoint, 831
—Net result of the 5-cent fare [Bibbins], •570
—Philadelphia conditions analyzed, •999
—Pre-war conditions versus today [Doolittle], r9
—Public utility rates discussed by National Association of Railway and Utilities Commissioners, 826
—Synchronizing revenues with wage increases in Wisconsin, 967
—Ten cent fare necessary in Pittsburgh, 257
Federal Electric Railways Commission:
—Appointment, comments, 103
—Comments on hearings, r1, 152, 311, 369
—Communication from Chicago Elevated Railways in regard to electric railways, c236
—Communication from T. E. Mitten, cr111
—Communication from Thos. A. Edison in regard to electric railways, c229
—Correspondence on Washington Testimony, 907
Federal Electric Railways Commission (Cont.):
—Facts that should be brought out [Ainey], 389
—Hearings from July 15 to July 18, •124
—Hearings, July 17-23, •163
—Hearings, July 23-25, 228
—Hearings, Aug. 11-Aug. 19, 329
—Hearings, Aug. 13-Aug. 15, •374
—Hearings, final •r93
—Organization and plans, 20
—President expresses opinion on hearings before, 240
—Questionnaire, 573
—Statistics, Distribution of capital stock, 438
—Statistics on electric railway industry, •181
—Summary of electric railways case, 284
Financial:
—Benefits of a consolidated system not always appreciated, 707
—Cost of financing discussed in Pittsburgh valuation report, 437
—Credit and cost of capital [Sisson], 178
—Depreciation of electric railway dollar, 868
—Effect of dead capital on fare, •1001
—Fair return on railway properties [Bemis], r126
—Financing problems in New York discussed before Federal Electric Railways Commission, 235
—Financing under different forms of franchise [Erickson], 242
—First cost, Central Metropolitan Railway of Madrid, Spain, 22
—Income statement of electric railways 1917-1918, 181
—Investment Bankers Association discusses railway problems, 797
—Milwaukee sells $3,600,000 of notes at home, 734
—Need for large capital, Comments on, 180
—Organization and capitalization questionnaire of Federal Electric Railways Commission, 573
—Purchase of money, Federal Electric Railways Commission, •164
—Purchase of one-man cars, car trust certificates for [Greenland], 69
—Railway securities situation, 171
—Simplification of corporate structures [Cooke], •858
—Shrinkage of the nickel 1913 to 1919 [Burke], 512
—Townspeople as stockholders, 371
—Watered stock for widows untenable [Ainey], 388
Fire Insurance:
—Philadelphia methods described to Federal Electric Railways Commission, r94
Fire Protective Apparatus:
—Annunciators for fire sprinkler system, •937
—Chemical engines on Chicago Elevated, •753
—Protecting car storage yard, Comments on, 815
Fort Wayne, Ind.:
—Fort Wayne & Northern Indiana Traction Co.:
  Foreclosure sale planned, 450
France:
—Electrification of railways, 857
—Electrification proposals [McCallum], 474
—Midi Ry.:
  Progress on electric line across the Pyrenees mountains [Pahin], •475
—Paris Tramways:
  Conditions during war, 486
Franchises:
—City and railway partnership, Different interests, 311
—City representation in electric railways [Woods], 726
—Cleveland, O., Comments on, by Secretary Baker, 329
—Compared in Chicago, Cleveland and Philadelphia [Busby], 795
—Denver, Col., situation, 781
—Franchise rates are legislative and not contractual [Chamberlain], 28
—Franchise tax waived in Providence, R. I., 702
—Inflexible franchise bad, Testimony before Federal Electric Railways Commission, 284
—License tax, Request remission, 297
—Michigan law governing, 592
—Minneapolis franchise draft, 251
—Norfolk, Va., offers new franchise, 870
—Pavement cost and maintenance, Comments on [Storrs], 176
—Service-at-cost:
  Advantages [Erickson], 244
  Can service costs be collected from traveling public [Mortimer], r14
  Cincinnati franchise [Draper], •r18
  Cleveland, O., Operation in, 172
  Contracts explained, 174
  Controlled by city but operated service-at-cost [Sidlo], r129
  Dallas, Tex. Operation in, 173
    First surplus, 1019
  Denver, Col., considered, 129
  Detroit, Mich., situation, 84, 730, 1013
  Economical operation, Comments on [Draper], 177
  Federal Electric Railway Commission, 169, 171, 233
  Minneapolis, 536, 590, 1013
  Montreal franchise [Hutcheson], •r24
  Paducah, Ky, 447
  Pittsburgh, Pa., recommended, 437
  Plan [Culkins], 79
  Questionnaire of Federal Electric Railways Commission, 574
  Report on by A. E. R. A., r47
—Youngstown franchise [Stevens], •r21
—Seeks new franchise, 248
—Subsidies recommended by receiver of Rhode Island Co., 426
—Toledo Rys. & Lt. Co., ousted, 801
—Toledo, O., Ouster ordinance, 446, 972

Abbreviations: •Illustrated. c Communication. r Page in Report Number for Oct. 11.
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

Freight and Express:
—Compensation for use of foreign track discussed by A. E. R. T. & T. A., r66
—Electric railway express discussed by C. E. R. A., 989
—Handling the freight business [Stanton], 982
—Heavy freight service on a single track, high-speed passenger line [Cole], •866
—Interurban express [Nicholl], 993
—Obstacles to electric express, 996
—Possibilities of electric railway express service [Munton], 992
—Possibilities of express business [Vaughn] 997
—Possibilities of electric express service [Starkey], 995
Fuel:
—Cost analysis discussed by American Electric Railway Engineering Assn., •75

G

Gary, Ind.:
—Gary Street Ry.:
Double-end pay-as-you-pass cars, •83
Fare increase granted, 875
Gasoline vs. Electric Motor for Street Railway Service [Storer], r27
Gears and Pinions:
—Adjuster for gear-case springs, •566
—Gear cases electrically welded, •942
—Helical gearing discussed by A. E. R. E. A., r82
—Helical gearing for railway motors [Phillips], •934
—Providing proper fit [Dean], 759
—Putting on motor pinions discussed by American Gear Manufacturers Assn., •889
—Reinforced suspension for sheet steel gear cases, •1004
—Troubles, 577
General Gas & Elec. Co. (see New York City)
Georgia Ry. & Pr. Co. (see Atlanta, Ga.)
Girardville, Pa.:
—Schuylkill Ry.:
Fare increase approved by commission, 44
Grafton, W. Va.:
—Grafton Lt. & Pr. Co.:
May be included in merger, 772
Properties taken over by Potomac-Edison Gas & Pr. Co., 1019.
Proposal of sale, 409
—Grafton Traction Co.:
May be included in merger, 772
Properties taken over by Potomac-Edison Gas & Pr. Co., 1019.
Proposal of sale, 409
Grade Indicator;
—Effective homemade indicator [Harte], •933
Grand Rapids, Mich:
—American Public Utility Co.:
Earnings 1918-1919, 451
Grand Trunk Ry. (see Stratford, Can.)
Great Britain:
—British Electric Traction Co. zone fare systems [Jackson], •155
—British tramway conditions [Madgen], 439
—Croydon, Fare Practice in, •476
—Edinburgh Corporation Tramways:
Resourcefulness during coal strike, 1034
—Energy-saving instruments, practice with, •521
—Electrification proposals [McCallum], 474
—Electricity supply bill, 35
—Fare practice [Jackson], 341
—Glasgow Municipal Tramways: Statistics, traffic, revenues, capitalization, 1918, •376
—Leeds, Zone system in [Jackson], •7, •56
—Sheffield Corporation Tramways and Motors:
Results of motor omnibus service, 865
—West Ham Corporation Tramways:
Telephone control system, •397
England (see Great Britain and London)
Guelph, Can.:
—Grand River Ry.:
Citizens vote against agreement with city, 535

H

Heavy Electric Traction:
—Advance in Sweden, 225
—Comparison in America and Europe by French Commission, 834
—Discussed by N. Y. R.R. Club, 918
—Electrification of French railways, 857
—European proposals [McCallum], •474
—Japan, Favored, 515
—Progress on the Midi Railway across Pyrenees mountains [Pahin], •475
—Status of Swiss electrification [Ateliers de Construction Oerlikon], c696
—Status in Switzerland, 227
—Switzerland, war time progress, 486
Heaters:
—Hot blast forced-ventilation heater, •290
—One man car used by Brooklyn Rapid Transit Co., •789
High-tension Lines (see Power Distribution and Transmission Lines)
Holland:
—Railways and Tramways, Difficulties during war. Interview with H. F. Adams, 215
Housing Conditions in Leeds, England [Jackson], •7
Houston, Tex:
—Houston Elec. Co., Valuation situation, 1017
Illinois:
—Public Utilities Commission:
Supreme Court upholds in fare question, 1064

I

Illinois Electric Railways Assn.:
—Summer meeting, 159
Illinois Traction System (see Peoria, Ill.)
Indiana:
—Assessments of all railways, 42
—Indiana Public Service Commission:
Comments on railway situation, 334
Indiana Rys. & Lt. Co. (see Kokoma, Ind.)
Indianapolis, Ind.:
—Indianapolis Street Ry.:
Courtesy campaign started, 877
Merger with Indianapolis Traction & Terminal Co. approved, 42, 91, 500
Sept. 1 dividend postponed, 497
—Indianapolis Traction & Terminal Co.:
Merger with Indianapolis Street Railway approved, 91, 500
Induction Regulator:
—Experiences with [Wensley], •887
International Railway (see Buffalo, N. Y.)
Inter-professional Council:
—Conference planned, 801
Interstate Commerce Commission:
—Hearings on mail pay concluded, 286
—Mail pay hearings, 1002
Inventories:
—Inventorying materials and supplies [Yungbluth], •518
Investment Bankers Association of America:
—Annual convention, 797
Iowa:
—Regulating rates [Chamberlain], 28
Iowa Elec. Ry. Assn.:
—Committee meeting, 328
—Midyear meeting, 541, 587, 761
Italy:
—Italian car design experience, •909

J

Jacks:
—For handling railway equipment, 586
Japan:
—Imperial Government Rys.:
—Electric railway transportation, Practices and tendencies [Sano], •4
Electrification favored, 515
Joint Use of Tracks & Terminals:
—Discussed by A. E. R. T. & T. A., r64

K

Kansas:
—Public Utilities Commission, Permits refunding of bonded and other indebtedness, 194
Kansas City, Mo.:
—Court grants 2½ cent a mile rate, enjoining commission, 957
—Kansas City, Clay County & St. Joseph Ry.:
Employees request cancellation of union contract, 536
—Kansas City Rys.:
Abuse of transfers, 361
Arbitrators recommend fare increase, 776
Changes in safety car design, •998
Eight-cent fare, 303
Line seniority to continue, 257
One man car successful [Kealy], r31
President gives dinner to directors and officials, 870
Prospects greatly improved, 1016
Service not fares zoned in, 362
Supreme Court upholds commission, 959
Ticket situation, 775, 875
Traffic changes suggested by J. A. Beeler, 1064
Transfers, Triplicate, •401
Wage increase sought, 136
Kokomo, Ind.:
—Indiana Rys. & Lt. Co.:
Air-operated tower for line cars, •794
Safe for fare box, •758
Stockroom records and practice, •861
—Missouri & Kansas Interurban Ry.:
Refunding permitted by Kansas Public Utilities Commission, 194

L

Labor;
—Comments on [Sidlo], r130
—Co-operative welfare vs. collective bargaining, Comments on [Weston], 529
—Discussed before Federal Electric Railways Commission, r98, r103, r107, r108
—Effect of shortage on maintenance during war [Phillips], 19
—Eight hour day, Comments on, 510
—Labor aspect discussed before Federal Electric Railways Commission, 238
—Labor's contribution to solution of railway problem, 705
—Organized labor, what it can do, 511
—Philadelphia conditions described before Federal Electric Railways Commission, r94
—Statistics on labor and living conditions [Emery], •394
—Superfluous labor on two man cars, 370
—Union methods discussed before Federal Electric Railways Commission, r107
(See also Employee)
Lawrence, Mass.:
—Railway service restored, 948, 1056
—Service to be suspended unless jitneys are curbed, 877
Legal:
—Bill introduced to abolish Department of Interior and substitute Department of Public Works, 38
—Federal legislation, Report on, American Elec. Ry. Assn., r46
Legal (Continued):
—Joint use of tracks and terminals discussed by A. E. R. T. & T. A., r64
—Legal notes, 458,
—Legislation slow in New York [Choate], 690
—Massachusetts provides act for investigation of electric railways, 250
—Nebraska court decides railway must have adequate temporary rate pending appraisal, 199
—Pennsylvania, Court sustains fare increase, 197
—Prospective legislation on electric railways in Massachusetts, 698
—Proposed legislation on electric railways, 838
—Referendum a failure in deciding economic questions, 814
—Toledo mayor dispossesses Toledo Rys. & Lt. Co., 133
—Transit legislation to be considered in New York, 1055
Lighting:
—Detroit cars, •864
—Electric lights to replace oil tail lights, •939
—Portable foot-candle meter, •940
—Portable utility light, •940
Locomotives:
—Midi Railway electric locomotives, characteristics [Pahin], •476
—Modern electric locomotives discussed by N. Y. R.R. Club, 918
—St. Paul cascade electrification, Comments on, 782, 815
London:
—London buses carry large proportion of London traffic [Beaumont], c727
—London County Council, Zone fare systems [Jackson], •210, •270
—London County Council Tramways:
More passengers better than too-high fares [Thomas], c727
—London Electric Ry.:
Coasting records, 526
—London letter, 34, 247, 490, 697, 729
—London's tubes and buses [Jackson], •708, •816
—Metropolitan District Ry.:
Car design, •345
—St. Paul locomotive tested, •827
Los Angeles, Cal.:
—Los Angeles Ry. Corp.:
Commission advises one man cars, 959
Wage increase, 251
—Pacific Elec. Ry.:
Conductors to be instructed by traveling agents, 807
Improving grounds a profiable investment [Elliott], •517
Normal service resumed, 493
Substations, Fireproof construction [Elliott], 487
Unusual method for moving two 250-hp. boilers [Elliott], •123
Wage increase, 251
Louisville, Ky.:
—Louisville & Interurban Ry.:
Reduction of suburban rates, 95
Lubrication:
—Improved with changed motor axle boxes, •757

M

Mahoning & Shenango Ry. & Lt. Co. (see Youngston, O.)
Mail:
—Committee on mail pay meets, 444
—Compensation, Report of American Elec. Ry. Assn., r46
—Hearings on mail pay, 286
—Mail pay hearings before Interstate Commerce Commission, 1002
—Postal zone law attacked by Senator Capper, 692
Maine:
—Public Utilities Commission orders zone fares, •622
Maintenance Difficulties During War [Phillips], 19
Maintenance Records and Costs:
—Cost of one man car maintenance, Comments on, 883
—Estimates of Wisconsin Railroad Commission, 892
—Repair shop forms used in Des Moines [McMahon], •119
Management:
—Cooperation with merchant to develop transportation, Comments on, 969
—Discussed before Federal Electric Railways Commission, r106
—Discouraged railway official, Comments on [Johnson], c443
—Manager should mix with car riders, 153
—Morale affected by adverse conditions [Johnson], 289
—Officials arrested in Davenport, Ia., for suspending service, 674
—Promoting co-operation of directors and officials, Kansas City, Mo., 870
—Simplification of corporate structures [Cooke], •858
Market Conditions:
—Aluminum, 550
—Bond testers, 965
—Carbon brush outlook promising, 811
—Car equipment, 811
—Coal, 964, 1026
—Coal strike conditions on Nov. 8, 811
—Copper and brass, 50, 306, 506
—Copper products advancing, 148
—Cotton and silk, 306
—Cotton and waste, 506
—Cross arm and pin orders, 604
—Difficulty of securing supplies during war [Phillips], 19
—Door and step control market active, 741
—Effect of return of steam roads, 879

Abbreviations: •Illustrated. c Communication. r Page in Report Number for Oct. 11
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX.

Market Conditions (Continued):
—Fare device sales, 682
—Glass, 100, 682, 965, 1026
—Hand brakes, 964
—Heaters, 50, 550, 741
—High tension insulators, 306, 366
—Insulating materials, 148, 846
—Iron culvert, 965
—Jacks, Sales increasing, 704
—Malleable iron delivery uncertain, 741
—Metals, 51, 149, 264, 367, 507, 605, 1068
—Overhead fare recorder, 506
—Paints and varnishes, 417, 779
—Pole market fair, 779
—Brake shoe demand heavy, 779
—Power saving devices, Sales, 682
—"Price at delivery" policy, 604
—Rails, 100, 366, 604
—Railway accessories and supplies, 51, 149, 264, 367, 507, 605
—Railway motors, 263
—Rubber covered wire, 879
—Sanitary hand straps, 417
—Scrap iron and steel, 879, 965
—Shop machinery, 460
—Sleet cutter sales increase, 964
—Snow plow deliveries thirty days, 846
—South American, 50
—Steam-turbines, 366
—Steel pole and tower, 204
—Steel and iron products, 263
—Steel, Electrical sheet, 551, 1026
—Steel situation, 704, 879, 846
—Ties, 417, 1068
—Tie tamping tools, 964
—Tool specialties, 506
—Track brooms, 965
—Track tools, 879, 846, 1026
—Trolley wire, 1068
—Uniforms, insignia and equipment, 366
—Used equipment sales, 604
—Water wheels, 551
—Wire and cable, 460
—Wood tie reservations, 1068
Manufacturers:
—Report on, by American Elec. Ry. Assn., r47
Massachusetts:
—Anti-strike bill killed, 1014, 1030
—Board of trustees report to Federal Electric Railways Commission, r96
—Fares a political issue, 769
—Fare situation, 311
—Fare situation [Macleod], 428
—Investigating Commission on electric railways:
  Appointment, 250
  Boston Elevated Ry. investigated, 445
  Electric railway essential, 538
  Report on railway situation, 871
—Legislative solution of troubles [Macleod], 429
—Prospective legislation on electric railways, 698, 838
—Proposed measures against strikes, 873
—Public Service Commission:
  Public ownership a means of restoring credit [Macleod], 427
—Temporary subsidies favored, 673
—Wage increase, Effect of, 354
Master Car Builders Assn.:
—Equipment standards of [Chance], 981
Metal Tickets (see Tickets)
Michigan:
—Regulative commission for all public utilities provided, 591
Middlesex & Boston Street Ry. (see Boston, Mass.)
Milwaukee, Wis.:
—Fares increased by Wisconsin Railroad Commission, 891
—Milwaukee Elec. Ry. & Lt. Co.:
  Notes sold at home, 734
  Operating statistics compared with Cleveland and Philadelphia 1918, r110
  Sells direct to investor, 497
Thermit-welded crossings are long lived, •1008
  Wage increase and eight-hour day sought, 351
  Weekly pass in Racine, 502
  Zone fare system, •613, 808
—Milwaukee Light, Heat & Traction Co.:
  Fare decision, 843, 891
Minneapolis, Minn.:
—Minneapolis Street Ry.:
  Accepts franchise, 580
  Franchise defeated, 1013
  Franchise draft, 251
  Service-at-cost defeated by people, 1013
—Twin City Rapid Transit Co.:
  Educational publicity, •400
  Face plates for straightening and bending special work, •559
  Making American citizens, •279
  Service-at-cost franchise to be voted on, 536
  Spring switches and crossovers made from standard trolley frogs, •566
  Tower trucks and cars, •121
Missouri & Kansas Interurban Ry. (see Kansas City, Mo.)
Monetary Standard:
—Described by Prof. Fisher at Washington hearing, •381
Monongahela Valley Traction Co. (see Fairmont, W. Va.)
Montgomery, Ala.:
—Montgomery Light and Traction Co.:
  Report of receiver, 358
Montreal, Can.:
—Montreal Tramways:
  Franchise, Essential features [Hutcheson], •r24
  Statement 1918-1919, 840
Motor Buses:
—Baltimore, Results of operation [Palmer], r12
—Boston, Mass., Service proposed, 456
—Carry large proportion of London traffic [Beaumont], c727
—Comments on, 553, 1030

Motor Buses (Continued):
—Comments on [Walker], 661
—Competition from motor vehicles [Stone], 979
—Competition with electric railways [Palmer], r11
—Cost of operation compared with electric car [Storer], r27
—Effect on electric railways [Storrs], 184
—Facts regarding motor-omnibus service, •926
—Jitney competition [Eddy], 691
—Lawrence, Mass., to be carless unless jitneys are curbed, 877
—Leeds, England, situation [Jackson], •11
—London's tubes and buses [Jackson]—I, •708; II, •816
—Motor trucks and electric road, [Watts], 980
—Motor truck competition, [Whiteside], 981
—New York City, Replace electric cars, 701
—Opposed by Eastern Massachusetts Street Ry., 593
—Pave the way for the tramway, British Electric Traction Co. [Jackson], 157
—Promotion, Comments on, 814
—Rail lines vs. buses [Jackson], 392
—Results of service in Sheffield, Eng., 865
—Ruled out of Portland, Me., 360
—Service and jitney competition [Clifford], r35
—Toledo, O., Operation during carless peroid, 974
—Truck competition discussed by C. E. R. A., 991
Motor Cars, Gasoline:
—Automobile arranged to operate on steel tracks, •976
Motors:
—Armature troubles [Dean], 759
—Commutator slotting device for use with double spindle lathe, •578
—Drying armatures in electrically heated oven, •746
—Gasoline vs. electric motor for street railway service [Storer], r27
—Improved lubrication with changed motor axle boxes, •757
—Locomotive motor for Chicago, Milwaukee and St. Paul, •827
—Lowering grid resistors to provide increased ventilation, •938
—Midi Railway across Pyrenees mountains [Pahin], 476
—Motor flashing troubles, 577
—Reclaiming worn armature dust collars, •937
—Regenerative braking with single phase commutator motors in Switzerland, •910
—Remedies for brush holder and carbon brush troubles [Dean], 759
—Remedies for worn split motor housings [Dean], 759
—Removing armatures from box frame motors, •532
—Safety motor starting switch, •941
—Standardization of parts discussed by American Electric Railway Engineering Assn., r68
—Test of materials by manufacturers [Dean], •321
Moving Picture Films:
—Illustrating one man car operation, •668
Municipal Ownership:
—Advocated by governor of Massachusetts before Federal Electric Railways Commission, •232
—Chicago, favored by mayor and committee, 535, 769
—Discussed by Public Ownership League of America, 895
—Discussed before Federal Electric Railways Commission, 165, 238, 337, r96
—Investment Bankers Association does not favor, 797
—Is un-American [Bradley], •r53
—Japan, Tokyo's street railway system [Sano], 6
—Massachusetts Street Railway Commission opposed to, 871
—Means of restoring credit [Macleod], 427
—Municipal roads are not independent of economic laws, Comments on, 1031
—New York City, possible development, 967, 1012
—Ontario Hydro Electric Commission recommends for Grand Trunk Ry., 491
—Political platform, 309
—Recommended before Federal Electric Railways Commission, 285, 378
—Recommended by Dallas (Tex.) Ry., 291
—Rejected in Detroit, 872
—Report of National Association of Railway and Utilities Commissioners, 824
—Seattle municipal lines [Murphine], 897
—Seattle, Wash., Profit, 496
—Situation in San Francisco [O'Shaughnessy], 896
—Windsor, Can., to purchase railways, 873
Muskegon, Mich.:
—American Light and Traction Co.:
  Fare situation, 362

N

National Association of Railway and Utilities Commissioners:
—Annual convention, 824
National Safety Council:
—Americanization, Letter on, 70
—Annual congress, Oct 1-4, 693
—Eighth annual safety congress, 790
—Organizing engineering section, 908
Newark, N. J.:
—Public Service Ry.:
  Publicity of zone fare system, •484
  Decision of War Labor Board, 37
  Flat rates restored, 1022
  History of recent fare increases, 282
  Requests return to flat rate, 715

Newark, N. J.:
—Public Service Ry. (Continued):
  Statistics, Traffic, revenues, capitalization, 1918, •376
  Zone fare loss $1,500,000, 1065
  Zone fare collection, 283
  Zone fare system, 268, 545, 599, •637, 783, 843
  Zone fare system approved by Board of Public Utility Commissioners, 258
  Zone fare system abolished, 957
  Zone fare system, Obstacles encountered, Comments on, 744
  (See also New Jersey)
New Brighton, Pa.:
—Beaver Valley Traction Co.:
  Employees service code, 503
  Successful traffic count, •865
New Haven, Conn.:
—Connecticut Co.:
  Comments on zone fare system, 707, 813
  Decision of case against New Haven & Hartford R.R., Travelers Insurance Co. & Aetna Life Insurance Co., 450
  Layout of coal handling equipment [Wood], •312
  Observations on zone system by N. J. Board of Public Utility Commissioners, 1035
  One man cars, Change boards, •342
  Preparing the public for zone plan, 1032
  Wood block, Relaying [Crandell], •816
  Zone fare system outlined, 807, •852
  Zone fare system protested, 1022
New Jersey:
—Boycott zone fare plan, 678
—Board of Public Utility Commissioners:
  Depreciation of electric railway dollar, 868
  Observations on the Connecticut zone system, 1035
—Refuse return to flat rate, 716
  Traffic checks of non-riders, 132
  (See also Newark, N. J.)
New York City:
—Buses replace electric cars, 701
—Cities Service Co.:
  $100,000,000 second preferred authorized, 950
—Citizens committee act on railway problems, 837
—Commissioner Nixon offers solution to electric railway problem, 292
—Commissioner to urge merger as means to traction settlement, 946
—Eighth Avenue R.R.:
  Organizing, 414
  Separation from New York Rys., 139
—Electric railway situation [Hedges], r5
—General Gas & Elec. Co.:
  Changes in holding, 357
—Interborough Rapid Transit Co.:
  Blue lights in subway, Significance of [Porr], •579
  City and railway partnership, Comments on, 311
  Deficits for 1920-1924, 497
  Earnings, July-September 1919, 840
  Financing problems discussed before Federal Electric Railways Commission, 234
  No surplus possible until 1922 with 8-cent fare, 1058
  Passenger handling records 1918-1919, 775
  Report of Stone & Webster, 358
  Stone & Webster report on earnings, 1016
  $8,473,098 deficit in 1918, 1059
  Strike, 404
  Women workers disappear, 838
  $5,000,000 deficit, 953
—Manhattan & Queens Traction Co.:
  Fare increases blocked by state supreme court, 701
  Fare situation, 546, 738
  Increased fares sought, 503
—Municipal ownership suggested, 1012
New York Municipal Ry. Corp.:
  4000 fans ordered for subway cars, 1009
—New York, New Haven & Hartford R.R.:
  Income statements for 1918, 195
—New York Rys.:
  Abandonments authorized, 596
  Abolishes transfers pending rehearing, 257
  Receiver recommends transfers be abolished, 46
  Receivership troubles, 3
  Separation of the Eighth Avenue R.R., 139
  Stone & Webster report on earnings, 1016
  Transfer case, 876
  Transfer order enforced, 301
  Two-cent transfer charge granted, 55, 94, 199
  Wage increase, 403
  $106,000,000 security shrinkage, 952
—Politicians oppose fare increase, Comments on, 510
—Public Service Commission:
  Comments on railway situation, •379
—Railway representatives and public service commissioner confer, 731
—Third Avenue Ry.:
  Amalgamated Assn., Statement regarding, 447
  Transit legislation to be considered, 1055
—Tunnel to Staten Island proposed 803
—Zone fare system politically barred •381
—Zone fare vs. multi-fares, Comments on, c868
—104,403,015 more passengers, 960
New York Elec. Ry. Assn.:
—Conference of electric railway executives, 688
—Dinner, 978
—Fall meeting, 977
—Meeting of electric railway executives, 609, 674
New York Railroad Club:
—Annual electrical night meeting, 918
New York Rys. (see New York City)

New York State:
—Consistant state policy is necessary [Choate], 690
—Mayors confer on fares, 545
Norfolk, Va.:
—Virginia Ry. & Pr. Co.
Negro problem in relation to one-man cars solved, 842
New franchise offered, 870
Net revenue declines, 954
Requests fare increase, 301
Safety cars experience [Callard], •430
Northern Ohio Traction & Ltg. Co. (see Akron, O.)
Norwich, Conn.:
—Shore Line Elec. Ry.:
Abandonment before superior court, 955
Accident reduction campaigns, •281
Making over open cars for prepayment fare collection, •113
Receivership, 804
Resume service, 292
Strike, 135
Zone fare system described, •685

O

Oakland, Cal.:
—Oakland & Antioch Ry.:
Affairs taken over by San Francisco & Sacramento R.R., 1019
—San Francisco-Oakland Terminal Rys.:
Ten day strike, 731
Reorganization planned, 595
Ohio:
—Promotion operation and dismantling of an electric and steam line [Finger], •1036
Ohio Electric Ry. (see Springfield, O.)
Oil:
—Saving in the shop, •582. (see also Lubrication)
Olean, N. Y.:
—Western New York & Pennsylvania Traction Co.:
Strike and rioting, 448
Omaha, Neb.:
—Omaha & Council Bluffs Street Ry.:
Fare situation, 362
Nebraska Court grants adequate temporary rate pending appraisal, 199
Skip stops continue, 701
One-man cars (see Cars, One-Man)
Ontario, Can.:
—Associated Municipalities of Northwestern Ontario:
Organization, 81
Ontario Hydro-Electric Ry. Assn.:
—Annual meeting, 593
Operating Practice:
—Advantages of higher schedule speeds [Beeler], •657
—British Electric Traction Co., characteristic features [Jackson], 156
—Claim adjuster's views on car operating economy [Giltner], 1045
—Dispatcher's view of car operation economies [Harris], 1044
—Economies in car operation [Phillips], 1039
—How the master mechanic looks at car operating economy [Scullin], 1044
—Human factor in safe operation and maintenance of rolling stock [Phillips], 793
—Increasing schedule speed of cars [Dehore], •917
—London County Council Tramways [Jackson], •211
—London tubes and buses—II [Jackson], •816
—Questionnaire of Federal Electric Railways Commission, 573, 574
—Schedules, layouts and routing [Beeler], r122
—Superintendent's viewpoint on car-operating economies [Snell], 1045
Operating records and costs:
—Cutting down operating expenses on a small interurban road [Dehore], •915
—Discussed by A. E. R. E. A., •r74
—Economies in car operation discussed by A. E. R. A., 991
—Economies in Philadelphia discussed before Federal Electric Railways Commission, r94
—Estimates of Wisconsin Railroad Commission, 892
—Great Britain, London County Council [Jackson], •272
—Operating engineer frowns upon theoretical calculations, [Castig Lioni], c350
—Pre-war conditions vs. today [Doolittle], r9
—Statistics of Philadelphia Rapid Transit Co., •1000
—Tower trucks, 123
Overhead contact system:
—Double trolley favored in Japan [Sano], •5
—Line materials, 417
—Statistics on cost [Emery], •395
Overload release for power driven machines, 346

P

Pacific Claim Agents Assn.:
—Annual convention, 69
Pacific Electric Ry. (see Los Angeles, Cal.)
Paducah, Ky.:
—Paducah Traction Co.:
Franchise, 477
Paints and Painting:
—Development in japanning, 443
—Insulating varnish solvent chart, 348
—Paint Mixer driven by remodelled air drill, •1007
—Shop methods used in paint shop, •921
Passenger Handling Records:
—Leeds, England [Jackson], •12
—New York City, 960
—Time of passenger interchange on double end vs. Peter Witt cars [Sullivan], •656
Pavement:
—Hints on paving [Findley], 764
—Kreolite paving blocks and sectional paving for railway tracks, •30
—Pneumatic tools for breaking up pavement, •584
—Pneumatic tools for breaking up pavement [Burn], •583
—Public authorities should assume this burden [Tinnon], 221
—Repairs to wood-block paving [Swartz], c588
—Results with wood-block paving [Buehler], c767
—Wood-block paving [Rasmussen], c767
—Wood-block, relaying [Crandell], •316
Pennsylvania:
—Public Service Commission:
Comments on railway situation, 269, •382
—Receivership [Ainey], 391
Pennsylvania Street Railway Assn.:
—Annual meeting, 13
—Traffic studies of the non-riders discussed, 55
Peoria, Ill.:
—Illinois Traction System:
Operating costs and revenues, 89
Philadelphia, Pa.:
—American Rys. Co.:
Fare increase earnings, 167
—Comparison of invesments in transit facilities, Philadelphia and Boston, 1001
—Fares in Chicago, Cleveland and Philadelphia compared [Busby], 795
—Philadelphia Rapid Transit Co.:
Comparison of fare situation with other municipalities, 851
Co-operative plan [Mitten], r114
Co-operative Welfare Association annual picnic, 537
Correspondence on hearings before Federal Electric Railways .Commission, 907
Earnings increased, 537
Gross revenue and increase 1903 to 1919, 999
"L" nearing completion, 403
Operating statistics compared with Cleveland and Milwaukee, 1918, r110
President's transit plan attacked, 950
Proposal to lease Frankford Elevated, 732
Safety-first movement, •399
Service and fare conditions analyzed, •999
Traffic court [Horton], •75
Wages readjustment, 36, 291
—Practice described by Mr. Joyce before Federal Electric Railways Commission, r94, [Mortimer], r108
Pittsburgh, Kan.:
—Joplin & Pittsburgh Ry.:
Court grants 2½ cent a mile rate, 957
Pittsburgh, Pa.:
—Pittsburgh Rys.:
Appraisals, 409
Arbitration before War Labor Board, 38
Court sustains fare increase, 197
Fare increase earnings, 165
Fare increase helpful, 735
Requests taxes remitted, 297
Strike situation, 405, 445, 491
Ten-cent fare necessary, 257, 302
Valuation, 357, 436, 1017
Valuation of property as basis for fare increase, 93
Wage increase sought, 136
—Street railway situation [Babcock], r116
—Subway planned, 85
—Voters recommend loop plan be abandoned, 950
Pittsfield, Mass.:
—Berkshire Street Ry.:
Receiver appointed, 496
Plymouth, Mass.:
—Brockton & Plymouth Street Ry.:
Building special work with an oxyacetylene cutting and welding outfit [Smith], •317
Poles:
—Pole-pulling jack, •941
—Spacing for transmission line [Harte], •563
—Steel gain, •346
—(See also, Transmission Lines)
Portland, Me.:
—Cumberland County Power & Light Co.:
Car mile and car hour earnings, •624
Fare increase earnings, 166
Zone system, •621
—Motor buses ruled out, 360
Portland, Ore.:
—Portland Ry., Lt. & Pr. Co.:
Fare increase sought, 776
Higher fare urged to save from bankruptcy, 1021
Mr. Strandborg discusses the dollar, 596
Wage situation, 403, 949
Power Development:
—Stimulus given to water power development in Sweden, 148
—Water power development hastened in Sweden, 225
—Discussed by American Electric Railway Engineering Assn., r71
—Keeping up the trolley voltage [Place], 27
Power Distribution:
—Maintenance of high tension lines [Drabelle], 325
—Melbourne (Australia) Suburban Railway, •904
—Street and interurban railways [Drabelle], 765
—Voltage surveys give information for varying station voltage, 976
Power, Purchase of:
—Discussed by American Electric Railway Engineering Ass'n, •r74
Power Stations and Equipment:
—Air blast transformers, Maintenance of, •424
—Automatic devices, Progress of, 370
—Coal handling equipment layout at New Haven [Wood], •312
—Dead gas pockets for protecting soot-cleaner elements, •935
—Discussed by American Electric Railway Engineering Ass'n, r72, 74, 76
—Economies in Steam generating stations [Finn], 1047
—Evaporating water in steam boilers, chart showing cost of, •586
—Feed water regulator, •936
—High efficiency of modern steam-turbine plants, 922
—Limitations in steam-turbine design discussed by A. I. E. E., •923
—Measuring boiler draft conditions, 1008
—Mechanical overload release for power driven machines, •346
—Melbourne (Australia) Suburban Railways electrified, •902
—Neglect of power plant fatal, 209
—Steam condenser construction, 578
—Underfeed stoker, automatic cleaning feature, •585
—Unusual method for moving two 250-hp. boilers [Elliott], 123
Power Transmission:
—Conditions in Sweden, 226
Providence, R. I.:
—Rhode Island Co.:
Earnings and operating expenses Jan.-June 1919, 412
Fare increase hearing, 412
Public pay subsides, comments on, 426
Results of higher fare, Washington testimony, 339
Service suspended by strike, 191
Six-cent fare, 702
Publicity:
—Accident prevention campaigns advocated, 719
—Educational publicity of Twin City Rapid Transit Co., •400
—Effect of cartoons upon public sentiment, 850
—Inform people through representatives, comments on, 849
—International Railway, 36
—Men with the nerve to tell the people the facts needed [Hedges], •r5
—National campaign needed, 464
—Newspaper most influential [Mullaney], 216
—Preparing public for zone system in Connecticut, •852
—Preparing the public for zone plan, 1032
—Public education of railway facts urged [Pardee], •r3
—Public Service Railway for zone fares, •484, •638
—Railway utility a good source [Mullaney], 216
—Selling transportation, comments on, c534
—Speak the speech of the people, comments on, 849
—State facts to public [Ainey], 387
—Straight-forward publicity bring results [Fredericks], 928
—Value and necessity of [Burroughs], r90
—When and where successful, 267
—Zone fare system in New Jersey, •484, •638
Publicity Agents:
—Organize as committee of American Asso., r89
Public Ownership (see Municipal Ownership)
Public Ownership League of America:
—Conference Nov. 15-17, 895
Public Service and Regulative Commissions:
—Commission co-operating with companies, 13
—Commissions have failed properly to administer the intent of the law [Schaddelee], 240
—Commission regulation at fault. Discussion before Federal Electric Railways Commission, 234, 235
—Consistent state policy is needed [Choate], 689
—Constructive attitude, 798
—Co-operation of commissions and municipalities, 688
—Detroit mayor disagrees with commission, 802
—Federal Electric Railways Commission (see Federal Electric Railways Commission)
—Industrial conference should include electric railway industry, 509
—Local versus state commissions [Erickson], 243
—National Association of Railway and Utility Commissioners, Meeting, 824
—New York Court of Appeals decides commission can raise rates, 143
—Regulation not a primary obstacle [Ainey], 389
—Regulation should be simplified [Rifenberick], 66
—Supervisory force, comments on by T. & T. Ass'n, r54
Public Service Ry. (see Newark, N. J.)
Purchasing:
—Problems of Purchasing agents [Whiteford], r88
Purchasing Agents and Storekeepers:
—Organize as branch of Engineering Ass'n, r87

Q

Quincy, Ill.:
—Quincy Ry.:
Seven-cent fare, 96

Abbreviations: •Illustrated. c Communication. r Page in Report Number for Oct. 11.
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

R

Rail Joints and Bonds:
—Bonds for temporary and permanent track construction [McKelway], •114
—Bond troubles, 577
—Button-head on terminal type [McKelway], •116
—Expanded type [McKelway], •115
—Joint without bolts, •348
—Soldered bonds for track bonding [McKelway], 899
Rails:
—Age and its relation to tracks and cars, comments on, 745
—Brinell hardness test for girder rails, comments on, 422
—Chemical analysis [Cram], 112
—Composite [Cram], •110
—Composition of [Cram], •111
—Cutting rails with a power sawing machine, •1049.
—Curved rails, use of, Manganese steel in, 54
—Girder rails, recommended designs [Cram], •558
—Girder rail specifications revised (A. S. T. M. annual meeting), 24
—History and early types [Cram], •106
—Length increases [Cram], •112
—Making accurate measurements of railwear [Ferguson], •1006.
—Rehabilitating track joints with an arc welder, •82
—Selection of [Cram], •556
—Sorbitic method of hardening, •29
—Standardization of [Cram], •109
—Statistics on selling price [Emery], •395
—Third rail: Standardization drive, 3
—Uses of oxyacetylene cutting and welding outfit [Smith], •317
Raleigh, N. C.:
—Carolina Pr. & Lt. Co.:
  Race Segregation with safety cars, 877
Racine, Wis.:
—One dollar a week pass started, 502
—Wisconsin commission withholds fare increase, 843
Reading, Pa.:
—Reading Transit & Lt. Co.:
  Employees refuse ownership, 836
Receiverships:
—Aurora, Elgin & Chicago, R.R., 409
—Brooklyn Rapid Transit Co., 138
—Pennsylvania [Ainey], 391
—United Rys., St Louis, Mo., 139; Court orders liquidation of indebtedness to War Finance Corp., 194
Rehabilitation:
—How the railways can be rehabilitated [Cooke], r127
Repair Shops:
—Commutator slotting device for use with double-spindle lathe, •578
—Saving oil, •582
—Stockroom records and practice, •861
Repair Shop, Material and Equipment:
—Choice of, comments on, 554
—Commutator slotter, •347
—Electrically heated oven, •746
—Self-centering chuck, •347
Repair Shop Practice:
—Discussion on slack adjusters, meters, wheel grinding, etc., by Iowa Elec. Ry. Ass'n, 761
—Handy shop carriage for fenders, •925
—Maintenance kinks [Dean], 759
—Maintenance of equipment [Sutherland], 766
—Portable rivet heater, •488
—Removing armatures from box frame motors, •532
Rhode Island:
—Rhode Island Public Service Commission, comments on railway situation, 338
Rhode Island Co. (see Providence, R. I.)
Rivet Heater:
—Portable for shop use, •488
Rochester, N. Y.:
—New York State Rys.:
  Fare decision stands, 737
Roslyn, N. Y.:
—New York & North Shore Traction Co.:
  Fare situation , 738
  Zone fare system established, 501

S

Safety car (see Cars, one man)
Safety-first Movement (see Accident Preventions)
Saginaw, Mich.:
—Saginaw Bay City Ry.:
  Voters approve fare increase, 776
San Diego, Cal.:
—San Diego Elec Ry.:
  Commission orders zone system and commends one man cars, 961
  Zone fare system recommended, 501
St Louis, Mo.:
—United Rys.:
  Court orders liquidation of indebtedness to War Finance Corp., 194
  Drag line car for handling track materials, •531
  Fare increase situation, 502, 599
  Maintenance of air-blast transformers, •425
  Metal tokens popular, 961
  Notice of default served, 139
  Power contract upheld, 836
  Receiver's report, 955
  Vice-President reviews finances, 254
  Wage award changed, 769
  Wage increase, 404
  Where the six-cent fare goes, 357
St. Joseph, Mo.:
—St. Joseph Ry., Lt., Heat & Pr. Co., Fares Increased, 1021
Sandwich, Windsor & Amhurstburg Ry. (see Windsor, Can.)
San Francisco, Cal.:
—Municipal Ry.:
  Depreciation fund situation, 450
San Francisco & Sacremento R. R.:
—Affairs of Oakland & Antioch Ry. taken over, 1019
—Street railway situation [O'Shaughnessy], 896
—United R. R.:
  Readjustment plan modified, 734
San Francisco-Oakland Terminal Rys. (see Oakland, Cal.)
Schenectady, N. Y.:
—Schenectady Ry.:
  Fare situation, 689
Schuylkill Ry. (see Girardville, Pa.)
Scotland:
—Glasgow Corporation Tramways:
  Income account, 1918 and 1919, 595
Seattle, Wash.:
—Municipal ownership successful, 496
—Municipal Ry.:
  Financial report, April-June, 1919, 386
  Improvements planned, 1054
  Profits for May, 89
—Puget Sound Traction, Lt. & Pr. Co.:
  Purchased by city, 897
—Seattle municipal lines [Murphine], 897
—Traction situation [Hanson], 386
Service and Tower Wagons:
—Air-operated tower for line cars, •794
—Tower trucks and cars at Minneapolis, •121
Service-at-cost (see Franchises)
Sherbrook, Can.:
—People vote to increase fares, 677
Shore Line Electric Ry. (see Norwich, Conn.)
Signals:
—Annunciators for fire sprinkler system, •937
—Blue lights and their significance in New York subways [Porr], •579
—Combined signal and telephone box [Restofski], •901
—Effect of electrification, 280
—England, West Ham Corporation Tramways telephone control system, •397
—Equipment of York (Pa.) Railways increased, •120
—Maintenance, observations on [Nachod], 442
—Operating without telephones, Boston elevated Railway [Dana], •23
Skip Stops (see Stopping of Cars)
Southern Traction Co. (see East St. Louis, Ind.)
Spain:
—Central Metropolitan Railway of Madrid, subway nears completion, •21
Special Work:
—Construction by oxyacetylene process [Smith], •318
—Continuous rail crossing, •936
—Face plates for bending and straightening, •559
—Home made high speed trolley frogs, •942
—Labor saving tools useful [Findley], 763
—Screw spike vs. cut spike, Comments on, 969
—Spring switches and crossovers made from standard trolley frogs, 566
—Switch construction [Smith], •318
—Tests on holding power of railroad spikes, •975
—Thermit-welded crossings are long lived, •1008
Spokane, Wash.:
—Spokane & Inland Empire R. R.:
  Court grants wage increase, 539
  Foreclosure, 840
Springfield, Mass.:
—Springfield Street Ry.:
  Energy saving campaign, •246
  Zone fare system described, •628
Springfield, O.:
—Ohio Electric Ry.:
  Observations and queries on safety car operation [Moore], 131
Standardization:
—Applying salesmanship to the engineering standards, 465
—Buildings and structures [Cram], 567
—Cars, one man [Wells], r36
—Classification of accidents, A.E.R.C.A., r83
—Classification of accounts, A.E.R.A.C., r85
—Danger of laxness, comments on, 743
—Engineering standards discussed by A.E.R.E.A., r81
—Engineering standards, Report of A.E.R.A., r47
—Equipment standards of A.E.R.E.A. [Chance], 931
—Equipment standards of Master Car Builders' Assn., 931
—One man cars considered [Kealy], r31
  Wells, r36
—One man car discussed by Central Electric Railway Assn., 64
—One-man cars, Comments on, 743
—Present status of engineering association standards [Welsh], 922
—Rails [Cram], •109
—Report of A. E. R. E. A., r70
—Use of standards by railways, 3
—Use of standards may be stimulated [Schreiber], 34
—Way matters [Cram], 568
—Wheels, 568
—Wheels, rails, bearing, motors and brake shoes discussed by A. E. R. E. A., •r77
Standards of Service:
—Prewar versus today [Doolittle], r10
Staten Island, N. Y.:
—Tunnel to New York City proposed, 803
Statistics:
—Accidents, Shore Line Elec. Co., 1917-1919, •281
—Automatic substation operation data on, [Cadle], 986
—British tramway expenses, 1913-1914 [Madgen], 440
Statistics (Continued):
—Car equipment increase, 1914-1919, 169
—Census figures for 1917 show distress, 195
—Census Report for 1907-1917, 91
—Comparison of Philadelphia, Milwaukee and Cleveland discussed by Federal Electric Railways Commission, r110
—Coasting records in Great Britain, 526
—Cost of capital, 1909-1919 [Sisson], 179
—Distribution of capital stock, 438
—Electrical equipment and supply parts increase, 1914-1918, 167
—Expenses and earnings, 1913 and 1919, compared [Burke], 512
—Fare revision and passengers carried, Croydon, England [Jackson], •469
—Income statement of electric railways, 1917-1918, 181
—Monthly statement of electric railways, 40, 256, 298, 411, 498, 544, 597
—Preparation of data in connection with rate cases [Bitting], r29
—Presented to Federal Electric Railways Commission, •181
—Promotion operation and dismantling on Ohio line [Finger], •1036
—Raw material increase, 1912-1919, 168
—Records show railways plight [Emery], •394
—Shrinkage of the nickel, 1913 to 1919 [Burke], 512
—Traffic returns, Croydon, England [Jackson], •473
—Traffic revenues, capitalization of Glasgow compared with Public Service Railway, •376
—Traffic statistics for British Traction Co. for 1917 [Jackson], •155
—U. S. and German export to Sweden, 1909-1913, 148
Steam Turbines:
—Limitations in design discussed by A. I. E. E., •923
Stokers:
—Underfeed stoker, Automatic cleaning feature, •585
Stockrooms:
—Records and practice, •851
Stopping of Cars:
—Comments on by A. E. R. T. & T. A., r54
—Effect upon economies in car operation [Phillips] 1039
—Omaha, Nebraska, Continue, 701
Stratford, Can.:
—Grand Trunk Ry.:
  Government ownership proposed, 491
Strikes and Arbitrations:
—Akron, O., 133
—Boston, Mass.:
  Boycott and strike follow fare increase, 198
  Eight-hour day with increase wage granted, •190
  Situation, 134
  Strike threatened, 538
—Brooklyn, N. Y.:
  Settled, 352
  Union recognition, 295
  Unjustifiable, 267
—Chicago, Ill., 249, 293
—Columbus, O., settled, 535
—Davenport, Ia., settled, 352
—Denver, Col., 129
—Des Moines, Ia., settled, 447
—Discussed before Federal Electric Railways Commission, r106
—Discussed by Amalgamated Assn., 528
—Facing a strike [Hedges], r7
—Newark, N. J., 37
—New York City, settled, 404
—Norwich, Conn., 135, 292
—Oakland, Cal., Ten day strike, 731
—Olean, N. Y., Rioting, 448
—Pittsburgh, Pa., situation, 405, 445, 491
—Proposed measures in Massachusetts, 873
—Providence, R. I., Service suspended by strike, 191
—Public opinion, Effect of, 268
—Toronto, Can., Strike settlement, 191
—Urbana, Ill., 87
—Windsor, Can., 86, 294
Subsidies:
—Comments on State Subsidy, 607
—Massachusetts Street Railway Commission approves, 871
—Massachusetts, Temporary subsidies favored, 673
—Municipalities lessen assessments, Comments on, 849
—State subsidies for electric railways [Perkins], •645
Substations and Equipment:
—Air-blast Transformers, Maintenance of, •424
—Automatic substations on New York state railways [Cadle], •985
—Automatic substations, permit salvaging of copper [Dehore], •916
—Discussed by A. E. R. E. A., r73
—Experience data of automatic substation operation, Comments on, 967
—Experiences in development of automatic substations [Wensley], •886
—Fireproof construction [Elliott], 487
—Melbourne (Australia) Suburban Electric Railways, •904
—Selection of [Drabelle], 765
—Some elements in a satisfactory substation building [Lloyd], •833
Subways:
Cleveland, O.:
—Plans outlined, 1012
—Detroit, Mich., Engineers' report, 248
  Proposed, 673, 699
—Proposed in Cleveland, •71
Sweden:
—Electrification work and waterpower development to be hastened, 225
—Railway development, 227
—Stimulus given to waterpower development, 148

Abbreviations: •Illustrated. c Communication. r Page in Report Number for Oct. 11.
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

Switzerland:
—Regenerative braking with single phase commutator motors, •910
—Status of Swiss electrification, 227
—Status of Swiss electrification [Ateliers de Construction Oerlikon], c696
—War time progress in railroad electrification, 487
Syracuse, N. Y.:
—Empire State R. R. Corp.:
Fare increase, 142

T

Taxation:
—Comments on [Bullock], 186
—Comments on [Jackson], r122
—Relief from taxation [Rifenberick], 66
—Problems before Federal Electric Railway Commission, 173
Taxes:
—Questionnaire of Federal Electric Railways Commission, 574
Templates:
—Shop methods used in building cars, 921
Tennessee:
—Regulative commission for all public utilities provided, 591
Terminology:
—Valuation terms defined by American Elec. Ry. Ass'n, 223
Terre Haute, Ind.:
—Terre Haute, Indianapolis & Eastern Traction Co.,
One man cars, results of operation, 161
Tests of Equipment and Material:
—Brinell hardness test for girder rails, comments on, 422
—Manufacturers tests of materials for railway motors [Dean], •321; comments, 309.
Third-rail (see Rails, Third-rails)
Tickets:
—Automatic ticket selling machine, •941
—Eastern Massachusetts Street Rys., Monthly tickets, 600
—Identification checks at Youngstown, •327
—Increase traffic [Buffe], 665
—Kansas City, Mo., to be used, 875
—London's buses [Jackson], •818
—Metal tickets:
Denver, Col. [Doty], r40
Popular in St. Louis, 96
Substitute for multiple coins [McLaughlin], r42
Stimulate sale of, c489
—Zone fare ticket forms:
Brisbane, Australia [Badger], •483
Connecticut Co., •855
Croydon, England [Jackson], •469, •470
Foreign countries [Cusani], •478
Milwaukee, •616
Newark, N. J., •484, •642
New London, Conn., •687
Portland, Me., •625
Springfield, Mass., •630
—Zone fare metal tickets in New London, Conn., •686
Ties:
—Selection of [Findley], 763
—Statistics on selling price [Emery], •395
—Tie nipper for reducing spiking difficulties, 890
Toledo, O.:
—Statements by company and city, 837
—Toledo Rys. & Lt. Co.:
Cease operation, situation, 801, 837
Mayor dispossesses company, 133
Ouster order overruled, 248
Ouster ordinance suspended, service-at-cost plan, 447
Paving blocks and sectional paving for railway tracks, •30
Plan suggested for temporary resumption of service, 947
Resumption of service, situation, 870, •970
Review of railway situation causing suspension and finally resumption of service, •972
—Toledo Traction Lt. & Pr. Co.:
Bonds called for payment, 1019
Toronto, Can.:
—Strike settlement, 191
Track Construction:
—Bonds for temporary and permanent track construction [McKelway], •114
—Clearance in special track work layout, comments on, 464
—Cost of recent construction [Storrs], 176
—Lessen first cost and increase maintenance cost, comments on, 555
—Selection of rails [Cram], •556
—Solid manganese for heavy traction [Findley], 764
—Standard track sub-construction, comments on, 310
—Using lever throw-type track switches for safety, •987
—Way matters discussed by A. E. R. E. A., r80
Track Maintenance:
—Discussed by Iowa Elec. Ry. Ass'n, 761
—How to maintain track [Findley], 763
—Lessen first cost and increase maintenance cost, comments on, 555
—Long track life, comments on [Cooper], c533
—Monolithic construction discussed by Illinois Electric Railways Ass'n, 159
—Removing track with a small force of laborers [Drury], 906
—War time progress [Tinnon], 220
Track Regulation:
—Joint use of discussed by A. E. R. T. & T. A. r64, r66, r67
—Terms and gaging points discussed by A. E. R. E. A., •r77
Tractor for freight haulage, •347
Traffic:
—Code of principles discussed by A. E. R. T. & T. A., r55
—Conditions in Cleveland, O., •72
—Croydon, England [Jackson], •467
—Effect of density and regulation upon economies in car operation [Phillips], 1039
—Regulation, comments on by A. E. R. T. & T. A., r54
—Rush hour vs. off hour passengers, c349
—Transporting shipyard workers at Quincy by "Split shift" plan [Conant], •62
Traffic Promotion:
—Advertising for traffic [Buffe], •663
—Business follows service [Walker], •660
—Comments on, 607
—Co-operation by the public [Beeler], r123
—Great Britain [Jackson], 432
—Higher schedule speeds [Beeler], 658
—Merchandizing, 391
—Methods of overcoming jitney competition [Eddy], 691
—Railways must sell their transportation [Jackson], c587
—Tickets increase rides [Sullivan], •654
—Ticket selling campaign in Kansas City, Mo., 775
Traffic Surveys:
—Comments on, 511
—Comments on by A. E. R. T. & T. A., r54
—Effect of carless period in Toledo upon business houses and theatres, 974
—Methods used by Philadelphia Rapid Transit System [Horton], •75
—Motor buses in London, England [Jackson], •709
—Successful count on the Beaver Valley Traction Co., •865
—Traffic checks of non-riders [Eddy], c132
—Traffic studies of the non-riders discussed by Pennsylvania Street Railways Ass'n., 55
Transmission Lines:
—Cap for mounting apparatus on the insulators, 584
—Laying out a complete line [Harte], •561
—Maintenance of high tension lines [Drabelle], 325
—Tinning test for copper wire (A. S. T. M. annual meeting), 25
Transfers:
—Abuse of the transfers in Kansas City, 361
—Comments on [Sullivan], •655
—Cost of giving [Storrs], 176
—Croydon, England, Tickets [Jackson], •469
—Discussed by Wisconsin Railroad Commission, 894
—Great Britain, London County Council, Granted only with higher fares [Jackson], •273
—Kansas City triplicate transfer, •401
—New York City:
Abolishes transfers pending rehearing, 257
Two-cent charge for, 55, 94, 199
Two-cent order enforced, 301
New York State Supreme Court to hear case for abolishing transfers, 876
—Portland, Me., Practice, •624
—Springfield, Mass., •631
Transportation Department:
—London County Council Tramways staff, •213
Trenton, N. J.:
—Pennsylvania-New Jersey Ry.:
Commutator slotting device for use with double spindle lathe, •579
Trespassing:
—Grade crossings and trespassing discussed by National Association of Railway and Utilities Commissioners, 824
Tri-City Ry.: (see Davenport, Ia.)
Trolley Wires (see Overhead Contact Systems)
Tunnels:
—New York City to Staten Island proposed, 803
Turbo-Generators:
—Sizes possible to build, discussed by A. I. E. E., 882

U

United R.R. (see San Francisco, Cal.)
United Rys. (see St. Louis, Mo.)
United Rys. & Elec. Co. (see Baltimore, Md.)
Union Traction Co. of Indiana (see Anderson, Ind.)
Urbana, Ill.:
—Urbana & Champaign Ry., Gas & Elec. Co.:
Strike, 87

V

Vancouver, Can.:
—British Columbia Elec. Ry.:
Fare situation, 600
Valuation (see Appraisal)
Varnish (see Paints and Painting)
Virginia Ry. & Pr. Co. (see Norfolk, Va. and Richmond, Va.)

W

Wages:
—Budget basis discussed before Federal Electric railways Commission, 1100
—Compared in Chicago, Cleveland and Philadelphia [Busby], 796
—Compensation for efficient management, 14
—Depend on rate of production, comments on, 781
—Discussed by Amalgamated Assn., 527
—Japan [Sano], 6
—Lower for high schedule speeds [Beeler], 658
—One man car operators [Greenland], 68
—Principle of differential wages in awards [Pringle], c943
Wages (Continued):
—Public takes an interest in wage increases, 207
—Questionnaire of Federal Electric Railways Commission, 574
—Wage and rate problem inter-dependent, 269
—Wage scales must be on reasonable basis [Pardee], 2
—Will wages continue to increase? 152
Wage Increases:
—Baltimore, Md., 407
—Birmingham, Ala., situation, 351
—Boston, Mass., 134, x-190
—Chicago, Ill., 134, 189
—Cleveland, O., 85
—Columbia, S. C., 142
—Kansas City, Mo., 136
—Los Angeles, Cal., 251
—Massachusetts: Effect of, 354
—Milwaukee, Wis., situation, 351
—New York City, 403
—Philadelphia, Pa., 36, 291
—Pittsburgh, Pa., 136
—Portland, Ore., situation, 403
Granted, 949
—St. Louis, Mo., 404, 769
—Spokane, Wash., court grants increase, 539
War Labor Board:
—Award in case of New Jersey Public Service Railway vs. employees, 37
—Cases settled, 353
—Dissolved, 353
—Pittsburgh, Pa., decision in, 39
Warsaw, Ind.:
—Winona Interurban Ry.:
Steel pilots for all year service, •939
Washington, D. C.:
—Capital Traction Co.:
Fare increase granted, 736
Value for rate making fixed, 543
—Washington Ry. & Elec Co.:
Collateral ordered sold, 254
Fare increase sought, 142
Fare increase granted, 736
Value for rate making fixed, 543
—Washington, Virginia Ry.:
Fare increase granted, 736
Washington, Baltimore and Annapolis Electric R. R. (See Baltimore, Md.)
Water Power (see Power)
Wausau, Wis.:
—Wisconsin Valley Elec. Co.:
Wood block paving [Rasmussen], c767
Waverly, N. Y.:
—Waverly, Sayre & Athens Traction Co.:
Fare increase granted by P. S. C., 197
Way:
—Melbourne (Australia) Suburban Railways, •905
—Mowing weeds on interurban right-of-way [Main], •569
—Standardization of way matters [Cram], 568
Welding, Special Methods:
—Arc welding set, •585
—Building special work [Smith], •317
—Electric arc [Unland], •343
—Experiences with thermit insert welding [Robeson], •987
—Recent progress in arc welding discussed by N. Y. R. R. Club, 919
—Shop thermit welded crossings are long lived, •1008
—Use and misuse of arc welding apparatus [Unland], 756
—Welding wrought iron and steel [Unland], 581
Western New York & Pennsylvania Traction Co. (See Olean, N. Y.), 448
Western Society of Engineers:
—Meeting Sept. 8, 529
West Virginia:
—Governor requests rate truce, 545
West Virginia Tr. & Elec. Co. (See Wheeling, W. Va.)
Wheeling, W. Va.:
—West Virginia Traction & Elec. Co.:
Receiver appointed, 358
Wheels:
—Building up flat spots, 82
—Standard designs of [Chance], 932
—Standardization of [Brown], 568
—Limiting features in life and performance of chilled iron wheels, •755
—Terms and gaging points discussed by American Electric Railway Engineering Assn., •577
Window Sash Brake Device, •246
Windsor, Can.:
—Sandwich, Windsor & Amherstburg Ry.:
Purchase by municipalities approved, 873
Strikes, 86, 299
Winnipeg, Can.:
—Workers sympathetic strike, 36
Winona Interurban Ry. (see Warsaw, Ind.)
Wisconsin:
—Railroad Commission recommends synchronizing revenues with wage increases, 967
Wisconsin Valley Elec. Co. (see Wausau, Wis.)
Work and Wrecking Cars:
—Drag line car for handling track materials, •531

Y

York, Pa.:
—York Rys.:
Signal equipment increased, •120
Youngstown, O.:
—Mahoning & Shenango Ry. & Lt. Co.:
Franchise, essential features [Stevens], r21
Zone fare collection, •327
Zone fare systems:
—Adaptability of one man cars, 152
—America [Jackson], r120
—Auditing on London buses [Jackson], •816
—Australia [Jackson], 434
—Advertise zone boundries, 371
—Brisbane, Australia [Badger], •481
—British Electric Traction Co. [Jackson], •154

Abbreviations: •Illustrated. c Communication. r Page in Report Number for Oct. 11.
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

Zone Fare Systems (Continued):
—Camden's view of the New Jersey zone plan [Bleakly], r126
—Collection at Youngston, *327
—Collection of zone fares [Kuemmerlein], r68
—Congestion reduced [Jackson], 393
—Comments on operation, 813
—Croydon, England [Jackson], *466
—Discussed by Dr. Whitten, 831
—Discussed by A. E. R. T. & T. A., r62
—Discussion of less than five-cent first zone fare, P. S. R. A. annual meeting, 166
—Effect upon distributing population [Madgen], 441
—Future fare system for small cities [Emery], *695
—Great Britain [Madgen], 440
—Great Britain [Jackson], 431
—Increase postage [Jackson], r119
—Kansas City, Mo., service not fares zoned in, 362
—Leeds, England, operation in [Jackson], *7, 56
—London County Council [Jackson], *210, *270
—Milwaukee, satisfactory, *615
  System upheld, 808
—Necessity for [Jackson], 393

Zone Fare Systems (Continued):
—Newark, N. J., 545, *637, 843
  Abolished, 957
  Losses, $1,500,000, 1065
—New Haven, Conn.:
  Comments on, 707
  Observations on by N. J. Board of Public Utilities Commissioners, 1035
  Opposed by people, 1022
  System outlined, 807, *852
—New Jersey (see Public Service Railway below)
—Obstacles encountered:
  Comments on, 744
  Operation in, 599, 715
  Plan approved, 258
  Situation, 715, 783
  Transfer-less zone fare system, 268
—Objections [Jackson], 435
—Politically barred in New York, *380
—Portland, Me., described, *621
—Practice in British cities, 34
—Preparing the public for, 1032
—Publicity, *484

Zone Fare Systems (Continued):
—Public Service Railway of New Jersey:
  Comparison of zone fare rate with flat rate, 283
  History, 545, *637, 678, 808, 843, 1022
—Reports on by A. E. R. A., r47
—Results in Rhode Island, testimony at Washington hearing, 339
—Roslyn, N. Y., 501
—San Diego, Cal.:
  Ordered by Commission, 961
  Recommended, 501
—Shore Line Electric Railway system described, *685
—Side lights on the zone fare—congestion or diffusion? [Jackson], *276
—Springfield, Mass., described, *628
—System outlined and practice discussed, 610
—Ticket forms, foreign [Cusani], *478
—Zone fare system vs. horizontal fare unit increase [Spring], 18
—Zone fare system vs. multi-fares in New York, c868
—Zone fares for small cities [Jackson], c 1051
—Zone markings on Shore Line Electric Railway, *686

AUTHOR INDEX

A

Ainey, William D. B.:
—State the facts to the public, 387
—What the Federal Commission should bring out, 389
Ateliers de Construction Oerlikon. Status of Swiss electrification, c696

B

Babcock, E. V. Street railway situation in Pittsburgh, r116
Badger, J. S. The graduated fare at Brisbane, Australia, *481
Beaumont, W. Worby. Buses carry large proportion of London traffic, c727
Beeler, John A.:
—Advantages of higher schedule speeds, *657
—What ails the street cars, r122
Bemis, Edward W. Fair return on railway properties, r125
Bennett, H. K. Written discussion on Mr. Carpenter's paper, Speed and its relation to accidents, 722
Bibbins, James R. The net result of the 5-cent fare, *570
Bitting, Clarence R. The preparations of data vs. connection with rate cases, r29
Bleakley, E. G. C. Camden's view of the New Jersey zone plan, r126
Boyce, W. H. National advertisers can help, c696
Brown, H. L. The wheel situation, standardization of, 568
Buehler, Walter. Results with wood block paving, c767
Buffe, F. G. Advertising for traffic, *663
Bullock, Charles J. The taxation of electric railways, 186
Burke, T. F. Transference of load in cars when braking, *750
Burke, W. H. The nickel in 1913 and 1919, 513
Burr, Walter P. Pneumatic tools for breaking up pavement, *583
Burroughs, W. Dwight. The value and necessity of publicity, r90
Busby, L. A. Fares in Chicago, Cleveland and Philadelphia compared, 795

C

Cadle, C. L. "Automatics" on the New York State Railways, *985
Callard, H. N., Jr. Safety car experience in Virginia, *430
Carraway, Leake. All electric railway publicity agents should be in Atlantic City, c588
Carpenter, E. C. Speed and its relation to accidents, 722
Castiglioni, F. Why does the operating engineer frown upon theoretical calculations, c350
Chamberlain, Wm. Regulating rates in Iowa, 28
Chance, T. A. Equipment standards of the A. E. R. E. A., 931
Choate, Joseph K. A consistant state policy is needed, 689
Clifford, C. H. Service and jitney competition, r35
Cole, A. B. Heavy freight service on a single-track, high-speed passenger line, *866
Conant, W. B. Transporting shipyard workers at Quincy, *61
Connely, Charles. A conductor's point of view on car-operating economy, 1042
Cooke, Charles B. Jr.
—Economies and equity in valuation, 911
—Simplification of corporate structures, *858
Cooke, Morris Llewellyn. How the railways can be rehabilitated, r127
Cooper, H. S. Long track life, c533
Cram, R. C.:
—Buildings and structures, standardization of, 567
—Way matters, standardization of, 568
—Notes on the history and development of electric railway rails, *106
—Selection of rails for electric railway service *556
Crandell, J. S. Relaying wood block in Bridgeport, Conn., *316
Culkins, W. C. Incentive to efficiency is needed, 79
Cusani, Ferdinando C. Typical zone tickets from abroad, *479

D

Dana, Edward:
—Operating without telephones, *23
—The street inspector as he was and is to be, *372
Dean, J. S.:
—Manufacturers' tests of materials for railway motors [Dean], *321
—Railway shop, maintenance kinks, 759
Dehore, C. T. Cutting down operating expenses on a small interurban road, *915
Dixon, Alves. A claim agent's experience with one-man cars, 720
Doolittle, F. W. Relationship of items of cost under pre-war conditions and today, r9
Doty, W. A. Fare collection with frequent changes in rates, r40
Draper, Walter A.:
—A need for incentive for economical operation under service-at-cost franchise, 177
—Some elements of the Cincinnati franchise, *r18
Drabelle, John M.:
—Keeping the high-tension line in good repair, 325
—Power distribution for street and interurban railways, 765
Drury, A. C. Removing track with a small force of laborers, 906

E

Eddy, H. C.:
—The street railway outlook, 691
—Traffic checks of non-riders, c132
Edison, Thos. A. Communication to Federal Electric Railways Commission in regard to electric railways, c229
Elliott, Clifford A.:
—Fireproof construction for substations, 487
—Pacific electric has complete parking program, *517
—Using lever throw-type track switches for safety, *987
—Unusual method for moving two 250-hp. boilers, *123
Emery, J. A.:
—Statistics show railway's plight, 394
—The future fare system for small cities, *695
Erickson, Halford. Financing, state vs. local regulations and service-at-cost plan, 242

F

Fearnley, A. R. Facts regarding motor-omnibus service, *926
Ferguson, Alexander D. Making accurate measurement of railwear, *1006
Findley, R. H. How to maintain track, 763
Finger, Charles J. History hath its lessons, *1036
Finn, S. M. Economies in steam-generating stations, 1047
Fredericks, Ernest B. Straightforward publicity does bring results, 928

G

Giltner, T. W. A claim adjuster's views on car operating economy, 1045
Greenland, Sam W. One man car operation, 67

H

Handlon, J. H. The psychology of claim adjustment, 157
Hanson, Ole. Traction situation in Seattle, 386
Harris, R. E. A dispatcher's view of car operation economies, 1044
Harte, Charles R.:
—An effective home made grade indicator, *933
—Laying out a power transmission line, *561
Hedges, Job E. Men with the nerve to tell the people the facts needed, *r5
Horton, R. H. Methods of observing and analyzing passenger traffic, *75
Hutcheson, J. E. Montreal cost-of-service plan, *r24

I

Insull, Samuel. Communication to Federal Electric Railways Commission in regard to electric railways, c236

J

Jackson, A. A. Railways must sell their transportation, c587
Jackson, Dugald C. Status of the electric railway, 391
Jackson, Walter:
—Foreign fare practice, 431
—London's tubes and buses, *708, *816
—Possible operating economies and sales methods, r117
—Side lights on the zone fare—congestion or diffusion? *276
—The zone fare in practice, *56
—The zone fare in practice, Croydon, England, *466
—The zone fare in practice, Leeds—Part 1, *7; Part II, *56
—The zone fare in practice, London County Council—Part 1, *210—Part II, *270
—The zone fare in practice, the British Electric Traction Co., *154
—Zone fares for small cities, c1051
Jefferies, Guy K. Co-ordination of safety between transportation and equipment departments, 694
Jirgal, John. Accounting for depreciation, 799
Johnson Geo. H.:
—Morale of executive staff is affected by adverse conditions, c289
—The discouraged railway official, c443
Johnson, H. A. Coasting results on the Chicago Elevated, *277

K

Kealy, Phillip J.:
—Safety car scores a success in Kansas City, r31
—Valuation and accruing depreciation, 530
Kuemmerlein, George, Jr. Collection of zone fares, r68

L

Laney, Charles J. Obstacles to electric express, 996
Lloyd, C. F. Some elements in a satisfactory substation building, *833

Abbreviations: *Illustrated. c Communication. r Page in Report Number for Oct. 11.

READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

M

Madgen, William L. Some light on British tramway conditions, 439
Main, Edwin, Mowing weeds on interurban right-of-way, •569
McCallum, Alexander. European electrification proposals, 474
McDougall, R. E.:
—Electric railway hazards—causes, effects and remedies, 693
—Organization for public accident prevention campaigns, 723
McLaughlin, J. F.: Metal tickets as a substitute for multiple coins, r42
McKelway, G. H.:
—Bonds for temporary and permanent track construction, •114
—Soldered bonds for track bonding, •899
McMahon, C. R. Car maintenance records facilitate work, •119
Macleod, Frederick J. Public ownership may be only means of restoring credit, 427
Moore, F. J. Some observations and queries on safety car operation, 131
Mitten, T. E.:
—Philadelphia's answer to the traction question, r114
—Working hours of motormen and conductors, continuance of the 5-cent fare, cr111
Mortimer, J. D. Can service costs be collected from traveling public, •r14
Mullany, Bernard J. Getting the right kind of publicity, 216
Munton, C. J. Possibilities of electric railway express service, 992
Murphine, Thomas F. Seattle municipal lines, 897

N

Nachod, Carl P. Some observations on signal maintenance, 442
Nash, L. R. The possibilities in readiness-to-serve fare schedules, 647
Nicholl, H. A. Interurban Express, 993

O

O'Shaughnessy, M. M. Street railway situation in San Francisco, 896

P

Pahin, Lucien A. Progress on the Midi railway pyrenean electrification, •475
Palmer, L. H. Are high costs of service likely to develop permanent competition, •r11
Pardee, J. H. Wage scales must be on reasonable basis, •r2
Perkins, R. W. State subsidies for the street railway companies, •645
Phillips, Frank R.:
—Economies in car operation, 1039
—The human factor in safe operation and maintenance of rolling stock, 793
—The maintenance man's experiences during the war, 19
Phillips, W. H. Helical gearing for railway motors, •934
Place, C. W. Keeping up the trolley voltage, 27
Porr, Edward A. Blue lights and their significance in the New York subways, •579
Pringle, P. J. The principle of differential wages in awards, •c943
Proctor, C. B.:
—Why does not every electric railway have a safety organization? 792
—Written discussion on Mr. McDougall's paper, Organization for public accident prevention campaign, 724

R

Rasmussen, W. C. Wood block paving, c767
Reid, Harry. Nationalization and standardization of accident prevention, 791
Rostofski, Harry:
—Combined signal and telephone box, •901
—Voltage surveys give information for varying station voltage, •976
Rifenberick, Robert B. Burdens from which we should be relieved, 66
Robson, W. Tuke. Experiences with Thermit insert welding, •1049
Roderick, T. C. Earnings of the safety car, 26

S

Saliers, Earl A. Accounting measures to meet business depression in the industry, r37
Sano, Shiro. Practices and tendencies in Japanese electric railway transportation, •4
Schaddelee, Richard. Commissions have failed properly to administer the intent of the law, 240
Schneider, E. F. Safety before and after the war, 791
Schreiber, Martin. Use of standards, c34
Scullin, Terance. How the Master Mechanic looks at car operating economy, 1044
Seelar, L. F. Swing of radial coupler on curves, •489
Sidlo, Thomas L. Relief for the present traction conditions, r129
Sisson, F. H. Street railway credit and cost of capital, 178
Smith, Montelle C. Building special work with an oxygen-acetylene cutting and welding outfit, •317
Snell, O. C. Superintendent's viewpoint on car-operating economies, 1045
Spring, Edward C. Electric railways from an operating standpoint, 17
Stanton, H. C. Handling the freight business, 982
Starkey, J. F. Possibilities of electric express service, 995
Stevens, R. P. The Youngstown service-at-cost franchise, r21
Stigall, E. E. Purchasing agents and storekeepers urged to attend the Atlantic City convention, c589
Stone, C. I. Competition from motor vehicles, 979
Storer, Norman W. Gasoline vs. electric motor for street railway service, r27
Storrs, L. S.:
—Competition of motor vehicles, 185
—Reasons for railways' present condition, 175
Sullivan, R. T. The collection of odd street railway fares, •653
Sunderland, John A. How a motorman can help in car operating economy, 1042
Sutherland, John. Maintenance of equipment, 766
Swartz, A. Repairs to wood block paving, c588

T

Taylor, A. Merritt. The valuation of electric railway properties, 128
Thirlwall, J. C. General observations on Birney cars, r33
Thomas, Theodore E. More passengers better than too-high fares, c727
Tinnon, John B. War-time progress in maintenance of way, 220
Tynan, L. J. A fixed schedule for injured persons other than employees, 721

U

Unland, H. L.:
—Electric arc welding methods, •343
—Use and misuse of arc welding apparatus, 757
—Welding wrought iron and steel, 581

V

Vaughn, S. L. Possibilities of express business, 997

W

Walker, E. M.:
—Business follows service, •660
—Safety cars and the results of their operation, 161
Watts, F. W. Motor trucks and electric road, 980
Welsh, J. W. Present status of engineering association standards, 922
Wensley, R. J. Some experiences in the development of automatic sub-stations, •886
Weston, George. Electric railway policy, 529
Whiteford, William. Problems of the purchasing agents, r88
Wells, Gardner:
—Standardization of Birney safety car, r36
—Some safety car objections answered, 983
Whiteside, W. J. Motor truck competition, 981
Winsor, H. G. Written discussion on Mr. Dixon's paper, A claim agent's experience with one man cars, 721
Wood, George E. Insuring adequate coal supply with the least expenditure, •312
Woods, Robert P. City representation in electric railways, 726
Wright, T. T. Advertising publicity, 287

Y

Yungbluth, B. J. Inventorying materials and supplies, •519

Abbreviations: •Illustrated. c Communication. r Page in Report Number for Oct. 11.
READ THE INSTRUCTIONS AT THE BEGINNING OF THE INDEX

PERSONAL INDEX

(with biographical notes)

Adams, H. F. 49
Allen, Horace 99
Anderson, Walter E. 261
Bailey, R. W. .... •703
Bauer, John .... •1025
Beach, H. L. 262
Bicknell, M. O. 49
Blair, Col. E. J. 740
Blanks, D. H. 1067
Boardman, A. Jay 203
Bolt, Walter C. 203
Bramlette, John M. 778
Brown, Harry L. 48
Buffe, F. G. .... •99
Burr, George L. 549
Butler, Henry O. .... •703
Callaghan, W. C. 416
Cameron, Bruce .... •98
Campbell, Gordon .... •48, 261
Chamberlain, F. C. 365
Cram, R. C. .... •147
Crane, C. F. 778
Daly, David 603
Dana, Edward .... •364
Dempsey, J. J. .... •305
Dillon, Col. T. H. 963
Fagan, J. F. .... •505
Edstrom, Sigfried J. 845
Emmons, C. D. 203
Estill, G. C. .... •459
Fitch, Howard F. 202
Flowers, Herbert B. 810
Ford, A. H. 778
Frauenthal, B. W. 878
Gaboury, Arthur .... •1067
Gillette, Maj. Geogre 878
Gordon, Leroy O. 739
Hardy, Frank I. 203
Harr, Augustus E. 365
Harrsen, H. P. 549
Hedley, Frank .... •739
Hill, Otis R. 549
Hunt, Edward J. 49
Ingle, J. P. .... •48
Jackson, Caleb S. 203
Jackson, Walter 48
Johnson, C. C. 878
Johnson, Eugene C. 98
Knox, R. R. 1067
Larrabee, Harold D. 146, 203
Leussler, R. A. .... •810
Libbey, Joseph H. 202
Lyons, William L. 416
Merrill, E. D. .... •146
Milliken, E. L. 878
Morgan, C. E. 778
Moyer, C. C. 963
McCormick, Maurice E. 146, 845
Neal, J. Henry 810
Perkins, Col. A. T. .... •146
Pierce, Daniel T. 963
Porter, H. Hobart .... •778
Ray, William D. 262
Renshaw, Clarence 203
Rolston, William E. .... •963
Root, Oren 680
Seeley, Garrett T. .... •740
Sheehan, Patrick F. 878
Sloan, M. S. 262
Sparks, Ralph M. 147
Stearns, Robert B. 202
Stocks, Carl W. 262
Stovel, Russell W. 963
Stratton, M. G. 740
Sullivan, Patrick F. 203
Sullivan, Richard T. .... •739
Taurman, A. 778
Trazzare, J. F. 1067
Von Phul, William .... •49
Waldo, Ralph 416
Ward, Frank D. 202
Waring, George H. 262
Warner, Robert L. 146, 365
Warnock, A. W. 49
Walker, Frank B. 202
Wayne, Joseph E. 262
Wellman, Louis W. 202
Wharton, J. S. M. 261
White, Louis C. 48
Whitlock, W. L. 505
Willcutt, George B. 99
Witt, John P. 261

(•Indicates Portrait)

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, July 5, 1919 Number 1

Central Association Boat Trip a Harbinger of Peace

ONE of the most homogeneous organizations in the electric railway industry is the Central Electric Railway Association. The railways operating in the territory of this association are in a position to profit to a rather unusual degree through co-operation, due to the fact that their business is in considerable part made up of interurban traffic. Their lines radiate and interconnect in a remarkable manner, and the interurban roads themselves and those which do city business can greatly augment their own income by assisting in promoting the prosperity of their neighbors. The territory is compact geographically and is closely knit together by interurban and steam lines. Moreover a spirit of good fellowship permeates the territory which, combined with the ease of getting about, conduces to making the meetings of the association very attractive to the members. This applies particularly to the summer cruises, which are resumed this week after a wartime lapse.

The cruise this year lasted from Monday to Thursday inclusive and short stops were made at points of great interest. There was sufficient of a program to form a skeleton for the meeting, and the papers and discussions were well worth while. However, the principal feature was the opportunity furnished for developing personal acquaintance, which is greatly needed in these trying times if the status of the electric railway is to become what it should.

Other associations may well envy the Central its wonderful summer outings and may properly hold it responsible for results commensurate with its unusual facilities for getting together.

Standardizing Ships, Electric Cars and Other Things

"CAN the world be persuaded to buy ships as it buys automobiles? that is the question." This extremely timely query is propounded editorially by a New York City daily in a recent number. The question was obviously prompted by the feat performed by the Emergency Fleet Corporation on the previous day in launching five ships of a combined tonnage of 39,000, all within a period of forty-eight minutes. The point made was that if the public will buy ships fabricated and assembled by the methods found applicable in war time, it will be possible to continue the operation of the Hog Island shipyard. Otherwise it may be necessary to scrap the equipment assembled there at so great a cost.

What is true in the shipbuilding field applies with modifications in the construction of electric cars. And, it is profitable to note, there was an analogy here in the decision by the United States Housing Corporation to buy cars built according to the "standards" prepared for it by a war-time committee appointed by the Electric Railway War Board. The signing of the armistice put an end to the Housing Corporation's plan, otherwise fifty cars of this type would have been ordered immediately. It is unfortunate that these cars could not have been completed, if only to determine their post-war marketability by actual sales.

The present acute shortage in electric railway funds is having its effect in the line of standardization. For example, many roads are buying safety cars to the manufacturers' rather than their own specifications. They could well follow the same procedure in purchasing larger cars. It is quite true, however, that it is easier to use a standard small car than large ones because clearance difficulties and other limiting conditions do not enter into the calculation. Any road can utilize a small car, as far as ability to get it over the road goes, whereas each road seems to be hampered by "special conditions" with respect to the use of large cars. Even with this handicap, however, some of the lessons taught by the safety single-truck car development can be applied to their larger contemporaries.

There Is Growing Recognition of the Value of Good Service

IT IS REFRESHING and encouraging to read editorials such as have appeared in many of the metropolitan dailies recently on the traction situation. In all of the large cities there seems to be a wider realization than ever before of the fact that electric railway companies are not immune to the effects of ordinary commercial laws. Everyone knows that the cost of labor and materials has gone up, and that in other lines of business this has been met by an increase in the price of the commodity. This raises the natural inquiry, why should the same course not be followed with street car fares?

It is still more satisfactory to find that there is growing understanding of the importance to a city of good service. This, for example, was the fundamental argument in a recent editorial in the Minneapolis *Journal*, reproduced in our issue of June 21.

The Minneapolis editor insists that service is paramount in any settlement of traction affairs—"more important to the individual car rider, and more important to a growing city which cannot permit its development to be stunted by lack of transportation facilities." He contends that if Minneapolis had a 6-cent service, with plenty of cars running, with extensions built where necessary, while St. Paul struggled with a 5-cent service that meant cars crowded and infrequent and no extensions, the people of the latter city would not be long in recognizing that their 5-cent bargain is no longer a good one. The editorial is an answer to the argument that the proposed service-at-cost franchise in Minneapolis will mean a 6-cent or 7-cent fare for Minneapolis while St. Paul, with a franchise guaranteeing a 5-cent fare and eighteen years to run, will have an unfair advantage. Both cities are served by the Twin City Rapid Transit Company which has expressed its approval of the pending ordinance.

The people as a whole also, we believe, are coming more and more to realize the value of good service. This was one of the strongest arguments which won over a majority of the Chicago city council to support a service-at-cost franchise some months ago. They recognized an increased fare as unavoidable and their principal differences were on a proper distribution of transportation improvements. If the companies had been able and willing to guarantee rapid transit facilities to every ward the popular support of the plan would have been more generous. It was really a question of making an enlarged elevated and subway system self-supporting on a reasonable rate of fare.

We look for interesting developments in the Minneapolis-St. Paul controversy. We believe the near future will show the wisdom of the Minneapolis *Journal's* argument. Local transportation is a community problem in which the interest of the public is even greater than that of the owners of the railway utility and the public interest can be best advanced by securing adequate service. A 5-cent fare was never expected to bear the burdens of present-day costs, and those communities which insist on carrying out such a contract are biting off their nose to spite their face. Five-cent service is better than no service at all, but the financial condition of many railway properties is approaching a crisis where 5-cent service will probably mean no service or very poor service. A right-thinking public will pay the price of good service before it is too late.

Electric Railway Transportation in the Orient

ACCORDING to the picture sketched by Shiro Sano, whose article on electric railway conditions in Japan is printed in the present issue, this utility is suffering in the Far East from difficulties of the same sort as are being encountered in the United States. While conditions in the two countries are radically different in many ways, it is at least of interest to compare them and to draw such conclusions as apply in our own country. The fact that the electric railways of Japan are compelled to rely for support to an increasing extent upon another utility indicates that there is an unfortunate relation of expenses to fares which must be corrected by means of better and more economical service and by increase in fares as well. Judged by our standards wages in Japan have been very low but they are increasing at a rapid rate, greatly aggravating this condition.

The fare-collection scheme used in Tokyo appears cumbersome and as not tending to high schedule speed, but presumably time saving is not considered so essential there as in an American city of the same size. Again the wide use of the double trolley in Japan strikes us as peculiar. While this scheme has had a slight use in the United States it involves very great complication in overhead construction, and the improvements in the track return circuit have largely removed the argument in its favor. Municipal ownership and operation is having an extensive trial in several Japanese cities. In time there should be valuable data available as to the success of these experiments.

Look About You Now and Then

SOMETIMES we marvel that a man in the station in life of a public utility manager can allow himself to be so far behind the times in his own business. It is lamented that acknowledgment of this condition in our industry is now and then forced upon us by elementary questions about things which we thought were fully known to all railway operators—things really vital from the standpoint of holding down one's job, let alone efficiency of management. For example, can you imagine a manager in a good sized town not knowing even the rudiments of the safety car idea? But it is a fact. Would that we had the power to direct such managers to spend $50 to proceed to the nearest city operating safety cars, there to learn by sight what they have failed to absorb from volumes of printed matter and hours of discussion. This is a knock, but it is more than that. There can be no excuse for such neglect in keeping abreast of the industry on the part of a responsible management, and the knock is therefore a helpful hint to the delinquents to look about them now and then.

The Forgotten Man in the Railway Tangle

SOME forty years ago a prominent professor of political economy at Yale coined the phrase "forgotten man" to describe the individual in the community who is often entirely overlooked in a great many civic and other government betterment programs. For instance, A considers that it would be a fine thing for B if the municipality or state should make a grant of money to him or otherwise give preference to him over his fellow citizens. The plan is enthusiastically approved by B, and both arrange to carry out the project. The "forgotten man" is C, the average citizen, who is not consulted in the matter and whose only connection with the affair is to pay the cost of carrying out the idea so generously conceived by A and so gratefully accepted by B.

There is a forgotten man, or several representatives of that genus, in pretty nearly every traction dispute on fares. When an increased fare is proposed to cover the increased cost of operation, the municipal authorities are usually very conspicuous in their denunciation of the plan and give out lengthy statements on the hardship which will result to the populace, and indignant citizens write to the daily press in opposition or head delegations to protest in municipal councils. Undoubtedly, both the authorities and the citizens (A and B in this case) are right in their contention that low fares on the local railway system are desirable as a means of community development. The trouble is that they forget entirely about C, at whose expense they seem to expect that this improvement will be maintained.

A striking illustration of this situation has been given in New York City during the past week. The New York Railways, after trying for a considerable time to accomplish the impossible task of making a profit by carrying passengers at less than cost, passed into the hands of a receiver, who finds himself in a position where he cannot pay the rental of all of the leased lines of the company. He has, therefore, announced that he will be obliged to turn back the lines on Eighth Avenue and Ninth Avenue to their owners. This would mean, of course, that transfers would no longer be given between these lines and those of the New York Railways system of which they formerly constituted a part, and consequently that some of the carfares in New York City will indirectly be raised. This proposed action of the receiver is being vigorously protested by the city. "What?" they say, in effect, "Charge an additional fare at the points of intersection at which formerly transfers were given without charge? This is more than a hardship, it is an outrage!" If the present transfer law, which, by the way, was passed long after the companies received their charter to charge 5 cents, does not require transfers between two independent lines, these protestors seem to think it should be amended to overcome this defect.

Now, all this is very well, but who is to pay the deficit which will be caused if transfers are continued? Surely, not the New York Railways. The company is insolvent now. Nor is there any reason why the owners of the Eighth or Ninth Avenue lines should bear the expense. They are looking forward to beginning independent operation under not very cheerful circumstances and have already seen the market value of their securities suffer a considerable fall because of the financial conditions now surrounding electric railway operation. The community has certainly no right, legal or otherwise, to ask the railway companies or any of them to make up deficits from operation. If New York City or its citizens want a service, they are rich enough to pay for it and they ought to do so. This is the only conclusion which can be drawn from the Eighth and Ninth Avenue case.

A Constructive Suggestion on the Use of Standards

A CONSTRUCTIVE suggestion to assist in the more general use of standards is made in a letter contributed to this issue by Martin Schreiber, chief engineer Public Service Railway, and a member of both the American Electric Railway Engineering Standards Committee and of the recently formed American Engineering Standards Committee.

In the past there has been a great deal of complaint that while the idea of standards was generally accepted, very few railway companies actually employed them. Each company accepted the desirability of standards in the abstract, but when it came to purchasing equipment always seemed to find some reason why a modification, more or less important, in the standards should be made to suit that company's local conditions. The association obviously has no authority to order the use of any particular standard, and there the matter has stood.

The experience during the war in reducing the number of patterns in other lines of manufacture, however, has been a stimulus toward similar progress with electric railways. The suggestion of Mr. Schreiber is that the manufacturers agree to refer to the association any departures from the standards which they are asked to make, and that the appropriate committee of the association should then endeavor to find out the reason for the change before the order is actually executed. Such a plan involves no sacrifice of personal liberty. If the change is a good one the standards committee of the association wants to know about it. If it is not necessary, the railway company presumably is equally anxious to be informed. The industry as a whole has an interest in this matter because reductions in cost of production will follow the greater use of standards, and thus every purchaser will be benefited.

If the individual customer, after this examination, insists upon departing from standards and thus necessitating, perhaps, the preparation of new patterns or the cutting of new rolls, he is entirely within his legal rights. But the plan suggested, we think, would head off a great many unnecessary changes, and this would eventually mean that the price for the standard designs or rail sections would be less than that for the nonstandard. As soon as this condition began to prevail, there would be a still further tendency toward the use of standards. We hope some steps can be made in the direction pointed out by Mr. Schreiber.

Start a Third Rail Standardization Drive

AN ARTICLE in the June 14 issue of this paper described some of the various types of third rail installations which are in use for electric railway operation. One cannot fail to be impressed by the large number of the different types, and the need for standardization. Climatic conditions and the necessity for protecting the third rail to prevent accidental contact appear to be the chief reasons for the development of most of the types. The question of cost is an important conconsideration and in a good many cases has proved misleading. It is a comparatively easy matter to obtain the initial cost as so much per mile of single or double track, but this does not form a basis for ascertaining what amount will be involved for modifications, renewals and disturbances necessary to existing permanent way where electrification is undertaken to lines already existing. A further and probably the most important item is the cost of maintenance, which must be ascertained if a true estimate for comparison is to be made. Electric railways have practically standardized the equipment for their power houses, plants, switchboards, substations, cables, etc. These can be ordered to fulfill the requirements from the various manufacturers, but as soon as an attempt is made to equip the permanent way with an electrical conductor a wide divergence of opinion is found with no attempt at standardization.

To the practical man familiar with the prevailing conditions there appears to be no difficulty in starting standardization. In such a consideration the weight, section, location of the conductor and method of contact should be the first consideration. The insulation, supports, sectionalizing and bonding would follow. The many points such as anchoring, expansion joints, clearances, protection, etc., could be taken up, but would of necessity have to be adapted to the various locations and conditions to be contended with.

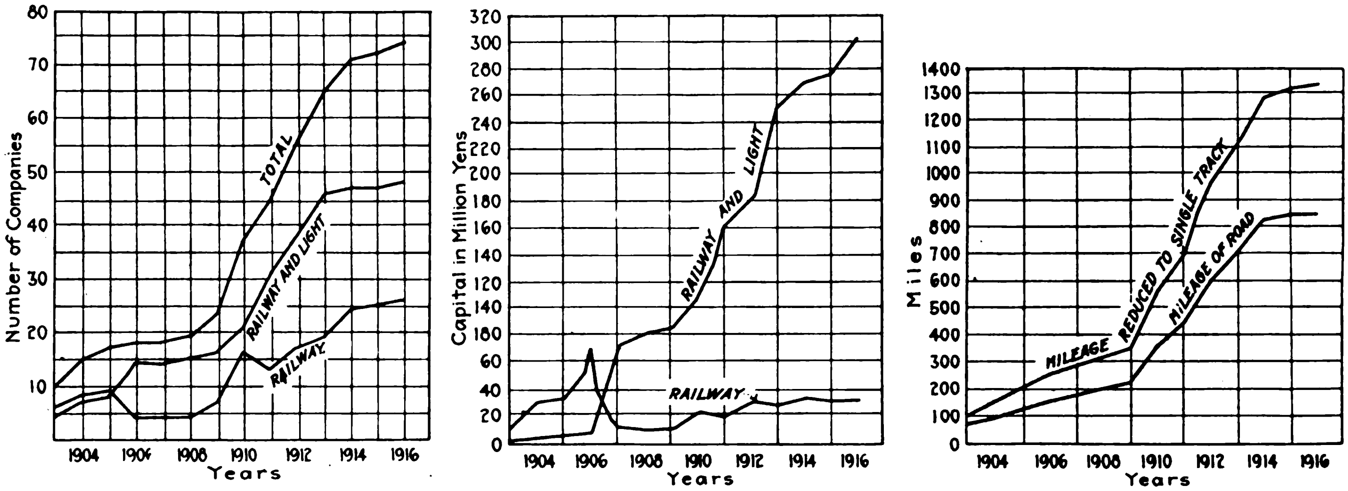
A standard clearance for third rail installations was adopted in 1916, by committees of the American Railway Association, the American Railway Engineering Association, and the American Electric Railway Association. There is still much work that could be done along this line. Such an investigation made by our various electric railway association committees appears essential, if any advance is to be made in this matter.

Practices and Tendencies in Japanese Electric Railway Transportation

Both Double and Single Trolley Are Used, Track Gages Are Far From Standard and People Seem to Lean Toward Public Ownership

BY SHIRO SANO
Electrical Engineer, Tokyo, Japan

IN 1890 the Tokyo Electric Company imported two electric cars from the United States for the purpose of demonstrating the advantages of electric traction. These cars were purchased from the Sprague Electric Railway & Motor Company. They were used on the grounds of the Third National Exposition, held in Tokyo that year, and created a favorable impression. It was, however, five years before the experiment produced results, although in 1893 the Kyoto Electric Railway Company was organized with a capital of $150,000 (300,000 yen). A 5-mile track in Kyoto was constructed and operation began on Feb. 1, 1895.



PROGRESS OF ELECTRIC RAILWAYS IN JAPAN. LEFT, COMPANIES; CENTER, CAPITALIZATION; RIGHT, MILEAGE

In Kyoto one 25-hp. motor was used on each car, the car bodies as well as the motors were built in Japan and power was supplied from a water-power plant. As an electric car was looked upon as a serious accident hazard a special runner with a lantern in hand was sent ahead to herald its approach.

The Kyoto Railway was a success from the start, and led to the construction of many other lines. To-day, according to the latest returns of the Department of Communications, there are ninety electric railway companies in Japan, including sixteen which have lines under construction. The total power consumption of the railways is not known exactly, as more than one-half sell power for lighting and other purposes. The power plant capacity is, however, 164,624 kw. The line mileage is 890, the length in single-track equivalent being 1368 miles.

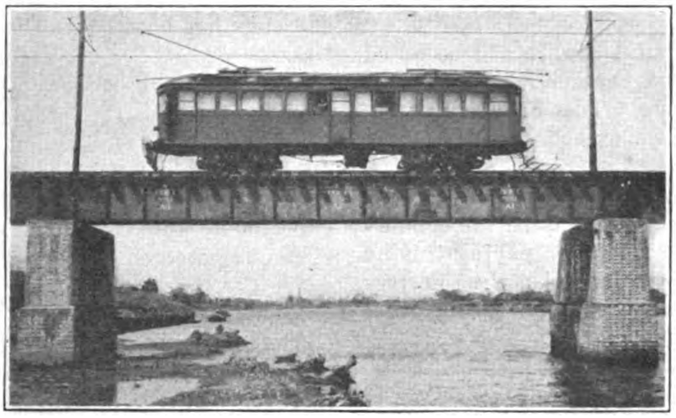
Of the 4492 cars in use 4077 are motor cars and 415 are trailers. The aggregate capital for electric railways alone amounts to $15,700,000 of which $14,500.000 has been paid in. The total capital for combined railway and light companies is $152,000,000 of which $132.200,000 has been paid in. The annual income from railway service totals $15,500,000 not including the income from light and power sold by the railway companies. The annual car mileage last reported was 117,120,000, the corresponding number of passengers carried being 704,470,000.

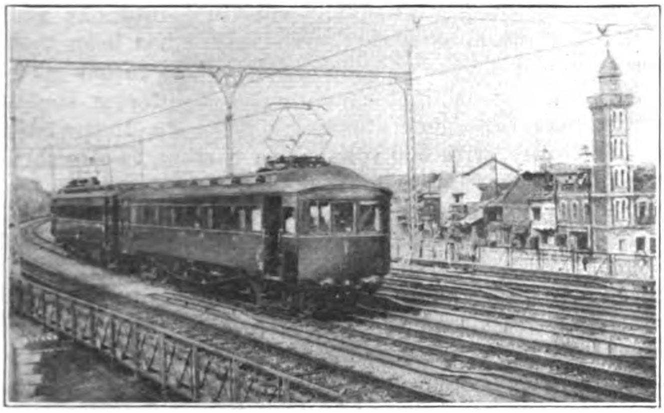
Although most electric railways in Japan are owned by private companies, some belong to the municipalities and still others to the central government. In the large cities the tendency seems to be in favor of municipal ownership. Of the six largest cities in Japan Tokyo, Osaka, Kyoto and Kobe have municipally owned railways while those in Yokohama and Nagoya are under private ownership.

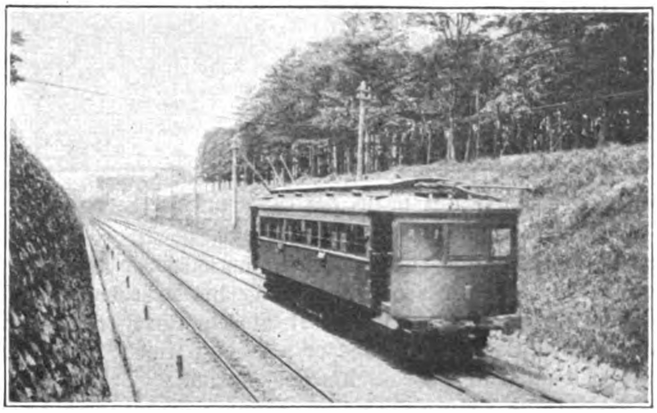
Electrification of steam railroads has made very slow progress in Japan but is promising for the future. The passenger steam railway operating in the outskirts of Tokyo has been electrified, but freight is still hauled by steam locomotives. The passenger traffic between Tokyo and Yokohama is now mainly done by electric power, where steam prevailed until a few years ago. The long tunnel at Usui has been completely electrified, passenger as well as freight trains being hauled by powerful electric locomotives. This, however, is the only place where real electrification work has been done.

The development of the electric railway industry in Japan can best be seen with the aid of the charts reproduced herewith. From these it is evident that railway enterprises have grown marvellously since 1907, due principally to the successful conclusion of the Russo-Japanese war and the general prosperity which succeeded it. The charts show also that the railway companies have increasingly been engaged in lighting and power business outside their transportation activities. This may be explained by the fact that the net earning capacity of companies engaged in lighting and power supply is much greater than that of those engaged simply in transportation work. This point is taken up more fully in the following paragraphs.

As a business proposition the electric railway in Japan is not very profitable. The latest returns available show that the mean dividend for companies doing a straight electric railway business is but 5.6 per cent per annum, this being the average for twenty-six companies. The corresponding figure for companies doing a combined railway, light and power business is 8 per cent, a mean value for forty-eight companies. The return to 442 companies doing a light and power business is 9.35 per cent. This explains the tendency for railway concerns to take up lighting business as a side issue, particularly as a dividend of 5.6 per cent is not attractive to Japanese investors where average good concerns in other lines pay 10 per cent or more. The interest paid at bank rates is 6 per cent to 7 per cent on fixed deposits in ordinary times, although at present the rate is lower due to extraordinary inflation of currency incident to the war and the holders of national securities receive 6 per cent on paid-in value.







AT TOP, SUBURBAN CAR NEAR TOKYO; DOUBLE TROLLEY DOWN SINGLE TROLLEY UP; NOTE BRIDGE CONSTRUCTION ALSO. AT LEFT, EXAMPLE OF JAPANESE ELECTRIFICATION—INTERURBAN LINE BETWEEN TOKYO AND YOKOHAMA. AT RIGHT, ELECTRIC CAR OPERATING IN THE OUTSKIRTS OF TOKYO

DOUBLE TROLLEY IS FAVORED IN JAPAN

In the early development of electric railways in Japan there was a wide difference in opinion as to the system to be adopted. The dispute concentrated on the relative merits of single-trolley and double-trolley contact systems. The general policy of the government at present is to permit the use of single trolley on suburban railways only, the double trolley being standard for street railways. Of six large cities, Tokyo, Yokohama and Kobe use double trolley and Osaka, Kyoto and Nagoya use single trolley.

Although the modern tendency is to adopt the standard track gage of 4 ft. 8½ in. there is a great variety in practice as to gage. The principal railway gages can be grouped into three classes, 4 ft. 8½ in., 4 ft. 6 in. and 3 ft. 6 in. Thirty-nine of the present seventy-three electric railways in the country have the 3-ft. 6-in. gage, twenty-three have standard gage, ten have 4-ft. 6-in. gage, the remainder being divided between 2 ft. 6 in and 4 ft. 8 in.

The prevalence of the 3-ft. 6-in. gage is probably due to the fact that this is the standard for steam railroads. The 4-ft. 6-in. gage owes its existence to local conditions. For example, in one case an old horse-drawn tramway had this obscure gage when it changed over its motive power to electricity. To avoid interruption to service the old gage was adhered to.

There are two principal plans for charging for transportation in Japan, one in which the fare has some relation to mileage and the other in which a uniform charge is made irrespective of the length of ride. For obvious reasons the suburban and interurban railways use some kind of a mileage plan exclusively, while the tendency of the street railways is to use uniform rates. Some large cities, however, still adhere to the old system of divisional charges, in which the city is divided into a number of sections and a fare is charged in each. In Tokyo, Osaka and Kobe the uniform rate is charged, while in Kyoto, Nagoya and Yokohama a division rate is the rule. In addition there are several kinds of special charges, such as those involved in the use of commutation tickets, season tickets, discounts for workingmen and students, discounts for school children, discounts for soldiers, etc.

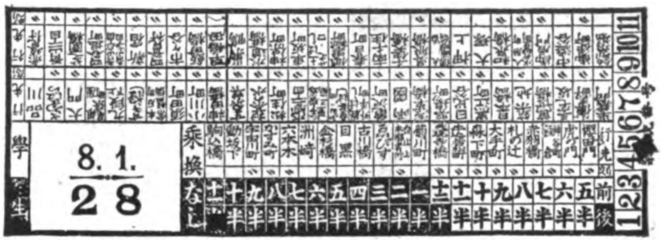
As an example of the special charges the practice of the Tokyo Street Railway will be given in full. These will be given in Japanese money, the yen having a value o about 50 cents in American money and the sen being worth one-hundredth of the yen. The single ticket is 5 sen plus a transit tax of 1 sen, making a total of 6 sen. Return tickets are sold for 9 sen plus 1 sen tax, a total twenty-trip commutation ticket, including transit duty. of 10 sen. Soldiers can buy return tickets at 7 sen. A costs yen 0.95, a thirty-trip ticket yen 1.40 and a fifty-trip ticket yen 2.50.

Boys and girls attending middle schools or lower schools, properly indentified by school authorities, are entitled to purchase a twenty-five-trip ticket, including duty, for yen 0.80, and a fifty-trip ticket for yen 1.55. Other students and workingmen are entitled to ride on a single ticket, including tax, at 4 sen and a return ticket at 7 sen.

This low rate of fare applies only during certain periods as follows: March 1 to April 30, 5 to 6.30 a.m.; Oct. 1 to Nov. 15, 5 to 6.30 a.m.; Nov. 16 to Feb. 28, 5.30 to 7 a.m.; May 1 to Sept. 30, 4.30 to 6 a.m. As a practical matter all riders during these hours are considered as either workingmen or students unless they specifically state that they are not.

Regarding the transit duty of 1 sen, it will be noted that this is paid every time a passenger rides except in the case of commutation tickets. This duty is not restricted to street railways but extends to all public vehicles in the empire.

Fare collection in Tokyo is done by means of tickets. A passenger on entering the car waits until the conductor comes to him to collect the fare. On paying this he receives a ticket along with a transfer ticket if he desires one. At the transfer station he returns the original ticket. On boarding the second car he asks for another transfer if he desires one, retaining his first transfer as a ticket and surrendering it at the next transfer station if he desires to transfer a second time. This is continued until he reaches his destination.


8. 1.
28

FORM OF TRANSFER USED ON CITY LINES IN TOKYO

The date is printed on the transfer ticket and by means of a special punch having different figures the conductor punches the hour of transfer, to even half hours, the route number, the name of the transfer station and the destination.

School children taking advantage of the special discount are required to change cars at the transfer station specified on the ticket cover. Workingmen's and students' discounts apply only in the specified hours mentioned but there is no specification as to the time when the return trip must be taken. With a return ticket two passengers may ride at the same time, thus saving 1 sen of transit duty. Commutatin tickets are sold both at the railway office and in the car and need not be used by the original buyer. There is no season ticket issued by the Tokyo Street Railway.

$25 PER MONTH IS A HIGH WAGE IN JAPAN

Wages of motormen and conductors vary somewhat with location, but the recent scarcity of men in general has tended to raise the standard of wages and to even out the inequalities. At present a conductor or motorman in Tokyo and other large cities receives about 30 yen per month at the start, increasing up to about 50 yen as he acquires experience. In Tokyo a boy above eighteen years of age is eligible for work as conductor but twenty years is the lower age limit for motormen. An apprentice conductor or motorman receives 50 sen per diem, and undergoes training for about fifty days before he is eligible to serve as a regular employee and to receive the 30-yen wage.

Of late it has been difficult to secure conductors or motormen since the great war created an abnormal demand for men of all classes, and high wages have been paid in other occupations. The present high wages are the result of this competition. The sum of $15 per month for a young man of eighteen just out of his apprenticeship is a high wage, although the recent inflation of currency has boosted up the general prices of commodities.

On one electric railway an attempt has been made to employ women as conductors, and with excellent results. The proverbial modesty and kindliness of Japanese girls are said to do much to promote harmonious relations between passengers and conductors. However, this is an experiment and it is very doubtful if the practice of employing women on cars will prevail.

TOKYO OWNS ITS STREET RAILWAY SYSTEM

The city railway systems in Tokyo may be considered typical on account of the importance of the city. Here there were at one time three separate street railway companies, but these were finally combined into one and bought by the municipality. The result has been that the technical details of the equipment are rather complicated, as the original companies used different standards of cars, rails, generator frequencies, etc. In the city, double trolley, with 500 volts direct current, is standard and the track gage is 4 ft. 6 in. Grooved girder, tee and step rails are used in different parts of the city.

In general two types of cars are used, the smaller being four-wheel cars of 7 tons weight with a maximum carrying capacity of forty passengers. The larger ones are double-truck cars weighing from 9½ to 10½ tons, with a capacity of sixty-six passengers. The city owns 919 of the small cars and 530 of the larger ones. In Tokyo there is a track mileage of 79.8, or 159.2 miles of single track, and the power is supplied by a private water-power company.

Besides the street railway owned by the city there is a government electric railway entering it and five more suburban electric railways terminate in the city. On these double trolley is used in the city, and the change is made to single trolley at the city line.

Although the electric railway industry in Japan has made marked advance in the past, much is left for the future. Electrification of steam railroads is sure to come on account of the abundance of water power still undeveloped and the increasing difficulty of securing coal. High-speed transit in the large cities is of no less importance, and there is still a field for interurban and suburban railways. In Tokyo, for instance, high-speed transit is an acute necessity, and a project is now under consideration for the construction of an elevated and subway system. High-speed electric railway operation between Tokyo and Osaka, a distance of 356 miles by the present steam route, is contemplated, and application has been made to the government for permission to put this project through.

The Zone Fare in Practice

LEEDS, PART I

A City that Has Grown Rapidly without Any Apartment House Development—Efforts Have Been Made to Cultivate Off-Peak Traffic—Trackless Trolley and Bus Service Also Conducted but Only as Feeders to the Trolley System—Comparative Bus and Trolley Statistics Are Presented

BY WALTER JACKSON

BOAR LANE IN THE SHOPPING DISTRICT OF LEEDS

LEEDS is the great clothing center of England, located 185 miles north of London and exactly halfway to Edinburgh. In addition to the clothing industry, which is predominant, Leeds possesses great engineering works, a big leather trade and an unusual diversity of other manufactures. Coal mines and quarries are also in the immediate vicinity. In general, the best residential district is on high ground in the north, while the manufacturing district is in the river valley to the south and southwest.

Since the rise of the manufacturing era, Leeds has grown apace, as is clear from the accompanying table of population and ratable value:

	Population		
1811	62,534	1891	309,119
1861	207,149	1911	417,051
1871	259,212	1917	*459,260
	Ratable Value		
1861	£504,885	1891	£1,279,213
1871	759,896	1901	1,741,373
1881	1,125,852	1917	2,258,486

* Enlarged city of 21,593 acres.

Leeds is also in close touch with a number of smaller cities and towns which reported the following populations in 1911: Guiseley (woolens) 4,925; Rawdon (woolens) 3,200; Yeadon (woolens) 7,442; Horsforth (residential) 9,145; Pudsey (weaving) 14,027; Rothwell (colliery and residential) 14,279; Shadwell (residential) 1,239, and Morley (woolens) 24,285. With these and some other communities, the population of the Leeds district amounts to approximately 500,000. Furthermore, traffic from these sources is supplemented by business with the city of Bradford (350,000 population) 9½ miles distant.

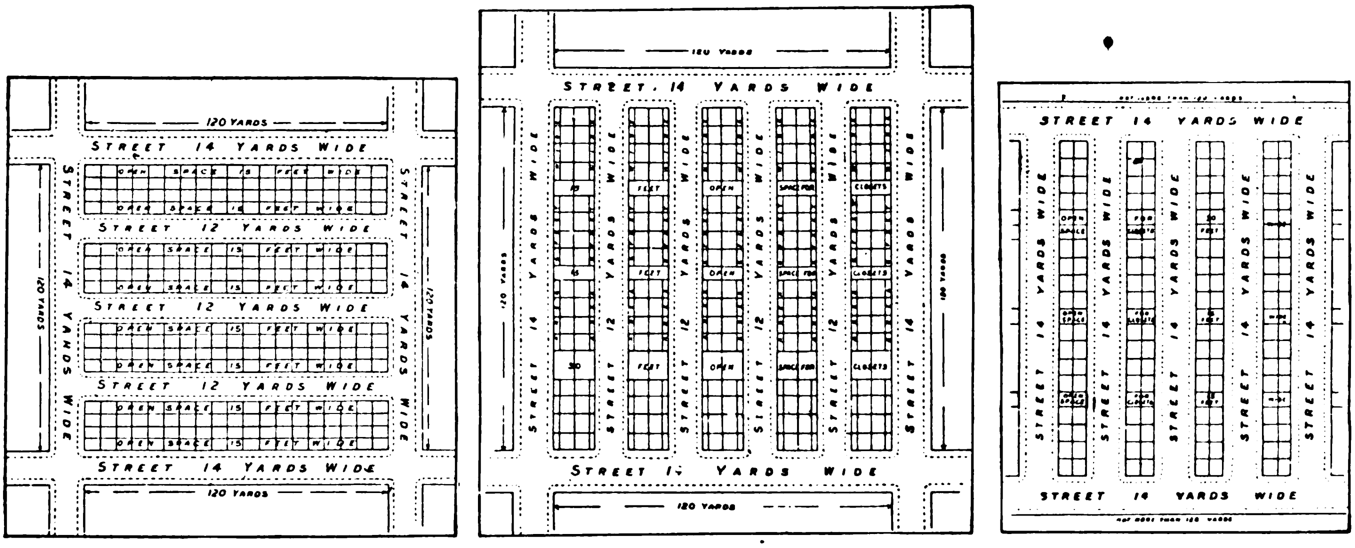
LEEDS AND ITS BACK-TO-BACK HOUSES

At the risk of wearying the railway reader, it is desirable to present some further statistics on the subject of housing to emphasize the fact that there is no special connection between congestion and the zone-fare system. It will be recalled that although Glasgow has the cheapest and most frequent tramway service in the world, the prevailing type of dwelling is the four or five-story tenement; while in New York City, with the most extensive universal fare existent, the elevator apartment house almost invariably follows the opening of rapid transit lines—the change of the Brooklyn section from small houses to big being especially marked. So, then, in examining the housing conditions at Leeds, one is struck again by the tremendous influence of habit, for Leeds, true to English predilections, has few multi-family houses.

Out of 112,000 houses in the city of Leeds, 76,000 are of the odd back-to-back brick type that has become almost traditional in the Midlands and northern counties. Since the common back wall of each pair of houses thoroughly eliminates open areas at the rear, satisfactory ventilation and lighting are considered impossible. Hence the construction of such houses was forbidden by the housing and town planning bill passed by Parliament in 1909.

Although the back-to-back house would seem to be economical of ground space because of the absence of yards, the contrary is the case. In the first place, the houses are only two stories high and made for single families. In the second place, the blocks are extremely narrow, with the result that a most disproportionate area of land is taken up by paved streets—and these serve largely for laundries, playgrounds and other uses incident to the needs of the inhabitants. One curious consequence of having so many extremely short blocks is the ingenious variation of the names of thoroughfares. One often runs across a series in which every synonym for a passageway has been exhausted, thus: Hunslet street, avenue, terrace, road, mount, lane, crescent, grove, hill, parade, promenade, gate, etc.!

Although further construction of the back-to-back house is forbidden, some particulars of the several types used in Leeds, illustrated herewith, may be given as a matter of record.



Type 1 Type 2 Type 3

BLOCK AND STREET PLANS OF LEEDS BACK-TO-BACK HOUSES

Type 1—The ideal houses are in groups of eight without any forecourt, but with an open space of 15 ft. at the end of each block, abutting upon streets not more than 360 ft. in length and 42 ft. wide. This means a space of 72 ft. between buildings made up of the street and forecourts. In these houses the basement has a coal place and pantry; the ground floor a kitchen and scullery, with bath, divided into 165 sq.ft. of kitchen and 66 sq.ft. of scullery; the second floor, one bedroom of 145 sq.ft. and another of 64 sq.ft.; the third floor, an attic of 185 sq.ft. The toilet facilities are located between each group of eight buildings.

Type 2—The second oldest houses are in groups of eight with forecourts or gardens 6 ft. deep and with an open space of 15 ft. at the end of each group, abutting upon streets not more than 360 ft. in length and 36 ft. wide. This means a space of 48 ft. between buildings. In these houses the basement has a coal place and pantry; the ground floor, 176 sq.ft. of kitchen besides the scullery; the second floor 176 sq.ft of bedroom besides a bath and toilet; the third floor, an attic of 176 sq.ft. and another attic of 48 sq.ft.

Type 3—About one-half of all the back-to-back houses are, of the latest sort, in a continuous row with forecourts or gardens of at least 15 ft. in depth, abutting upon streets not more than 360 ft. in length and 36 ft. wide. This means a space of 66 ft. between buildings. The basement has a wash cellar in addition to the coal and larder sections; and the ground floor a living room of 186 sq.ft., a scullery of 66 sq.ft. and a bath; the second floor, one bedroom of 162 sq.ft. and another of 64 sq.ft.; the third floor, an attic bedroom of 140 sq.ft. One group of such houses showed a frontage of 21 ft., a combined depth of 30 ft. for two houses, a basement height of 6 ft. 3 in., a first-floor height of 9 ft., a second-floor height of 9 ft. 8 in. and a total overall height of 39 ft. 6 in. to the ridge.

In a statement concerning the housing and town planning bill of 1909, the Lord Mayor and Aldermen of Leeds protested against the summary prohibition of back-to-back houses. After quoting the extremely low death rate of Leeds in comparison with other British cities, despite Leeds being an active manufacturing district, the protest went on to say:

> It is presumed that the object of the bill is to secure better dwellings for the working classes; but the view taken by the corporation is that should the clause prohibiting the erection of back-to-houses pass into law, the position of the working classes in Leeds, as far as housing is concerned, will be worse than it is today. The effect of the clause will be to make compulsory the building of large tenement dwellings, which, unless there is a great change in public opinion, will never be fully occupied, or in the alternative will compel the building of through houses only, which will mean occupation by two or more families, that being the only way in which the people will be able to pay the necessary rent.
>
> The working classes in the city have a decided aversion to tenement houses, which are the only alternative to back-to-back houses (on the assumption that each family is to occupy a separate dwelling), for it has been found in working-class districts the houses are in many cases occupied by two or more families, a state of things which is conducive neither to morality or public health.

It is obvious enough from the foregoing that apartment-house life is not palatable to the Englishman despite its possibilities in reducing work for the housewife and other conveniences like central heating.

In earlier days the efforts of the Leeds municipality were concentrated on the elimination of slum areas (£775,928 for clearance work alone) and the widening of streets in the business section. The capital expenditures for street improvements had run up to £2,500,000 by 1917. In late times the purchase of land for housing projects has been taken up; by 1917 the city had put up fifty-one houses. In 1918, however, war conditions made it impossible to put up more than five. The need for new buildings is emphasized by the fact that the number of vacant houses dropped from 7144 in 1911 to 462 in 1917. Of course, many of these houses are such in name only.

Within the present city limits Leeds has already acquired for housing development, on the basis of ten to twelve houses to the acre, the following sites: Stanningley Road, 53½ acres; Hawkesworth, 70 acres, and Cross Gates, 83½ acres. The real garden city development, however, would be on the south side of the River Aire at Middleton, where there is room on 450 acres for more than 5,000 houses and gardens on a plateau about 500 ft. high. The City of Leeds already owns in this neighborhood a public park of 350 acres, but the housing development is dependent upon Parliamentary sanction to permit the extension of the city boundaries to include the areas referred to. In connection with the Middleton development J. B. Hamilton, general manager Leeds City Tramway, is already planning a right-of-way service that will enable workmen in Middleton to travel 3 miles to or from work in twelve minutes or less. This will give most of the residents a clear half hour for lunch. In this way, the line will get a better load factor, and the patrons of the line will get more pleasure out of their home life. The first cars on the Leeds City Tramways are out at 4:30 a. m., and the last cars leave the center of the city at 11:30 p.m. This is half an hour earlier than before the coal stringency, which led to a cut of 15 per cent of the mileage of some lines. Leeds, however, developed so many munitions factories that the actual total mileage was practically unchanged. The traffic characteristics graph, such as that given on page 12 for the Headlingley route on Oct. 21, 1918, shows the first peak between 5 and 6 a.m. outbound and from 7 to 8 a.m. inbound, between 12:30 and 2:30 p.m. both ways, between 5 and 6 p.m. outbound, between 7 and 8 p.m. inbound and again between 7:15 and 8:30 p.m. outbound.

Roughly, there are three peaks, morning, noon and night. As in other British cities, the early workmen's travel is coming later on account of the shorter workday. Engineers now start at 7:30 instead of 6 a. m. and the mills are also expected to make 7 a. m. their opening hour. Outdoor workers begin at 7 a. m., many factories at 7:30 to 8 a. m., and most offices and stores at 9 a. m. These changes are going to sharpen the morning peak, but this disadvantage may be offset by eliminating many of the less-than-cost workmen's cars, which must be boarded before 7:45 a. m. to get the half-rate fare.

Besides making frequent traffic checks to determine the influence of these important changes, the Leeds tramways management has taken up the subject of staggering the hours of work. The employers are agreeable enough, but it is harder to convince the employees. Many of the latter live so close to their work that tramway comfort means little to them, and they do not care to disturb the hours of opening and closing unless, perchance, they do the disturbing themselves! In general, all routes are continuous through the center of the city wherever possible. This is shown in detail in Table I on page 10, in which the through routes are bracketed.

Type 1

Type 2

Type 3

FROM THE OLD TO THE NEW WITH LEEDS FAMOUS BACK-TO-BACK HOUSES

One of the first points to be observed from this table is the sizable length of the routes, even when considered from the through-routing basis. This shows that there is ample open ground accessible, although for topographical and industrial reasons the development has not been uniform.

A second point to be observed is the splitting up the through services where traffic on opposite sides of the center is uneven, such as the division of the Upper Wortley service among Killingbeck, Halton and Seacroft, or again supplementing of the Harehills Road service from Haddon Place by cars from Beeston. Through this division and overlapping of services, the actual headways available at the more important traffic gathering points are better than the tabulation indicates.

It is fully realized that the zone fare compels short headways, for otherwise the low fare alone would not attract so great a proportion of short riders. There is food for reflection in the fact that one of the first alterations made in the service by Mr. Hamilton when he came to Leeds in 1902 was to substitute a five-minute service with single cars for a ten-minute service with trailers, the response being an immediate jump in short-haul traffic. Nor does the operation of the zone fare interfere with the economical use of car mileage as obtained through turnbacks. For example, on the 13.62-mile Roundhay Guiseley line, the service to the first turnback, Haddon Place, 2 miles out, is two and one-half minutes, and to Horsforth, 6 miles out, five minutes, leaving a ten-minute service in the four-mile open country run to Guiseley.

As shown on the route and fare map, the central gathering places for the converging routes are near the Town Hall and Briggate (Street). The great loading point is on Briggate, where the cars arrive about every thirty seconds during the rush hours. Here, the open or sidewalk queue system has been superseded by something more effective, owing to the fortunate circumstance that Briggate is a reasonably wide street. It has been found feasible, since the spring of 1918, to use railed passage ways divided and marked for the various routes. Outgoing cars refuse to accept passengers at certain discharge points in the congested district, and prospective passengers make use of the stockades at all times of the day. Such means have proved most effective in avoiding unnecessary and unfair crowding. The standard car seats twenty-four below and thirty-six above. All passenger interchange, except at heavy loading points, is on the rear platform only.

The schedule speed for the system as a whole is 7.72 m.p.h. with free running speeds of 16 m.p.h. in the outer areas. Prior to the coal-saving measures, stops were spaced 540 to 750 ft., but the present range is 660 to 900 ft. Most of the twelve traffic regulators and timekeepers are stationed in the downtown district, as the ticket inspectors also handle traffic along the line. Telephones are installed about every ½-mile for emergency and general traffic regulation use only.

As commercial manager of the City of Leeds, JOHN BAILLIE HAMILTON ("JB") holds an unusual position, but one similar in several ways to that of city manager, which has made considerable headway wherever American municipalities try to keep business principles and political jobbery apart. Mr. Hamilton has been general manager of the Leeds City Tramways since 1902, coming direct from the position of chief assistant at Glasgow except for a pleasure-and-business interim in the United States. The title of commercial manager became added in this way: During 1913, when the public services of the city were paralyzed by strikes, the Council of Leeds appointed a committee of five to co-ordinate and re-organize the work of the several departments affected. To concentrate responsibility, the Council deemed it necessary to engage one executive. The office of commercial manager was therefore created, and Mr. Hamilton was asked to add this to his other responsibilities. One of the most important features of the commercial manager's work is the employment bureau. All applications for work must be made to this bureau, and when a department head needs help he must draw upon the list supplied by the bureau. This avoids undue pressure on the department head and goes a long way toward preventing the creation of easy and needless positions. Mr. Hamilton is also surveyor of highways and superintendent of the street-cleaning department. Since he is in charge of all highway facilities, he has used his tramway experience to save paving charges by transferring heavy drayage to electric motor cars where possible—a unique situation indeed! During his off-hours, Mr. Hamilton acts as a consultant on all transport problems and specialist in rate cases, valuation proceedings and the like.

HOW TRACTION ON TIRES WORKS OUT

The Leeds City Tramways offer interesting examples of every kind of urban and suburban surface transit. From a car route like Hunslet earning 22.04 d. (44 cents) a car-mile to a motor bus earning only 9.65 d. (19.3 cents) one gets nearly the entire range of economics in highway transportation. Therefore, the experiences of the Leeds lines and the deductions of the management should prove of more than usual interest to operators who are worried about the possibilities of traction on tires instead of rails.

TABLE I.—THROUGH-ROUTINGS OF TRAMWAYS IN LEEDS

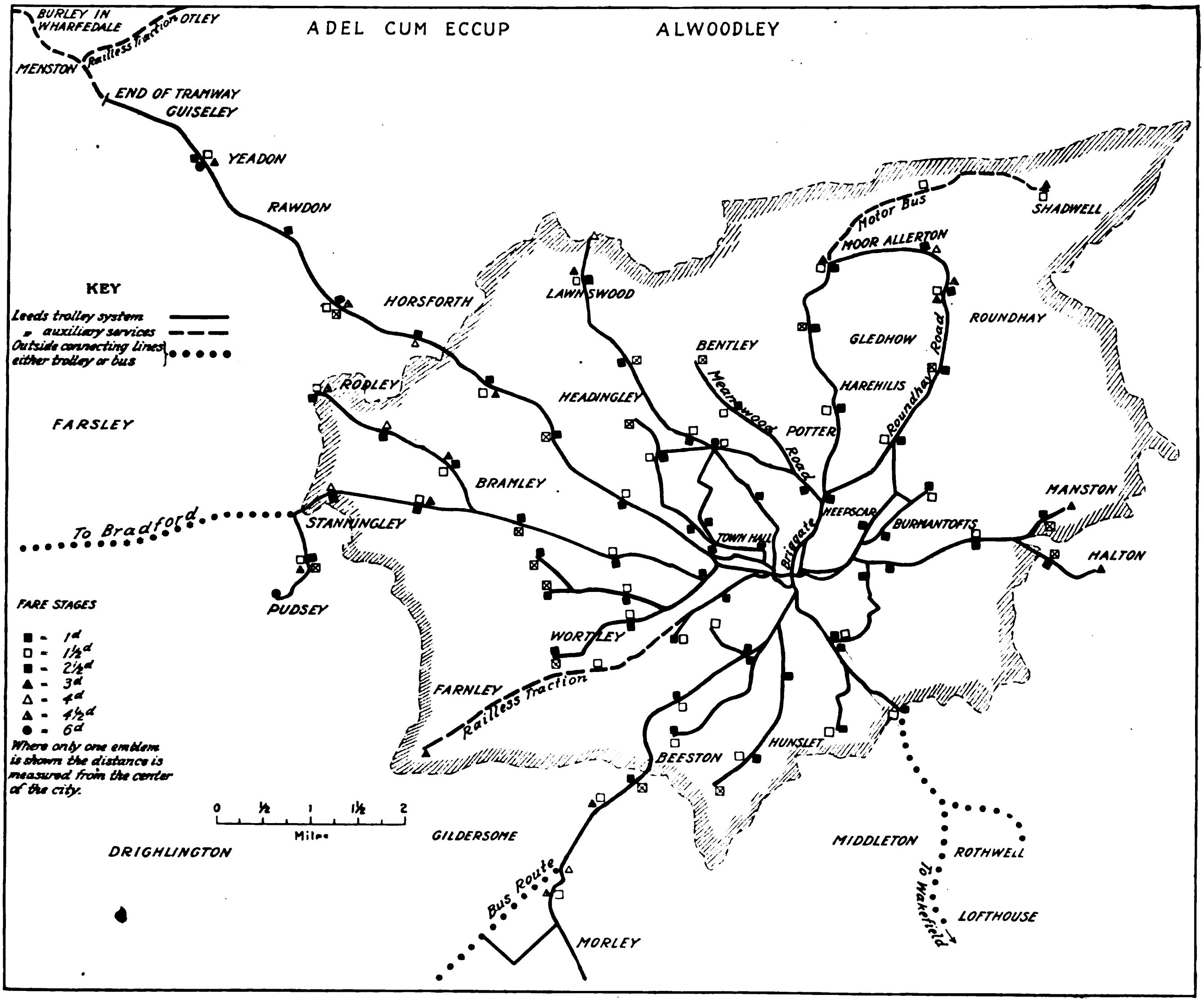
Route	Route Length in Miles		Maximum Service Minutes
Street Railway:*			
Hunslet	....	2.00	3
Balm Road	2.23	....	7½
Cardigan Road	2.50	4.73	7½
Dewsbury Road	2.61	....	4
Harehills	2.03	4.64	8
Dewsbury Road	2.61	....	4
Compton Road	1.87	4.48	8
Beeston	2.32	....	5
Woodhouse Street	2.14	4.46	10
Beeston	2.32	....	5
Harehills Road	1.89	4.21	10
Park Gates (Beeston)	1.79	....	3
Belle Vue Road	2.49	4.28	10
Morley	6.35	....	7½
Meanwood	2.69	9.04	7½
Domestic Street	1.70	....	10
Victoria Road	2.00	3.70	10
Whitehall Road	....	1.46	10
Lower Wortley	2.91	....	10
Easy Road	1.95	4.86	10
Upper Wortley	3.05	....	4
Killingbeck	2.33	5.38	4
Upper Wortley	3.05	....	4
Halton	3.24	6.29	10
Upper Wortley	3.05	....	4
Seacroft	3.17	6.22	10
Stanningley	....	5.48	5
Pudsey	....	6.61	15
Rodley	....	5.75	10
Roundhay	3.68	....	5
Guiseley	9.94	13.62	10
Roundhay	3.68	....	5
Horsforth	5.45	9.13	5
Roundhay	3.68	....	5
Kirkstall	3.33	7.01	5
Haddon Place	2.00	....	2½
Harehills Road	1.89	3.89	2
Lawnswood	4.58	....	10
Street Lane	5.14	9.72	10
Headingley	3.14	....	3
Chapeltown	2.80	5.94	3
Trackless Trolley:			
Farnley	4.01	....	30
Guiseley and Otley	3.19	....	20
Guiseley and Burley	2.91	....	40
Motor Bus:			
Moortown and Shadwell	2.72	....	45

* Total single track, approximately 121 miles; double track route length approximately 54 miles.

One rail-less or trackless-trolley car is operated as an extension of the Guiseley line to Otley 3¼ miles distant along one road and to Burley 3 miles distant along another. Otley has from 10,000 to 12,000 people and Burley from 5,000 to 6,000 but the intervening country is sparsely settled. In summer this district is a vacationing ground to which the tramways carry a heavy travel, but for the greater part of the year nothing better than a twenty-minute maximum and sixty-minute hourly service appears justified. This is indicated by the return for the week ended Feb. 8, 1919, when the total traffic was only 7,691 passengers for 1,688 bus-miles. The maximum fare, which is slightly higher than the street-car fare basis is 4d., and the gross earnings per bus-mile for the week named were 13d. This service has now been operated for five years with a 28-

passenger vehicle whose driver is assisted by a boy to care for the collection of fares.

The trackless trolley service to Farnley, 4 miles distant, is operated directly from the center of Leeds, although it runs along the Tramway tracks for 1 mile. The service on this route varies from twenty to thirty minutes. The maximum fare is 3d. For the week ended Feb. 8, 1919, 7409 passengers were carried a total of 1421 bus-miles, and the earnings were 11.05d. per bus-mile.


BURLEY IN WHARFEDALE
Railless Traction
OTLEY
MENSTON
END OF TRAMWAY
GUISELEY
ADEL CUM ECCUP
ALWOODLEY
YEADON
RAWDON
Motor Bus
SHADWELL
MOOR ALLERTON
KEY
Leeds trolley system
" auxiliary services
Outside connecting Lines either trolley or bus
HORSFORTH
LAWNSWOOD
ROUNDHAY
GLEDHOW
Roundhay Road
BENTLEY
Meanwood Road
HAREHILLS
RODLEY
HEADINGLEY
POTTER
FARSLEY
BRAMLEY
MANSTON
To Bradford
STANNINGLEY
TOWN HALL
Briggate
SHEEPSCAR
BURMANTOFTS
HALTON
PUDSEY
FARE STAGES
■ - 1d
□ - 1½d
■ - 2½d
▲ - 3d
△ - 4d
▲ - 4½d
● - 6d
Where only one emblem is shown the distance is measured from the center of the city.
WORTLEY
FARNLEY
Railless Traction
BEESTON
HUNSLET
0 ½ 1 1½ 2
Miles
GILDERSOME
MIDDLETON
ROTHWELL
DRIGHLINGTON
Bus Route
To Wakefield
LOFTHOUSE
MORLEY

ROUTING OF LEEDS TRAMWAY SYSTEM AND LOCATION OF STAGE POINTS

Of still less importance than the trackless trolley services is the extension bus line (2½ to 3 miles long) to Shadwell. This has no fixed headway, the bus making eight round trips between 8 a.m. and 6.30 p.m. to suit the convenience of its patrons, the country cottagers. For the week ended Feb. 8, 1919, the bus carried 1248 passengers. The number of bus-miles run was 272, and the intake per bus-mile, 9.65d.

In discussing the reasons for the installation of these services, Mr. Hamilton said that he regarded the trackless trolley simply as a means, where good roads were available, of putting down a tramway on the installment plan. Tracks would be justified when the density of population reached say 5000 per mile or route, or to put it another way, when the traffic warranted a headway of at least ten minutes. As far as the bus was concerned, that form of operation cost about 2d. per mile more than the trackless trolley. It was justified chiefly in localities where the permanence of development was uncertain or where the business fluctuated because of market days, holidays, outings, etc.

Quite recently Mr. Hamilton was one of a board of three engineers which carefully considered whether it would be preferable to use motor buses at Edinburgh or to electrify the cable system. The decision, as noted in the article on Edinburgh, in the ELECTRIC RAILWAY JOURNAL of May 3, 1919, was to electrify, a few buses being used only until such time as certain extensions could be built. Mr. Hamilton's arguments on the subject were expressed fully in a paper on "Urban Passenger Transport" read by him before the Municipal Tramways Association conference in 1912. The following quotations from the paper is of two-fold interest, as they also take up the matter of congestion. In opening Mr. Hamilton said:

> In many provincial cities, and particularly in Leeds, prior to the introduction of electric tramway traction, the central and older parts of the city were densely populated. . . . The provision of a regular form of transit between the center of the city and the various suburban districts at low fares, at frequent intervals and higher speeds, has completely metamorphosed the distribution of the residential parts of the town. . . . In Leeds, in 1912 as compared

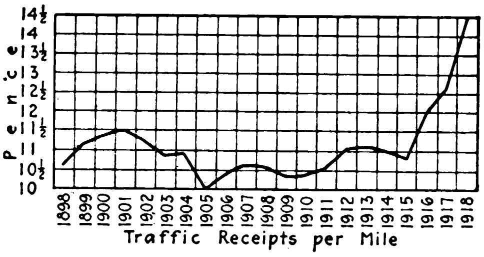
with 1895, just shortly after the corporation had taken over the working of the tramway undertaking, the population residing in the two central business wards of the city has decreased in one case by 25 per cent. and in the other by 35 per cent., while during the same period increases from 40 per cent to 60 per cent have taken place in districts outside the central zone.

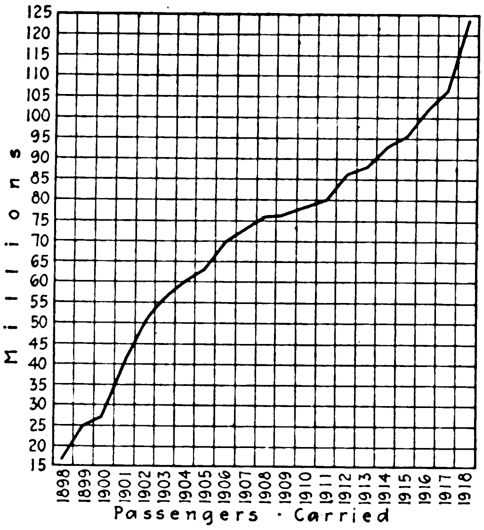
The requirements of the form of traction necessary to meet the (city) conditions which I have outlined must first provide for vehicles capable of dealing with large variations in the number of passengers. . . . One car may have practically no passengers, while the following car may have from forty to fifty. The size of the vehicles should, therefore, be capable of meeting the public requirements by having a large carrying capacity.

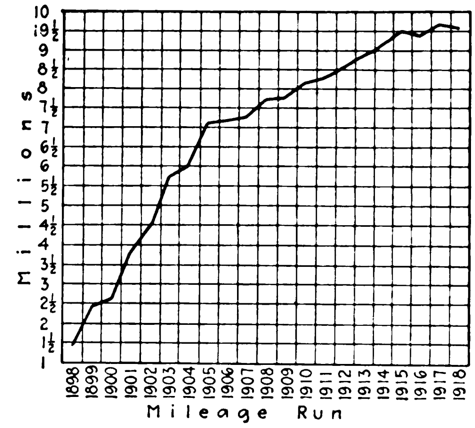
The point in the whole matter is that if a vehicle with a capacity of approximately sixty (seated) passengers can be provided at the same cost as or less than a vehicle with a capacity of about thirty-four (seated) passengers, then even at the less busy periods of the day it is very likely to pick up more passengers, and, at any rate will carry them, other things being equal, with greater comfort than a smaller vehicle possibly could.

Worby Beaumont's alternative to the tramcar, *viz.*, the motorbus, with its strong smells and its tendency to skid, and with the fact that at the rush periods of the day every tramcar as at present would be represented by two motorbuses, will produce a mental picture to every delegate here of the condition of congestion and confusion which would occur every day in the central thoroughfares of the towns they represent.

I have said that the carrying capacity of a motorbus is only half of a tramcar. . . . In inclement and rainy weather the effective carrying capacity of the motor bus (open tops) is further reduced by fully one-half. Surely if there is any obstruction caused by tramcars, the cure proposed—that of substituting four buses for one car—is worse than the disease.







RECEIPTS PER CAR-MILE, PASSENGERS AND MILEAGE IN LEEDS SINCE 1898

Note—Passengers per car-mile were 13.04 for year ended March 31, 1918, as compared to 11.61 for preceding year.

Continuing, Mr. Hamilton said that the large bus development of London was due to conditions almost unique, the streets being too narrow for any kind of rail traction. Finally, on the basis of all the figures of bus costs then available, Mr. Hamilton calculated that in Leeds motor-bus operation would cost £137,600 a year more, leaving a deficit instead of a surplus (for relief of the rates) of £61,000. The annual cost per seat for motor buses compared with cars in 1912 was as £47 to £23.

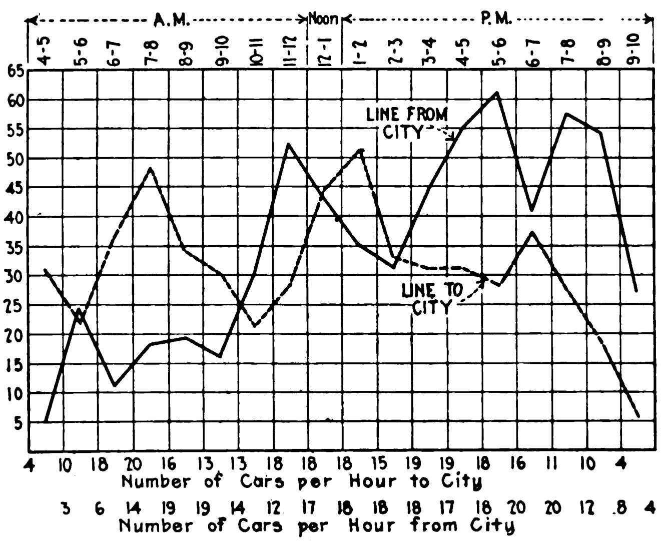


CHART SHOWING NUMBER OF PASSENGERS PER HOUR PER CAR ON HEADLINGLEY ROUTE AT LEEDS

One other variety of electric railway operation at Leeds remains to be mentioned—inter-operation with adjacent undertakings. Perhaps the service to Bradford, 9½ miles distant, is most notable as it represents the earliest important attempt to overcome both the legal and the physical handicaps of inter-operation. Leeds has a gage of 4 ft. 8½ in., and Bradford one of 8½ in. less. This made it necessary to devise an axle of expanding type so that the same cars could be run on both gages. This was successfully operated for five years, but owing to the shortage of equipment and the greater difficulty of maintaining non-standard apparatus, trucks with expanding axles had to be temporarily discontinued late in 1918.

It has been observed that the absence of through-car service perceptibly injures travel despite the fact that the transferring passenger always finds a connecting car waiting for him. This traffic is quite considerable, 61,395 passengers being carried during the week ended Feb. 8, 1919. For the same week, the mileage run was 6940 and the earnings 16.30d. per car-mile. The service is given in competition with steam trains, which lost a large part of their travel when the government made a general rate increase of 50 per cent. A through-running arrangement is also in force with Wakefield, 9½ miles distant.

CONTENTS OF LATER ARTICLE

In the second and concluding part of this description of the Leeds transportation system an account will be given of the fares charged and the labor conditions, with statistics of operation. The method of accounting for fares will be described and illustrated with reproductions of some of the blanks used.

Optimism Prevails at Pennsylvania Association Meeting

Pronounced Spirit of Fairness and Helpfulness of Commissioners, Increased Riding Due to Populations Returning to Pre-War Normal, and Revenue from Increased Fares Serve as Antidotes for War Period Gloom

IN SESSION when the world's most momentous peace document was being signed, the electric railway men gathered in the annual meeting of the Pennsylvania Street Railway Association at the Penn-Harris Hotel, Harrisburg, Pa., on June 27 and 28, seemed to sense the beginning of a new order of things in the electric railway industry contemporary with the optimism and hopefulness for a new order of things in the political world. They realized they were rapidly emerging from the war conditions and that the outlook for the future, as it may be interpreted from the attitude of the public and the commissions and from the comparison of operating revenues of the last few months with those of a year ago, was most encouraging. This meeting of the Pennsylvania association was the first regular meeting since before the war, the annual meeting of a year ago having been simply a small business session at which the officers were elected and other essential work done, and the members gloried in the renewed interchange of ideas and discussion of their respective operating conditions.

Undoubtedly the principal encouragement the members took home with them from the annual meeting of this week was contained in the informal address of Chairman William D. B. Ainey, of the Pennsylvania Public Service Commission. Some of his remarks were reiterations of thoughts he had expressed before the mid-winter meeting of the American Electric Railway Association and before the Chamber of Commerce of the United States at its meeting in St. Louis in April. But the note of sympathetic approach to the electric railway problem, which he has pronounced as the attitude of the Pennsylvania commission and the one which should actuate all public service commissions to render helpful assistance, will bear much repetition. He was anxious to make clear to the members this spirit of helpfulness with which the commission undertook to solve the problems of the public utilities which constantly come before it. He said that the commission felt that the great corporations were as necessary as the air we breathe and the food we eat, and considered them to be in a sense wards of the commission, though of course recognizing the obligation the commission holds to the public. In this work the commission has carefully refrained from setting itself up as being able to operate the properties better than the managements, feeling certain that the railway men knew better than any member of the commission how to operate their properties. He wanted to get away from the idea that the public utilities commission should occupy a position of antagonism toward the railways. The commission, he said, was not a court, but an inquisitorial body, before which the railway men were invited to come and talk over with the commission their respective problems, so that they might be fully appreciated and the commission might then act in a manner which would be helpful and not in any sense as a judge before the court. The aim of the commission was not to render a judgment against any one, but to give a decision in each case which would be fair and just to every one. The court must weigh the evidence presented, but the commission can go beyond this and invite information and seek to help in the solution of the intricate problems of the utilities.

Commenting upon the paper on methods of analyzing passenger traffic by R. H. Horton, which had just previously been read, Mr. Ainey added the important thought that traffic studies should not stop with the people who do ride on the cars and where they go and when, but should also study the courses of the people who do not ride. The enormous number of people who walk represent to a certain extent potential riders, and if data were at hand regarding the movements of these people, it might be used as an important guide to the company in providing a service which would attract their patronage. A large proportion of the walkers represents a revenue which belongs to the street railway companies, and having proper information they should go after it. Later in his talk he referred to this source of revenue as the unearned increment of the electric railway business.

COMPLAINT DEPARTMENT OF THE COMMISSION

In the course of his talk Mr. Ainey referred to the manner in which the old Greeks classified all strangers and things about which they were unadvised as enemies and in a spirit of antagonism, and then referred to the great value of keeping the public informed of the causes of failures and delays in the service, many of which were beyond the control of the company. He also told of the informal complaint department of the commission and pointed out how he believed this to be a proper function of the commission work. The pyschology behind this department is really the important thing, for the public in general seems to prefer to address its complaints against public utility companies to the commission rather than the companies, since it feels that the commission is a disinterested body and therefore inclined to be more fair and responsive. This department of the commission serves as a clearing house for a great number of complaints, the great majority of which are probably inconsequential. These are all treated with care, however, and are usually referred to the company concerned, thereby giving it an opportunity to call upon the complainant and discuss the causes of the complaint, this usually resulting in a much better understanding between the person and the utility.

Taking up the discussion of fares and revenues for the utility company, Mr. Ainey said that the commission had no objection to or antipathy against any rate of fare, whether it be 5 cents, 6, 7, 8 or 10 cents. Before granting any particular rate of fare, it was simply interested in knowing whether the company had gone deep enough into its own problems to know that the rate of fare desired was necessary, and then whether there were not other elements than the increase which might be taken advantage of to produce the results without the fare increase. The commission is of course duty bound to go into all factors in the interest of maintaining a reasonable fare for the riding public and at the same time in the interests of retaining to a company a large share of its potential passengers; in other words, to make sure so far as it is able that the fare proposed will not react to the detriment of the company rather than to its advantage. It is the duty of the commission to join with the companies in rendering good service, and only as they have adequate revenues can this end be accomplished. In other words, the commission and the companies come to the same end in striving to serve the public, for they are both interested in the prosperity of the company. The hearing of a company in a rate case involves two factors, the first being the determination of how much additional business may be secured by proper service and merchandising methods, and then how much additional revenue must be derived in the way of a fare increase in order to bring about the desired revenue.

Mr. Ainey thought that the minds of the managements should be directed toward the fact that a great many companies are burdened with intercorporate obligations and corporate complexities which bring about undue overhead expense and that there must some time be a lessening of these burdens.

Mr. Ainey took occasion to break down the barrier which he said existed in many operators' minds that it was necessary in order to avoid discrimination, to have one rate of fare all over a property. He said that there was nothing in the law against discrimination, but rather unjust discrimination. The zone system of fare collection does not necessarily add any burden upon the public through its differentiation between riders for the conditions of length of ride, service, etc. He did not express himself as to the value or effect that would result from the use of the zone system, but simply clarified its legality.

COMPENSATION FOR EFFICIENCY

Mr. Ainey sounded a new note in commission regulation of utilities when he asked the help of the companies to solve the problem of compensation for efficient management. He said it was his belief that there was something radically wrong in not giving compensation or recognition to the well-regulated and operated property as compared with the return to the poorly managed property. He said there must be some formula which will recognize good management and bring back an incentive for that. He expressed his sympathy with greater return so earned, and said that such compensation would make a spur to the company to practice economy if it could share in the results. The company should not have to strive for efficient management with the motive of preserving life, but to the end of earning more for the stockholders, provided that the public would likewise benefit through such economy and efficiency in operation.

ADDRESS OF THE PRESIDENT

In his presidential address, Gordon Campbell, president York Railways, referred to the war and the inevitable after-war conditions in this country and abroad. He mentioned particularly the effect of these conditions on the electric railway industry and the higher cost of material and labor. Some companies have received power to increase rates, but there are others where this permission has not been granted.

The speaker did not think much could be expected from referendums on the rates of fare. It is true, people realize that costs have increased, as when they pay ten cents to the baker for a loaf of bread which they formerly bought for 5 cents. But, he asked, would they vote for a higher bread price if they had an opportunity, merely because the baker argued that the price of wheat was higher, and that without an increase the ultimate production would decrease and the public interest suffer?

These questions of utility rates, in his opinion, should be left to a responsible commission, having in mind the ultimate public interest. The wrecking of electric railways would be a public disaster. Increases in revenue are necessary and can be obtained only by increased rates of fare. A 10-cent fare to-day is no higher, measured in commodities, than a five-cent fare was formerly. Any reduction from the 10-cent fare would therefore be a reduction in price. Adjustment of fares for the depreciation of currency will bring increased revenues, in his opinion. He quoted Professor Fisher on the future trend of prices and pointed out that if later prices should decrease, fares could be lowered.

Continuing, he said:

> While open to consider any device or method of reducing operating costs, let us not give encouragement to the idea that reduced fares can be maintained thereby. This is always a popular idea but at this time is rather dangerous. New things cost money. They require capital. They are experimental, and if time proves that we were on the wrong track another "mistake of management" is charged up to us. Let us meet the main issue first, that revenues must be provided. And if, under commission supervision, satisfactory service can be produced for lower fares, let that be fully demonstrated first. It is easy to lower fares. And, in principle, we believe that the lowest price at which transportation can be sold profitably is the best price.
>
> How about fixed charges? It is said that car fares need not increase because fixed charges have not increased and form so large a part of the cost. But less than one-fourth of the receipts are now applicable to fixed charges. Fixed charges have increased continually and must continue to increase. True, they cannot be reduced, for which reason we cannot stand a reduction in revenues, but in order to keep pace with the public needs we must buy more cars, more power facilities must be provided, paving (imposed on us by city ordinances) is continually extending. It now requires $2,000 to pay for what could formerly be done for $1,000 and rates of interest have increased. These same facts apply to depreciation. It will cost more now to replace property when it becomes worn out or obsolete, and it behooves us to set aside a greater reserve for depreciation.
>
> Now, it is true that in readjustments interest on fixed investments has not increased, and thereby the holder of bonds is a sufferer. His 5 per cent interest will only buy half what it formerly did. He has our sympathy, for he has provided capital for the development of public utilities which the public now enjoy. We cannot argue for an increase in return to the former investor in bonds, but we can say this for him: It is our bounden duty to keep faith with him; to see that the interest return he is entitled to is assured to him; that his property is not run down and

wasted but maintained in a high state of efficiency; that ample reserves be provided for contingencies and that his property should show earnings, not merely sufficient to pay his return but to assure it doubly and to provide a fair return to those who have operated the properties in the joint interest of the public as users and of the public as investors.

THE PROPER BASIS FOR FARES

After referring to the hope of the industry that the Federal Commission would be of help in bringing about a recognition of the infallible underlying truths of the industry, Mr. Campbell discussed methods of proportioning fares. He referred to the zone plan of the Public Service Railway of New Jersey, and gave the theory of the zone fare advocates, which was, first, that it is more equitable to distribute the cost in proportion to distance traveled, and second, that by preserving the short-distance riding revenues will be maintained with the lower general scale of prices. He thought that except under certain conditions the volume of this short-distance riding might be overestimated, and that this plan placed the burden of providing the increased revenues on part instead of all of the riders, though for some longer hauls he thought higher fares are in order.

Besides the short rider, there are two other classes of patrons who might be entitled to special consideration. According to the speaker, they are:

First, the regular rider, the man who, rain or shine, rides twice or even four times a day, bearing his full share of the cost of maintaining the service, while there are others who only use the cars in rainy weather or when their motor car is undergoing repairs, generally on the most crowded trips. It does not seem right that this latter class should have this service at their command without paying a service charge. Second, the off-peak rider. This plan was suggested by the Bay State Company. The arguments in favor of would, no doubt, be that it would induce those who could do so to ride at other hours than those of heaviest travel and that, when the travel is light, those who might otherwise walk would be induced to ride.

We have thus three conditions which might be considered in the theoretical construction of rates for street railway transportation. But, are not these only diversions from the logical conclusion that the car fare should increase as the value of money falls? If this increase could have been gradual and in inverse proportion, there would, no doubt, have been no disturbance in the normal travel. Unfortunately, this was not practicable. Unfortunately, relief has been delayed too long in some cases and is too timidly applied in others, and the results, I fear, will be costly reconstruction in many places.

WHAT THE PUBLIC WANTS

The speaker then referred to the work of the executive committee during the year, the coming hearings on the question of increased compensation for carrying United States mail, and the activity of the legislative committee in protecting the companies from the effects of ill-advised legislation. Concluding, Mr. Campbell said:

The question is asked, Why are the street railways so unpopular? Is it because they have been for a long time trying to do something for less than it was worth, the results being reflected in the wages and the service? Is it because they are tax gatherers—for the street railway collects from all its passengers a tithe for government taxes, another for State taxes, a tithe for city taxes and another to pay for paving the city streets? Is it because they make no concessions? But the street railways do generally carry children for half fare, smaller children free, baskets and bundles without charge, policemen and firemen of the city free, and in many cases they have assumed expenses, willingly or otherwise, as a concession to public opinion. But are they really so unpopular or is this hostility subjective in the mind of the propagandist and only objective in the public mind?

Of course, people generally "knock" the public servant. They have to complain of something. We know how it is ourselves. We used to complain of the servant at home. We don't now, for there is none. Well-intended criticism is to be taken seriously, but ordinary grumbling probably reflects the momentary frame of mind of the complainant. If we give the full service which we honestly believe is the public due, striving ever to better it, we can ask the return with a clear conscience.

It is my own belief that the real demand of the public is good service, rather than cheap service. The class of travel which we have lost came from those who can afford the very much higher cost of private automobiles. Possibly, before long some will travel in the air with still greater elements of cost and risk. Likewise, I am an advocate of fair wages and conditions for our employees.

We have it on no less authority than the President of the United States that if we have treated the people from whom we are making our profits as they ought to be treated, if we treat the employees whom we use in earning these profits as they ought to be treated, if our methods of competition are clear and above reproach, nobody will be jealous of our profits.

Do not understand me as under-estimating the difficulties. This is not to be accomplished without combined effort. I assume that the street railway men will continue their devotion and unremitting effort toward the cause. It has been a long and grueling fight with heavy casualties, but now that we have reached this point let us see it through. What I wish to suggest is renewed courage and confidence in the future.

DISCUSSION ON MAINTENANCE AND FARES

After the address by President Campbell and the reading of the papers by F. R. Phillips and E. C. Spring at the first session of the association, Friday afternoon, the discussion of the members centered about the subjects which had been taken up in the papers, abstracts of which are published elsewhere in this issue.

W. E. Boileau, general manager, Scranton Railway, told of the task to which his company had been put in keeping the cars running during the war period. Rails had been taken from the scrap heap and put back in the street, and at one time when it was impossible to get car wheels, the ones in use became worn so low that the gear cases were striking the pavement and so the company lowered the pavement. He said that the maintenance program which the company had been forced to follow during the war would now require between $300,000 and $400,000 expenditure within the next one or two years to put the property back in normal condition. The population of about 280,000 served by his company had lost over 75,000 people during the war. The riding went down and down with each draft and with the exodus of workmen to other places of employment until the company was compelled to increase its fare to 6 cents. This was not great enough, and as the riding continued to drop off, the fare was raised to 8 cents. At this rate of fare the revenue become better almost daily and the number of riders was coming back and was nearly up to the number which had been carried at the 6-cent rate when the commission ordered a cash fare of 7 cents with four tickets for 25 cents. The increase of riding, which had been expected from this decrease in fare, had not been realized, and he doubted if the 7-cent fare would ever bring sufficient return to make the business profitable. With the present rate of fare, he said that about 73 per cent of the fares collected were tickets, it having been estimated that this would go to 90 per cent. The largest percentage of cash fares is paid on the lines carrying a high percentage of foreigners who do not seem to invest in tickets. In the better sections of the city, tickets are used almost exclusively. One line which carries almost entirely foreigners collects over 60 per cent cash fares, while a line in the better section of the city collects only 22 per cent cash fares.

William O. Hay, general manager, Northampton Traction Company, Easton, reported that in 1916 his company had increased its fare from 5 cents to 6 cents and had been disappointed in the per cent of increase in revenue received. A good many of the riders had walked rather than pay the increase. On Sept. 23, 1918, the company went to a 7 cent fare and since that time has been realizing a comfortable return. The people have seemed to recover from their soreness and are again riding the cars. The results this year have been very good and the company now sees its way out of the woods, so to speak. He also commented on the fact that the company had learned a lot about development of the scrap heap during the war as a means of keeping the cars operating, and told how brakeshoes had been recovered, scrapped axles refitted, cars robbed of parts to keep others going, etc.

H. G. Morse, of the General Electric Company, and W. G. Kaylor, of the Westinghouse Traction Brake Company, were called upon by the president and they recited some of the severe difficulties which the manufacturers faced in their endeavor to keep the operating companies supplied with necessities.

F. R. Phillips, Pittsburgh Railways, remarked that there seemed to be something inseparable between the rate of fare and the revenue received. In connection with the so-called superimposed fare system of Pittsburgh, whereby there existed a 5 cent inner zone and a 7 cent outer zone, he reported that there had been a traffic increase of about three per cent in the 5 cent inner zone, but a decrease in the number of riders in the 7 cent zone, with a net revenue very much less than that previously derived by the company. In the outer zone, it seems that there was formerly a great deal of riding from home to the local theatres in the evening, and these people complained that it was entirely unjust to charge them 7 cents for that ride, whereas an equivalent ride in the central district would cost only 5 cents. This system of fares is about to be abandoned, and replaced by a fixed flat fare all over the city of 7½ cents (four tickets for 30 cents) with a 10-cent cash fare. The 10-cent cash fare entitles the rider to a transfer to ride across the city, it now being necessary to pay two fares to ride across the city. There is thus no increase in the fare to the passenger who rides across the city, but the new system will bring about a 2½-cent increase in the central zone and a ½-cent increase in the outer zone. Under the superimposed system, the total net increase in receipts in the 7-cent area was 9 to 11 per cent, whereas it should have shown a 40 per cent increase. Mr. Phillips commented that it was very difficult to tell what effect the rate of fare has on the amount of riding, since there are a number of elements which have a bearing. For instance, he cited the fact that at present the industries of Pittsburgh are operating at only 62 per cent normal, and he inferred from this that the amount of riding on the cars might likewise be assumed to be about 62 per cent.

R. B. Hull, general manager, Lancaster County Railway & Light Company, Lancaster, said that his company, by increasing its fare from 5 cents to 6 cents and eliminating all unnecessary service, had been able to make a good showing and that for May and June of this year it had shown a 20 per cent increase in revenue over that during the corresponding months of last year.

LESS THAN FIVE-CENT FIRST ZONE FARE

C. B. Fairchild, Philadelphia Rapid Transit Company, was inclined to think that the industry had arrived at the time when it must right about face and collect from the passenger for what he wanted to buy; namely, so many units of transportation at a proper unit charge. He was inclined to believe that this unit charge for the first zone should be something less than a nickel. He argued that it cost so much to produce this street car service, a figure differing with all of the special conditions of each locality. The first problem is to determine what the cost of producing the kind of service the public wants, plus a fair return on the investment given, is. The company must then derive that amount of money in order to produce the service required and then the public can arrange to pay the corresponding fare in any manner in which it prefers. If the cost of paving streets and various other items of cost which must now be borne by the car rider, were removed then the cost of producing the transportation could be reduced, and it should be the endeavor of the industry to bring about a rock bottom basis for figuring transportation costs.

Mr. Fairchild remarked that the industry had violated every principle of merchandising by continuing from the old days to charge 5 cents for a ride, regardless of how long or how short a ride the passenger desired to purchase. He believes that, like the merchant, the railway company must be prepared to sell the customer the size of package he wants, which means that he must come to a zone system, and this zone rate must be low enough to attract customers. He said the industry had overlooked one thing which had made European business attractive—the short-haul riders. It should be the aim to get onto the cars the people who are now walking at the hours when the companies are hauling empty seats around, and this means a rate of fare less than five cents for the first zone. He thought that the bulk of the business which is available can be classified as short haul. He also pointed out that it would not be necessary to carry as many passengers in this country as they must in Europe to realize an equivalent return, because of the lower unit fare prevalent there. Referring to the protest of the suburbanites against the zone fare system, he said that he did not think their case was well founded and that he did not believe they would object strenuously.

President Campbell took an opposite view of the fare situation. To carry a passenger one to two miles for something less than 5 cents would be going backward, his contention being that the value of the nickel has changed so materially that a ride of that distance for 5 cents now would be giving more than to give an equal ride for half that amount in 1900. He said that fares in effect have been cut in half already and that instead of looking toward lower fares, the industry should be looking toward increased fares, that it had been looking too long toward small fares. He was inclined to doubt that short-haul traffic would be stimulated by the small fare, or if it were stimulated, that there would not be sufficient additional riding so that the company would realize an increase in revenue. He was looking more toward the basis of rides for 5 cents which existed twenty years ago as a proper readjustment basis for fares at this time. At that time the length of ride for 5 cents was in the neighborhood of 2 miles. Even at that rate of fare, the passenger of today would receive more for his money due to the infinitely better service, more lines, better cars, etc., taking into account all the progress made through engineering.

Thomas A. Wright, vice-president and general manager, Wilkes-Barre Railway, told how his company had increased its fares from 4 cents to 5, then 6, and later to 8 cents, which has finally yielded a satisfactory return. His return for May had shown a 47 per cent increase over the corresponding month last year and the reports showed a steady decrease in the loss of passengers. In the population of 250,000 served, there had been a decrease of 25,000 to 30,000 people during the war who were now gradually coming back, and conditions were becoming normal. He had just finished his testimony before the commission on the rate case of his company and the question which was uppermost in his mind was as to what the effect will be on the industry if a fixed rate of return is generally determined upon. If that is all that the companies will be allowed to earn, he wondered what incentive there would be from the manager down to try for better operation and better economy.

Mr. Kaylor and A. M. Eicher of the Westinghouse Traction Brake Company, upon request, described the safety car and told of some of the splendid results which are being obtained through its use in several cities and presented the evidence which the use of these cars furnish, that more frequent service does sell transportation.

At the banquet given by the association on Friday evening, Lieut.-Gov. Edward Biddleman, of Pennsylvania, was the principal speaker. He was followed by Chairman Ainey of the public utilities commission, who briefly addressed the gathering, and by several of the state legislators. The secretary of the association, Capt. Henry M. Stine, acted as toastmaster. Mr. Biddleman said in the course of his remarks that it was high time that men in public stations should exercise the courage to let industry earn a fair return, whatever the cost might be. If an increase of fare becomes necessary in order to sustain the cost of transportation, then it becomes the duty of the officers of the commonwealth to approve and support that increase. He said they should stand up for what they believe to be to the interests of the public whether that is popular for the moment or not.

At the Saturday morning session, after the reading of Mr. Horton's paper on "Methods of Observing and Analyzing Passenger Traffic" an abstract of which will appear in next week's issue, Mr. Boileau stated that his company had used two and three-day traffic check data very effectively in handling complaints made by the merchants' and other associations.

Mr. Fairchild said that the number of complaints of service had been reduced over 80 per cent in the last year and a half, due in large part to the data made available from traffic studies. His company keeps a record of all delays and finds that this record is very helpful in explaining to patrons who complain of poor service and long delay, by showing them the cause is usually one beyond the control of the company. All complaints for the Philadelphia Company are handled by the welfare and public relations department, which is in charge of a vice-president, the office having been created with the organization of the department, and a transportation superintendent of wide experience promoted to the place.

Mr. Spring told of a bulletin board which his company has at the interurban station in Allentown, upon which the cause of delays or other information is written for the information of the passengers. He has found this to be of greatest value in allaying criticism, for when the public is advised of the fact that a parade in a certain town has held up the car and there will be none for thirty minutes, or given other similar information as to conditions, they then know it is beyond the control of the company, and are decidedly more content in their wait.

ELECTION OF OFFICERS

The nominating committee which was appointed by President Campbell, reported at the close of the Saturday morning session that it was recommended no change be made in the administration of the association and that the present officers be re-elected. Upon motion, the wishes of the committee were carried out, and the officers below re-elected for another year:

President, Gordon Campbell, president and general manager, York Railways Company, York, Pa.

Vice-President, T. B. Donnelly, claim agent, West Penn Railways, Pittsburgh, Pa.

Secretary and treasurer, Henry M. Stine, 211 Locust Street, Harrisburg, Pa.

Electric Railways from an Operating Standpoint*

Policies and Methods Which Will Aid in Securing Better Operating Ratio—Merchandising Principles Applicable in Selling Car Rides

BY EDWARD C. SPRING
Superintendent of Transportation, Lehigh Valley Transit Company, Allentown, Pa.

MY OPTIMISM and faith in mankind lead me to believe that the future of electric railways is assured, but not without most serious thought and sleepless nights. The department which occupies the most prominent position in the field of activities is the operating department, and upon it in no small measure depends the working out of the difficulties in which the industry now finds itself. The men at the head of the operating department are close to the public they serve, and the service they give is vital to the welfare of the company and the growth of the community—a relationship filled with great responsibility and opportunities demanding sane and sound judgment.

The operating department has in its hands two important factors to use in safeguarding the industry; namely, the power to create and the power to save—two factors which are essentially vital in the future of our properties. These embody the power to create business and develop it along the most economical lines, and the power to save in all branches of operation in order that there shall be no waste.

---

*Abstract of paper read before Pennsylvania Street Railway Association at Harrisburg, June 27, 1919.

Our employees should be trained in the art of co-operation. We need men who can think and solve the seeming impossible, who will dare to tackle the problems that are confronting them. To them we shall look for the progress that will make the operating department count 100 per cent. The employee who takes a personal interest in his work and feels that the company is his, who realizes his individual responsibility, is the man of the hour, and he will in turn find his position easier and more pleasurable. The more quickly the trainman realizes that his car is one of a chain of stores, and he the manager and salesman selling transportation and delivering it in the package of service, the sooner will he become one of the co-operating parts of the organization. To such an employee is encouragement and appreciation due.

There is one expenditure in the account of the electric railway which brings back no return, and that is the element of accident claims. In no better way will the efforts of an employee be felt and appreciated by the management than in promoting to the limit the safety program. The slogan of the electric railway section of the National Safety Council, "One less accident for every mile of track in 1919 over 1918," should be impressed upon the entire personnel of the organization, in order that they shall be on the alert to safeguard the company's interest.

The equipment department, in promoting the interests of the company, should see to it that defective rolling stock is not allowed to go beyond a reasonable period before repairs are made. The cost of maintenance can be materially kept down if the defects are remedied and repairs made as soon as they are apparent, and not allowed to go over for the general overhaul. Such repairs should always be, if possible, of a permanent character, rather than of a temporary nature. The reclaiming of old material should continue to receive the attention it has during the war period.

In the track and roadway department, the adoption of standards is strongly urged as a means of promoting economical maintenance of tracks and roadways. This is desirable not only because of the importance it has in keeping the stores and stocks down to a minimum, but of increasing the general efficiency of the work done. Workmen handling the same type of material repeatedly become more proficient in making repairs, and not only is the work better and more quickly done, but more cheaply. Another saving is the time involved, which may be minimized by making early repairs. The centralization of stores and tools, the reducing of all gangs to the lowest possible working force, and the making of estimates of cost and proper disposition of cost will assist the way department in promoting economy.

In connection with the work of the superintendent of overhead and distribution lines, transmission and telephone lines should be inspected and all weak places where winter weather might cause trouble put into shape, for much labor can be eliminated by doing this character of work during favorable weather. All overhead work done in cold weather is generally over-expensive. The centralization of distribution points for material and an accurate check of materials on hand are great factors in bringing about savings.

In the transportation department, serious thought should be given to traffic studies, and the effect of distance, time, stops, skip stops, slow downs, length of stops, speed and general operating conditions upon the grade of service and cost of operation. Traffic charts made at frequent intervals to show the load factors and traffic changes are absolutely necessary for good service and operation. The car mileage of any system should be checked daily so that any increase can instantly be accounted for. Development of the freight service offers other great advantages for increasing the revenues at this time of high costs. If made a part of a proper organization plan, the interurban railway may be made of most effective value in eliminating the middleman's profits and reducing the cost of foodstuffs to the consumers.

FARES AND INCREASED REVENUE

An electric railway has every right to operate at the lowest possible cost, even if it shall neglect maintenance for one or two years, but it is a very dangerous habit to get into. Probably more properties have been wrecked as the result of this policy than from any other cause.

As a member of the committee appointed by the American Electric Railway Association to make a report at the Atlantic City convention on the subject of rates of fare and methods of collection, it would be unwise for me at this time to do more than make a few general statements. It is apparent that no company has as yet reached a final solution of the rate problem, although recent developments would tend to indicate that a zone plan of operation has many advantages over the so-called horizontal fare unit increase. The latter, which has been the one most tried out, has not shown the gain expected, but in many cases has been accompanied by a decrease in revenue.

Observations have led to the belief that a well defined zone system offers the greatest advantage to passengers and will retain a larger proportion of the existing travel than any other method of increasing the revenue. I am a firm believer that transportation is a commodity and service is the package in which the commodity is delivered to the customer, and that our business should be handled on a commodity basis. If this is true, then the zone system is the logical solution of increased revenue. The length of the zone and the rate per zone must be determined according to the conditions which exist. I do not believe that a hard and fast rule can be laid down for all cases. A so-called inner zone of 5 cents would seem mandatory in the business district, and it seems to be the most logical. The inadequate financial results from most of the zone systems placed in operation, have resulted from inaccurate estimates of travel on the system. An accurate estimate can only be made from a check of each passenger, and the actual length of ride of each passenger.

The greatest difficulty with any zone system is the collection of fares and their proper registration. The diversified methods in present use on the various systems tend to enhance the pockets of the conductors rather than the company. The various systems employed in the collection of fares on the lines by the zone system practically make bookkeepers out of the conductors and form a source of annoyance to the passengers, being particularly bad in congested areas during peak load movements.

I believe that in solving this great problem before the industry that it will be possible by acting with wisdom, coolness and firmness to apply a remedy which will wholly or in a great part remove the existing evils while leaving the good behind. We must be cautious in our movements so that we will not discourage enterprise. We do not desire to destroy communities, but we do desire to put our commodities fully at the service of the people on a profitable basis.

Nothing needs closer attention, nor deserves to be treated with more courage, caution and sanity, than the relationship of the corporations to the municipalities. The law of public opinion in its broadest sense must be cultivated and matured in every community. It is well to remember that the adoption of what is reasonable in the demands of a municipality is the surest way to prevent the adoption of what is unreasonable. We need in this country a greater number of newspapers dedicated to the cause of unbiased truth in order that the public mind may not be confused, but so molded in public matters by honest and faithful counsel that the people at large will realize that the problems of the transportation companies are in reality those of the community, and that they can best be solved if the two will act together.

The Maintenance Man's Experiences During the War*

How the Difficulty of Securing Supplies and the Shortage of Labor Affected Street Railway Operation

BY F. R. PHILLIPS
Superintendent of Equipment, Pittsburgh Railways Company

EVEN several months prior to the declaration of war by our government, and increasingly so thereafter, the electric railway industry began to feel its pinch. Huge demands for supplies and munitions of war were made upon the industries of this country by the allied governments and by our own. These supplies were similar in many respects to the material and supplies used in large quantities for the upkeep of street railways. For when we speak of steel, we think of rails, wheels, axles, shells, guns, bars, bolts, shapes, sheets, etc. When copper or brass is referred to we think of coils, brushholders, controllers, trolley wheels, trolley wire, overhead material, cartridges, shell casings, etc. The serious shortage of coal because of the enormous consumption here and abroad together with the restricted production in foreign countries nearly put an end to street car operation in a number of communities. As time progressed and our government increased its preparations for war, with greater and still greater intensity, many manufacturers of street railway apparatus practically withdrew from the market, leaving many of us in a somewhat precarious position. This forced us into the practice of using substitutes and required a change in practice which proved decidedly uneconomical. Moreover, in order that some semblance of service might be maintained, we were compelled to rob some cars to keep others in a serviceable condition.

The Army, Navy and other governmental departments made conscientious efforts to relieve the situation, but with no practical result. Priority certificates were admirable pieces of paper, and a thing much coveted, but they rarely earned dividends. Furthermore, the quality and workmanship of the supplies and materials which were secured were far below normal.

Materials that were welcomed with open arms and glad hearts during this period would, prior to the war, have been promptly rejected or scrapped. The exigencies of the situation, however, taught us many lessons in reclamation of material, although the line of demarkation between a sensible and a mistaken economical practice is still a question of some debate.

The shortage of material also led many of us to use materials and supplies beyond the time usually considered economical. Of course, prices increased in leaps and bounds and in many instances beyond reason. One instance perhaps will suffice to illustrate. A certain class of material used in large quantities for the insulation of electrical apparatus, prior to the war sold for 90 cents a pound. During the most critical period and a time when it was most needed, the price was $9.80 a pound. This material was not used in quantities for war purposes and is produced in this country.

LABOR SHORTAGE AN ADDITIONAL BURDEN

Companies operating in districts within and contingent to large manufacturing centers where munitions of war were manufactured, even before the war keenly felt labor shortage. Manufacturers of munitions in their anxiety to serve their country bid against each other for the labor supply, and the pace became so hot that the poor street railway man soon became an "also ran." Many of the trained employees, especially in the equipment departments, soon joined the stampede. Moreover, large numbers of the employees through enlistments and the draft entered the service of the Army and Navy and other branches of governmental work and the two combined causes of exodus made serious decreases in the employee rolls of railway companies.

While the maintenance departments of street railway companies draw largely upon the various trades for their labor supply, still the work is of a special nature and requires special training before the men become proficient. It has been estimated that the cost of replacing the average shopman and completing the transaction costs approximately $75 per turnover. One company in an effort to maintain its quota of men during the period from July 1, 1917 to Dec. 31, 1918, employed 3083 men to fill 600 jobs, or an average of five men to each job during the eighteen-month period. Furthermore, it was not possible to maintain the necessary quota of men within fifteen per cent.

Many of the larger companies resorted to the employment of women in occupations which had heretofore been considered of a character beyond the possibility of performance on the part of the gentler sex. Three years ago who would have supposed it possible that women would be oiling motors, painting cars, repairing cars, motors, trucks, controllers or winding armatures. It must be said to their credit, for the most part, that they performed their tasks nobly and well, and in some instances, had it not been for them I fear that our very poor showing would have been much worse.

Under such circustances, it was, of course, impossible to maintain previous standards and schedules of work despite our utmost effort to meet the situation. Then the unprecedented weather of the winter of 1918 added to our difficulties. In certain districts, particularly in the east and middle west sections, there were continued low temperature conditions with repeated snow, rain or sleet storms. In my vicinity for fifty-one consecutive days in the winter of 1918, the temperature was below zero or it snowed, rained or sleeted, and on many of them there was a combination of two of these.

---

*Abstract of paper read before Pennsylvania Street Railway Association at Harrisburg, June 27, 1919.

Like other public service undertakings, many of the municipal departments were operating below normal and were unable or at least did not perform their proper functions. The streets in many cities were packed with snow and ice, and practically the only navigable area within the streets was in the railway area. All of the traffic was concentrated within the trench cut through the snow by scrapers and sweepers. Due to the fact that catch basins and other surface drains were closed, this trench became the surface drainage system for the time being. As one master mechanic very aptly put it —"railway motors are not submarines," nor have railway motors capable of operating continuously in salt and acid water yet been designed. The result was an avalanche of disabled equipment.

Many governmental departments (national, state and municipal), unfamiliar with the well-nigh insurmountable conditions which we were compelled to meet, through various institutions and agencies brought to bear all the pressure possible to force us to improve the service, and in their earnest efforts to secure what they considered proper transportation facilities for munition workers, more often than not, imposed conditions upon us that only served to add further to the already heavy burden.

But this experience of the war period has served to provide a fund of knowledge which will no doubt be invaluable in solving the problems of the future.

Up Goes Sheffield, Too

AT A RECENT meeting of the Sheffield (England) Council the following figures were quoted as representing present prices for tramway material and those quoted four years ago:

Article	Unit	Price 1914	Price Dec., 1918	Per Cent Increase
Tramway rails	Ton	$29.20	$85.16	192
Cement	Ton	8.28	31.28	279
Gear wheels	Each	15.00	67.64	351
Armature coils	Set	24.33	83.95	245
Oil	Gallon	.24	.73	200
Tickets	Thousand	.06	.30	400

The cost of timber during the same period has risen 500 per cent. In 1916 tenders for the construction of fifty cars were asked for, and the price quoted was $5,840 per car. Recently $14,600 apiece was paid for fifty cars of a similar type.

In consequence of the increase of wages, alterations in working hours, higher cost of materials, and additional capital expenditures, and allowance for contingencies, the estimated increase in expenditure in conducting the tramways department will be $744,300 per annum. The estimated increase in revenue from the advance in fares is $914,900 per annum.

Some of the Parisian society people are taking a hand in strike breaking for the purpose of assisting Paris to regain her much needed street transportation service. Baron Henry Rothschild has been a chauffeur of an autobus, making regular trips over a city route, while Countess Villestrey has been punching tickets in a subway station.

Federal Commission Completing Plans

THE Washington representative of the ELECTRIC RAILWAY JOURNAL reports that since the first official hearing of the Federal Electric Railways Commission in New York City, June 19, questions of organization and the formulation of plans for its continued work have absorbed its attention. There have been conflicting opinions as to the period of the commission's existence, owing to the fact that the President's contingent fund, out of which the commission's expenses are to be paid, was not made available after June 30.

Some officials in Washington have thought that the commission would be obliged to wind up its work on that date. Others, among them the Attorney-General, have taken the position that the commission will not expire until the President issues the proclamation of peace, and that it may continue to function, provided the $10,000 set aside at the President's direction for its use, can be made secure, in accordance with the usual practice of the Treasury Department in such cases.

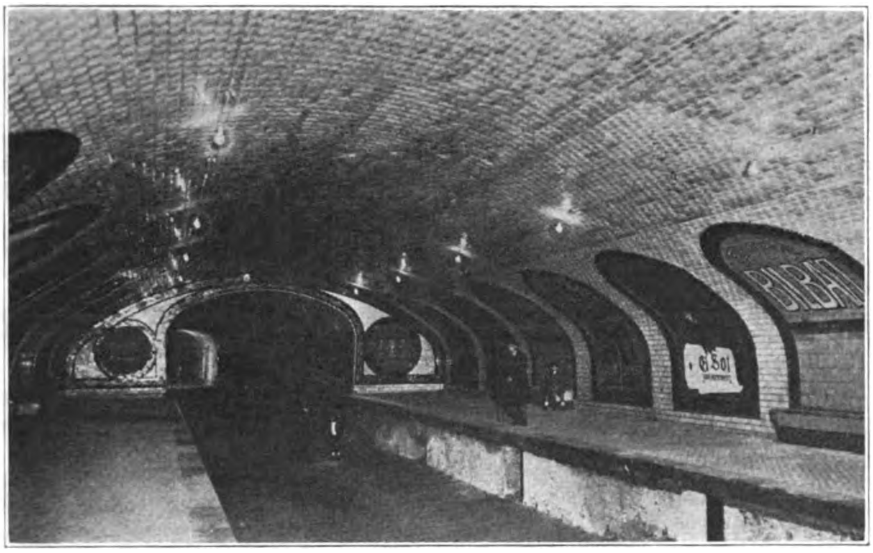
The commission, fortified by the opinion of the Attorney-General, will therefore continue its work and has already appointed as its executive secretary Charlton Ogburn, formerly examiner of the National War Labor Board, in charge of the electric railway section. Mr. Ogburn is now appointing his staff and arranging for the commission's offices in Washington.

As heretofore announced, all persons interested in the electric railway problem, including state and municipal authorities, civic associations, chambers of commerce, boards of trade and electric railways themselves, will be given an opportunity to appear before the commission and testify as to the conditions in their respective states and communities.

It is also proposed to issue questionnaires in order that the commission may receive a report from all interested parties unable to appear in person. A force of statisticians and accountants will be employed to examine the reports made to the commission, and the testimony of witnesses will be reviewed and classified. The information so secured will form the basis of the commission's report to the President. If it is impossible to prepare a complete report prior to the proclamation of peace, action will be taken for legislation necessary to continue the commission until its work be completed.

The commission has already received a number of unofficial requests from interested parties in various cities, urging the importance of making a local investigation of the electric railway situation. Whether the commission will be able to heed these requests depends of course upon the number of communities desiring particular investigations, the length of the commission's term of office and the sufficiency of funds made available for its use. No decision has as yet been reached by the commission with reference to this branch of its activities.

Eugene Meyer, Jr., managing director of the War Finance Corporation, whose place on the commission has been temporarily filled by Louis B. Wehle, counsel of the corporation, is expected to return from Europe in the near future and take his place on the commission. It is proposed to hold two hearings a week in Washington until all those desiring to be heard have had an opportunity to present their views and give information regarding transportation conditions as they find them.



ONE OF THE STATIONS AS COMPLETED

Subway in Madrid, Spain, Nears Completion

Present Congested Transportation Conditions in the Spanish Capital Will Be Greatly Relieved by the Completion of the First Line of the New Subway Next Fall

THE Central Metropolitan Railway of Madrid, Spain, will provide a rapid means of transportation between the city's most densely populated districts, and between these and the principal railway stations. Double-track subways will be constructed to constitute the main arteries of a network which at some date will cover the whole of the capital and its suburbs.

The capital of Spain has developed rapidly, due to the increase in transportation facilities already provided. This has caused a spreading out of the population, as the inhabitants, trusting the transportation facilities as to future adequacy, have moved away from the centers. The network of electrical carlines is, however, inadequate to satisfy the growing needs of the capital.

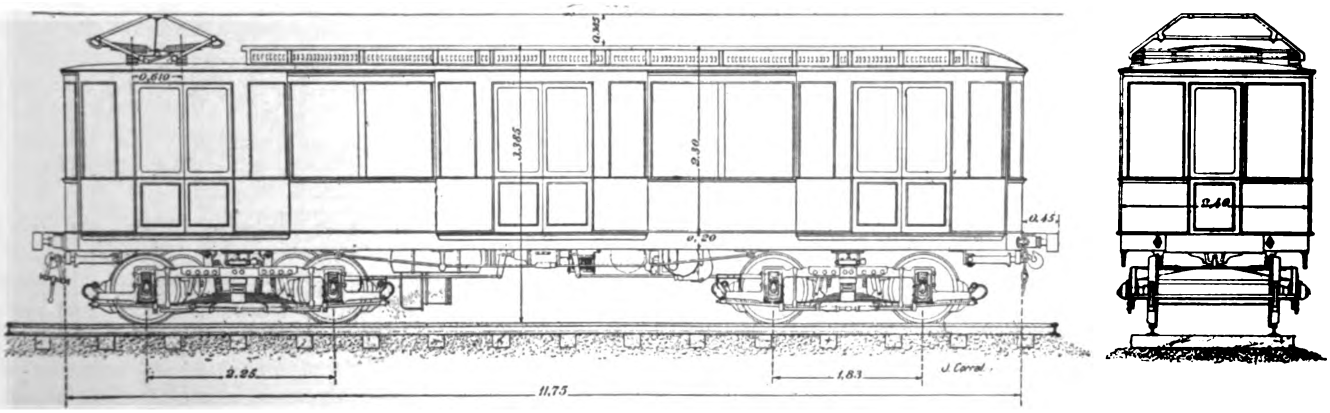
Many of the city streets are so narrow as to preclude the use of more than a single track. The consequent throttling of traffic, added to the tie-up caused by congestion of vehicles, leads to a service necessarily very slow and irregular. This condition cannot be remedied by increasing the speed of the vehicles and adding to the number of cars, as the difficulties at the crossings would make matters worse rather than better.

On the "Metropolitano" the average speed will be 15.5 m.p.h., with sufficient capacity to permit a two to three-minute headway between trains. These will consist of five-car trains, comfortably accommodating 250 persons per train. The two-track tunnel has been designed to accommodate wide and comfortable cars, which will be well lighted.

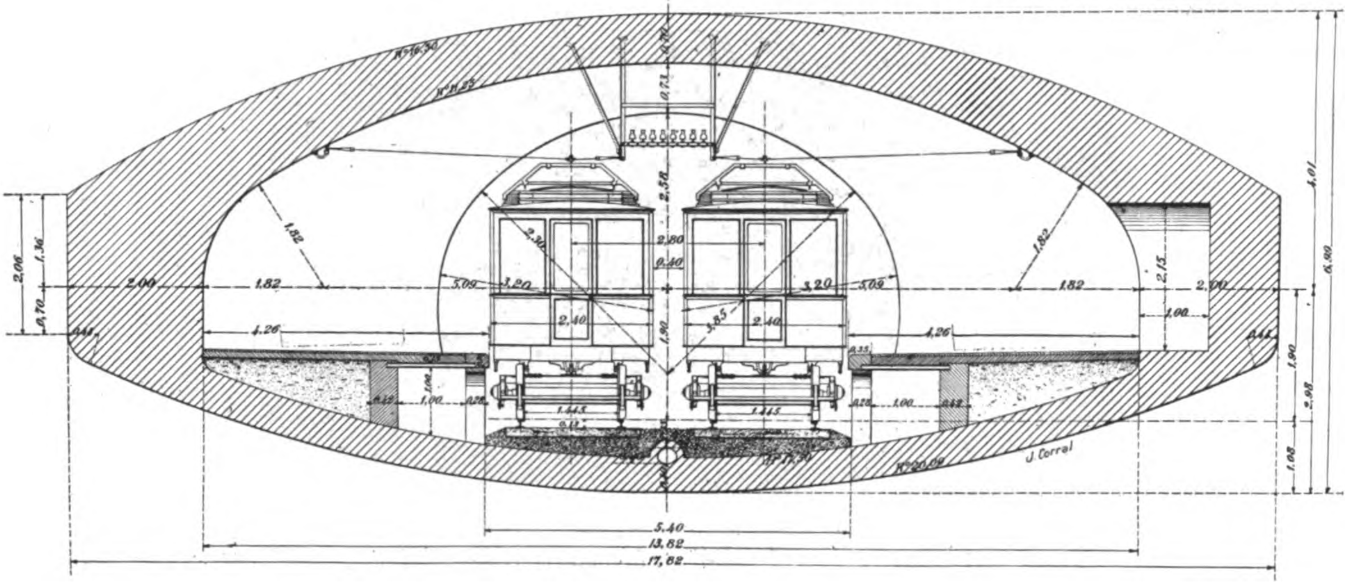
SOME DETAILS OF THE MADRID CENTRAL-METROPOLITANO RAILWAY

The present plan includes the construction of four lines to constitute the Central Metropolitano system. Line No. 1 will run north and south, from Cuatro Caminos to Progreso, line No. 2 from Ferraz-Puerta del Sol-Calle Alcalá to Goya. Line No. 3 the full length of Serrano Street and line No. 4 from Ferraz-Boulevares-Goya to Alcalá.

The total route mileage of this system is about 9. The tunnel will be double-track throughout its full length, and of solid concrete construction similar to that of the Paris subway but in dimensions slightly smaller. The stations will be 197 ft. long and built as near the street



TYPE OF MOTOR CAR USED FOR SUBWAY OPERATION



SECTION OF SUBWAY AT STATION

level as possible to make them easily accessible. The maximum grade of this section, which follows the street center, is 4 per cent; the curves have a minimum radius of 328 ft.

The construction of the tunnel has advanced continuously since 1918, in accordance with the plans previously made, and at the end of the year the stretch from the Puerto del Sol to Cuatro Caminos was completed. At the same time the approaches to the stations have been under construction as well as the shops at Cuatro Caminos.

At the time of the publication of the last annual report of the company but a small number of brace beams and supports with removal of dirt, were necessary for completion. The decorative details for the stations, vestibules, kiosks, etc., are now being taken up and it is expected that the whole work, tunnel as well as superstructure, will be completed before fall.

Material such as rails, ties, car bodies for the motor cars and trailers, trusses for the shops, machinery, etc., are being produced in Spain. As regards material of foreign manufacture, the copper is being furnished by the Standard Underground Cable Company, Pittsburgh, Pa., and it is now stored in the shops at Cuatro Caminos. Of the twenty-four Westinghouse and Schneider motors, one half have already been delivered and the remainder are in transit. The operating accessories for the motors are from the General Electric Company, Schenectady, N. Y., and the forty-six forward trucks were furnished by the J. G. Brill Co., Philadelphia, Pa. The manufacture of these details was pushed rapidly to provide for early operation.

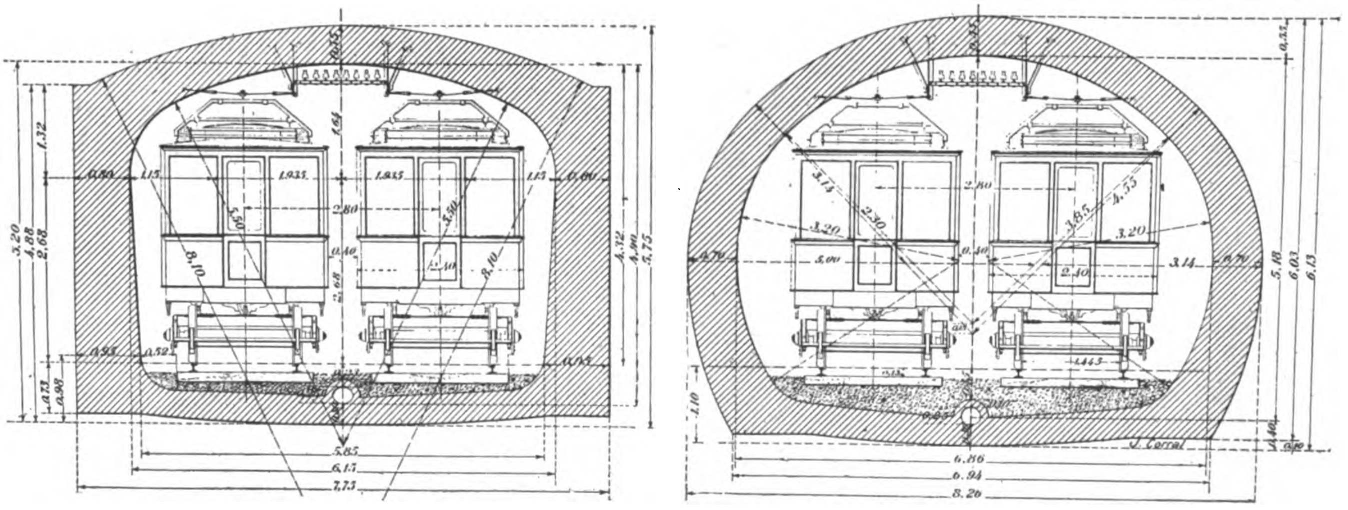
Assuming that the American manufacturers can make shipment on the expected dates, the contractors promise to put branch No. 1, from Sol to Cuatro Caminos, in operation next October.

The total cost of the north-to-south branch is as follows:

Understructure	$ 787,396.57
Superstructure	188,991.61
Mobile material and coaches	316,520.00
Repair shops	106,482.90
Formation of the company, making of the plans, management, and interest for the second year of construction	144,608.92
Total	$1,544,000.00

The prices given are the same as those which have been contracted to be paid for all the additional underground work in Madrid.

During the second week in May the Glasgow, Scotland, Corporation Tramways made a record for receipts, taking in for that week £33,514, which is £161 more than the previous record.



TYPICAL SECTIONS OF SUBWAY

Operating Without Telephones

"Preparedness" Plans Made by Boston Elevated Railway During the Recent Strike of Telephone Operators in New England

By EDWARD DANA
Superintendent of Transportation, Boston Elevated Railway

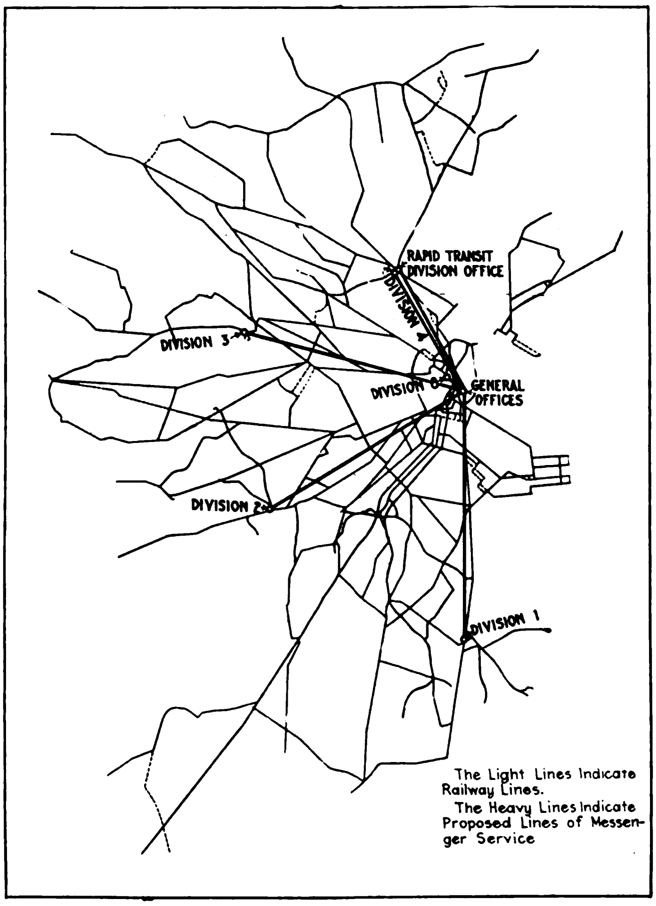
THE strike of telephone employees in Boston which occurred on April 15, 1919, and lasted approximately seven days, immediately raises the question in the minds of street railway men as to how a transportation system operating 15,000 trips daily and spread over 125 square miles and running its 1600 cars 160,000 miles daily could carry on its business without aid of the telephone upon which it of necessity depends to such a large extent in handling its 6300 men, its accidents and delays and its executive functions.

The Boston Elevated rents its telephone system from the local telephone company, but except for the provision of current to its central switchboard from the batteries of the public telephone company, its telephone system is entirely a self-contained affair, operated by its own employees and designed to meet its own requirements. The central board has 275 connections, of which twenty-four lines are directly connected with the main exchange of the telephone company. These lines were completely out of service during the strike, but while there was great concern as to whether the power which energizes its local system would be maintained by the telephone company, this complete shutting down of its plant did not occur, and consequently its operation was relatively little affected by the strike which paralyzed other industries.

Of course the failure of public lines leading to its switchboards necessitated securing the co-operation of the police in the various communities in case of serious accidents or delays, and men were stationed at police headquarters representing the company. This in reality connected the police patrol boxes with the company in case of serious trouble. The only real problem which the company had to face was that of keeping in touch with its operating officials during the evening and the night when they were not available at their offices. This was accomplished by providing automobiles at the five locations where divisional headquarters are maintained, and after the first night this plan was found to be reasonably satisfactory to meet emergencies and relieved to a large extent the concern of the management, although the officials were handicapped in doing the business that a railway operating man necessarily does by telephone from his residence.

COMPANY'S PLANS IN CASE OF TOTAL FAILURE OF TELEPHONES

The object of this article is to outline what further arrangements were contemplated had the central branch exchange switchboard of the campany been deprived of its battery current and the system been entirely deprived of telephone service. Such a study is not alone dependent upon the occurrence of a strike but might very well occur through the destruction by fire of the building in which this switchboard was located, although under such conditions the results would not be so disastrous as in the case of a strike because the public lines would in that condition be available.


RAPID TRANSIT DIVISION OFFICE
DIVISION 4
DIVISION 3
DIVISION 6
GENERAL OFFICES
DIVISION 2
DIVISION 1
The Light Lines Indicate Railway Lines.
The Heavy Lines Indicate Proposed Lines of Messenger Service

MAP OF BOSTON ELEVATED RAILWAY MESSENGER LINES

The Boston Elevated Railway has six divisions—four operating divisions, one elevated division, and one non-operating surface and subway division. When the seriousness of the situation became apparent, the transportation department officials conferred and laid out a "time-table of communication" which in some respects afforded advantages of communication by messenger which even surpassed the teleephone.

The office of the superintendent of transportation was deemed to be the heart of the communication system, and from that point a trunk line was planned to each of the division headquarters upon which would be operated upon a moment's notice a regular headway of messengers leaving every five minutes over a definitely planned route. These messengers would use in each case the quickest available method of transportation, which for a certain portion might be walking to a subway station; another portion, the rapid transit service, and still another portion, an automobile. This would require a definite number of men exactly as a car line demands a definite number of cars and crews to maintain regularity of service. All concerned would know of the exact route, and that verbal or written messages could be handed to this conspicuously-marked constantly-moving chain of men, at any fixed point along the route.

It was found that after allowing for reasonable delays and layovers as well as relief to cover the entire operating period of the day that the several divisions which are respectively—4, 3.70, 3.52, 2.16, 2.16 and 0.25 miles from the office of the superintendent of transportation could be maintained with twenty-five men and four autos.

When this had been arranged the backbone of the system had been provided, and it was a relatively simple matter to arrange local schedules in the divisions to tap the trunk line at divisional headquarters.

In addition it was planned to arrange an automobile patrol which would help in the elimination of long delays or lost cars, as for instance when a car operated on an infrequent line should get out on the line and become derailed or disabled and have no means of communication with the outside world.

SUPERINTENDENT'S OFFICE MADE CLEARING HOUSE

Much of the success of the plan would have depended upon the work done in the office of the superintendent of transportation in sorting mail and in classifying reports and in promptly and correctly forwarding information received. To this end additional help was arranged for, but the quickest method of securing results here would have been demonstrated by actual experience after the plan was in operation.

While the operation of the system under such an arrangement would have taxed the patience of the operating officials, it was confidently expected that if the word came that the telephone service had "gone" there was not so much to fear as might at first be supposed.

Fortunately this did not occur and the officials can only feel satisfied at the "preparedness" measures, but it might have occurred and may actually occur some day on some property.

Tool Holders for Use in Close Quarters

A NEW LINE of set screw pattern turning tools has recently been placed on the market by J. H. Williams & Company, with plants at Brooklyn and Buffalo, N. Y. These tools are provided with right and left-hand offsets and straight shanks. The nose of the holder is beveled to permit their use in close quarters. The tools are all drop forged with a strong tough grade of steel and are submitted after forging to a special heat treatment. The cutter-holding channel is broached to accurate size in special machines and provides a rigid seat for the cutter.

The electric cars on all lines in and near the city of Tokyo, Japan, carried some 1,450,000 passengers during the day of April 1 last. The income from this source was 63,136 yen, or $31,568. This is the largest amount ever recorded since the operation of this service. The corresponding figure for the same day last year showed 120,000 fewer passengers carried.

A. S. T. M. Shows Strong Spirit of Co-operation

At the Annual Meeting Held in Atlantic City Last Week Several Subjects of Interest to Electric Railways Were Taken Up

THE American Society for Testing Materials held its 22nd annual meeting last week at Atlantic City, N. J. The significant development of the meeting was the great expansion of co-operative work with other societies and with testing and research laboratories. Renewal of vigor in materials study was apparent, not only in the unusually strong program of papers presented, but also in the announcements of work in progress or to be undertaken.

New policies were fixed by several decisions of vital importance which the Executive Committee reported to the meeting, though matters of great moment are still in abeyance. A definite organizational policy has been established, with the first independent headquarters in the society's history. C. L. Warwick, long the assistant of the late Professor Edgar Marburg, secretary of the society since its foundation, has been appointed secretary-treasurer to succeed him. The society's office will no longer be at the University of Pennsylvania, but is to be located in the building of the Engineers' Club of Philadelphia, 1315 Spruce St., and is to be manned by a full-time organization. During the past year the society has gone outside the close bounds of its technical activities by joining the Engineering Council and by participating in the formation of the American Engineering Standards Committee. Both of these new activities have brought into being very serious problems, not yet solved. Furthermore, many demands for taking up joint committee work in different technical subjects arose after the end of the war, and they led finally to the society's entering upon a much broader program of co-operation than has prevailed at any previous time since its organization. All these matters produced active discussion at the meeting, but in the sessions of the society attention to the questions at issue was restricted to brief announcements by the chairman, with no discussion.

While these matters were in the foreground of attention, notable technical work constituted the essence of the meeting. In the matter of steel rails, results were reported that give distinct promise of an early advance in this difficult subject. A classic group of papers on magnetic study of steel quality was presented. Fatigue and impact testing were brought into new prominence. Several ingenious new testing instruments gave further proof of the activity of laboratory investigators. A remarkable paper on paints injected new vitality into the lagging thought in this subject.

GIRDER RAIL SPECIFICATIONS REVISED

Sub committee I has had under consideration in co-operation with a committee of the American Electric Railway Association the question of omitting the drop test in the standard specifications for open hearth steel girder and high Tee rails, with the intention of substituting a ball impression test for this. The previous test did not bring out the quality most desired by users of girder rails, viz., resistance to wear. Moreover, girder rails owing to their irregular section are difficult to test in the drop, and their practical use is such that the drop test is not considered to be an essential one. To meet the demands of the users of this rail an impression test to determine hardness was drawn up in co-operation with the A. E. R. A. committee. The following are sections relating to this test:

> 7. (a) Four representative sections of rail from each melt shall be selected by the inspector as test specimens. (b) Excess scale on the head of the section shall be carefully removed.
>
> 8. (a) The head of each specimen shall be subjected to a pressure of 50 net tons. (100,000 lb.) for a period of 15 seconds applied through a ball ¾ in. in diameter. (b) The average depth of impression obtained on the four specimens shall not be more than 3.8 mil., for Class A rails nor not more than 3.6 mil. for Class B rails.
>
> 9. If the average of the impression tests from any melt fails to conform to the requirements specified in Section 8 (b) the manufacturer may at his option test each rail from such melt by making an impression test on the web as described in Section 8 (a). Rails so tested which conform to the requirements as to depth of impression specified in Section 8 (b) shall be accepted.
>
> The committee believes it is justified in recommending an impression test differing from the standard Brinell test for several reasons: First, that the use of the larger ball is more convenient in view of the considerable number of tests contemplated. (Four from each melt with provisions for testing possibly every rail.) And the size of the specimen; second, that the test is intended to be comparatively simple so far as girder rails are concerned and not absolute—that is, that the user is not particularly interested in the Brinell hardness of the rail; and third, that the proposed test is in agreement with the present foreign practice in tests of girder rails.

The proposed revision has been approved by the members of the A. E. R. A. committee with which subcommittee I has been co-operating, and it is understood that this committee will recommend its adoption by the American Railway Association at its next meeting.

NEW TINNING TEST FOR COPPER WIRE

In the specification for tinned soft copper wire proposed as tentative standard there is included a new method for determining the integrity of the tin coating. It is based on the view that the tin coating must be entire, but should not be thicker than this object necessitates, as a thick coating will crack when the wire is bent or stranded and in any case reduces the conductivity of the wire. For these reasons only two cycles of dipping in the test solutions are specified—the second cycle to make sure that spots which though not bare have too thin a coating are detected. The specified method is to dip a clean sample of the wire into dilute hydrochloric acid (sp.gr. 1.088) for 1 min., washed, wiped dry, and then dipped for 30 sec. into sodium polysulphide solution (sp.gr. 1.142), which will blacken bare copper; then to repeat this cycle. If these two cycles produce any blackening of the wire beyond ½ in. from the cut end, the sample is considered to have failed.

OTHER FEATURES OF COMMITTEE REPORTS

A remarkable paper on paints injected new vitality into this subject. A flashpoint test worked out for paint thinners other than turpentine has, during the past year, been found to be accurate also for turpentine, and the preservation coatings committee therefore recommended its extension to cover all thinners. The same committee continued the inspection of test panels erected two years ago as a means of determining the best way of preparing iron and steel surfaces for painting. No conclusions will be reported before another year or two of exposure, but one well-defined result obtained so far is that cleaning a deeply rusted surface with scraper and wire brush is an unsatisfactory preparation for painting; the panels prepared in this way have failed badly. On the other hand, the plates which were painted as received from the mill, with mill scale intact and adherent, are among the best up to date.

With the presentation of tentative specifications for viscosity tests of lubricants, a long contest in committee came to an end during the past year. The Saybolt instrument was decided on, in spite of the objection by various laboratory investigators that it does not give "absolute viscosity."

The method for determining the fusibility of coal ash presented by the committee on methods of sampling and analysis of coal is one which was formulated by A. S. Fieldner and has been used by the U. S. Bureau of Mines for several years. It was endorsed in joint action with the American Chemical Society.

C. E. R. A. Cruises on Great Lakes

Association Charters S.S. "South American" for Four-Day Meeting—Safety Cars, Relief for Railways and Other Topics Discussed

THE Central Electric Railway Association celebrated the return of the country to a peace basis by holding a summer meeting on the Great Lakes, having the exclusive use of the large cruising steamer *South American*, from Sunday, June 29, to Thursday, July 3, inclusive. The steamer sailed from Toledo on the morning of June 30, touching at Detroit in the afternoon. About noon on Tuesday it reached Perry Sound, and later made a two-hour stop at Georgian Bay. On Wednesday a brief stop at Mackinac Island was made according to a report telegraphed from that point, and the schedule called for other short stops at Harbor Springs, and Benton Harbor early Thursday morning. The cruise was to end at Chicago on Thursday afternoon. The two-hour stop at Owen Sound which was planned, was not made.

The steamer, which has a capacity of 360 persons, had 350 on board, and all were delighted with the trip. The sentiment which prevailed was that much credit was due John Benham of the International Register Company, and James H. Drew of the Drew Electric & Manufacturing Company, for the fine arrangements and entertainment for which they were responsible. The newspaper men in the party published a small daily under the caption *Central Daily Spray*, which furnished a means of communication among the attendants at the meeting and also supplied some material of the "lighter vein" variety.

The program opened with a meeting of the executive committee on Monday morning, followed by a business session with reports of committees on Monday afternoon. On Tuesday morning S. W. Greenland, general manager, Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., presented a paper on "One-Man Car Operation." This paper and the lively discussion which followed it will be given in a later issue of the ELECTRIC RAILWAY JOURNAL.

On Wednesday, the formal paper was by Robert Rifenberick, consulting engineer, Detroit (Mich.) United Railway, on the subject, "Burdens from Which We Should Be Relieved." In his absence it was read by Charles L. Henry.

As this was the first boat trip of the association since 1916, it was like a big reunion and the usual good fellowship of the C. E. R. A. members was more than ever in evidence.

Earnings of the Safety Car*

Analysis of Its Possibilities on a Forty-Car Line—Approximately Sixty-six Per Cent Return on Investment Is Shown

BY T. C. RODERICK
Assistant General Manager, Tri-City Railway, Davenport, Ia.

IN a great many cities, mostly through the aid of public utility commissions, an increased fare ranging from 6 cents to 10 cents has been established to meet the increased operating costs that prevail at the present time. But the results obtained by increasing fares have been far from satisfactory. In some cases the relief is only temporary. In other cases the expected relief did not materialize. In still other cases, on the first favorable showing of the monthly reports, there was an immediate demand for a restoration of the old rate of fare. Again where the relief had been obtained by action of political boards, such as city councils or city commissions, a change in the political control was followed by an immediate reduction of the fare, and the constant turmoil has kept the business and the public in such a state of uncertainty that the question of service has been almost completely forgotten.

With all of these discouraging conditions there is one ray of hope which not only gives promise of increased revenue but also gives decreased operating expenses and possibilities of more frequent service with greater satisfaction to the riding public. These results can be obtained by the use of the safety car.

To show the possibilities of the safety car we will apply its costs of operation to the Tri City Railway of Iowa. The operating costs per car-mile during the past eight months, for the four primary accounts mentioned and the possible figures for the safety car follow:

	Present Cost	Safety Car
Maintenance of way and structures	$0.0208	$0.0125
Maintenance of equipment	.0374	.0187
Power	.0706	.0353
Transportation	.1120	.0616
Total	$0.2408	$0.1218

The majority of the cars in Davenport weigh approximately 40,000 lb., have four 35-hp. or 40-hp. motors, are from 42 ft. to 44 ft. over all with a seating capacity of forty passengers and have an average schedule speed of 8.87 m.p.h. The weight of the safety car is approximately 7 tons with a seating capacity of thirty-two.

Maintenance of Way and Structures.—Without exact figures for comparison a reasonable method would seem to be a comparison of axle tonnage of each type of car over the track, though the hammer blow of the heavier car would be more severe than in direct proportion to its weight. The tonnage per axle of the present car is 5 tons, for the safety car 3½ tons, while the ratio of axles per car is two to one. If 50 per cent more safety cars were used than of the present equipment the percentage of axle tonnage would be 52½ per cent. If we allow 7½ per cent for extra cars of the present type, the tonnage over the track would be 60 per cent of the tonnage of the present cars. Applying this percentage to the present cost of maintenance of way and structures would give us, for the safety car, 60 per cent of $0.0208 = $0.0125.

Maintenance of Equipment.—This item is subject to a great many variables such as wage scale, grades, curvature, condition of track and climate conditions. Reports from systems that have had these cars in operation for three years give cost of maintenance of equipment for the past twelve months at 1.2 cents on one and 1.02 cents on the other. Others give reports varying from 15 per cent to 50 per cent saving over previous cost of heavier equipment. Reports from Cedar Rapids, where they are operating safety cars with two men, indicate the saving would be approximately 50 per cent of the present cost. Applying this percentage to the present of maintenance of equipment would give us for the safety car, 50 per cent of $0.0374 = $0.0187.

Power.—This is an item in which the saving is very apparent, due to the light weight of the car and smaller number and size of motors. Comparing the kilowatt-hours used per car-mile of the safety cars operated in Cedar Rapids with the cars operated in Davenport, on both of which the kilowatt-hour is metered at the car, we find the safety car using 47 per cent of the other car. This comparison is made with the line with the least grades in Davenport. On an average for the system it would be less. Assuming a power consumption of 50 per cent present cost we have for the safety car 50 per cent of $0.0706 = $0.0353.

Transportation.—The use of one man per car is a very apparent saving in the safety car operation. It has been customary to give this operator a higher compensation for the added responsibility, and this rate has been usually 10 per cent. At this rate the reduction in expenses amounts to 45 per cent. This would make the cost for transportation $0.0616.

The figures for traffic and general would remain the same as at present so that on the basis of these assumptions there is a saving per car-mile in operating expenses of $0.1127 or nearly 48 per cent.

The safety car, having only 80 per cent of the seating capacity of the present equipment, 25 per cent more cars would be required to furnish the same number of seats. The total car mileage of the Davenport lines for 1918 was 2,067,450. The increased car mileage due to the decrease in car interval would be 568,586 miles, which, at 0.1281 cent per car-mile, would cost $72,872.

Nearly all systems that have decreased their car interval by the introduction of safety cars have shown an increase in receipts practically equal to the increased mileage. Assuming in this case 50 per cent of the car mileage increase we would have a 15 per cent increase in gross receipts, or $78,495.

Credit:		
Savings on operating expenses 2,067,450 car miles at	$0.1127	$233,002
Increased earnings		78,495
Total increase		$311,497
Debit:		
Increased operating expense		$72,872
Increased annual charge, 15 per cent on $275,000		41,250
Total increased expenses		$114,122
Net increased earnings		$197,375

Fifty safety cars at $6,000 each, would cost $300,000, an amount which would be partially offset by the sale of forty double-truck cars at possibly $2,500 each. Necessary track changes would cost $75,000. The account would then stand as above. The annual increase in earnings is $3,947.50 per car or nearly 66 per cent of the investment. This is exclusive of the saving in accidents, which reports from nearly all companies show to be very materially reduced.

---

*Abstract of paper read at meeting of Iowa Electric Railway Association, Colfax, Ia., June 19, 1919.

Keeping Up the Trolley Voltage*

Automatic Substations Have Demonstrated Ability to Improve Operating Conditions, and Possibilities Are Attractive

By C. W. Place
Engineer, General Electric Company, Schenectady, N. Y.

IN ANALYZING many sets of conditions under which electric railways have in the past found it advantageous to use manually operated substations I became thoroughly convinced that power can be most continuously and satisfactorily delivered by having the transforming device automatically rather than manually controlled. The automatic substations can be put where they are needed and have capacities proportioned to the load in the immediate vicinity instead of having to provide for the load plus losses in long feeders. The transforming devices need not be bunched to accommodate the operator as to living conditions, or to minimize investment in property.

Railway systems fall into two natural divisions or classes as regards the application of automatic control, namely, those furnishing interurban service or service approaching it in character, and those furnishing city service. The advantages of automatic substations for interurban service have been fully and properly discussed and seem most generally appreciated. In this type of service the more infrequent the cars the greater will be the proportional saving beyond the labor saving.

In city service the advantages over manual operation multiply in proportion to the density of the traffic and the load difference between rush and slack hours. The larger the city and the more congested the traffic, the greater the advantage of using some type of automatic control for the machines and the feeder circuits.

It seems to me that in the immediate future, due to present housing conditions, there will be much agitation resulting in the development of many real estate additions, with a demand for railway service which may not promise profit for some years. The only way that I can see for the railways to make the necessary extensions is by putting in small automatic stations and using light-weight, one-man cars.

All companies must lay out their feeder, transforming and generating systems on the basis of the peak load, hence anything that increases the peak requires additional investment. This is why reduction in weight of cars, which must be accelerated most frequently during the peak, is receiving so much attention. Every volt drop in potential from power plant to motor represents wasted power which must be paid for before returns on the investment can be realized. Furthermore, it is the drop in the return circuit which provokes electrolysis discussion. Hence any remedy that cuts down the loss on the positive side of the complete circuit does the same on the negative.

The maintenance of the trolley voltage cannot be divorced from the way in which the power is used when supplied. Reference has been made to the effect of the peak on the size of equipment all along the line. The use of automatic substations improves this peak condition immensely and certain modifications in the conditions under which the cars are operated would allow the substations to help still more.

For instance, if the railways could prevail upon the state commissions and the public to allow them to operate their present heavy cars as express cars, stopping them only at transfer points until far out into the residence district, and to pick up the intermediate, and short haul people with one-man cars, stopping anywhere, the railways would lower their peaks, would require less transforming apparatus to handle the same number of passengers and would economize the passengers' time.

There is another phase of the question that everyone may not fully appreciate. At present, with commutating poles, flash guards, and other safety features on rotary converters, the whole limitation of service from a machine is dependent upon heating. Less capacity is required to deliver a given number of kilowatt-hours from a number of machines if the iron losses are removed during practically idle periods. For example, the no-load losses for a 300-kw. set recently investigated were 3.33 kw. for the transformer and 8.7 kw. for the rotary; while the possible shut-down period was eleven hours out of the present eighteen-hour day.

To return to the general principles involved in this matter, voltage between trolley wheel and rail is a factor in making the car move and the nearer to normal it is the more efficient is the operation. As long as voltage is maintained at the car and none of your equipment up to that point becomes dangerously hot, it is undesirable to have any underloaded machines on the line. It is desirable, however, to have one or more additional machines, as near the load as possible, come into the circuit as soon as the voltage really begins to go down (not on a momentary dip). When this time comes the machine should come in promptly. All of the operations of starting up must occur in the proper sequence and as rapidly as possible within the capacity of the machine.

Hand operation can be improved upon considerably by fixing the polarity of the machine and hastening its building up by exciting the fields at the proper instant. Next the rotary comes onto the line by the rapid cutting out of a load-limiting resistance. After the machine is on the line this load limiting resistance prevents injury to the machine itself by preventing the current from building up unduly. The lowering of voltage on the line caused by introducing the resistance in turn starts up another station in exactly the same way as the first machine was started, or the high current itself brings in another machine. At each point it has been considered advisable to have a check on the proper completion of one operation before the next can occur.

The load-limiting resistors mentioned have been furnished a number of times for use on hand-operated machines, where it was not considered possible to go to the expense of making stations automatic.

Where the station supplies power over a number of feeders the resistance has been split up and part put in the machine and part on the individual feeders.

There are other types of feeder control which involve breaking the feeder circuit on the occurrence of trouble on the outside circuit.

Still another phase of this automatic control question that is worth consideration is this: Fuel costs money, and any energy obtainable without burning something means a cut in operating expense. An induction motor driven above speed by a waterwheel delivers real energy when it is connected to a system on which frequency is established and magnetizing current supplied by one or more synchronous machines. There may be possibilities of utilizing this fact on some alternating current circuits. The addition of such source of energy will tend to improve voltage conditions and cut down alternating-current distribution losses just as an automatic substation will do on the 600-volt circuit.

---

*Abstract of paper read at meeting of Iowa Electric Railway Association, Colfax, Ia., June, 19, 1919.

Most railway systems could stand some of these induction generators as a means of improving the power factor. If the effect of the magnetizing current on the power factor is too great an automatically-controlled synchronous machine can be used to neutralize it. Many of these low-head, small automatic stations will be installed, and there is no reason why anyone possessing a fairly good location should not put in one or more. A good location involves banks high enough to give, say, about 10 ft. head without flooding valuable bottom lands.

Regulating Rates in Iowa*

Rates Stipulated in Franchise Ordinances Are Not Contractual but Legislative in Character, and Cities Can Alter Them

By William Chamberlain

General Counsel United Light & Railways Company, Grand Rapids, Mich.

HAVING in mind that it lies wholly within the power of the Legislature to establish rates of service for public utilities and that this power may be exercised by it (1) directly either through contract in which it reaches an agreement with the utility or by legislative act in which it establishes the rate by law and needs to bargain with no one (and is subject to no limitations save those of the constitution), or (2), indirectly through delegation of the same powers to some one or more of its minor governing subdivisions, we are in a position to examine the situation in Iowa.

Except as to passenger fares upon railroads, the Iowa Legislature has never directly exercised its power over rates, but has on the contrary expressly delegated this power as to all the ordinary utilities save street railways to the cities and towns within which the utilities operate. This delegation of power is found in Section 725, Code of 1897, as amended. The city power to legislate as to rates, however, is not abridged by the fact that maximum rates have been fixed in a franchise voted upon by the people. Unfortunately, street railway rates are not covered by Section 725, and the power of city councils to increase these rates above the maximum provided in the franchise without a vote of the people is questioned. The Iowa supreme court has never made a decision on this point, nor has any district court, so far as I am aware. My own studies of the subject, however, which have been quite extensive, have convinced me that this power does not exist in city councils, whether charter cities or those organized either under the general law or commission plan law.

Status of Council's Acts

The question as to the proper municipal officer or body to exercise this rate-making power is not the vital question. The vital question now is whether the acts of councils in naming maximum rates in franchises are to be considered as consummating contracts or are to be considered as purely legislative acts of the council. If contractual in character they are binding upon the utility regardless of whether its last dollar is exhausted in fulfilling the obligation of its contract; if purely legislative in character, that is to say, the initial exercise by the city of its power to fix rates by law, they are subject to attack if by reason of changed conditions the rate fails to yield a fair return upon the fair value of the property devoted to the public use.

It is the opinion of those of us who have been engaged in the rate litigation now before the State and Federal Courts that these franchise rates are to be considered as purely legislative in character and subject to attack as confiscatory under present day conditions, while city officials have earnestly contended that franchise rates are contracts binding upon the company but not upon the city. So far we have had no controlling decision. Judge Wade of the Federal Court has in an interlocutory opinion held adversely to us. Judge Applegate, one of the most distinguished of the District Judges of Iowa, has held with us; while the State Supreme Court, in the case of Town of Williams vs. Iowa Falls Electric Company, has very strongly intimated if not fairly declared its opinion that our view is the correct one.

Why Franchise Rates Are Legislative and Not Contractual

Unless it is granted in express terms, cities have no legislative power whatever over rates of public utilities, and in but few states has this legislative power over rates ever been granted to municipalities. It is out of this failure of many states to grant to municipalities this law-making power over rates, coupled with the failure of the legislatures to exercise it directly, that the courts of many states have held that cities may have the power to contract as an implied power even though no express power to contract was granted.

This rule is so firmly established and supported by such an abundance of distinguished authority that were it not for Section 725 delegating express legislative authority over rates to our cities and towns, our position would be clearly untenable. But in Iowa the cities and towns have been granted complete legislative authority over rates, and that the power to fix rates by law obviates all necessity of possessing the power to fix them by contract admits of no dispute. However, implied powers are not to be found to make things more convenient or more desirable; they must be necessary to the proper functioning of the city upon a given subject or they do not exist. Therefore, we confidently assert that while cities and towns in Iowa have complete authority to fix rates by law, they do not have power to fix them by contract even though the contract be binding only upon the utility. Ordinance provisions, therefore, must be considered as legislative and treated by the courts as such.

It is perfectly proper for a city council to include regulations of rates in the ordinance granting the franchise and such regulations do not, from the mere fact that they are included in the ordinance granting the franchise, become contractual in character by reason of the acceptance of the franchise. They are legislative rate regulations to exactly the same intent and purpose as though enacted by the city in a separate and distinct ordinance and should be so treated.

This rule is better for the city, for the utility and for the consumer. If it be held by our Supreme Court that the so-called franchise rates are legislative in character and thus subject to attack if so low as to be confiscatory under present prices, the decision will be welcomed not only by the utilities but also by the greater proportion of the city councils of the state and by practically all the consumers.

---

*Abstract of paper presented before Iowa Electric Railway Association, Colfax, Iowa, June 18, 1919.

It is a remarkable and gratifying fact that in the greater portion of our Iowa cities and towns the city officials have responded to the needs of the companies with a promptness and fairness unexcelled by any of the public utilities commissions.

Pending the ultimate solution of this problem by the decision of our high courts, no utility should accept a new franchise in Iowa which is granted in an ordinance attempting also to fix rates. If the cities or towns desire the rates to be fixed, they themselves should establish them by separate ordinance which is the fair, just and legal method of proceeding. A number of years before the outbreak of the war some of the companies I have represented adopted this policy, and many franchises have been granted throughout Eastern Iowa in this manner. It is needless to say that these companies have not been troubled during the war with any litigation over increased rates, as automatically the councils are obliged to increase the rates to keep pace with the cost of production and all have willingly done so. It is only where the average mayor or councilman feels that he may be criticised for his action in relieving the company from a contract that he hesitates about meeting the situation fairly.

If this litigation should be decided adversely to the companies, then in my opinion no Iowa gas or street railway company would be warranted in spending any substantial sums for improvements or extensions until it has first secured a new franchise drawn upon proper lines. No franchise at all would be much superior to a so-called contractual franchise, for the reason that the Supreme Court of the United States in the late Denver water case and again in the late Detroit United Railway case has held that even though a utility has no franchise at all, those accepting its service must pay a rate which will yield a fair return upon the reasonable value of the property devoted to the public use.

I believe that most city councils with a full appreciation of the situation would rather accept a surrender of an old franchise to which is attached rates so low as to bring about the practical insolvency of the company and grant a new franchise without rates under the Iowa law than face the inevitable outcome of the ruin of the utility. If this rate litigation is decided adversely to the companies, there should be immediate effort on the part of all utilities to secure franchises without the rate provisions.

Sorbitic Treatment for Rails

Can Be Applied to New Rails or Those in Place—The Rail Surface Is Hardened by Use of This Process

REFERENCE has been made in these columns to the sorbitic method of hardening rail surfaces, developed in Great Britain and invented by C. P. Sandsberg. When applied at the mill, the heads of the rails, as they come from the hot saw at a temperature of about 900 deg. C., are subject to a blast of air at 15-lb. pressure from a series of discharging nozzles. The result of this treatment is the formation in the rail head of different structures which vary according to their depth from the surface, the outer being sorbitic, while pearlite without lenticular formation is found in the center of the head. Sorbite is the term applied to denote the hard, fine granular structure, obtained without loss of tensile strength or elongation, and with granules scarcely distinguishable with a magnification of 1000 diameters. A special feature of the sorbitic process is that it need not be applied only to new rails, but rails or special work in place in the street can be treated without disturbing the pavement. In fact, extensive orders for the treatment of rails *in situ* are being executed for tramways in Croydon, Birmingham, Manchester, Bournmouth, London, Liverpool and Glasgow.

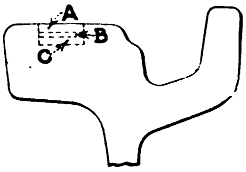
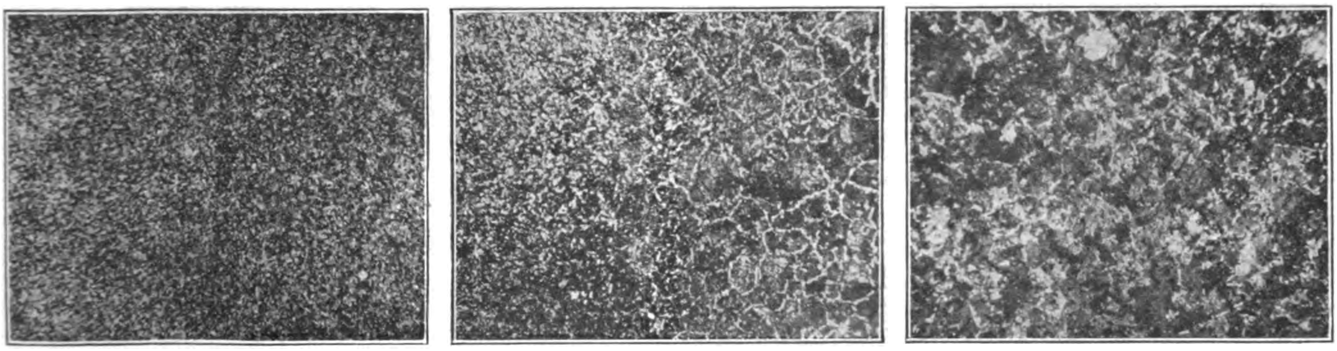


DIAGRAM OF RAIL SHOWING SECTIONS FROM WHICH MICROPHOTOGRAPHS WERE TAKEN

On March 13, 1919, through the courtesy of T. B. Goodyer, general manager of the Croydon Corporation Tramways, a demonstration was arranged for a representative of the ELECTRIC RAILWAY JOURNAL by Scholey & Company, Westminster, agents for Mr. Sandberg. A length of rail was subjected to the flames from a specially designed twin or duplex oxy-acetylene blow pipe, mounted on a light hand-propelled, geared truck, which advanced at the rate of about 1 ft. per minute. The rail surface was raised to a red heat and immediately quenched by means of water jets, close to and just behind the blow-pipe nozzles. After the passage of the truck, large, freshly-ground cold chisels were applied to both treated and untreated portions of the rail. No difficulty was experienced in notching the untreated rail, but the edges of the chisels were immediately turned up or chipped on being applied to the treated portions. The speed of the operation may be regulated to suit the particular requirements of the case by the use of twin, triple, quadruple or fishtail burners.



A. B. C.

MICROPHOTOGRAPHS SHOWING GRADUAL CHANGE OF STRUCTURE IN RAIL HEAT TREATED BY SANDBERG PROCESS

An interesting experiment was carried out two years ago on the Leeds Tramways, with the *in situ* treatment. Here a length of rail, heavily corrugated, had the corrugations removed and a portion of the rail was treated. So far, the corrugations have not recurred on the treated rail although they are fully developed on the untreated length. A similar experience is now reported from Birmingham so that the process may have an important bearing on the solution of the corrugation problem.

Ashes—Handling by Steam Conveyor Versus Manual Labor

A CORRESPONDENT who is friendly to the steam-jet conveyor plan of handling ashes, calls attention to the need for additional information if the comparison contained in the brief article on page 951 of the May 17 issue of this paper is to be applicable under conditions more general than those described. On request of the editors of this paper the American Steam Conveyor Corporation has furnished the following additional information:

The steam ash conveyor figures previously given were for an installation in the Big Mine of Canada. This does not have an ash storage bin, but discharges the ashes onto the open prairie, about 140 ft. from the boiler house. Farmers frequently come from the surrounding territory and haul away the ashes for filling purposes. As to an item to cover fixed charges on the steam conveyor and the ash storage bin, there undoubtedly should be such an item, but an analysis of a number of steam conveyor systems which have been in operation for several years has shown that the charges are quite low when the cost per ton of ash is taken into consideration.

In the charge of manual labor there would be an item of $5.50 for carting and no equivalent charge where the ashes were handled through the steam conveyor. This is due to the fact that in this case the ashes were discharged onto a pile far enough away from the boiler so that they would not interfere. In the case of the manual labor item the ashes were wheeled outside, and then loaded onto wagons, which hauled them to a distance of 250 ft. from the mine. No steam allowance was made in the comparison as the Canada West Coal Company, which operates this mine, burns in its power plant a dirty, fine slack which had been stored on the open prairie. This is practically refuse coal which the company cannot sell, and consequently the charges for steam were disregarded.

Paving Blocks and Sectional Paving for Railway Tracks

New Type of Construction Along the Tracks of the Toledo Railway & Light Company Is Giving Satisfaction

THE accompanying views illustrate several specially shaped wood blocks for paving along railway lines. One of the illustrations shows alternate rows of Kreolite end-lug wood paving blocks and ordinary second-hand paving bricks laid alternately. The wood blocks were laid about ¼ in. higher than the bricks so that the annealing effect of traffic could weld the wood over the edges and prevent cobbling of the bricks. This method of installation also tends to reduce the noise produced by vehicular traffic and as well provides a non-slippery surface. The Kreolite blocks are treated with 6 lb. of creosote per cubic foot by the Rueping process. The end-lug block absorbs all expansion and prevents buckling or thrust against the rails. One illustration shown which is of particular interest is that of a pavement which has been in service for six months and illustrates how the wood blocks iron out over the bricks. It was taken along the Main Street tracks of the Toledo Railway & Light Company.

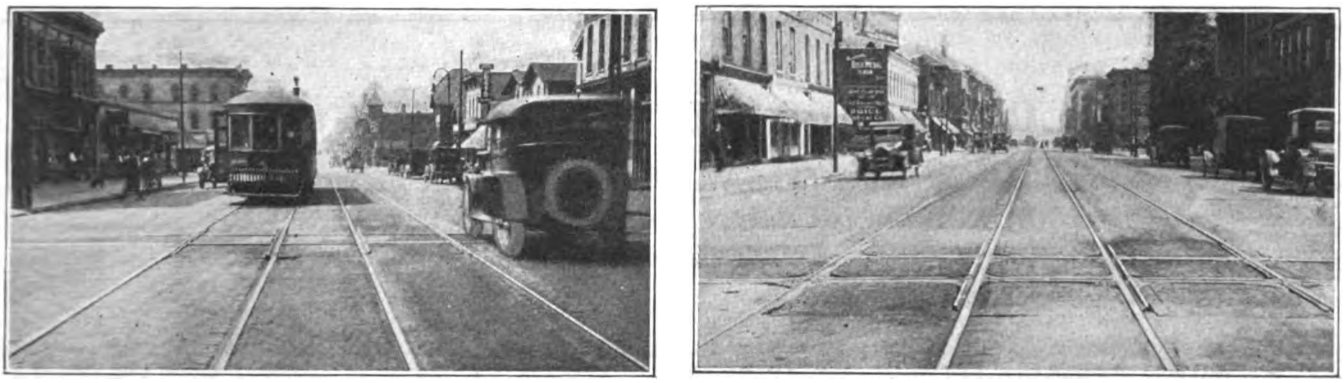
Another illustration shows how the header blocks are set in a trench and concreted into position. These header blocks serve as a boundary between the railway company's and city's paving. They prevent loosening of blocks in the city's portion of the pavement which might be caused by vibration of the tracks.

The illustrations showing the sectional paving for crossings were also taken on the lines of the Toledo Railway & Light Company. The sections are not fastened down but simply laid in place and can be removed by two men with crowbars. It is thus not necessary to take up all the pavements to repair frogs, as only that portion adjacent to the frogs need be removed in order to make repairs.

Of the two intersections shown, one cost $121 and the other $129 installed. It is estimated that the cost

RAIL AND LUG BLOCKS FOR PAVING IN STREET CAR TRACKS

LUG AND RAIL BLOCKS WITH STRETCHER BLOCKS OUTSIDE OF RAILS



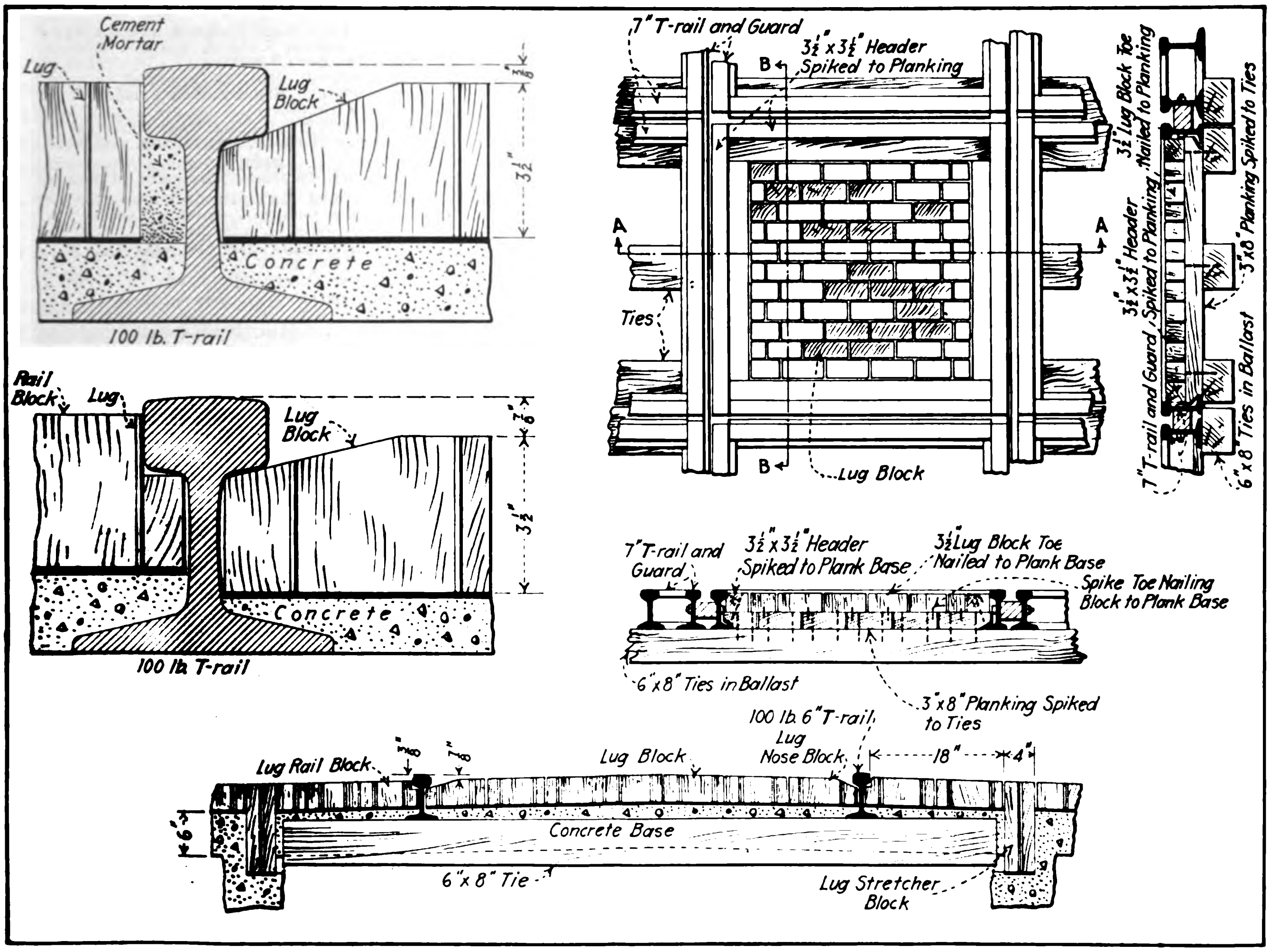
SECTIONAL PAVING CROSSINGS ON THE TOLEDO RAILWAY & LIGHT CO.'S LINE—AT LEFT, INTERSECTION AT CHERRY AND MICHIGAN STREETS; AT RIGHT, INTERSECTION AT CHERRY AND HURON STREETS

necessary to install concrete, wood block or brick pavement at these points would have been slightly more than $100, and these would have had to be renewed every time that the crossing needed repair or renewal of worn parts.

The intersection at Cherry and Michigan Streets, Toledo, is a 9-in. 125-lb. groove-rail built-up crossing and that at Cherry and Huron Streets is a 9-in., 137-lb., hard-center crossing. These two intersections cost more than if the track had been a 6-in. rail, as it was necessary to use additional planking under the sectional pavement in order to bring it to the full 9 in. which was the rail height.

These two intersections were installed in March of this year and are giving good satisfaction. Inspections made at the Cherry and Huron Streets crossing showed that all four of the crossing frogs were working. This would have destroyed the usual type of paving and would have necessitated an expense of from $50 to $100 to replace it, while with this special construction it has not been necessary to disturb the pavement, the expense of replacing it has been saved and the annoyance of bad crossing conditions, to both pedestrians and vehicles, has been avoided.

The Kreolite blocks used were made by the Jennison-Wright Company, Toledo, Ohio.


Cement Mortar
Lug
Lug Block
3½"
Concrete
100 lb. T-rail
Rail Block
Lug
Lug Block
3½"
Concrete
100 lb. T-rail
7" T-rail and Guard
3½" x 3½" Header Spiked to Planking
B
A
A
Ties
B
Lug Block
3½" Lug Block Toe Nailed to Planking
3½" x 3½" Header Spiked to Planking
7" T-rail and Guard
3"x8" Planking Spiked to Ties
6"x8" Ties in Ballast
7" T-rail and Guard
3½" x 3½" Header Spiked to Plank Base
3½ Lug Block Toe Nailed to Plank Base
Spike Toe Nailing Block to Plank Base
6"x8" Ties in Ballast
3"x8" Planking Spiked to Ties
100 lb. 6" T-rail
Lug Nose Block
18"
4"
Lug Rail Block
Lug Block
6"
Concrete Base
6"x 8" Tie
Lug Stretcher Block

TOP, LEFT, CONSTRUCTION OF ELECTRIC RAILWAY TRACK PAVING WITH SPECIAL BLOCKS. TOP, RIGHT, CONSTRUCTION DETAILS OF SECTIONAL PAVING FOR CROSSINGS. BOTTOM, SECTION OF PAVING ALONG TRACKS WITH HEADER BLOCKS ON OUTSIDE SET IN CONCRETE

Committee of One Hundred

Revised List of Those Who Will Present the Case of the Electric Railways Before the Federal Electric Railways Commission

PRESIDENT J. H. PARDEE of the American Electric Railway Association has given out a revised and complete list of the committee of 100. Their names follow. The chairmen of the four subcommittees mentioned on page 33 are included in this list among the vice-chairmen, as with the vice-chairmen and the chairmen they form the executive committee of the committee of 100.

MILTON E. AILES, Vice-President Riggs National Bank, Washington, D. C.

W. R. ALBERGER, Vice-President San Francisco-Oakland Terminal Railways Company, Oakland, California

H. M. ATKINSON, Director Georgia Railway and Power Company, Atlanta, Georgia

JULIAN M. BAMBERGER, President Bamberger Electric Railroad Company, Salt Lake City, Utah

S. R. BERTRON, Director United Gas and Electric Engineering Corp., New York City

HENRY A. BLAIR, Chairman Board of Directors Chicago Surface Lines, Chicago, Illinois

CHARLES BOETTCHER, Chairman Board of Directors Denver Tramway Company, Denver, Colorado

H. G. BRADLEE, President Stone & Webster Management Corp., Boston, Massachusetts

NICHOLAS F. BRADY, President New York Edison Company, New York City

FRANK W. BROOKS, President Detroit United Railways, Detroit, Michigan

BRITTON I. BUDD, President Metropolitan West Side Elevated Railway Company, Chicago, Illinois

H. M. BYLLESBY, President H. M. Byllesby Company, Chicago, Illinois

CLARENCE M. CLARK, President E. W. Clark Management Corporation, Philadelphia, Pennsylvania

B. C. COBB, Vice-President Hodenpyl, Hardy and Company, New York City

BARRON G. COLLIER, President Barron G. Collier, Inc., New York City

E. G. CONNETTE, President International Railway Company, Buffalo, New York

NORMAN Mc. D. CRAWFORD, Vice-President Columbus Railway, Power and Light Company, Columbus, Ohio

THOMAS A. CROSS, President United Railways and Electric Company, Baltimore, Maryland

GERHARD M. DAHL, Vice-President Chase National Bank, New York City

ARTHUR V. DAVIS, President Aluminum Company of America, Pittsburgh, Pennsylvania

MOREAU DELANO, Brown Brothers, New York City

A. C. DINKEY, President Midvale Steel Company, Philadelphia, Pennsylvania

HENRY L. DOHERTY, President Henry L. Doherty & Company, New York City

WALLACE B. DONHAM, Vice-President Old Colony Trust Company, Boston, Mass.

R. J. DUNHAM, Vice-President Armour and Company, Chicago, Illinois

W. CARYL ELY, Barron G. Collier, Inc., New York City

VAN HORN ELY, President American Railways Company, Philadelphia, Pennsylvania

EDWIN C. FABER, Vice-President Aurora, Elgin & Chicago Railroad Company, Aurora, Illinois

HENRY FLOWERS, President Fidelity National Bank and Trust Company, Kansas City, Missouri

ALLEN B. FORBES, President Harris Forbes and Company, New York City

FRANK R. FORD, Ford, Bacon and Davis, New York City

FRANK W. FRUEAUFF, Henry L. Doherty and Company, New York City

FREDERICK GOFF President Cleveland Trust Company, Cleveland, Ohio

GEORGE DE B. GREEN, Vice-President California Railway and Power Company, New York City

FRANKLIN T. GRIFFITH, President Portland Railway, Light and Power Company, Portland, Oregon

E. K. HALL, Vice-President Electric Bond and Share Company, New York City

Chairman

GUY E. TRIPP
Westinghouse Electric & Manufacturing Company, New York City

Vice-Chairmen

JOHN H. PARDEE
President American Electric Railway Association, New York City

A. W. BRADY
President Union Traction Company of Indiana, Anderson, Indiana

JOSEPH K. CHOATE
Vice-President J. C. White Management Association, New York City

SAMUEL M. CURWEN
President J. G. Brill Company, Philadelphia, Pennsylvania

PHILIP J. KEALY
President Kansas City Railway Company, Kansas City, Missouri

THOMAS N. MCCARTER
President Public Service Railway Company, Newark, New Jersey

JAMES H. MCGRAW
President McGraw-Hill Company, Inc., New York City

J. D. MORTIMER
President North American Company, New York City

LUCIUS S. STORRS
President The Connecticut Company, New Haven, Conn.

H. L. STUART
Halsey Stuart Company, Chicago, Ill.

O. B. WILCOX
Vice-President Bonbright & Company, New York City

O. D. YOUNG
Vice-President General Electric Company, New York City

W. F. HAM, President Washington Railway and Electric Company, Washington, D. C.

GEORGE E. HAMILTON, President Capital Traction Company, Washington, D. C.

C. H. HARVEY, President Knoxville Railway and Light Company Knoxville, Tennessee

ANTON G. HODENPYL, Hodenpyl, Hardy and Company, New York City

FRANCIS T. HOMER, President, American Cities Company, New York City

SAMUEL INSULL, Chairman Board of Directors Metropolitan West Side Elevated Railway Company, Chicago, Illinois

A. B. LEACH, President A. B. Leach and Company, New York City

ARTHUR W. LOASBY, President First Trust and Deposit Company, Syracuse, New York

HOMER LORING, Chairman Public Trustees Bay State Street Railway System, Boston, Massachusetts

HORACE LOWRY, President Twin City Rapid Transit Company, Minneapolis, Minnesota

A. M. LYNN, President West Penn Railways Company, Pittsburgh, Pennsylvania

RICHARD McCULLOCH, President United Railways of St. Louis, St. Louis, Missouri

WILLIAM B. McKINLEY, President Illinois Traction System, Peoria, Illinois

SAMUEL McROBERTS, Executive Manager National City Bank, New York City

S. Z. MITCHELL, President Electric Bond and Share Company, New York City

THOMAS E. MITTEN, President Philadelphia Rapid Transit Company, Philadelphia, Pennsylvania

RANDALL MORGAN, Vice-President United Gas Improvement Company, Philadelphia, Pennsylvania

J. K. NEWMAN, Chairman of Executive Committee American Cities Company, New Orleans, Louisiana

J. R. NUTT, President Citizens Savings and Trust Company, Cleveland, Ohio

E. H. OUTERBRIDGE, President Pantasote Company, New York City

J. S. PEVEAR President Birmingham Railway, Light and Power Company, Birmingham, Alabama

E. W. RICE, Jr., President General Electric Company, New York City

EDWIN W. ROBERTSON, President Columbia Railway, Gas and Electric Co., Columbia, South Carolina

E. N. SANDERSON, Sanderson and Porter, New York City

W. KESLEY SCHOEPF, President Cincinnati Traction Company, Cincinnati, Ohio

J. N. SHANNAHAN, President Newport News and Hampton Railway, Gas and Electric Co. Hampton, Virginia

THEODORE P. SHONTS, President Interborough Rapid Transit Company New York City

PAUL SHOUP, President Pacific Electric Railway Company, Los Angeles, California

CLEMENT C. SMITH, President Wisconsin Securities Company, Milwaukee, Wisconsin

JOHN J. STANLEY, President Cleveland Railways Company, Cleveland, Ohio

R. P. STEVENS, President Mahoning & Shenango Railway & Light Company New York, N. Y.

CHARLES A. STONE Stone and Webster, Boston, Mass.

J. J. STORROW, Lee, Higginson and Company, Boston, Massachusetts

J. F. STRICKLAND, President Dallas Railway Company, Dallas, Texas

KNOX TAYLOR, President Taylor-Wharton Iron and Steel Company High Bridge, New Jersey

A. W THOMPSON, Federal Manager Baltimore and Ohio Railroad Company, Baltimore, Maryland

W. B. TUTTLE, First Vice-President San Antonio Public Service Company, San Antonio, Texas

T. H. TUTWILER, President Memphis Street Railway Company, Memphis, Tennessee

WILLIAM VON PHUL, President United Railroads of San Francisco, San Francisco, California

G. W. WATTLES, Vice-President Omaha and Council Bluffs Street Railway Company, Omaha, Nebraska

EDWIN S. WEBSTER, Stone & Webster Management Corp., Boston, Mass.

H. H. WESTINGHOUSE, Chairman Board Westinghouse Traction Brake Company, New York City

THOMAS N. WHEELWRIGHT, President Virginia Railway and Power Company, Richmond, Virginia

JAMES G. WHITE, President J. G. White and Company, New York City

HARRISON WILLIAMS, 60 Broadway, New York City

TIMOTHY S. WILLIAMS, President Brooklyn Rapid Transit Company, Brooklyn, New York

GEORGE T. WILSON, Vice-President Equitable Life Assurance Company, New York City

J. H. WILSON, President Mobile Light and Railroad Company, Mobile, Alabama

AMERICAN ASSOCIATION NEWS

Committee of One Hundred Meets

Four Sub-Committees Appointed—Preparing Case for Early Presentation

THE committee of one hundred appointed by the American Electric Railway Association to prepare the case of the electric railway industry for the presentation to the Federal Commission, designated by the President of the United States, to investigate the electric railway situation, held its first meeting in New York on June 26. Chairman Tripp presided and in addition to the members of the committee Philip H. Gadsden, the member of the commission representing the American Electric Railway Association, was present.

Mr. Gadsden stated that the present plan of the commission contemplated holding hearings in Washington once or twice a week and that it was the present purpose not to consider individual cases except in so far as they might have bearing on the whole situation.

As a result of the meeting it was decided to appoint four sub-committees, one each on recommendations, presentation, finance, and information and service. The membership of the sub-committees is as follows:

Committee on recommendations: O. D. Young (chairman), H. G. Bradlee (vice-chairman), H. M. Byllesby, C. M. Clark, Frank W. Frueauff, Samuel Insull, Randall Morgan, J. J. Stanley, H. H. Westinghouse, E. N. Sanderson.

Committee on presentation: J. K. Choate (chairman), Philip J. Kealy (vice-chairman), E. K. Hall, A. W. Brady, Britton I. Budd, R. P. Stevens, Frank R. Ford, Francis T. Homer, J. D. Mortimer, Lucius S. Storrs.

Committee on information and service: Lucius H. Storrs (chairman), W. F. Ham (vice-chairman), Francis H. Sisson, W. R. Alberger, Barron G. Collier, B. C. Cobb, T. A. Cross, James H. McGraw, J. N. Shannahan, Britton I. Budd, T. S. Williams.

Committee on finance: H. L. Stuart (chairman), Thomas N. McCarter (vice-chairman), Samuel M. Curwen, Henry L. Doherty, Samuel Insull, A. B. Leach, Randall Morgan, E. W. Rice, Jr., Edwin S. Webster.

Under the direction of the committee of one hundred, of which Guy E. Tripp is chairman, the American Electric Railway Association is preparing the case of the electric railways, to be presented to the commission appointed by the President to investigate the electric railway situation.

It is now probable that a request will be made to the commission for a hearing to start in Washington on July 14 and to continue until the entire case is presented, which it is estimated will take two weeks.

The committee on presentation, under the chairmanship of J. K. Choate, and the committee on recommendations under the chairmanship of O. D. Young, will meet on July 7 to give formal approval to the tentative program which is already prepared. If this program is accepted, the case will be presented under three headings:

1. Present conditions of the industry.
2. The causes which have led to these conditions.
3. Suggested avenues of escape.

The association is endeavoring to present to the commission an array of witnesses who are thoroughly familiar with the various phases of electric railway operation, finance and economic theories which govern public utilities. The list includes some of the best-known men in America—financiers, economists and men thoroughly familiar with public life. It is commandeering the services of witnesses wherever the best men can be obtained. Chairman Tripp believes that the situation is one in which it is the duty of every man interested to render what service he can.

An opportunity is offered for presenting the case of the railways in such a way as to impress upon the people of the United States the desperate straits in which the industry is at present, and the necessity for immediate action in the interest of the public, the employees and of the owners of these properties.

Presentation of the case, under Chairman Choate, will be in direct charge of a railway attorney of national reputation, who has participated in a number of investigations along similar lines and who is thoroughly familiar with the subject. As far as possible the evidence will be brought before the commission in a sequence which will develop the case from the start to the conclusion.

Among the important evidence to be presented is that dealing with the present price level and its probable maintenance for an indefinite period. It is the intention of the committee to show that what was at first considered a matter of short duration is in reality a condition that is likely to maintain for a long period of time.

All of the various phases of the situation, the causes which have led up to them, the various remedies that have either been suggested or applied in particular situations, are to be brought out. Included is a very complete and thorough analysis of the statistics of electric railways as developed by the United States Census as well as later statistics which have been compiled by the association for that purpose.

Equipment Committee Holds Busy Session

AT THE MEETING of the equipment committee of the Engineering Association, held in New York City on June 26, the chairman, Daniel Durie, Connellsville, Pa., presided, and the others present included W. S. Adams, Philadelphia, Pa.; W. W. Brown, Brooklyn, N. Y., representing W. G. Gove; R. H. Dalgleish, Washington, D. C.; E. D. Priest, Schenectady, N. Y.; K. A. Simmon, Pittsburgh, Pa.; N. B. Trist, East Pittsburgh, Pa., and F. A. Vial, Chicago, Ill., representing G. W. Lyndon.

The sub-committee appointed to consider the development of check gages and templets for wheels and truck parts presented recommendations for wheel mounting, a check gage and a rotundity gage for wheels together with terms and gaging points for wheels and tracks. They also included tables of dimensions for standard wheel designs for use on electric railways.

The sub-committee on standardization of motor parts presented a list believed to cover the best possible field for standardization and recommended that the parts listed be considered in connection with any program for future work. The limited time which had been available for this work prevented the formulation of definite recommendations for standardization.

The sub-committee appointed to co-operate with the National Fire Protective Association in formulating a code for 1200-volt car wiring reported that it had been co-operating with this association, but at present no definite recommendations could be made.

Committee Meetings of Week

THIS is a busy time at association headquarters. Besides the equipment committee, whose meeting is mentioned in a separate paragraph, the committee on collection and registration of fares held a meeting during this past week. Those in attendance were: W. J. Harvie, chairman, E. C. Spring, C. W. Stocks and L. H. Palmer. At this meeting the final draft of the report was prepared.

During the coming week committee meetings scheduled include the following: July 7, code of traffic principles of the T. & T. Association and recommendation and presentation of the committee of 100; July 8, terminal contracts of the T. & T. Association, information and service of the committee of 100, and the subcommittee on exhibits of the main association; July 9, executive committee of the T. & T. Association and finance committee of the committee of 100; July 10, full meeting of committee of 100: July 11. sub-committee of committee on zone fares.

"Tramway & Railway World" Discusses "Journal's" Glasgow Articles

A PLEASANT note of gentle raillery against the American flat fare and free transfer is sounded by the *Tramway & Railway World* of London, in its May 15 review of Walter Jackson's first three articles on "The Zone System in Practice." These were the Glasgow articles published in the ELECTRIC RAILWAY JOURNAL for Feb. 22, March 8 and March 29. Among other things, it says:

> The native home of the tramway is in a rather confused state, and its guardians are looking for some way out of the trouble. Tramway managers in the United States are finding that the incomes of their undertakings do not balance expenditure, and as Wilkins Micawber testified from the depths of experience, that means misery. For a long time the cause of the trouble seemed difficult to locate. "Here," said the American tramway managers, in effect, "we have an ideal system for collecting cash; every passenger, no matter how short the distance he travels, must put down his nickel. No fuss, no trouble, no worry in collection—it is all so simple a child could collect the fares—and yet there is the deficit. What is wrong?"
>
> In the days of their prosperity the tramway managers in New York, and beyond, had seen and smiled at the British method of charging and collecting fares. It had seemed to them much trouble for very little gain. Cent, 2-cent, 3-cent, 4-cent, and so on, tickets, with a conductor ranging through the car continually collecting coins and punching tickets, carrying a ticket bank as long as his forearm, struck our transatlantic friends as very nearly the acme of the ridiculous. They had escaped all that by the mere application of common sense at the start—charge the passenger 5 cents when he boards the car, and there is an end of it.
>
> The success of British tramway undertakings, which carry enormous numbers of passengers at the equivalent of a 2-cent fare, has latterly, however, begun to give them quite an air of respectability in the eyes of United States managers, and the zone system of charging fares shares in the enhanced repute. After all, for a thickly-populated old country zone fares were not altogether to be despised; but, of course, for a country like America the uniform charge was the more suitable. In that tolerant frame of mind, our transatlantic friends arrived at 1914. Then a mysterious disease began to attack all grades and classes of tramway undertakings. Traffic increased, and receipts mounted up, but so also did expenditure, and while the increase in receipts slowed down, the additions to expenditure quickened pace. Indeed, it seemed as though things were working backwards, and that the more traffic there was on a system the worse were the financial results. Here was a mystery. At last it occurred to someone to ask if every passenger who paid a 5-cent fare really defrayed the cost of his ride. Nobody knew; short-distance, middling-distance, and long-distance passengers were all lumped together, and the only thing that remained certain was that cars did not pay the expenses of their journeys. To avoid bankruptcy, some tramway undertakings have adopted the expedient of putting a limit to the 5-cent journey, and making an additional charge for any distance beyond. Results have shown improvement, and therefore the question whether or not the zone fare system should be adopted in America has become a live topic over there.
>
> Up till about twenty years ago it was a widespread belief that the first-class passengers on railways were the chief contributors to revenue, though railway officials had long known that the case was exactly opposite. The report of the Peel commission in 1867 clearly showed that the backbone of railway passenger revenue was the third-class, but the superstitious reverence for the first-class survived till the last few years of the nineteenth century, when the condition of railway affairs became so critical that inquiry into all the facts became an absolute necessity. After that, the first-class passenger traffic was recognized as a costly form of advertising.
>
> A similar process has taken place with regard to long-distance traffic on the tramways. In the early days the through passenger was considered most important by tramway authorities, but the essential quality of a tramway system is its adaptability to the needs of the short-distance traveler. Experience has shown that the latter is not only the largest factor, but also that he pays best for his ride. Mr. Jackson brings out the point clearly in his observation of the Glasgow tramways.

Our contemporary concludes its review by referring to the problem of auditing and checking the great variety of fares required with the zone system, but expresses the opinion this is a light task compared with that of checking the time limits and other features of the American transfer, and says that in this opinion "everyone at all familiar with the difficulties of inspection and the abuses to which the latter gives rise, will emphatically agree."

LETTER TO THE EDITORS

How the Use of Standards May Be Stimulated

PUBLIC SERVICE RAILWAY
NEWARK, N. J., June 30, 1919.

To the Editors:

I have read with interest the editorial in your last issue about standards. It seems to me that we now have a splendid opportunity to make great progress in standards. As you say, we have learned a lesson from the war, and, besides, the manufacturers are now more closely allied with the association than ever before.

I believe it would be a simple matter, for example, to limit all of the rail sections rolled to standard sections as designated, say, by the way committee of the association. When an order is placed for a rail of a type other than the standards set forth, the manufacturer would at once take up the question with the Way Committee, or some other authorized agent of the association. Then, if there was some good reason to have the extra section rolled, the manufacturer would be advised that it was O.K.; otherwise, the manufacturer would refuse to roll the rail. Similar arrangements could be made for mechanical and other parts that are standards.

MARTIN SCHREIBER, Chief Engineer.

Recent Happenings in Great Britain

Review of Legislation That Is in Prospect—London Traffic Unprecedented—Military Motor Lorries Converted to Passenger Service

(From Our Regular Correspondent)

The course of legislation affecting traction interests in Great Britain continued to be of much interest during May. Events seem to be now fairly on the way toward the state of things in which national control, unification and co-ordination will take the place of individualism. The hope is for greater economy and efficiency; the fear is of the smothering of individual enterprise and the paralysing effect of red tape and bureaucracy.

GOVERNMENT'S BILL MODIFIED

The Ministry of Ways and Communications bill has at length passed through its long period of discussion and criticism by a standing committee of the House of Commons. It has been modified in some respects, chiefly in the direction of lessening the autocratic powers to be conferred on the new minister, and for retaining more Parliamentary control. The minister is to act with the help of advisory committees, and when he proposes to embark on new schemes costing more than £1,000,000 he must get the sanction of Parliament instead of proceeding by orders in Council.

In general, however, the wide powers of the Minister are retained for dealing with all systems of transportation—unifying, co-ordinating and improving—but municipally-owned tramways are still excluded from the scheme. The powers are so wide and general that it is not possible to say exactly what the minister may do. The bill will probably be passed into law during the summer or autumn.

The other leading measure affecting traction interests—the electricity supply bill—passed its second reading in the House of Commons on May 14. As it is a long and complex bill and as it touches so many interests, its detail consideration by a committee is likely to be protracted.

CHEAP ELECTRICITY THE AIM

The fundamental object of this measure is to provide a cheap and abundant supply of electricity for all purposes throughout the United Kingdom. The main organization proposed consists of a central controlling body called the electricity commissioners and a number of district electricity boards. The commissioners will act under the general direction of Minister of Ways and Communications. They will divide the country into districts, and for each district they will constitute a District electricity board. These boards will be composed of representatives of local authorities, companies and other authorized undertakers, large consumers and labor.

The district boards will take over all generating stations and main transmission lines, erect new stations and extend and consolidate the whole system of supply on uniform lines. Distribution to consumers will remain in the hands of the existing authorities, municipal or company. Financing is to be done locally so far as possible.

The weak point in the bill is that so many of the powers are to be permissive instead of mandatory. For example, the commissioners "may" set up a board for each district. So some districts may have boards and some not. Yet one of the essentials for a national supply is uniformity. Necessary provision is made for technical knowledge and advice.

The ideal aimed at is expected to be the shutting down of many small stations and the substitution therefor of a few enormous stations feeding into great main transmission lines, from which distribution for all purposes will take place. The two leading kinds of opposition to the scheme promise to be those of the municipalities which will be shorn of some of their powers, and a part at least of the engineering and manufacturing interests who object to the great powers to be conferred on the district boards, and want more freedom and room for private enterprise.

CROWDING ON THE UNDERGROUND

There has been a fierce agitation among London members of Parliament in connection with the overcrowded state of the underground railways and the tramcars and the omnibuses and also over the subject of the increased fares. They have had interviews with leading officers of the various undertakings, who tried to convince them that everything possible was being done to overcome the difficulties. They have sent deputations to the Local Government Board and to the Board of Trade, and these departments have promised to do what they can. The upshot of the matter is that the transport authorities cannot help themselves for the time being. Plenty of new rolling stock is on order to meet the unprecedented demand for accommodation, but only now after long waiting does there seem to be a prospect of getting some new cars delivered. Labor is getting more plentiful, but material is still scarce. As for cost, it is beyond words.

It is probably safe to say that no fresh capital expenditure incurred in present conditions can be remunerative, despite increased fares. The first sensible relief from congestion may not come till the autumn or winter, by which time London should be considerably emptied of its present excess of temporary population and troop traffic should have died down. For the present the local London passengers are as the sands of the seashore for multitude; they are unprecedented, overwhelming. Only the enormous increases in wages and other working expenses prevent the transportation concerns from being in a state of financial prosperity.

This London transport agitation led in the end of May to the Government consenting to appoint a select committee of the House of Commons to inquire into the subject and propose remedies. The committee promptly started work in the beginning of June before Parliament rose for the Whitsuntide recess. The members continued hearing evidence during the holiday time. In the meanwhile a new phenomenon burst upon the eyes of Londoners early in June in the shape of a number of military motor lorries converted into omnibuses by the provision of cross seats. They are no longer needed for war, and they are being used to alleviate congestion until more omnibuses of the ordinary kind can be built.

MR. STANLEY UNDERGROUND CHAIRMAN

A man who is about once more to be officially concerned almost more than anybody else with London transport problems in their underground railway and street omnibus aspects is Sir Albert Stanley. Owing to persistent ill health he has been obliged to relinquish his office of President of the Board of Trade, and on the last day of May he sailed for America in the hope that the visit would re-establish his health. Before he left he was elected chairman of the Underground Electric Railways, London, Ltd., and he thus returns to a position of even more influence than he formerly occupied in connection with the associated London transport undertakings.

Sir Albert was made managing director of London underground railway systems more than ten years ago. The business developed enormously under his administrative talent. Then in the earlier period of the war he, like a number of other capable railway men, was induced for the time being to leave his own occupation and to join the government in order to give practical help in time of emergency. He was appointed President of the Board of Trade, and later on in recognition of his services in that capacity he received the honor of Knighthood. He has carried on his work with little external show, but with much efficiency. The good wishes of all who know him go with him to America, along with the hope for his speedy return in restored health to take up the great task, now more urgent than ever, of developing the railways and other undertakings with which he is again connected.

Every effort is being made in this country to hasten the renewal of tramway tracks worn out during the war. A number of tramway authorities have also been in the market lately for additional steam and electric plant and cars. There is much difficulty and delay in getting the wheels of production into motion again, and that despite the fact that there are about 1,000,000 men discharged from the army who cannot find employment.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Winnipeg Strike Over

Six Weeks of Disorder, During Most of Which City Went Entirely Without Railway Service

Winnipeg's general sympathetic strike of 35,000 workers was called off by the strike committee at 11 o'clock on the morning of June 26, having lasted exactly six weeks, and having accomplished practically nothing. The account of the trouble in the ELECTRIC RAILWAY JOURNAL for June 21, page 1238, traced, briefly the early developments of the strike and told of the attempt of the strike leaders to tie-up completely all industries and public utilities in the city.

The splendid voluntary services of the citizens of the city, who resisted such a ruthless assault, and who saw in it an attempt to establish the rule of the soviet in Winnipeg, kept all utilities operating, and after the third week of the strike employees began to drift back to their jobs. The City Council of Winnipeg, however, decided not to take back any employees who refused to sign a pledge expressing complete loyalty to the city, declining to join a union affiliated with any outside organization, and also refusing at all times to go out on a sympathetic strike. This applied to the firemen and policemen, who went out on strike at the call of the strike committee. At present all utilities are manned by regular staffs, while most of the former police and firemen are back on their old jobs, having "signed the pledge."

The ignominious ending of the strike, resulting in complete defeat for the strikers, has brought about a serious split in the labor ranks. The saner element are dissociating themselves from the more radical trades unionists, and denunciation of the strike leaders by the mass of the workers is general.

As stated in previous dispatches the Winnipeg Electric Railway was ordered by the City Council to resume service after the strike had been in progress four weeks. The company made an appeal to the men to return, but without success. On June 17, however, A. W. McLimont, vice-president and general manager, issued an ultimatum to the effect that employees who did not report and were not available when required to enable the company to resume service would be replaced by permanent new employees and lose their seniority. It was further announced that new employees taken into the service would not be dismissed to make places for any old employees who subsequently decided to return to duty.

This ultimatum expired at 8 a.m., on June 19. It resulted in several employees returning to work. These, together with supervisors and inspectors, manned the cars and gave service on the principal lines in the city. Fourteen cars were operated on June 19, and this number was gradually increased up to fifty cars by the time the strike was called off. Upon "peace" being declared the company's employees returned in a body and normal service was soon restored.

On the whole, the strike was a very orderly one. On two occasions the strikers clashed with the special police, but only in the encounter of June 21 were cars running. In this instance the crowd attacked the car, pulled off the trolley, smashed every window, and tried many times in vain to upset it. Unable to do this they piled newspapers in the interior and set them on fire. Just at this moment a detachment of mounted police arrived on the scene, the fire was put out, and the car was run back to the carhouse. The mounted police, stoned by the crowd, retaliated with their revolvers. Two of the crowd were killed and scores injured. As an offshoot of the strike, strike leaders face charges of seditious conspiracy.

The strike was called off by the strike committee "unconditionally," but the Provincial Government has appointed Judge H. A. Robson, a commission to inquire into the origin and the whole circumstances surrounding the strike.

Wages Readjusted

The co-operative plan of the Philadelphia (Pa.) Rapid Transit Company now in effect provides a permanent basis of adjusting the wages of the employees of the company by averaging the wage scales of the four cities covered by the War Labor Board wage award of August, 1918, namely, Chicago, Cleveland, Detroit and Buffalo.

The maximum wage paid the Detroit trainmen has under the recent settlement now been advanced to 60 cents an hour. The maximum in the cities of Chicago, Cleveland and Buffalo is 48 cents per hour. This produces an average maximum of 51 cents an hour for the Philadelphia trainmen, viz.: First three months, 45 cents an hour; next nine months, 48 cents an hour; thereafter, 51 cents an hour.

At a meeting of the transportation committee, established under the co-operative plan, held on July 1, the above wage scale was announced to become effective at once.

The wages of other employees will be adjusted according to the provisions of the co-operative plan as soon as the necessary facts and figures are obtainable.

Publicity Pays in Buffalo

Marked Change in Attitude of Public Toward International Railway Follows Publicity Campaign

There has been a decided change in sentiment in Buffalo, N. Y., toward the International Railway since the company started its publicity campaign about two years ago and turned the spotlight upon its financial condition and its internal affairs.

COMPANY ESTABLISHES PAPER

One of the biggest factors in bringing about this change in sentiment is the publication of the *Service Spot Light*, the editor of which has never been publicly announced by the company. This little publication is issued every Monday morning and is placed in the "Take One" boxes which have been installed in all of the cars operated in the city and on the interurban lines.

The first and second pages are occupied every week by an editorial in which the company usually takes the position that it is being unfairly attacked by outside influences and individuals who do not understand the real situation in the company's internal affairs. In a recent issue the *Service Spot Light* took a shot at the Mayor for his recent speech before the state conference of mayors at Schnectady in which he said the company is not playing fair with the city; that it promoted the recent strike of the company's platform men and that it never was sincere in the service-at-cost proceedings which have since been abandoned.

Space is given in the little paper for brief letters from car riders praising or criticising motormen and conductors. Letters which give the badge numbers of the crew are translated by the company so that the names of the crew are published. In other space current events are listed which should attract people and add to travel over the company's lines, and considerable space is given to facts about the International Railway's suburban and freight and express service to points along its lines, and to jokes.

DISPLAY ADVERTISING A FEATURE

Large display advertisements are appearing in rural newspapers in localities through which the company operates cars pointing out why interurban fares have been increased and asking the public whether or not it is fair to criticise the company merely because it has raised fares to meet increased cost of operation.

For a time the company's publicity department used considerable newspaper advertising space to offset hostile newspaper articles, but this form of advertising has been discontinued. Another campaign carried articles signed by E. G. Connette, president of the company. These articles were displayed on posters in the car windows and swinging signs suspended from the roof of the car. Each of these different forms of publicity has done its share of the work of converting the public, according to President Connette.

Through the medium of the *Service Spot Light* the International is showing the car riders how much more it is costing to operate the lines than it did five years ago; how much more is being paid out in wages to all of its employees; how much is being paid yearly for paving between its tracks while this paving is constantly being destroyed by heavy trucks and other vehicles not owned or operated by the International, and how the cars are delayed beyond the control of the company's operating force.

Very few letters are now received criticising the company and its officials. For a time when the company was under newspaper fire thousands of letters were received monthly scoring the alleged inefficient methods of the company. The vote against higher fares, almost five to one, also indicated the hostile attitude of the general public. All this has now apparently been changed, and in its place has arisen an attitude of helpfulness toward the company on the part of its riders through a keener appreciation on their part of the problems by which the company is confronted.

New Jersey Award Announced

War Labor Board Makes Public Its Findings but Reserves Decision on Important Issue

The War Labor Board made awards on June 26 in the dispute between the Public Service Railway and its employees, the awards being based, under the 1918 agreement for arbitration by the board, on the evidence taken at Newark since the settlement of the strike last March.

HOURS A PROBLEM

Among the demands of the employees was that all runs be made straight runs, thus eliminating gaps, and that the working day be nine hours for ten hours pay, that runs of eight and less than nine hours be paid on the basis of ten hours work and that runs of six and less than eight hours be paid on the basis of nine hours work. In announcing its ruling on this demand the joint chairmen said:

> At this time we are unable to grant the demands of the men as made. We do think, however, that some revision of the company's schedules should be made, if possible, to minimize the spread time and provide a full day's work for their trainmen. The spread time on some of the company's runs is now unduly long, and we recognize the justice of the men's claim for relief from such runs.
>
> To grant the demand of the men as made in Paragraph V (of the employees' claims) would mean a radical revision of the company's schedules. The company maintains that such a revision is entirely impracticable. The company has considerably more than 1500 runs of nine hours or over.
>
> We feel that a more careful study must be made before we can pass on this question. The evidence introduced at the hearings did not give us sufficient information. This is a work of painstaking study and care, and we are delegating to our electric railway examiner, Charlton Ogburn, the task of making this study and reporting on what revision, if any, can be made in the company's schedule toward meeting these demands of the men, and would authorize him to make a ruling covering the demands embodied in paragraph five of the complainant's petition, after he has ascertained to what extent the company's schedules can be revised in a manner that is practicable. His ruling is to be subject, however, to the approval and adoption of the joint chairmen as arbitrators and is to be covered by their award.

The board confined its awards to the platform men. The demands of shopmen and miscellaneous employees of the company were referred back for special hearings.

The other issues before the arbitrators for the most part related to details of the working conditions. In all there were twenty-four issues submitted and on several of them the parties were in agreement already. These issues, however, were incorporated in the awards of June 26 at the request of the employees.

The first four demands related to union recognition, or rather presupposed recognition of the union by the company. On this the board said:

> The employees understood at the hearing, that the board would not grant them and the demands must be taken as having been abandoned by the employees. We rule, however, that under the rulings of this board, the company must do nothing to prevent or discourage its employees from becoming a member of a union and must in no way discriminate against an employee because he is a member of a union. These employees made no specific complaint in this regard, however, and so far as the evidence shows this company gives full right to its employees to join a union, and no charge or discrimination was made against the company in this regard.

Demands of employees that men be selected for snowplow work on basis of seniority were denied by the board on the ground that "the present practice of the company is satisfactory."

The demand of the men for special pay for waiting time was denied because "the present practice of the company is fair and equitable in paying for their waiting time only at the regular wage, except where overtime is involved."

The demand of the men for additional pay for instructing new men was not granted in full, but the board did order that all instructors should receive 5 cents an hour additional for actual platform time in such work.

The demand that the company pay for the meals of crews when they are prevented from going to their homes at their regular meal time was granted. It is said this practice is substantially in operation now.

The demand for stools for motormen and conductors was granted, the use of the stools, however, to be subject to regulation by the company.

The demand of the men that free transportation be extended to employees in civilian attire, as well as to those in uniform, was granted. The board thinks, however, that this practice must be safeguarded from abuse and suggests that the officers of the company meet committee of employees and endeavor to agree upon the form of free transportation to be adopted. If this conference fails to agree, Mr. Ogburn, examiner for the board, is to make the decision as to the form.

The demands of the men embodied in Paragraph 15 of their complaint, for pay for certain kinds of extra work were denied because the matter was covered in the findings for increased pay made by the board July 31 last.

Operators of one-man cars are awarded 5 cents an hour additional pay.

The demands of the men relating to uniforms were granted, the board holding that "the men should have a right to buy their uniforms in the open market provided they conform to the specifications of the company."

The next demand related to bulletin boards at the carhouses and the right of the employees to post notices thereon. This issue was settled at the time the strike was called off, but the board was asked to interpret the agreement. On this point the board said:

> Our construction is, that the company, by giving the men the right to put their notice on the company's bulletin boards in the carhouses, has complied with the agreement and that the company has the option of saying whether the men may use their own bulletin boards or the company's.

The awards are effective as of May 1, 1919, and continue until peace is formally announced by executive proclamation. Should any difference arise relative to construction the secretary of the board is authorized to appoint an examiner, who shall hear such differences and who shall announce his decision, from which an appeal may be taken to the arbitrators.

The men originally demanded a nine-hour day with ten hours' pay. The National War Labor Board decided on other matters, but, as previously stated, referred this particular subject back to Mr. Ogburn for further investigation and report. In the meantime the men became dissatisfied with the decision and threatened to strike. They then demanded an eight-hour day with 65 cents an hour. Mr. Ogburn on July 2 passed upon the matter of hours and granted the original demand of the men for a nine-hour day with ten hours' pay. On the afternoon of July 2 the state conference board representing the employees met President McCarter and other officers of the company and both sides agreed to accept the findings of the War Labor Board. The company further agreed to enter into a civil contract binding both parties to the terms of the award for a period of two years.

Cleveland Wages Discussed

Men There Want Twelve Cents More an Hour—City Against Interfering

Problems arising from the demands of the conductors and motormen of the Cleveland (Ohio) Railway for an increase of 12 cents an hour in wages were discussed at the regular meeting of the City Council of Cleveland, Ohio, on the evening of June 23. Members went on record against interfering in negotiations between the company and its employees.

J. J. Stanley, president of the Cleveland Railway, had made a proposal which involves a profit-sharing idea and this may be discussed at a public meeting which was set for the afternoon of July 2. Mr. Stanley proposed that the men be granted the increase asked and at the same time that the rate of dividends to stockholders be advanced from 6 per cent to 7 per cent. Retaining the present rate of fare, he suggested that if the receipts then failed to take care of the advance in wages and the increase in return to investors, both the wages of the men and the rate of return on the investment be reduced, but not below the present figures.

In this connection he advocated the removal of the minimum and maximum fare limits from the Tayler franchise. Council members, however, objected to this. They said they would take care of any future emergency just as on previous occasions.

A request has been made of Council that operating allowances be increased from 20 to 23 cents a car-mile and that the maintenance allowance be raised from 5 cents a car-mile to an average of 9 cents annually.

State Credit and a Public Manager

Calvin Coolidge, Governor of Massachusetts, on June 27, sent the following message to the Legislature:

> The situation in relation to the street railways of Massachusetts, as pointed out in the inaugural address, is one of great difficulty. Some of them are not earning enough money to meet their expenditures. This can have only one result if continued—that is, the suspension of operations.
>
> In many localities the operation of street railways is a public necessity. It would be a great public inconvenience if, on account of conditions which it is trusted may be temporary, street railways should cease to operate or if their operation should be greatly impaired.
>
> This is a condition which exists all over the nation and investigation has been undertaken by the federal authorities. It is hoped that it will be temporary. It is, however, very desirable that some emergency legislation should be provided which could be put into operation if the contingency arises.
>
> It is, therefore, recommended that provision be made for the temporary operation of a street railway by a public manager, so that such street railway may be under the exclusive control of public officers and public agents, with authority to fix fares subject to revision by the Public Service Commission; and that temporarily for the public convenience in order to operate street railways hereafter placed under such control, provision be made for extending the credit of the commonwealth and of the cities and towns in which such street railways operate.
>
> Such management should be approved and supervised by the Public Service Commission, and public credit should be extended only so far as is necessary to keep the roads in operation by taking cars of valid operating deficits, for a limited period in any event, and only so far as existing necessities require, without in any way impairing or restricting a further and different action in the future, or imposing in any event an undue burden upon the taxpayers.

Pittsburgh Arbitration Completed

Final Hearing Before the War Labor Board on Wages Held in Washington

Final argument was heard before Chairman Basil M. Manly and Frederick Judson of the War Labor Board in Washington on June 25, on the demand of the platform employees of the Pittsburgh (Pa.) Railways for a 12-cent increase in wages.

Counsel for the receiver of the railway showed that increases in wages ranging from 65 to 95 per cent have been received by the Pittsburgh men since 1914. At the present scale a man working thirty days a month can earn $153, and in twenty-seven days he can make $125. It was represented by counsel that this constituted a very favorable showing as compared with the returns from labor in skilled trades.

In rebuttal counsel for the employees attacked the scale of 1914, reached by arbitration before Judge Joseph Buffington, of the United States court of Western Pennsylvania.

The principal argument of counsel for the receivers was based upon inability of the company to pay. Mr. Alter for the company declared:

> During the first four months of the current year there was a deficit of $494,707 without taking into consideration interest on bonds, rentals and other items of fixed charge. The total deficit for the period was $1,549,849.
>
> If the wage increases now asked had been in effect during those four months the company would have lacked $81,698 of having enough to pay mere operating expenses and taxes.

Pittsburgh's experience with fare increases has not been very encouraging, according to Mr. Alter. Neither the 5½-cent fare nor the 5-7 cent area system brought revenues up as much as had been expected. The 5½-cent fare, indeed, did not increase them at all. The proposal to institute a universal 7½-cent fare by tickets, with a 10-cent cash rate on Aug. 1 does not offer any hope of sufficient increment in revenues to provide for any such wage increase as the men want, either, Mr. Alter informed the board. He said further that "any present increase in wages can be accomplished only by abandonment of rehabilitation measures essential to safe operation of the lines."

The finding of the War Labor Board will not constitute a final award in the case. Under the terms of the agreement which ended the four-day May strike in Pittsburgh, the finding will be subject to review by the United States District Court, under which receivers are operating the Pittsburgh railways. If a decision favoring the men is negatived by the court, the employees have the right to strike again.

Engineering Department

Bill Introduced to Abolish Department of Interior and Substitute Department of Public Works

Far-reaching changes in the executive machinery of the federal government are proposed in bills introduced in each house of Congress on June 25. The federal Department of the Interior will become the Department of Public Works, if legislation proposed and indorsed by the National Service Committee of the Engineering Council is enacted. The main idea is to assemble all engineering activities of the government in one department. Such bureaus of the Interior Department as are non-engineering in character are to be placed under the jurisdiction of appropriate departments. Thus, the Patent Office is to be placed under the Department of Commerce, the Bureau of Pensions under the Treasury Department and the Bureau of Education under the Department of Labor.

At the same time engineering bureaus from other departments are to be included in the Department of Public Works. Thus, this department is slated to absorb the Supervising Architect's Office of the Treasury Department, the Construction Division, River and Harbor Improvements, Mississippi River Commission, and California Débris Commission of the War Department; the Bureau of Standards and the Coast and Geodetic Survey of the Department of Commerce, and the Bureau of Public Roads and the Forest Service of the Department of Agriculture.

The bill provides that the Secretary of Public Works "shall by training and experience be qualified to administer the affairs of the department and to evaluate the technical principles and operations involved in the work thereof." The measure excepts from the foregoing provision the Cabinet officer who is at the head of the department at the time of the passage of the bill. It was introduced in the upper House by Senator Wesley L. Jones, of Washington, and in the lower House by Representative Frank C. Reavis of Nebraska.

Ottawa Men Insist on Wage Increase

The Ottawa (Ont.) Electric Street Railway and its employees who have been negotiating for some time past over the demand by the men for an increase in wages, have arrived at a deadlock, and fears were expressed on both sides that a tie-up of the railway system was inevitable on July 1 when the present agreement expired, unless the only solution which they believe fits the situation is introduced by the municipality.

The company through its superintendent, Major F. D. Burpee, explained in a lengthy statement that the situation of the company financially was such that it was utterly impossible for the increases demanded by the men to be granted.

The solution sought by both the employees and the company was that notwithstanding the franchise agreement which the company has with the city, whereby it is prohibited from charging a higher transportation charge for passengers than 5 cents straight, the city should agree to allow the railway to increase its fares, so as to take care of the increased expenditure it would be called upon to meet should the demands of its employees be complied with.

Wage Case in East St. Louis Argued

A hearing on the demands of the conductors and motormen on the electric railways of East St. Louis, Ill., and neighboring cities for an eight-hour day and for a wage increase amounting almost to 100 per cent was held at East St. Louis, Ill., recently before Charlton D. Ogburn, examiner appointed by the War Labor Board.

W. H. Sawyer, president of the East St. Louis & Suburban Railway, testified that it was utterly impossible for the company to grant any increase in wages under present conditions. He declared that prices of the necessaries of life are now on the downward trend and it was his belief that the wage paid by the company was a "living wage."

The car crews of East St. Louis now working under a sliding scale of 41 to 45 cents an hour, are asking 80 cents an hour. The employees of the interurban lines leading out of East St Louis, now receiving 47 cents an hour, are asking for 87½ cents. Both demand an eight-hour day. The companies involved besides the East St. Louis & Suburban Company are the East St. Louis, Columbia & Waterloo Railway and the East St. Louis, Alton & Granite City Railway.

Rapid Transit Report Presented for Cleveland

A report on the proposed underground rapid transit road, prepared by R. M. Brinkeroff of Barclay Parsons & Clapp, New York, was placed before the Rapid Transit Commission of Cleveland, Ohio, on July 2. It is based on the needs of a population estimated at 1,000,000 now, 1,500,000 within the next ten years and 2,000,000 within twenty years.

Two main arteries, one east and the other west, are suggested. A system of subway loops is provided in the Public Square. For early construction a subway is suggested under Superior Avenue to East Twelfth Street to take care of the traffic on the Superior, St. Clair and Pain Avenue lines. Another suggestion is that a subway be built under Ontario Street to the Central market house to take care of traffic on the lines southeast and southwest. A digest of the report is being prepared for publication in the ELECTRIC RAILWAY JOURNAL.

News Notes

Berlin Takes Over Surface Lines.—The municipality of Greater Berlin has acquired the metropolitan surface lines for a consideration of $25,000,000. The shareholders were paid off in municipal bonds with a premium.

Employees Reject Wage Proffer.—The striking employees of the Toronto (Ont.) Railway in mass meeting on June 27 voted 1521 to 11 against accepting an offer of 48 cents an hour made by the Ontario Railway Board, which has taken over the line. The men demand 55 cents an hour.

Shamokin Employees on Strike.—The employees of the Shamokin & Mount Carmel Transit Company, Shamokin, Pa., went on strike on June 14 for higher wages and shorter hours. The men have been receiving 38 cents an hour for an eleven-hour day. They ask 45 cents an hour for a nine-hour day and time and a half for overtime. The company offered 40 cents an hour for a ten-hour day.

Union Chartered.—The Oklahoma Union Railway Employees' Association of Tulsa, Okla., has been granted a charter by Secretary of State Lyon. This is a labor union embracing employees of the Oklahoma Union Railway, which operates an interurban line from Tulsa to Keifer and the local systems in Tulsa and Sapulpa. It was formed some time ago and its recognition by the interurban company was forced by a strike. The association has no capital stock.

Changes in Yale's Electrical Staff.—Prof. C. F. Scott, head of the electrical engineering department of Sheffield Scientific School at Yale University, has announced several appointments of assistant professors of electrical engineering. One of these is L. W. W. Morrow, formerly director of the School of Engineering at the University of Oklahoma. Another is that of G. F. Wittig, at one time with Westinghouse, Church, Kerr & Company, and later at the University of Alabama and the University of Pennsylvania. Another is H. M. Turner, for several years in the electrical engineering department of the University of Minnesota.

Seattle Men Insistent.—The members of the Seattle local of the street railway men's union have voted to stand squarely back of their demands for increased wages, taking the position that the increase asked is not unreasonable from the standpoint of the present cost of living. Other municipal employees have asked increases of $60 a month above the maximum rates paid in 1916 on the theory that actual living costs have increased that much, and the railway men will co-operate with the other city employees to obtain advances. A publicity committee has been appointed to lay the facts before the public, in an effort to obtain the co-operation of the patrons of the Municipal Railway.

Arbitration Arranged in Davenport.—A strike of motormen and conductors of the Tri-City Railway, Davenport, Iowa, was averted when the company agreed to arbitrate differences with the men. The committee representing the men and officials of the company decided that arbitration should be under the Rock Island city franchise. This grant provides that all differences of wage and working conditions shall be submitted to a board of three composed of one member appointed by the company and one by the men, with the third selected by the two previously appointed. The company originally demanded that its ability to pay an increased wage be considered. The men are said to be willing to postpone arbitration if the company will agree to negotiate a wage increase over the company offer of 46, 48 and 50 cents an hour if a 7-cent fare is allowed by the Public Utilities Commission, and to arbitrate a reduction in wages if the 7-cent fare is not granted.

Wage Contract Ordered Extended.—Federal Judge Martin J. Wade has ordered that the contract between the Des Moines (Iowa) City Railway and its employees be extended for another period of six months. Judge Wade's opinion was in answer to a petition filed by the receivers of the Des Moines City Railway. The contract governs working conditions, wage scales and methods of their adjustments. One clause of the contract provides that differences on the wage question are to be submitted to a board of arbitration and for notice of contemplated or requested changes in wage scales to be served on either party thirty days previous to March 1, 1919. The employees have made the request for higher wages within the allotted time so that the next step in the controversy will probably be the appointment of the arbitration board. In the hearing before Judge Wade, Emil G. Schmidt, one of the receivers and the president of the Des Moines City Railway, testified that the company's books show a deficit of $23,522 for the first five months of 1919.

Program of Meeting

Illinois Electric Railways Association

The Illinois Electric Railways Association will hold its mid-summer meeting at the Rockford County Club, Rockford, Ill., on July 16. The forenoon will be devoted to several interesting papers. In the afternoon, golf, a trip to Camp Grant, swimming, etc., will be provided for the entertainment of those attending.

Financial and Corporate

Operating Rates Up 5.34 Per Cent in March

The Effect of Increased Wages and Prices for Materials Is Reflected in Detailed Accounts

The operations of electric railways for the month of March as reflected in the tables compiled by the information bureau of the American Electric Railway Association indicate that throughout the country there has been little if any improvement during the month. Increases in operating expenses continue to outstrip increases in revenues and the net return is in consequence correspondingly diminished. For the country as a whole the decline is apparently a slower one than has heretofore been registered and this fact affords the only possible consolation that may be derived from the otherwise depressing situation revealed by the returns shown in the accompanying tables.

In Table I a comparison is made with the figures for March, 1918, of fifty-one companies, and in Table II the same figures are shown on a per car-mile basis. Referring to Table I it will be seen that the operating revenue increased 14.71 per cent, a healthy growth. This advance, however, is more than wiped out by an increase of 23.47 per cent in the expenses. The result is a net revenue from operations of 9.08 cents in 1919 as compared with 9.62 cents in 1918, a decrease of 5.61 per cent. This of course takes no account of taxes or fixed charges, which have to come out of this net revenue.

In 1919 taxes amounted to 2.32 cents and fixed charges to 6.81 cents per car-mile which when deducted from the net revenue of 9.08 cents, leaves a deficit from railway operations alone of 0.05 cents per car-mile as compared with a surplus in 1918 of 1.18 cents per car-mile. This would seem to indicate pretty definitely that in March, 1919, electric railway operation by itself simply did not pay its own way. However, non-operating income and return from auxiliary operations amounted together to 1.95 cents per car-mile and with this help the industry managed to keep its nose above water with a net income of 1.90 cents per car-mile. In 1918 the net income was 2.48 cents per car-mile so that the 1919 figures indicate a decrease of 23.9 per cent during the year.

The operating ratio was 75.23 per cent as compared with 69.89 per cent in 1918.

As in the past the returns have been classified according to the following geographic grouping: Eastern District—east of the Mississippi River and north of the Ohio River. Southern District—south of the Ohio River and east of the Mississippi River. Western District—west of the Mississippi River.

Although the South shows actually the best return of the three—net income in March, 1919, of 2.87 cents per car-mile compared with 1.42 cents in the East and 1.90 cents in the West—relatively, it has recently been losing ground much more rapidly. Its net revenue from operations in March showed a decrease from 1918 of 24.79 per cent as compared with a decrease of 6.07 per cent in the West and an actual gain of 1.85 per cent in the East. After deducting taxes and fixed charges and adding in miscellaneous revenues, the South shows a decrease of 61.39 per cent in its net income while the West which comes next in the amount of its falling off shows a decrease of 15.93 per cent and the East a decline of 4.05 per cent. To what extent weather conditions in 1918 affected the returns it is difficult at this time to say.

The operating ratio in the South jumped from 57.79 in March, 1918, to 71.80 in March, 1919, while in the East it increased from 74.97 to 77.58 and in the West from 67.47 to 73.63.

Table III gives the operating expenses divided up among the several departments while in Table IV the expenses per car-mile of these departments is shown. Sixty-four companies are represented and analysis of their expenses contributes to a better understanding of the returns in Tables I and II.

The increase in the cost of materials throughout the country is reflected strongly in the maintenance expenses.

The rise in the cost of labor is reflected better in the conducting transportation account. In 1918 this was 9.56 cents per car-mile and in 1919 it had risen to 11.71 cents per car-mile an increase of 22.48 per cent.

This increase in the cost of labor and material while extending generally throughout the country is more marked in the South and West, or at any rate it appears so in the tables, probably because of the unfavorable weather in the East in 1918. The cost of maintenance of way and structures increased 56.0 per cent over 1918 in the South, rising from 1.75 cents to 2.73 cents per car-mile. In the East it rose from 3.11 cents to 3.67 cents per car-mile, an increase of 18.0 per cent, and in the West it jumped from 2.02 cents to 3.05 cents, an increase of 50.99 per cent.

Maintenance of equipment costs increased 53.47 per cent in the South, 42.91 per cent in the West and 31.83 per cent in the East. The cost per car-mile of this account in March, 1919, was 2.87 cents in the South, 3.33 cents in the West and 4.39 cents in the East.

The conducting transportation account rose from 9.34 cents to 12.19 cents per car-mile in the South, an increase of 30.51 per cent. In the West the increase in this cost was 14.61 per cent and in the East it was 28.54 per cent, the amounts per car-mile in 1919 being 11.06 cents in the West and 12.25 cents in the East.

The increase in the cost of power was 1.42 per cent in the East, 17.86 per cent in the West and 122.41 per cent in the South. Bad weather conditions in 1918 in the East which increased the unit cost at that time probably accounts for the small increase in that section of the country in 1919 and the method of taking care of power in accounting in the South, makes the figure for the increase in that section unreliable.

In Tables V and VI the income statement for March, 1919, of 129 companies is shown, both the actual amounts and also the amounts per car mile.

Table VII is a detailed statement of the operating expenses for March, 1919, of 152 companies, and in Table VIII the same statement is shown on a per car-mile basis.

The most interesting of these is Table VIII in which the operating expenses per car-mile are given and divided among the main operating departments, way and structures, equipment, power, etc.

TABLE I—INCOME STATEMENT FOR FIFTY-ONE ELECTRIC RAILWAYS FOR MARCH, 1919, COMPARED WITH MARCH, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918
Operating revenue	$10,712,640	$9,393,281	$4,796,405	$4,138,309	$965,507	$858,132	$4,950,728	$4,396,840
Operating expenses	8,059,755	6,564,681	3,721,249	3,102,450	693,261	495,902	3,645,245	2,966,329
Net operating revenue	2,652,885	2,828,600	1,075,156	1,035,859	272,246	362,230	1,305,483	1,430,511
Net revenue from auxiliary operations	120,238	....	105,088	....	8,921	....	6,229	....
Taxes	677,385	596,916	260,741	219,034	99,541	80,752	317,103	297,130
Operating income	2,095,738	2,231,684	919,503	816,824	181,626	281,478	994,609	1,133,381
Non-operating income	449,539	382,687	120,725	149,162	157,254	166,719	171,560	66,806
Gross income	2,545,277	2,614,371	1,040,228	965,986	338,883	448,197	1,166,169	1,200,187
Deductions from gross income	1.990,026	1,884,580	867,078	786,938	224,623	225,629	898,325	872,013
Net income	555,051	729,791	173,150	179,048	114,260	222,568	267,844	328,174
Operating ratio	75.23	69.89	77.58	74.97	71.80	57.79	....	....
Car-miles operated	29,226,103	29,397,146	12,230,697	11,993,575	2,954,608	2,954,626	14,040,798	14,448,945

TABLE II—INCOME STATEMENT IN CENTS PER CAR-MILE FOR FIFTY-ONE COMPANIES SHOWN IN TABLE I, FOR MARCH, 1919 COMPARED WITH MARCH, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating revenue	36.65	31.95	14.71	39.20	34.50	13.6	32.68	29.04	12.53	35.26	30.43	15.81
Operating expenses	27.57	22.33	23.47	30.41	25.87	17.5	23.46	16.78	39.81	25.96	20.53	26.44
Net operating revenue	9.08	9.62	*5.61*	8.79	8.63	1.85	9.22	12.26	—*24.79*	9.30	9.90	*6.07*
Net revenue from auxiliary operations	0.41	......	....	0.86	......	.....	0.30	....	....	0.04	....	....
Taxes	2.32	2.03	14.29	2.13	1.83	16.39	3.37	2.73	23.44	2.26	2.06	9.70
Operating income	7.17	7.59	*5.53*	7.52	6.80	10.59	5.15	9.53	*45.96*	7.08	7.84	*9.69*
Non-operating income	1.54	1.30	18.46	0.99	1.24	*20.16*	5.32	5.64	5.68	1.22	0.46	166.94
Gross income	8.71	8.89	*2.02*	8.51	8.04	5.85	10.47	15.17	30.99	8.30	8.30	.....
Deductions from gross income	6.81	6.41	6.24	7.09	6.56	8.08	7.60	7.64	*0.53*	6.40	6.04	5.96
Net income	1.90	2.48	*23.39*	1.42	1.48	—*4.05*	2.87	7.53	61.89	1.90	2.26	*15.93*
Operating ratio	75.23	69.89	7.64	77.58	74.97	3.48	71.80	57.79	24.24	73.63	67.47	9.12
Car-miles operated	29,226,103	29,397,146	*0.58*	12,230,697	11,993,575	1.98	2,954,608	2,954,626	......	14,040,798	14,448,945	*2.82*

NOTE—Figures in *italic* denote decrease.

TABLE III—OPERATING EXPENSES OF *SIXTY-FOUR ELECTRIC RAILWAYS FOR MARCH, 1919, COMPARED WITH MARCH, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918f
Operating expenses	[1]$8,880,713	[2]$7,193,519	[3] $4,230,223	[4] $3,503,424	$930,126	$664,834	[5] $3,720,365	[6] $3,025,261
Way and structures	1,056,449	790,538	505,587	419,678	111,472	71,778	439,390	299,082
Equipment	1,202,422	870,918	604,449	450,431	117,714	76,110	480,259	344,377
Power	1,450,173	1,301,743	787,013	762,198	92,542	41,589	570,618	497,956
Conducting transportation	3,777,927	3,101,449	1,685,659	1,287,155	498,059	382,570	1,594,209	1,431,724
Traffic	38,549	29,870	19,307	12,589	2,721	2,641	16,521	14,640
General and miscellaneous	1,145,870	1,008,704	544,723	485,843	107,617	90,146	493,530	432,715
Transportation for investment—Cr	*7,176*	*50*	....	....	....	....	*7,176*	*50*
Car-miles operated	32,257,315	32,435,875	13,759,122	13,509,446	4,085,132	4,094,519	14,413,061	14,831,910

* NOTE—This table includes the expenses of the fifty-one companies shown in Tables I and II, and in addition thirteen other companies which are not included in Tables I and II, because of the fact that they do a power and light business and do not separate their railway taxes and fixed charges from the taxes and fixed charges of their ither business.

[1] Includes $216,499 undistributed depreciation. [2] Includes $90,347 undistributed depreciation. [3] Includes $83,485 undistributed depreciation. [4] Includes $85,530 undistributed depreciation. [5] Includes $133,014 undistributed depreciation. [6] Includes $4,817 undistributed depreciation.

TABLE IV—OPERATING EXPENSES IN CENTS PER CAR-MILE OF THE SIXTY-FOUR ELECTRIC RAILWAYS APPEARING IN TABLE III, FOR MARCH, 1919, COMPARED WITH MARCH, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating expenses	[1] 27.53	[2] 22.18	24.12	[3] 30.74	[4] 25.93	18.55	22.76	16.24	40.15	[5] 25.81	[6] 20.40	26.50
Way and structures	3.28	2.44	33.98	3.67	3.11	18.00	2.73	1.75	56.00	3.05	2.02	50.99
Equipment	3.73	2.68	39.17	4.39	3.33	31.83	2.87	1.87	53.47	3.33	2.33	42.91
Power	4.49	4.02	11.97	5.72	5.64	1.42	[7] 2.27	[7] 1.02	122.54	3.96	3.36	17.86
Conducting transportation	11.71	9.56	22.48	12.25	9.53	28.54	[7] 12.19	[7] 9.34	30.51	11.06	9.65	14.61
Traffic	0.12	0.09	33.33	0.14	0.09	55.55	0.07	0.06	16.66	0.11	0.09	22.22
General and miscellaneous	3.55	3.11	14.15	3.96	3.60	8.33	2.63	2.20	19.55	3.43	2.92	17.46
Transp. for investment—Cr	0.02	....	.....	....	....	.....	....	....	......	*0.05*	....	.....
Car-miles operated	32,257,315	32,435,875	*0.55*	13,759,122	13,509,446	1.85	4,085,132	4,094,519	*0.23*	14,413,061	14,831,910	*2.82*

[1] Includes 0.67 cents per car-mile undistributed depreciation. [2] Includes 0.28 cents per car-mile undistributed depreciation. [3] Includes 0.60 cents per car-mile undistributed depreciation. [4] Includes 0.63 cents per car-mile undistributed depreciation. [5] Includes 0.92 cents per car-mile undistributed depreciation. [6] Includes 0.03 cents per car-mile undistributed depreciation. [7] A number of companies in the South include the cost of power under conducting transportation which accounts for the apparent disparity of these figures.

TABLE V—INCOME STATEMENT OF *129 ELECTRIC RAILWAYS FOR MARCH, 1919

	United States	East	South	West
Operating revenue	$26,006,594	$17,415,970	$1,419,198	$7,171,426
Operating expenses	19,505,913	13,200,115	1,024,502	5,281,296
Net operating revenue	6,500,681	4,215,855	394,696	1,890,130
Net revenue: Auxiliary operations	586,660	280,336	142,488	163,836
Taxes	1,660,716	1,057,133	143,449	460,134
Operating income	5,426,625	3,439,058	393,735	1,593,832
Non-operating income	683,232	309,083	162,390	211,759
Gross income	6,109,857	3,748,141	556,125	1,805,591
Deductions from gross income	5,400,998	3,504,656	355,714	1,540,628
Net income	708,859	243,485	200,411	264,963
Operating ratio	75.00	75.79	72.19	73.64
Car-miles operated	70,878,195	46,192,903	4,195,805	20,489,487

* Includes the companies shown in Tables I to IV and others for which the 1918 figures are not available.

TABLE VII—OPERATING EXPENSES OF *152 ELECTRIC RAILWAYS MARCH, 1919

	United States	East	South	West
Operating expenses	[1]$20,576,266	[2]$13,782,866	$1,271,087	[3]$5,522,313
Way and structures	2,376,009	1,528,317	153,260	694,432
Equipment	2,721,559	1,810,903	159,956	750,700
Power	3,279,832	2,294,963	137,265	847,604
Conducting transportation	9,073,511	6,060,039	652,949	2,360,523
Traffic	84,784	42,849	4,898	37,037
General and miscellaneous	2,578,837	1,707,082	162,759	708,996
Transportation for investment—Cr	*14,507*	*1,528*	....	*12,979*
Car-miles operated	75,131,551	48,068,190	5,368,142	21,695,219

NOTE—This table includes the expenses of the 129 companies shown in Tables V and VI and in addition 23 other companies which are not included in Tables V and VI because of the fact that they do a power and light business and do not separate their railway taxes and fixed charges from taxes and fixed charges of their other business.

[1] Includes $476,401 undistributed depreciation. [2] Includes $340,401 undistributed depreciation. [3] Includes $136,000 undistributed depreciation.

TABLE VI—INCOME STATEMENT OF TABLE V, SHOWING THE AMOUNTS IN CENTS PER CAR-MILE

	United States	East	South	West
Operating revenue	36.67	37.70	33.82	35.00
Operating expenses	27.50	28.58	24.42	25.77
Net operating revenue	9.17	9.12	9.40	9.23
Net revenue: Auxiliary operations	0.83	0.61	3.39	0.80
Taxes	2.34	2.29	3.42	2.25
Operating income	7.66	7.44	9.37	7.78
Non-operating income	0.96	0.67	3.87	1.03
Gross income	8.62	8.11	13.24	8.81
Deductions from gross income	7.62	7.58	8.48	7.52
Net income	1.00	0.53	4.76	1.29
Operating ratio	75.00	75.79	72.19	732.4
Car-mile operated	70,878,195	46,192,903	4,195,805	20,489,487

TABLE VIII—OPERATING EXPENSES OF THE 152 COMPANIES APPEARING IN TABLE VII, SHOWING THE AMOUNTS IN CENTS PER CAR-MILE FOR MARCH, 1919

	United States	East	South	West
Operating expenses	[1] 27.38	[2] 28.67	23.68	[3] 25.45
Way and structures	3.16	3.18	2.85	3.20
Equipment	3.62	3.77	2.98	3.46
Power	4.37	4.77	2.56	3.90
Conducting transportation	12.08	12.61	12.17	10.88
Traffic	0.11	0.09	0.09	0.17
General and miscellaneous	3.43	3.55	3.03	3.27
Transportation for investment—Cr	*0.02*	....	....	*0.06*
Car-miles operated	75,131,551	48,068,190	5,368,142	21,695,219

[1] Includes 0.63 cents undistributed depreciation. [2] Includes 0.70 cents undistributed depreciation. [3] Includes 0.63 cents undistributed depreciation

Indianapolis Merger Conditionally Approved

Company Disposed to Reject Changes in Plan Which Have Been Suggested by Public Service Commission

The Indiana Public Service Commission handed down an order on June 28, conditionally approving the merger of the Indianapolis Traction & Terminal Company and the Indianapolis Street Railway. After hearing the case as reported in the ELECTRIC RAILWAY JOURNAL of June 21, page 1243, the commission submitted a radically modified plan of merger. This provided for placing the reduced Indianapolis Traction & Terminal stock in the hands of five trustees, to be selected by the commission from fifteen citizens nominated by the company. Other requirements were so stringent that the committee of stockholders and officers of both companies declined to consider the proposal of the commission, which would have required the calling of another meeting of the stockholders. The commission was informed that the time was too short, and that the merger already approved by the majority of the stockholders should be approved by the commission or the company would not be in a position to provide necessary financing on July 1. The controlling part of the order is as follows:

The merger agreement is hereby approved subject to the following conditions:

1. That the $2,500,000 of common stock of the consolidated company to be issued in lieu of $5,000,000 of common stock of the Indianapolis Traction & Terminal Company be reduced to the par value of $1,000,000.

2. That all bonds accumulated or accumulating in bond sinking funds shall be retired and cancelled.

3. All payments of interest on bonds in sinking fund shall be permanently discontinued.

4. No direct payments into bond sinking funds shall be made until Jan. 1, 1923, and until Jan. 1, 1923, the amounts of such direct payments which otherwise would be paid into said sinking funds, shall be utilized and expended for additions, extensions, improvements, equipment or for other proper capital expenditures. If such direct payments are resumed in 1923, such payments into said funds and the disposition thereof shall conform to the provisions set out in the Sixth paragraph of the agreement submitted to the commission; that is to say, that said direct payments into said sinking funds shall be utilized in the purchase, retirement and cancellation of the bonds of the Indianapolis Street Railway and the Indianapolis Traction & Terminal Company in the proportions provided in the respective trust deeds or mortgages and upon such retirement and cancellation, bonds of the consolidated company to the par value amount of bonds so retired and cancelled, shall immediately be available for additions and extensions.

DIVIDEND PAYMENTS FIXED

5. The consolidated company shall assume the complete performance of the franchise obligation of each constituent company.

6. Until April 7, 1933, no dividends shall be paid on the $5,000,000 of preferred stock of the consolidated company issue in lieu of the $5,000,000 of common stock of the Indianapolis Street Railway and no dividends shall be paid on the $1,000,000 of the common stock of the consolidated company issued in lieu of the $5,000,000 of the common stock of the Indianapolis Traction & Terminal Company while or at any time there is a failure to comply with the franchise conditions or requirements of the franchise of either of the constituent companies. The Public Service Commissions of Indiana shall have the right and authority to determine when there is a failure to comply with or default of such franchise requirements. The commission will look to the city of Indianapolis for notice of such failure or default.

7. Whenever any dispute shall arise between the consolidated company and the city of Indianapolis the matter shall be referred to the Public Service Commission and the consolidated company shall agree to abide by the decision of the commission with respect to such matters with the right to appeal, as provided by law.

MAINTENANCE AND DEPRECIATION CHARGES FIXED

8. Until the further order of the commission, 21 per cent of the gross revenues of the consolidated company shall be set aside in a separate fund to be used for maintenance and depreciation. This amount, unless otherwise ordered by the commission, shall be set aside in cash and shall be handled separately and with proper accounting.

9. There shall be no redemption or retirement of the preferred stock of the consolidated company before April 7, 1933, or before the extended maturity date of any bonds, the time of payment of which is extended.

10. Nothing contained in Paragraph 6 of the agreement submitted or in any of its other provisions, shall either expressly or impliedly bind the commission in any matters of future security regulation.

11. The consolidated company shall apply to the commission for authorization and approval of all stock and bonds to be issued.

The commission in no wise guarantees the payment of any dividends on stocks, bonds or other securities and the consolidation and merger herein conditionally approved is a matter entirely independent of rates, without any obligation, express or implied, on the part of the commission, to provide the payment of any interest charges or dividends.

The commission is in no wise bound to provide rates which will permit or enable dividends or interest charges to be paid on the stocks or bonds of the consolidated company. The commission reserves to itself the right to fix rates, independent of and unaffected by the securities of the consolidated company or by its approval of the merger and consolidation.

13. Nothing in the commission's approval of the merger or the consolidation agreement shall, in any manner, relieve the consolidated company from any of the liabilities, claims or obligations of or against either or both the Indianapolis Street Railway and the Indianapolis Traction & Terminal Company and the merger agreement is approved, subject to the assumption by the consolidated company of all the obligations, liabilities and claims of or against said Indianapolis Street Railway Company or the Iidianapolis Traction & Terminal Company.

ACCEPTANCE NECESSARY BY SEPT. 1

14. That on or before Sept. 1, 1919, the parties to this agreement shall file or cause to be filed with the Public Service Commission, the written acceptances, approvals and consents of all parties whose acceptances, approvals and consents are legally necessary to the conditions and stipulations hereinbefore set out.

It is further ordered, that the consolidated company shall, without unnecessary delay, proceed with the making of extensions and additions in accordance with the franchise requirements.

Salt Lake Revenues Increase

In the monthly statement filed by Manager H. F. Dicke of the Utah Light & Traction Company, Salt Lake City, Utah, with the Public Utilities Commission, it is shown that during May, 1919, 9314 more revenue passengers were carried by the company's cars than during the corresponding period of May 2 to June 1, inclusive, 1918. The total this year was 2,788,535 passengers, of whom 43.6 per cent paid cash fare of 6 cents each.

With the increased fares in force by the order of the commission, the company's revenue during the month was $152,692, which was $12,310 more than for the corresponding month a year ago. Operating expenses also increased, but only $3,238, leaving an increase in the net revenue from operation, making no allowance for depreciation, of $9,071. The net revenue in May, 1919, was $44,980.

Mr. Dicke in his letter accompanying the report says in part:

> With respect to the increase in net from operation, I want to say for your information that we have not as yet for this year increased our maintenance gangs for the purpose of doing the usual amount of maintenance work during the summer season.

Indiana Assessments Announced

Under the 1919 assessment of utilities announced by the State Board of Tax Commissioners of Indiana large increases have been made over the 1918 assessments. The assessments may not be final, as the various properties will have recourse to a rehearing at the second session of the tax commission to be held in July.

The assessment of the constituent companies of the Indianapolis city railway system was increased from $7,992,719 to $16,425,010. The Indinapolis Street Railway is increased from $5,739,903 to $11,905,080; the Indianapolis Traction & Terminal Company from $2,222,190 to $4,448,250; and the Broad Ripple Traction Company, a part of the Indianapolis system, from $30,625 to $71,680.

The assessment of the value of the railway lines in Indianapolis is nearly $500,000 more than the outside figure of the tentative valuation placed on the traction property by the Public Service Commission during the hearing last fall on the fare increase matter.

The assessments for all interurban railways of Indiana for the year 1919 as compared with 1918 are as follows:

	1919	1918
Union Traction	$9,731,522	$3,257,860
Terre Haute, Indianapolis & Eastern	12,520,448	4,115,443
Indianapolis & Cincinnati	1,953,651	665,031
Interstate P. S.	2,422,125	66,839
Fort Wayne & No. Indiana	5,639,075	1,899,722
Chicago, Lake Shore & S. Bend	3,163,305	856,145
Louisville & Northern Ry. & Lt.	552,645	184,370
Beech Grove Traction Co.	139,750	30,625
Central Ind. Ltg Co.	97,555	34,265
Chicago, South Bend & Northern Indiana	3,163,305	995,640
Cincinnati, Lawrenceburg & Aurora	174,780	71,886
Evansville Rys	63,678	316,154
Evansville S. & N. Ry	648,590	266,195
Ft. W. & Decatur Tr.	224,590	110,345
Ft. W. & Nw. Ry	821,935	277,937
Ft. Lick & W. B. St. Ry	26,880	9,240
Gary Connecting Ry	147,850	49,350
Gary & Hobart Tr.	112,350	32,606
Gary & Sou. Tr.	282,682	85,587
Gary St. Ry	1,124,330	304,880
Gary & Valparaiso Ry	281,032	52,580
Hammond, Whiting & E. Chi.	2,141,240	460,935
Indiana Rys. & Ltg. Co.	1,411,510	495,950
Indiana Utilities Co.	23,310	11,160
Indianapolis & Louisville	937,049	260,449
Indianapolis, N. C. & East	1,058,263	363,955
Lebanon-Thorntown	103,201	40,326
Louisville & Northern	552,645	184,370
Louisville & Southern	731,948	27,036
Madison Lt. & Ry	35,900	15,050
Marion & Bluffton	583,050	199,425
Muncie & Portland	573,795	196,230
New Albany St. R. R.	332,610	119,585
Ohio Elec. Ry	778,518	259,221
Public Utilities	1,558,320	619,635
Southern Michigan	169,672	56,484
Vincennes Tr. Co.	115,005	47,545
Washington St. Ry	30,500	11,925
Winona Interurban	1,394,685	460,988
Winona & Warsaw	80,320	27,870

Financial News Notes

Authorize Three-Year Bond Issue.—The stockholders of the Nova Scotia Tramways & Power Company, Halifax, N. S., have authorized an issue of $2,000,000 of three-year 7 per cent gold bonds, of which $1,000,000 is to be issued presently for improvements subject to the ruling of the Public Utilities Commission.

Successor Company Organized.—The Pittsburgh, Butler & Harmony Consolidated Railway & Traction Company has been incorporated in Delaware with a capital of $6,500,000, presumably as the successor to the Pittsburgh, Harmony, Butler & New Castle Railway, change in control of which was noted in the ELECTRIC RAILWAY JOURNAL for June 28, page 1290.

Abandonment Hearing Concluded.—The Massachusetts Northeastern Street Railway, Haverhill, Mass., has petitioned the New Hampshire Public Service Commissioners to close the branch of the railroad from Smithtown to Salisbury Junction, on the claim that travel there does not warrant continuation from a financial standpoint. Following a hearing the commission reserved decision on the appeal of the company.

Baltimore Company Again Defers Dividend.—The directors of the United Railways & Electric Company, Baltimore, Md., at their regular meeting on June 25 again deferred action on the quarterly dividend on the common stock. This is the second time this year that the board has postponed action. So far, only 1 per cent has been distributed to common shareholders this year. After the meeting no intimation was given as to when the board would again take up the dividend question.

Receiver for Vincennes Company.—E. C. Cheobold, Vincennes, Ind., has been appointed receiver of the Vincennes (Ind.) Traction Company by Judge A. B. Anderson in the United States District Court. The receiver was asked in a complaint filed by the Mercantile Trust Company, St. Louis, Mo., against the Vincennes Traction Company and the City Trust Company, Vincennes. The allegations in the complaint were admitted by the defendants and consent was given for the appointment of a receiver.

Will Not Sell Collateral Now.—It was announced in Chicago, Ill., on June 27 that not only would the Chicago Elevated Railways be forced to default on its $13,600,000 of 6 per cent notes, due on July 1, but it would be unable to pay even the interest. A. G. Hoyt, New York banker, representing the protective committee formed on behalf of the noteholders, said: "The noteholders have a first lien on the collateral securities, but they do not propose to foreclose immediately, fearing to harm still further the elevated companies' credit. We shall make a general survey of the situation and hope for a fair return for the service the properties render."

Brooklyn Interest Payment Deferred.—The directors of the Brooklyn, Queens County & Suburban Railroad, the Nassau Electric Railroad, and the Coney Island & Brooklyn Railroad, all included in the system of the Brooklyn (N. Y.) Rapid Transit Company, decided to defer, temporarily, at least, payment of the interest due on July 1 on the bonds of those companies. The amount involved is about $450,000. The mortgage securing these bonds provides varying periods of grace before default can be declared, and the directors hope that before these periods expire conditions will permit the payment of the interest. It was announced that the rental by the Brooklyn Heights Railroad to the Brooklyn City Railroad, due on July 1, would be paid.

Abandonment Petition Denied.—The Indiana Public Service Commission has dismissed the petition of the Central Indiana Lighting Company, Columbus, Ind., for authority to abandon service on its Maple Grove line. The petition to discontinue the line was made on the assertion that the building of the Nentrup road would result in such loss to the company that it could not afford to maintain that branch of its service. The State tax board later denied authority to build the Nentrup road. The company thereupon decided to continue the Maple Grove line. Those who favor the road being built are not preparing to make a test case to determine the constitutionality of the tax law, under which the ruling was made.

Notice of Sale of Collateral.—The Equitable Trust Company, New York, N. Y., as trustee for the issue of five-year 5 per cent convertible gold bonds of the Eastern Power & Light Corporation, New York, N. Y., dated March 1, 1913, has given notice that default having been made in the payment of the principal of these bonds and in the payment of certain interest due on them, it will sell at public auction in New York on July 15 the collateral pledged as security for these bonds. Included in this collateral are 12,482 shares of the common stock of the West Virginia Traction & Electric Company, 26,000 shares of preferred stock of the Reading Transit & Light Company, and 73,000 shares of the common stock of the Reading Transit & Light Company.

Dallas Results for May.—Earnings of the Dallas (Tex.) Railway for the twenty months of operation under the service-at-cost franchise amounted to but slightly more than 4 per cent of the agreed property valuation, as against a permitted return of 7 per cent. The deficit in the permitted return for the period is $369,241. The gross earnings for May were $194,379 (not including interurban terminal receipts). This represents an increase of about 48 per cent in comparison with last year. The railway operating expenses were $165,178, an increase of about 40 per cent over last year. The net earnings from railway operations were $29,200, and from interurban terminal operations $4,659, making the total net earnings $33,860. This amount is equivalent to a rate of return of 4.96 per cent per annum on the property value.

Bond Extensions Approved.—The Indiana Public Service Commission, in orders issued on June 13 extending bond issues of the Union Traction Company of Indiana, asserted its jurisdiction in this field for the first time. Members of the commission said that the body had never before acted formally on utility bond extensions, reserving the right merely to pass on new issues. The commission approved the extension for three years of $4,623,000, par value, 5 per cent bonds of the Union Traction Company, which expired on July 1. The interest rate is to be increased to 6 per cent and the federal tax on the interest coupons up to 2 per cent is to be paid by the company. The Union Traction Company was also authorized to extend for three years the outstanding 6 per cent bonds of the Indianapolis, Newcastle & Eastern Traction Company, amounting to $1,200,000, par value. These bonds also expired on June 1. A five-year extension of the Marion City Railway bonds of the Union Traction Company was approved. The par value of these 6 per cent bonds is $328,000. They expired on May 1.

Offering on Sioux City Service Bonds.—Halsey, Stuart & Company, Chicago, Ill., and New York, N. Y., are offering for subscription at 89 and interest, yielding 6.75 per cent, $880,000 of Sioux City (Ia.) Service Company first and refunding mortgage sinking fund 5 per cent gold bonds dated Jan. 1, 1910, and due Jan. 1, 1928. The bonds are secured by an absolute first mortgage on the electric light, power and steam heat distribution systems and the electric generating and steam heating plant of the company, and, upon the retirement of $750,000 of first mortgage 5 per cent bonds of the Sioux City Traction Company, due on July 1, 1919, will also be secured by an absolute first mortgage upon the entire electric railway property of the company. The present issue of refunding bonds will provide for the retirement of the electric railway bonds just mentioned. The mortgage under which the bonds are issued creates a sinking fund obligating the company to deposit with the trustees sums which will aggregate $1,200,000 at the maturity of the bonds, at least half of which must be used in retiring first and refunding bonds and the balance for permanent extensions and improvements.

Traffic and Transportation

Girardville Case Different

Increase to Eight-Cent Fare Allowed to Road in Mining District with Few Short Riders

The Public Service Commission of Pennsylvania has dismissed complaints as to increased rates for service on the lines of the Schuylkill Railway, Girardville, Pa., due to the fact that the increase was necessary to meet increased operating expenses. In its ruling, referred to very briefly in the ELECTRIC RAILWAY JOURNAL for May 10, page 939, the commission said that as an emergency measure and for the purpose of giving the company what appeared to be the necessary relief it would grant the application for an 8-cent fare, but would refuse that part of the application which provided for thirteen tickets for $1 and would order the company to sell seven tickets for 50 cents on one day's notice until June 1, 1920. At that time the company is to report to the commission the result of the experiment. The complaint of the Borough of Mahonoy as to the service rendered will be disposed of by the commission in a separate report.

The commission says that peculiar conditions surrounding the operation of the railway place it in a class by itself. It is pointed out by the commission that the line is constructed in a mountainous country, in some places over mines, and that the wear and tear on the cars and the condition of the surface of the line over which the right-of-way runs entails more expense in keeping the cars in order and maintaining the roadbed than is usual. The company has no large cities from which to draw its patrons, and, while the road connects comparatively populous communities, some of its divisions traverse regions that are sparsely settled. The road has very few short riders to depend upon. For these reasons the commission distinguished this company from most of the other companies operating in the State.

Further Testimony by Municipalities

Robert H. Whitten, formerly with the Public Service Commission for the First District of New York, utility expert and technical advisor to the Cleveland City Plan Commission, testified further at the hearing in Newark on June 26 before the Board of Public Utility Commissioners of New Jersey in regard to the plan submitted by the Public Service Railway for installing zone fares.

Mr. Whitten, who appeared for the municipalities, advocated the division of the proposed one-mile zones into one-third-mile zones so that passengers getting on in the middle of a zone would ride to the middle of the next zone without being compelled to pay two zone fares. He contended that this would be fairer to the short distance rider and claimed that it would not complicate the fare collection system, but simply required the conductor to change the zone indicator oftener.

It was Mr. Whitten's opinion that the plan suggested by the Public Service Railway for fixed one-mile zones would make the loading very uneven, as passengers would be inclined to walk to zone points. This would slow down car movement and would have a tendency to increase traffic congestion. He said that the prime function of the electric railway was to serve the needs of the comparatively short distance rider. The steam roads and rapid transit lines could if necessary take more of the longer hauls. The direct examination of Mr. Whitten was concluded late on June 26. The hearing was then adjourned until July 1.

Ten-Cent Fares for Bay State

The public trustees of the Eastern Massachusetts Street Railway, Boston, Mass., voted to withdraw on July 1 the 7-cent tickets and tokens from the Bay State system. It was announced that on and after that date the initial fare north and south of Boston would be 10 cents, as it has been since Jan. 8 for a single cash fare. The 7-cent tickets and tokens will be redeemed at 7 cents each.

The public trustees took possession of the property on June 1. An estimate of the earnings and expenses for the month indicates a deficit of approximately $300,000. Nothing was earned toward interest charges or the principal of the State guaranteed bonds.

Steps have been taken by the public trustees substantially to reduce the management expenses throughout the system. Notwithstanding these economies, neither an 8-cent nor a 9-cent fare would produce enough revenue to meet the cost of service, as provided by law, or even the interest charges, which must be met if the company is to remain solvent.

As soon as the cost of service can be determined accurately in each of the twelve districts under the home rule plan of operation and accounting, which also goes into effect July 1, the fares in these districts will be changed accordingly.

It is the intention of the public trustees to issue at frequent intervals statements showing the receipts and expenses of each district.

Fares Compromised

Residents Along Monongahela Valley Traction Line and Company Settle Dispute in Conference

A compromise agreement has been reached between the Monongahela Valley Traction Company, Fairmont, W. Va., and the special committee appointed at a recent mass meeting to represent the several hundred residents and patrons of the company between Parkersburg and Williamstown who protested against the application before the Public Service Commission for a 7-cent flat rate.

PROTESTS WITHDRAWN

This compromise in the form of an agreed order has been sent to the commission and will be filed by this body, the protest of the residents being withdrawn and the company withdrawing application for its requests not included in the compromise agreement.

The fare from the limits of Williamstown, W. Va., over the bridge to Marietta, Ohio, is fixed by the compromise agreement at 5 cents, as at the present time. There are to be four zones between Parkersburg and Williamstown as at present, the zone limits to be the same with one exception.

The cash fare per zone will be the same as that which the Public Service Commission determines should be allowed for the city of Parkersburg, but in no case is it to exceed 7 cents. In other words, if Parkersburg has a 6-cent rate the interurban rate will be 6 cents.

Coupon books of fifty or 100 tickets, good on both the interurban and city lines, are to be sold by the company at ½ cent less per ticket than the cash fare charged. Tickets without a time limit are to be sold for transportation between Parkersburg and Greenmont at the same rate as the cash fare charged in the city as fixed by the Public Service Commission, but in no case for more than 7 cents. School tickets between Parkersburg and Greenmont and between Williamstown and Central are to be sold for 3½ cents. School tickets are good for any school child any day in the school year from 7 a.m. to 6 p.m.

RATES INCREASE SLIGHTLY

The fare rates as agreed in the compromise are to take effect when any new rate allowed by the Public Service Commission in the city of Parkersburg goes into effect.

The compromise rates mean that it will cost 6 cents more than formerly to go to Williamstown or Marietta if one travels on a book of tickets and if the 7-cent fare should be granted. On the other hand, the fare for school children is decreased from 5 cents to 3½ cents so that residents on the interurban might actually save money under some conditions.

The lines of the Monongahela Valley Traction Company connect Fairmont with Mannington. In extent they cover more than 110 miles of road.

Ten-Cent Fare Announced for Boston

The State Public Control Act Would Seem to Leave No Other Alternative, Trustees Say

The trustees of the Boston (Mass.) Elevated Railway, to meet the deficit which has been created by reason of the added cost of service, have announced that they will establish a 10-cent fare on July 10. While the legal title to the property is vested in the stockholders, the complete control of the Boston Elevated Railway has passed to public trustees. Stockholders have no voice in the management and no control over service, receipts or expenditures. The trustees serve no private interest.

PUBLIC TRUSTEES AT WORK A YEAR

When the railway was turned over to the trustees on July 1, 1918, the deficit for the preceding six months of private management, though no dividends had been paid and little attempt made to maintain the property, was $570,000. In the first month of public control, namely, in July, during which the 5-cent fare was continued, the deficit, augmented by the burdens of dividend rental maintenance charges, increased cost of supplies and materials, wage increase and rental of the Dorchester Tunnel, was $700,000. The trustees introduced a 7-cent fare. That fare failed to meet the cost of service by about $600,000 a month. An 8-cent fare was then established. That rate has been in force since Dec. 1, 1918. The 8-cent fare has also failed to meet the cost of service, the net operating cost for six months to May 31, 1919, having been $1,519,974 in excess of the receipts.

The statute under which the experiment in public control was begun provides that at the end of the year which closed on June 30 accumulated deficits should be met by a payment from the State Treasury, the amount so paid to be assessed upon the cities and towns in which the railway is located. Despite the general notion that this payment of deficits is a contribution by tax payers to car riders, the statute makes it a loan to be repaid to these communities when and as fast as receipts exceed the cost of service. The car rider continues to carry the entire burden of the service.

NINE-CENT FARE UNWISE

Under the statute as quoted, the trustees were required to advance the fare. A study of receipts and expenditures convinced the trustees that it would be unwise if not unlawful to experiment with a 9-cent fare. The average cost of carrying a passenger under existing conditions, without consideration of the obligation to repay deficits or the outcome of the pending arbitration over a further advance in wages, exceeds 9 cents. There was also to be considered the uncertainty of the effect of the higher fare upon net revenue, owing to loss of passengers. Under the 8-cent fare there was in December a loss of nearly 15 per cent in travel. From natural increase in business and from returning patronage that percentage has gradually diminished until in May the loss was reduced to 9 per cent.

The trustees point out that there are certain items in the cost of operation that have special interest. For instance, $2,004,000 is annually reserved for depreciation. For the eleven months ended May 31, 1919, for which complete figures of operating cost are available, the charge amounted to $1,837,000. This reserve is based upon independent expert opinion as to what should be set aside yearly in order to provide for renewals and replacement as necessity arises. Applied to the individual fare since Dec. 1, 1918, the increased allowance for depreciation amounts to 0.497 cent per passenger. In the eleven months $1,243,222 has been expended in rental dividends to stockholders. These annually aggregate $1,403,970 as the fixed return upon their investment. This applied to individual fare amounts to 0.416 cent per passenger during the past six months.

The sum of $1,365,636 has been paid to the city of Boston in subway rentals that now represent an annual charge of $1,491,560, the amount having been increased this year by $473,000 upon the opening of the Dorchester tunnel. These rentals, in the opinion of the trustees, are unjust to the car rider. The additional amount assumed during the period of the 8-cent fare as applied to the individual fare has cost 0.183 cent per passenger. A bill was introduced in the Legislature to relieve the riders from this burden during public control of the railway, but it failed of enactment. More than $12,272,000 has been spent during the eleven months for wages. This constitutes 45 per cent of the total of fixed charges and operating expenses. The total wage increase for the period was $3,996,883, of which $2,750,000 was due to the award of the War Labor Board, the remainder due to the increase in going rates of craft organizations and to additional service and higher standard of maintenance. The increase in wages as applied to the individual fare amounted to 1.751 cents per passenger in the six months period ending May 31. Under present conditions the trustees declined to grant the recent demand of employees for still higher wages. In consequence that demand is now under consideration by the War Labor Board before which final arguments were made on June 25.

The sum of $2,312,728 has been expended for maintenance and repairs of track and repaving of streets, for no part of which any provision is made in the reserve for depreciation. Increased cost from rising prices of supplies and materials has been felt most in the matter of coal, which, during the period named, has advanced in price to such an extent as to make an additional outlay of $405,000. When applied to the individual fare this amounted to 0.126 cent per passenger during the six months ending May 31.

In announcing the 10-cent fare the trustees after reviewing affairs of the year, said:

> Public interest in the service is as keen as it is in the fare. To imagine that a new management, hampered by the depreciable character of the railway, the unprecedented war conditions, and the lack of capital and income, could promptly bring the impaired service to a proper standing, gage the cost and fix a fare commensurate and reasonably cheap, is to imagine what commonsense forbids. Realizing what their task meant, the trustees laid out a program which will cover a term of five years. A substantial beginning has been made toward the consummation of that program bringing with it new cars, new track, better trains in subways, larger accommodations on surface lines, cleanliness and ventilation of cars.
>
> What of the future? Without being unduly optimistic the trustees believe that the cost of the service measured by fares, is reaching its highest level; that gradual improvement in service with gradual reduction in fares is to be expected. In brief, the trustees are confident that the goal which they have had in view—a service of high standard at lowest possible cost—is not unattainable. The time within which this goal can be reached will depend largely upon the promptness with which the deficit of the past year is made good and upon the relief that the Legislature may give by just and wise legislation.

Chapter 159, special acts of 1918, inaugurated the experiment with public control. Private management of the Boston Elevated Railway under a charter permitting not over a 5-cent fare under a public policy that imposed upon it subway rentals and street improvements, and with rising cost of supplies and materials to add the finishing touch, had resulted in failure.

Three courses were open to the Legislature. It could let the property go to ruin, regardless of interrupted service and wasteful cost; it could embark upon government ownership and control, or it could try out government control with private ownership. The last plan was adopted. The property in effect was leased by the stockholders to the State for ten years at a fixed rental paid in the form of interest on outstanding bonds and dividends on outstanding stock. The dividend for the first two years was fixed at 5 per cent, for the next two years at 5½ per cent, and thereafter at 6 per cent on par value of shares. The capital stock on which these dividends are paid comprises common stock amounting at par to $23,879,400 and preferred stock amounting at par to $3,000,000, an aggregate of $26,879,400, which, with premiums amounting to $2,707,000, makes a total investment of $29,586,828. The real dividends therefore are for the first two years 4.74 per cent, for the next two years 5.15 per cent, and thereafter 5.55 per cent on actual cash investment.

When the trustees took over the railway on July 1, 1918, they found a large number of cars totally unfit for use, much of the remaining rolling stock of obsolete type, unclean, and unpainted, many miles of track badly worn and some unsafe, power plant in part out of date, and repair shops inadequate. The service was approaching the point of collapse. The trustees faced an imperative need of new capital and an even more imperative need of larger revenue. For capital $2,000,000 was available from the proceeds of the preferred stock authorized in the act establishing public control. This was immediately applied toward the purchase of 250 new cars. Fifty center-entrance trailers have been received. The delivery of the remaining 200 cars, delayed by war conditions, is assured within the next four months.

No more capital stock can be issued because by law it must be issued at par and the market price has been continuously below par. No more bonds can be lawfully issued because the bonds outstanding equal the outstanding stock and premiums. There was one source of additional capital. This was the Cambridge subway. The company had been allowed to build and own it as an exception to the well-settled and sound policy that forbids private ownership of public highways. Every other subway in Boston has been built and owned by the public.

The trustees submitted to the Legislature a bill to authorize the purchase of this subway by the State as agent for the communities which the subway serves. The price named was less than actual cost and far below cost of replacement. The bill required an immediate lease of the subway to the company at a rental sufficient to meet the interest on the State loan and to provide a sinking fund from which to pay eventually the entire purchase price of the subway. This bill was passed by the Senate, but was rejected by the House of Representatives. This was peculiarly unfortunate for the reason that while the proceeds of the subway could only be invested in permanent improvements, such investment would mean large operating economies. The statute establishing public control provided that "if on the last day of June, 1919," it appears that "during the preceding three months the income has been less than the cost of the service," the trustees shall within one month thereafter put into effect "a higher grade of fare." In consequence the 10-cent fare has been announced as best suited under existing conditions.

Receiver Would Abolish Transfers

Would Charge Three Cents at Ninety-nine Intersection Points Where Transfers Are Now Issued Free

Job E. Hedges, as receiver of the New York (N. Y.) Railways, has petitioned the Public Service Commission for the First District for permission to abolish ninety-nine free transfer points on the system under his management, and to establish a charge of 3 cents for transfers made at such points. Free transfers are now given at 113 points on the lines of the New York Railways system. Fourteen such free transfer points will be left if the commission grants the company the relief desired. Those remaining are transfers which are required by the conditions of municipal consents and franchises. The remainder were established either by general provisions of the public service commissions law or by specific orders of the commission.

The petition of Receiver Hedges alleges that the earnings of the New York Railways system show an emergency which is likely to disintegrate the property entirely unless some relief is afforded at once. The charge for transfers made at the ninety-nine points involved in the petition, according to the application, would produce a revenue approximating $900,000. It is stated in the petition that the relief thus afforded would only be partially what the company needs to meet its operating expenses, interest charges, etc. It is also alleged that the average rate of fare actually received by the company for each individual line is only a little more than 3 cents.

At the hearing on June 30 Henry L. Stimson, counsel for Mr. Hedges, the receiver, led the argument for the application, assisted by James L. Quackenbush, counsel for the New York Railways. Corporation Counsel Burr, appearing with E. J. Kohler for the city, objected to the taking of any testimony until an up-to-date appraisal of the property could be made.

As Judge Mayer, in the Federal Court, has fixed July 8 as the time when he will decide whether the Eighth Avenue and the Sixth Avenue lines shall be turned back to their original owners because the New York Railways cannot pay the rental charges, Public Service Commissioner Nixon announced that he wanted the question of whether transfers should be abolished settled before that date.

Evidence given by F. T. Wood, assistant to Frank Hedley, vice-president and general manager of the company, was to the effect that the abolishment of free transfers and the charging of 3 cents for them would bring an additional revenue to the road of $853,981 a year.

It was stated that rentals now due and unpaid to subsidiary lines amount to $667,510. If Judge Mayer does not get assurance by July 8 that the rentals can be paid, it is believed he will separate the Eighth and the Ninth Avenue lines from the consolidated system. The earnings for the system up to March 31 were $50,000 short of paying the interest on the bonds, not to say anything of the rentals. This interest was due on July 1 and will have to be defaulted, Mr. Stimson said.

It was a desperate situation, Mr. Stimson urged, and he declared that immediate relief was required if the system was to continue service. Under the so-called Quimby or Rochester decision of the Court of Appeals, fourteen of the 113 transfer points seemed to be without the jurisdiction of Commissioner Nixon, although Mr. Stimson was not sure that the law might be construed to take those in as well.

Corporation Counsel Burr said that the city was agreed that there would have to be a rock-bottom basis for a readjustment, but said this could not be arrived at until the city had had the opportunity to look over the books and a new valuation of the property had been made.

Toledo Fares Increased

The Toledo Railways & Light Company, Toledo, Ohio, has increased the rate of fare to 6 cents, with 2 cents for transfers. Under a decree of the United States Courts, the company has the right under present conditions to fix the rate of fare under which it operates, its increase from the old franchise rate to 5 cents having been approved. This being true, it has the right to make the further increase that is necessary to pay the additional wages just granted to the men by the War Labor Board.

A resolution was introduced in the City Council on June 25 to oust the company from the use of the streets, as it has been operating without a franchise since 1914. Should this resolution prevail, it is said that further action will be taken in the United States District Court.

More than 2000 employees of the Toledo Shipbuilding Company refused to submit to the increased fare on the evening of June 25, and after an altercation, two cars were ditched, and several others were stoned. One of the cars took fire and the service of the fire department was necessary to extinguish the blaze.

St. Louis Fare Hearing Postponed

The hearing on the United Railways fare case scheduled for June 24 at St. Louis, Mo., was indefinitely postponed by the Public Service Commission of Missouri. Coincident with the announcement of this postponement City Counselor Daues of St. Louis issued a statement saying that the city will wait until Oct. 31 before beginning an active fight for reinstituting the 5-cent fare at St. Louis. Mr. Daues said that the city was in favor of giving Rolla Wells, receiver appointed by the United States District Court, a chance to see whether the United Railways could be operated profitably under less than a 6-cent fare.

Transportation News Notes

Interurban Will Install One-Man Cars.—The New Jersey & Pennsylvania Traction Company, Trenton, N. J., announces that it will shortly install cars of the one-man type on some of its divisions.

Increase in Fare in Quincy.—The Public Utilities Commission of Illinois has issued an order increasing the fare of the Quincy (Ill.) Railway from 5 cents to 7 cents. Four tickets will be sold for 25 cents.

One-Man Cars for Galesburg.—The Public Utilities Commission of Illinois has issued an order authorizing the Galesburg Railway, Lighting & Power Company, Galesburg, Ill., to operate one-man cars in that city.

Missouri Interurban Wants Increase.—The Southwest Missouri Railroad, Webb City, Mo., has applied to the Public Service Commission of Missouri for permission to increase passenger rates between Webb City and Carthage.

Chicago Railways Rate Hearing Sept. 2.—The hearing on the appeal of the Chicago (Ill.) Surface Lines in the 7-cent fare case, from the denying order of the Public Utilities Commission of Illinois, has been set for Sept. 2 in Sangamon County Circuit Court.

Increased Fare at Youngstown.—It was announced that fares on the Municipal Railway at Youngstown, Ohio, controlled by the Mahoning & Shenango Railway & Light Company, would be increased from 5 cents to 6 cents on July 1. This will be done under the new service-at-cost plan adopted some time ago.

Wants Fare Increase Continued.—The Aurora, Elgin & Chicago Railroad recently filed a petition with the Public Utilities Commission of Illinois asking for a continuation of the order which granted the company an increase in fare from 5 cents to 6 cents on the city lines of Elgin and Aurora. The original order expired on July 1, 1919.

A Courtesy to the Soldiers.—The Quincy (Ill.) Railway, included in the system of the Illinois Traction Company, considered all men in the uniforms of United States soldiers and sailors as the guests of the company during Quincy's big welcoming demonstration. Conductors of the company were notified not to collect fares from the men in uniform.

Fare Increase Again Refused at Warren.—On June 11 the City Council of Warren, Ohio, rejected the ordinance granting the Mahoning & Shenango Railway & Light Company a renewal of its franchise for twenty-five years and an increased rate of fare. This ordinance has been drafted four times, passed twice by Council and vetoed both times by Mayor Parks.

One-Man Cars Authorized. — The Public Service Commission of Massachusetts on June 30 approved the purchase and operation by the Berkshire Street Railway, Pittsfield, of seventeen one-man safety cars. The commission has also approved the construction and operation by the Milford, Attleboro & Woonsocket Street Railway, Milford, of two safety cars operated by one man.

I. T. S. to Run Its Own Express Business.—The Illinois Traction System, Peoria, Ill., resumed express business over its lines on June 29. The Adams Express Company operated over the lines of the Illinois Traction System until the express companies were consolidated into the American Railway Express Company. The Illinois Traction System now plans to operate the express business and to extend the scope of the work.

Memphis Fares Upheld.—The Supreme Court at Nashville, Tenn., on June 28 upheld the legislative act creating the Public Utilities Commission and the 6-cent fare that commission authorized for the Memphis Street Railway. The 6-cent fare in Memphis is already in effect and seems certain to remain in full force until an appraisal is made and a permanent decision rendered by the Public Utilities Commission. The new fares seem to be working well.

Wants Both Passenger and Freight Advance. — The Joplin & Pittsburg Railway, Pittsburg, Kan., has applied to the Public Service Commission of Missouri for an increase in both passenger and freight rates. The present appeal of the company is for an advance in passenger rates in Joplin and in freight rates between Joplin and Pittsburg. Some time ago the company was authorized to increase passenger rates between the city limits of Joplin and the Missouri-Kansas state line.

One-Man Cars for South Bend.—One-man cars may be introduced into South Bend., Ind., as a result of a visit made to Gary, Ind., by Mayor Carson, City Attorney Slick and R. R. Smith, superintendent of the Chicago, South Bend & Northern Indiana Traction Company. The Mayor and the city attorney were favorably impressed with their visit to Gary and it is thought that a plan will soon be worked out by which one-man cars will be placed on the streets of Scuth Bend. The safety cars in Gary were described and illustrated in an article, "Safety Cars in Gary Make Jitneys Unprofitable," in this paper for May 17, page 967.

Defeat of Fare Referendum Urged.—On June 19 petitions were presented to the North Side Improvement Association containing the names of 500 residents of the North Side, Columbus, Ohio, urging defeat of the proposed referendum on the ordinance giving the Columbus Railway, Power & Light Company an increased rate of fare. The directors approved the petitions, which urged the association to go on record against the proposed referendum. They voted to submit the petitions to the membership for consideration.

Smoking Permitted on Elevated Cars.—The Chicago City Council believes smoking ought to be allowed on the elevated trains, as it was a year ago, when the influenza epidemic caused the health department to issue an edict against it. By a vote of forty-eight yeas to eleven nays the Council on June 23 adopted resolutions directing the health department to set aside the order. The elevated system heads can restore smoking or not, but if they refuse to restore it on the Council's resolution, an ordinance will be passed directing that it be done, according to statements made after the meeting.

New Rates at Cincinnati.—The Cincinnati (Ohio) Traction Company announced the following rates of fare, to take effect on July 1: Adults—Tickets, 6½ cents, strips of six tickets for 39 cents, cash fares, 7 cents; children under ten years—tickets, 3¼ cents; strips of four tickets for 13 cents; two children carried for one adult ticket of 6½ cents, cash fare, 4 cents; transfers—issued under the present rules; inclined plane passengers—tickets, 3¼ cents; strips of four tickets for 13 cents, same tickets will be used for inclined plane fares as for tickets; cash fare, 4 cents. Arrangements have been made for the use of old tickets by adding the difference in cash. These changes have been referred to previously very briefly in the ELECTRIC RAILWAY JOURNAL.

Increases on Elmira Suburban Lines.—The Elmira Water, Light & Railroad Company, Elmira, N. Y., has filed with the Public Service Commission for the Second District, a new tariff which it proposes as effective on July 20 on the Seneca Lake division—Elmira, Elmira Heights, Horseheads, Montour Falls and Watkins and the towns of Elmira, Horseheads, Veteran, Catlin, Catherine and Dix. Changes proposed are: One-way fares between points Horseheads to Watkins, inclusive, established on the basis of 3 cents per mile, minimum fare 5 cents. Increases are effected. The new regulation provides for the sale of fifty-two-trip monthly commutation ticket books for travel between points named and at the following prices per book: Pine Valley and Elmira, $10.40; Pine Valley and Horseheads, $4.68; Millport and Elmira, $13.52; Millport and Horseheads, $8.32; Millport and Montour Falls, $7.03; Montour Falls and Watkins, $3.64. Changes in chartered car rates, package rates and for checking trunks effect increases.

Personal Mention

J. P. Ingle President

Manager of Keokuk Property Elected to Head the Iowa Electric Railway Association

At the annual meeting of the Iowa Electric Railway Association held at Colfax, Ia., on June 18 and 19, J. P. Ingle, manager, Keokuk (Ia.) Electric Company, was elected president of the association for the ensuing year and member of the board of directors for five years. Mr. Ingle was born at Salisbury, Md., on Oct. 27, 1882, and lived at Atlanta, Ga., from 1882 to 1906. He was educated in the public schools of Atlanta and worked for the Atlanta Gas Light Company as office boy, billing clerk and bookkeeper from 1897 to 1902. From 1902 to 1906 Mr. Ingle attended the Georgia School of Technology, graduating the latter year with the degree of Bachelor of Science, Civil Engineer. In 1906 he became assistant superintendent of the Gas Light Company of Columbus, Ga., and in 1908 superintendent of the gas department of the Baton Rouge (La.) Electric Company. In 1908 he went to Keokuk, Ia., as superintendent of the gas department of the Keokuk Electric Company, becoming general superintendent of the company in 1914. From 1915 to date he has been manager of this company, which does all of the electric railway, lighting, power and gas business in Keokuk, and also serves several other surrounding towns in Iowa and Illinois.

J. P. INGLE

Mr. Jackson Retires

Walter Jackson, who has been connected with the ELECTRIC RAILWAY JOURNAL for seventeen years successively as assistant editor, associate editor and as business manager, has resigned to enter independent consulting electric railway work. He will specialize on modern operating economies, the building up of short-ride zone fare systems and the co-ordination of bus and electric railway service. During recent years, Mr. Jackson has given these subjects wide study, both in America and abroad, and his writings on these topics have been of most stimulating character. Mr. Jackson will carry with him in this new work the best wishes of his recent associates for his success.

Capt. Harry L. Brown, U. S. A., has returned to the editorial staff of the ELECTRIC RAILWAY JOURNAL after an absence of a year and a half spent in the signal service. He was formerly the Western editorial representative of the paper, with headquarters in Chicago, but will now be stationed in the New York office.

George H. Wygant, for the last nine and a half years commercial agent of the Tampa (Fla.) Electric Company, has been transferred by Stone & Webster to Baton Rouge, La., as manager of the Baton Rouge Electric Company, which furnishes gas and electric light and power, as well as electric railway transportation, to the community.

J. Augustus Hageman has been made traffic superintendent of the Trenton & Mercer County Traction Corporation, Trenton, N. J. The new official succeeds Thomas J. Connelly, resigned. Mr. Hageman has been connected with the company at Trenton for the last thirty years and has filled various offices with the corporation. Mr. Connelly will return to Troy, N. Y., to rejoin the United Traction Company.

C. Gordon Reel, who retired as vice-president and general manager of the Kingston (N. Y.) Consolidated Railroad in 1911 and later was first deputy superintendent of highways of the State of New York, is now a captain in the United States Aviation Service. He was navigator of one of the airplanes which flew down New York Bay on June 28 to greet the crews of the NC 4, who returned to New York on the Zeppelin on that day.

Louis C. White has been appointed counsel to John H. Delaney, new transit construction commissioner of New York. The transit construction commissioner has taken over all rapid transit construction work from the former Public Service Commission. Mr. White has for ten years past been attached to the New York City law department, and has during most of that time been engaged in the acquisition of property for rapid transit and water supply purposes, and in the trial of suits growing out of rapid transit construction contracts.

Gordon Campbell Re-elected

President of Companies at York Re-elected to Head of Pennsylvania Street Railway Association

Gordon Campbell has been re-elected to serve a second term as president of the Pennsylvania Street Railway Association. His re-election took place at the Harrisburg meeting of this association on June 27 and 28. He became a member of the executive committee of the association in December, 1914, was advanced to vice-president in December of the following year and continued in that position until June, 1918, at which time he was elected president. Mr. Campbell has been president and general manager of the York Railways and the Edison Light & Power Company of York, Pa., since January, 1910. He graduated as mechanical engineer from Stevens Institute in 1886 and entered the railway field as a draftsman at the Denver shops of the Union Pacific Railway shortly thereafter. Subsequently he became superintendent of the Colfax Electric Railway, Denver, purchasing agent and master mechanic of the North Jersey Street Railway, Newark, N. J., general superintendent of the railways in Providence, R. I., now operated by the Rhode Island Company, and purchasing agent of the Washington Railway & Electric Company, Washington, D. C. This was followed by his connection in August, 1908, with the York Railways as vice-president and general manager, that position having been retained until he was promoted to the presidency of the York Company.

GORDON CAMPBELL

W. B. Yearance, who for a number of years since leaving direct corporate administrative service has been engaged in consulting, operating and engineering work on many of the important undertakings for the largest utilities in the East, has just been elected by the boards of directors of the Eighth and Ninth Avenue Railroads, New York, as "general manager and chief engineer in whole and responsible charge for the operation of these properties and the administration of their interests."

H. F. Adams has resigned as manager of the Haarlem (Holland) Electric Railway, and is now in this country, where he expects to purchase some apparatus, particularly motors and converters, for his property. During the war it was impossible to get this equipment, and service had to be cut for that reason, and a fuel shortage. After the purchase of this equipment Mr. Adams intends to remain in this country and will make application for American citizenship. He believes that with the signing of peace there will be a revival of Dutch electrical enterprises, and possibly extension of the existing trunk line electrification. Mr. Adams, who is a graduate engineer from Delft and Carlsruhe, was engaged for some time in turbine manufacture in Great Britain and then engaged in railway electrification in Holland. He became connected with the Haarlem Electric Railway when it was owned in America, the shares being in possession of the Netherlands Tramway Corporation, New York. This was in 1912. Later the property was taken over by the Holland Railroad System. The line is some 30 km. in length, double track, and connects Amsterdam, Haarlem and Zandvoort. During rush hours trains of two and three cars are run on a ten-minute headway.

A. W. Warnock has resigned as general passenger agent of the Twin City Rapid Transit Company, Minneapolis, Minn. The resignation becomes effective early in the fall when Mr. Warnock plans to go into business for himself. In his fourteen years as head of the passenger department of the company Mr. Warnock has systematized the work and has introduced many innovations. some of which have been adopted for use of systems in other cities. His two books, "How to Treat the Public" and "Selling Street Car Rides" are text books which every Twin City trainman studies. Many other systems have also adopted them. Along this same line of reducing friction between trainmen and the company's patrons, Mr. Warnock has delivered 150 lectures to Twin City trainmen. Other notable work by Mr. Warnock has been the twelve annual folders devoted as much to the Twin Cities as to the electric railway lines; the establishment of the first electric railway publicity bureau on a large scale, and the complaint and suggestion bureau. Before entering electric railway work Mr. Warnock was for three years advertising manager of the Northwestern Railroad, and for nine years was a member of the editorial and advertising staffs of the Minneapolis *Journal*. He was one of the organizers of the Publicity Club of Minneapolis, which was later merged into the Minneapolis Civic & Commerce Association, and was its first president, from 1907 to 1909. It was under his leadership that the ornamental street lighting system of Minneapolis was conceived and first installed on Nicollet Avenue, from Washington Avenue to Ninth Street, in 1908. Mr. Warnock has also been active in civic work. By virtue of his unanimous election by the clubs of the city as president of the Minneapolis Civic Celebration Association Mr. Warnock was foremost in planning and managing the seven-day outdoor celebrations of the event during the first week of July, 1911.

Mr. von Phul San Francisco President

William von Phul, who has been vice-president and general manager of the United Railroads of San Francisco since 1916, has been elected president and general manager of the company succeeding as president the late Jesse W. Lilienthal. Mr. von Phul was graduated from Tulane University in 1891 with the degree B.S., and two years later as mechanical engineer. He was subsequently employed as general superintendent of the Louisiana Electric Light Company and of the Edison Electric Company, New Orleans, until 1902, when he became associated with Sargent & Lundy, engineers of Chicago. He represented that firm as engineer in charge of construction for the Cincinnati Gas & Electric Company, later becoming general superintendent of that company until 1905, when he was employed by Ford, Bacon & Davis. Since 1907 Mr. von Phul assisted in the firm's engineering and operation of the electric railway and lighting companies in a number of large Southern cities comprised in the American Cities Company, including the Birmingham Railway, Light & Power Company, Memphis Street Railway, Nashville Railway & Light Company, Little Rock Railway & Electric Company, Houston Lighting & Power Company and later the New Orleans Railway & Light Company. In 1912 he became a member of the firm of Ford, Bacon & Davis. Mr. von Phul is a member of the American Society of Mechanical Engineers and the American Society of Civil Engineers, and is responsible for a number of important inventions which made possible the construction, at greatly reduced cost, of the large cotton warehouse terminal which Ford, Bacon & Davis designed and constructed at New Orleans for the Board of Port Commissioners of the State of Louisiana.

WILLIAM VON PHUL

M. O. Bicknell, who has recently been appointed traffic manager of the Sacramento Northern Railway, with headquarters at San Francisco, Cal., was born at Vincennes, Ind., on March 22, 1869. He began railway work in January, 1888, with the Evansville & Terre Haute, at Vincennes, as bill clerk in the local freight office. The following year he was promoted to agent of the same road at Patoka, Ind. In November, 1891, he went to the Southern Pacific Company as operator and ticket clerk at Deming, N. M., since which he has been consecutively traveling freight and passenger agent with headquarters at El Paso, Tex., until August, 1895; general freight and passenger agent of the Maricopa & Phoenix at Phoenix, Ariz., until January, 1898; superintendent of the same road until January, 1902; general freight and passenger agent of the Arizona Eastern and Southern Pacific until 1907; assistant general freight and passenger agent of the Southern Pacific, Pacific System, with headquarters at Tucson, Ariz.; chairman of the Arizona Railway Commission at Phoenix, Ariz., until 1909; chairman of the trans-continental bureau at San Francisco, Cal., until 1910; assistant to the president, Sacramento Northern Railway, which position he held until his recent appointment.

Edward J. Hunt, who has been western manager of ELECTRIC RAILWAY JOURNAL, with headquarters at Chicago, for the last eleven years, sails on July 5, for the West Indies, Central and South America, Japan and China, in the interest of Hitchcock, Lloyd & Company, Inc., exporters and importers, New York City. His assignment is that of studying the trade conditions in the various countries, and establishing selling connections and creating organizations to handle the company's lines. Among these are machine tools and hardware, steam and electric railway supplies, central station equipment, etc.

Mr. Hunt's early training was in electric railway construction work. He had charge of the construction of the third-rail on the Aurora, Elgin & Chicago Railroad and on the Jackson & Battle Creek Railway. He was also in charge of building the overhead on the Lansing & St. John Railway and on the Sterling, Dixon & Eastern Railroad. He joined the staff of the ELECTRIC RAILWAY JOURNAL in 1908, when this paper absorbed the *Electric Railway Review*. In 1910 he was placed in charge of the advertising in the Chicago territory, and held this place until February, 1919, when he resigned to take up the foreign work for Hitchcock, Lloyd & Company. Mr. Hunt's long experience in the selling activities of the electric railway field have given him excellent training for his present work.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES   BUSINESS ANNOUNCEMENTS

South American Traction Materials Market

Some Manufacturers' Agents Report Good-Sized Orders, Principally for Line Materials

Some fairly good-sized orders from South America for different kinds of electric railway material and equipment, principally line materials, have been reported recently by several manufacturers' agents. From all appearances the material was for new work rather than for maintenance.

One of the larger exporting houses, however, finds the electric railway supply business to South America a little quiet just at present. Even under normal conditions South America is not as heavy a purchaser of traction material, according to this exporter, as might be supposed. The reasons given for this condition are the size of the South American countries, the great distance between cities, and the light passenger and heavy freight traffic.

While the interurban and freight work is quiet in South America there are indications that the transit systems in the larger cities are expanding somewhat.

Copper and Brass Products Higher

Sheets, Tubes and Rods Increased 3 Cents Within a Week—Bonds Again Advance 3 Per Cent

With copper prices well over 18 cents the latter part of last week, prices of copper and brass rods, tubes and sheets advanced about 2 cents a pound. That brought hot rolled copper sheets to 27.50 cents and round copper rods to 24.25 cents a pound. Seamless copper tubing went to 32.00 cents. An additional increase of 1 cent per pound applies to manufactured copper and brass products as of July 2. Copper was quoted at 19 cents on that date with the tendency still upward. So within one week there are found two advances in copper and brass products totaling 3 cents a pound.

Copper products follow the metal upward in price cent for cent, manufacturers say, while brass products follow in the ratio of about ¾ cent for 1 cent rise in copper. All rail bonds are not sold under the same conditions; in some cases they follow the copper market closely and are sold on quotation. Where the discount is applied they change in price only on about one cent copper changes. The discount on these bonds changed on June 27 and 28 from 22½ to 20 per cent, another increase in price of slightly over 3 per cent. This makes a price increase of 6⅝ per cent within three weeks.

Although there has been reported no increase in brass overhead line material other than wire, it would not be surprising to see advances shortly in trolley cars, splicers, etc., in the near future with the raw metal tending upward.

Copper Wire Still Advancing in Price

Volume of Sales Increases and Shortages in Some Kinds and Sizes are Already Reported

Wire is steadily increasing in price as a result of the almost daily higher copper prices. Within the past week an advance averaging 1 cent per pound was made in most every make of copper wire.

Rubber covered wire on Monday morning was on a 23-cent base. Weatherproof and slow burning was quoted from 22 to 23½-cent base. Bare wire was 21 to 22½-cent base.

The volume of wire sales is getting larger right along. Wire mills are most conspicuous of the copper buying interests. Reports of shortages on certain sizes of weatherproof, particularly No. 10, and flexible armored conductor, are coming in from different sections of the country.

A much better market for bare wire is reported. Considerable business is coming through from central stations for transmission systems. Trolley wire is being sold in one mile lots. Sales of signal wire, however, have been very light of late.

Foreign inquiries for wire of all kinds are coming in in larger numbers, although the export trade in American wire has grown by leaps and bounds during the last three or four years.

High-Tension Insulator Sales Are Not Large

While there are a number of inquiries out for high-tension insulators, actual sales, manufacturers report, are below those of last year and not very good. Generally speaking, sales are for small quantities. This is to be expected as new long lines have been very scarce. Considerable work is projected, and some is under way.

Insulator sales consequently are increasing and, judging from the amount of projected work, the prospects for future business are bright. Many inquiries are coming from without the United States.

Time Now Right to Order Heater Parts

Later Purchasing for Fall and Winter Requirements May Not Secure Such Favorable Terms or Shipments

With the summer season well under way, there are a number of good market reasons why traction companies should consider seriously their heating needs for the coming fall and winter. There is no better time for that than right now, manufacturers say, because there is no evidence that prices will be lower this fall and because deliveries can be best obtained by getting in orders as early as possible.

On the other hand, manufacturers really feel that circumstances justify advancing prices for new electric heating equipments and for repair parts this fall and winter. The tendency of porcelain, resistance elements and iron work is upward rather than downward, and labor cannot be expected to be lower this year.

The early summer season is of course the slack season in the manufacture of electric heaters, and manufacturers have to keep on hand a certain force of workmen. The factory cannot build up at this time either repair parts or complete heaters for stock, in anticipation of the fall demand, on account of the varied requirements of the different railways. Consequently, if ordering is put off until September and October and pile up all at once, shipments will necessarily run up to two or three months.

Orders for repair parts placed now, it is learned, can be filled and shipped for delivery at any time in the fall or winter, and billed as of that date. Orders placed in September can probably be shipped in 30 days, while those placed in October are liable to require sixty to ninety days in filling. Stocks of raw materials on hand amount to about 20 per cent of the season's requirements, so late orders may have to await until these can be replenished.

The whole tendency of late ordering is toward higher costs and longer shipments. In the past four years producers have absorbed considerable amounts of the additional expense, but if costs of material go higher they feel that these must be passed on to the consumer in greater proportion than heretofore.

Repair parts orders in the past two years have been about 10 per cent of normal, so evidences point to a much larger volume of ordering than heretofore if traction companies are to put and keep in shape their electrical heating equipment for this winter.

Rolling Stock

New Orleans Railway & Light Company, New Orleans, La., has started to equip cars on its Coliseum line with safety doors and steps. When this work is finished it is expected to similarly equip cars of its other lines.

Tidewater Power Company, Wilmington, N. C., has received motors and trucks necessary for changing two of its interurban trail cars into motor cars. Shipment of the eight cars, to be rented from the Emergency Fleet Corporation, has been held up on account of the delay in delivery of motors, which were secured in Boston.

Recent Incorporations

Pittsburgh, Butler & Harmony Consolidated Railway & Traction Company, Pittsburgh, Pa.—Incorporated in Delaware with a capital stock of $6,500,000, presumably as the successor to the Pittsburgh, Harmony, Butler & Newcastle Railway, change in control of which was noted in the ELECTRIC RAILWAY JOURNAL for June 28, page 1290.

Power Houses, Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal.—Plans have been completed by the Pacific Electric Railway for the construction of a combined passenger and freight station at Harbor Boulevard, San Pedro. The building will be 190 ft. long and have an average width of 30 ft., and will be of brick construction. The total expenditure, including the rearrangement of trackage necessary, will be approximately $50,000.

Philadelphia, Pa. — Sealed proposals will be received by William S. Twining, director, Department of City Transit, until July 8 for the following work: Contract No. 553.—Station buildings of brick, steel and reinforced concrete for Frankford Elevated Railway, at the southeast corner of Front and York Streets, and at the southwest corner of Front and Dauphin Streets, including the removal of the existing building at the southwest corner of Front and Dauphin Streets. Contract No. 554—Station buildings of brick, steel and reinforced concrete for Frankford Elevated Railway, at the northeast and northwest corners of Front Street and Girard Avenue, including the removal of the existing building from the northwest corner of Front Street and Girard Avenue. Contract No. 555—Group of both contracts 553 and 554 in one. Contract No. 563—Steel sash and wood closures for the entrance openings of the existing station buildings at 4269, 4270 and 4604 Frankford Avenue and southeast corner of Frankford Avenue and Margaret Street. Contract No. 113—Return piping for steam heating system in basement of City Hall. Contract for building partitions of wood and glass in the offices of the Department on the eleventh and twelfth floors of 1211 Chestnut Street. Copies of plans and specifications may be obtained upon deposit of $10, to be refunded upon the return of plans.

Track and Roadway

Los Angeles (Cal.) Railway Corporation.—The Board of Public Utilities has ordered the Los Angeles Railway Corporation to install double tracks on new Broadway, between Tenth and Pico Streets, in order to relieve traffic congestion. It is estimated that the installation of the double tracks, with switches, turnouts, etc., will cost about $50,000.

Miami (Fla.) Traction Company.—It is reported that the Miami Traction Company will construct 3 miles of track.

Susquehanna Traction Company, Lock Haven, Pa.—Work has been begun by the Susquehanna Traction Company on the reconstruction of its line in Lock Haven.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Extensive improvements will be made by the Fort Wayne & Northern Indiana Traction Company of its Broadway line between Main Street and the plant of the General Electric Company. The company will also double track South Calhoun Street from Creighton Avenue to Pontiac Street.

St. Louis, Mo.—Resolutions introduced in the Board of Aldermen of St.

NEW YORK METAL MARKET PRICES

	June 18	July 2
Copper, ingots, cents per lb	17 75	19.00
Copper wire base, cents per lb	20 00 to 20 50	20.50 to 21.00
Lead, cents per lb	5 40	5 40
Nickel, cents per lb	40.00	40.00
Spelter, cents per lb	6 90	7.35
Tin, cents per lb	†72.50	70 50
Aluminum, 98 to 99 per cent, cents per lb	33.00	33.00

† Government price in 25-ton lots or more f.o.b. plant.

OLD METAL PRICES—NEW YORK

	June 18	July 2
Heavy copper, cents per lb	15 00 to 15 50	16 00 to 16 50
Light copper, cents per lb	12 00 to 12 75	13 00 to 13 50
Heavy brass, cents per lb	8 50 to 9.25	8 50 to 9.50
Zinc, cents per lb	5 25 to 5 50	5 25 to 5 75
Yellow brass, cents per lb	7 50 to 8.00	7 75 to 8 25
Lead, heavy, cents per lb	4.75 to 4 87½	4 75 to 4 87½
Steel car axles, Chicago, per net ton	$23 00 to $24 00	$25 00 to $26 00
Old carwheels, Chicago, per gross ton	$21 00 to $22 00	$22 00 to $22 50
Steel rails (scrap), Chicago, per gross ton	$18 50 to $19 00	$19 00 to $20 00
Steel rails (relaying), Chicago, gross ton	$19 50 to $20 00	$20 00 to $21.00
Machine shop turnings, Chicago, net ton	$6.50 to $7.00	$7.75 to $8.00

ELECTRIC RAILWAY MATERIAL PRICES

	June 18	July 2
Rubber-covered wire base, New York, cents per lb	22	23
Weatherproof wire (100 lb. lots), cents per lb., New York	23.25 to 26.00	27
Weatherproof wire (100 lb. lots), cents per lb., Chicago	25 75 to 26.50	25 75 to 26 50
T rails (A. S. C. E. standard), per gross ton	$49.00 to $51 00	49 00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47.00 to $49 00	47 00 to 49 00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45.00 to $47.00	45 00 to 47.00
T rail, high (Shanghai), cents per lb	3	3
Rails, girder (grooved), cents per lb	3	3
Wire nails, Pittsburgh, cents per lb	3.25	3.25
Railroad spikes, drive, Pittsburgh base, cents per lb	3 35	3.35
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	2.75	2.75
Tie plates (brace type), cents per lb	2.75	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb	3	3
Angle plates, cents per lb	3.90	3 90
Angle bars, cents per lb	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb	4 35	4.35
Steel bars, Pittsburgh, cents per lb	2 35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4 20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.25	5.25
Galvanized barbed wire, Pittsburgh, cents per lb	4.10	4.10
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70	3.70
Car window glass (single strength), first three brackets, A quality, New York, discount †	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	81%	81%
Waste, wool (according to grade), cents per lb	14 to 17	14 to 17
Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	8 to 12½
Asphalt, hot (150 tons minimum), per ton delivered	.....	.....
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	......	.....
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl	$2 90	$2 90
Cement (carload lots), Chicago, per bbl.	$3.05	$3 05
Cement (carload lots), Seattle, per bbl.	$3.13	$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.83	$1.90
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1 75	$1.92
White lead (100 lb. keg), New York, cents per lb	13	13
Turpentine (bbl. lots), New York, cents per gal	$1.17	1.00 to 1.03

† These prices are f. o. b. works, with boxing charges extra.

Louis by the Tenth Ward Improvement Association last week ask that the city take action toward the establishment of loops and passenger waiting stations for the convenience of persons using the interstate electric lines between St. Louis, Mo., East St. Louis, Ill., and other Illinois points.

Schenectady (N. Y.) Railway.—The Schenectady Railway has been authorized by Governor Smith to use the new gateway bridge across the Mohawk River. The company plans to double-track the new bridge and continue the tracks down State Street, cutting off the tracks now on Washington Avenue and along the Scotia dyke. The cost will be about $170,000.

Canadian Government Railways, Brockville, Ont.—The Brockville Public Utilities Commission is considering equipping the Brockville and Westport branch of the Canadian Government Railways for electrical operation. The line is 45 miles long and serves a farming section.

Waco-Temple Interurban Association, Waco, Tex.—The Waco-Temple Interurban Association has been organized at Waco for the purpose of building and operating an interurban line between Temple and Waco. Officers of the association are: O. A. Ryfle, president and general manager; John F. Wright, vice president; J. L. Davidson, secretary and treasurer; Alva Bryan attorney, all of Waco. A survey of the proposed route will be begun at once.

Richmond & Ashland Railway, Richmond, Va.—Operation has been begun by the Richmond & Ashland Railway on the line of the Richmond & Chesapeake Railway, which it recently purchased.

Manitowoc & Northern Traction Company, Manitowoc, Wis.—The City Council of Manitowoc has ordered the Manitowoc & Northern Traction Company to extend its lines.

Trade Notes

Watson-Stillman Company announces that on June 2 it moved its general sales and advertising departments from Aldene, N. J., to 50 Church Street, New York City.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has added 2,000 sq. ft. to its present office space at 325 Locust Street, St. Louis, Mo., an increase of 33⅓ per cent.

Gold Car Heating & Lighting Company announces the receipt of an order for electric heaters for the 200 safety cars ordered by the Brooklyn (N. Y.) Rapid Transit Company.

Safety Insulated Wire & Cable Company, New York City, Le Roy Clark, president, announces the appointment of Francis E. Donohoe as special agent of the company, effective June 1, 1919.

Indiana Mill & Lumber Company, 1405 Fisher Building, Chicago, Ill., has announced that it is handling a line of Southern white cedar poles in addition to its line of hardwood and pine railroad ties, piling, pine and oak timbers.

Samuel F. Joor, a consulting engineer of Chicago, has joined the American Steam Conveyor Corporation, Chicago, as sales engineer. Mr. Joor has had wide experience in the conveyor field, at one time being western manager and sales engineer of the Jeffrey Manufacturing Company and previous to that, with the Link Belt Company.

Eastern Foundry & Machine Company, Inc., announces that it is now operating its new plant at Ambler, Pa. The buildings are the modern daylight type, and the equipment the most scientific procurable. With large quantities of raw materials always in stock, and under the ideal conditions now afforded, the company states requirements in bronze castings, bushings, chord bars, bearings, or specification work, will receive prompt and satisfactory fulfillment.

Standard Scientific Company announces that the manufacture of Meliorate solderless terminals has been taken over by the Standard Scientific Company, 70 Fifth Avenue, New York City. These terminals were introduced a number of years ago by the Meliorate Manufacturing Company, which has now disposed of its entire rights and interests therein to the Standard Scientific Company, which is expending the same care and attention on the product as its predecessors.

Midwest Engine Company of Indianapolis, Ind., announces the opening of four offices in this country in order to more fully cope with and meet the growing demand for prime movers, pumping equipment, etc. Jacksonville, Fla., El Paso, Tex., New Orleans, La., and New York City are the locations selected. D. J. Carrison represents the Midwest Engine Company in Florida, with offices in the Florida Life Building, Jacksonville. Mr. Carrison was formerly connected with the Busch-Sulzer Brothers Diesel Engine Company of St. Louis., Mo., and later started a manufacturers' agency at Jacksonville, handling miscellaneous equipment to shipyards under the name of D. J. Carrison & Company. Chester B. Loomis is representing the company in western Texas, Arizona, New Mexico and southern California, with offices at 303 Caples Building, El Paso, Tex. Mr. Loomis had a consulting and mechanical hydraulic engineering office in Los Angeles, Cal., for several years before entering the service. B. H. Downing is eastern sales manager, with offices at 111 Broadway, New York City. J. R. Lowe, with offices at 617 Maison Blanche Building, New Orleans, La., represents the company in the south.

Blaw-Knox Company, Pittsburgh, Pa., announces that the sale of its plant at Wheatland, Pa., to Sharon interests, is in line with its program which was outlined some time ago for either the removal or sale of the Wheatland plant and the building of an extension to its plant at Hoboken, Pa., to take care of product formerly manufactured at Wheatland. This is done for the purpose of concentrating all of the manufacturing at Hoboken, which was found to be the most advantageous point both for manufacturing and for shipping facilities. About one-half of its new plant at Hoboken has been completed, and it is anticipated that the entire addition will be completed within the next few weeks. The combined plants at Hoboken now under construction will contain about 30 per cent more floor space than was available in the two separate plants. In addition to the foregoing activities the Blaw-Knox Company is engaged in the construction of a welding plant at Hoboken adjoining its present plant, and will specialize in this department on steel mill and chemical plant specialties. The combined plants at Hoboken will employ about 1200 men as against 700 men who have been employed by the company heretofore at Hoboken and Wheatland. The manufacturing site of the company at Hoboken covers 50 acres, and in point of shipping facilities for incoming material and outgoing product as well as in the matter of labor supply is most fortunately situated. In order to take care of the additional labor required the company has purchased 15 acres of additional ground on which houses are being erected for the use of its workmen.

New Advertising Literature

Liberty Manufacturing Company, Pittsburgh, Pa.: Catalog "Z" describes the operation of turbine cleaners, pneumatic cleaners and other products of its factory.

Mitchell-Rand Manufacturing Company, 18 Vesey Street, New York City: Form No. 245—"Discounts on Electrical Tapes and Webbings," with reference to form No. 226, which was issued previously.

Holden & White, Inc., Chicago, Ill.: Bulletin on Garland ventilators for large passenger coaches, showing typical installations for either monitor or arch roof cars of larger types, and describing the Garland blower systems.

Gilbert & Barker Manufacturing Company, Springfield, Mass.: Booklet on "Oil Storage Systems," for storing, handling and distributing volatile, lubricating and paint oils in machine shops, power plants and electric railway oil houses.

Electric Railway Equipment Company, Cincinnati, Ohio: First edition of Catalog "F," showing reproductions from actual photographs of its combination railway and lighting poles installed in many cities. It also illustrates these poles supporting General Electric Novalux units and luminous arc lamps, besides lamp standards, lighting brackets and mast arms.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, July 12, 1919 *Number 2*

Don't Think of the Electric Railway in the Past Tense

ANY tendency, if such exists, to feel or assume that the electric railway has done its best work and must look forward to early retirement should be emphatically discouraged. The electric railway in which the present generation is interested is the railway of the future. And the industry is as yet a mere infant in point of years as compared with transportation as a whole. Just a third of a century covers its whole commercial career, of which the most useful part is spanned by two decades. Thirty years ago the electric railway had the field to itself, now there is vigorous competition. But fair competition is the life of every industry and it ought to be the life of transportation. Let us not forget that Oliver Wendell Holmes said that when the individual becomes retrospective he is showing signs of age. Surely this business is not turning gray at thirty-three.

All Means for Helping the Industry Must Be Utilized

THE two topics considered at the Great Lakes cruise meeting of the C. E. R. A. are indicative of the thinking, and acting, too, of the industry at this time. The paper on safety cars aroused lively and continued discussion. This was due to the fact that the men who are operating the electric railway utilities are looking for means to enable them to give an approximation to the service which the people demand, knowing that if they can do this it will be much easier to secure the relief from taxation and fare-limitation burdens which they so much need.

The paper outlining the development which has led to the present inequalities in financial and other burdens, with the supplement thereto by A. W. Brady, painted a rather gloomy picture of the situation from what might be termed the "negative" side. This side must be considered with a view to securing readjustment, and so long as politics plays so important a part in public relations as it does to-day, the industry will be under the necessity of keeping its case directly before the public.

The discussion at this meeting once more emphasizes the fact that the traction business must be put upon its feet by using all of the three available means, namely, (1) adjustment of fares to fit the purchasing power of money and the quantity and quality of the service; (2) adjustment of direct and indirect taxation in all fairness to the railway user and non-user, to the security holder and the non-security holder; (3) improvement of output so that expansion of business will reduce the unit cost of furnishing it.

The industry is shaking itself preparatory to a mighty forward move. Realizing the essentiality of electric railway transportation the public is, reluctantly but positively, recognizing the need for higher fares. The federal government has at last provided a mechanism to permit the people as a whole to appreciate the nature and needs of the business. The interest in the safety car reflects the desire of both public and operators for better service. These encouraging signs are stimulating and presage, to our mind, a general improvement in the situation. As the French say: *"En avant!"*

One-Man Cars Must Be Laborless and Safe

IT IS a little discouraging in examining the statistics of one-man car installations, as presented by S. W. Greenland on July 1, at the meeting referred to in the preceding editorial, to find that so many of these cars have been put into operation without decreasing but rather augmenting the work of the car operator. We do not refer, of course, to stub-end operation or other lines averaging only two passengers per car-mile, but rather to those cases where a speeding up of the service would bring more dollars to the company and more satisfaction to the platform man and the public.

For example, those managers who express satisfaction because nobody is complaining are uttering a merely negative opinion. If they add air brakes to their cars, they are taking the first step in higher schedule speed, in greater safety inside and outside the car and in less work for the operator. If they add air-operated doors and steps to their cars, they take a second step forward, particularly in reducing standing time and in permitting better collection of fare. If they take the third step of interlocking all the operating appliances of the car, they have attained the highest degree of operating economy, the safest attainable schedule speed and the maximum satisfaction to both the patron and the platform man.

Now each step, made individually or collectively, will cost money, but wasted platform time also costs money. The trouble is that because we think of the expense in dollars and of the waste in cents, the real economies tend to become obscured. Let us assume, for instance, that the car with all the speed-up and safety appliances is good for 10 car-miles more a day. Then the faster car would earn say $2 a day more if the average revenue was only 20 cents per car-mile. More than half of this would be sheer profit because the wages in both cases would be for hours and not for miles. Even if we made a liberal allowance for the extra weight of the speed-up equipment and the energy required therefor, the surplus would surely run between $1.25 and $1.50 a day on any line with something better than interurban schedules. Does it require a knowledge of the higher mathematics to figure out how quickly the automatic apparatus would pay for itself?

In all this we have said nothing about the reduction of the accident expense. Any electric railway surely would be willing to pay a good premium per annum per car to any casualty company that would be willing to accept the risk. Why not then treat part of the cost of automatic appliances as if it were an insurance premium. It is all very fine to boast that no accidents have occurred despite the absence of modern safety appliances, but if the accident does come the cost of the settlement will depend very largely upon the defendant's ability to prove the best and most comprehensive devices that its operating conditions justified. The ultimate economy of putting safety first is but a matter of dollars and cents and common sense.

The Use of Manganese Steel In Curved Rails Is Not Always Economical

THE use of manganese steel and other alloyed steel in special track work, including curves, upon electric railways was a rather fixed practice before the steam railroads began to take an interest in the subject. In fact it took a long time to prove to them that even a trial would prove its worth. Once convinced, the steam roads have become large users of this material for some kinds of work. Meanwhile the electric railways had gained considerable experience in comparative wear of manganese steel as against bessemer and open-hearth steel, especially in curves, and some street railway engineers were long ago bold enough to voice the results of these experiences, which were to the effect that for plain curves the conditions must be exceptionally severe to warrant the added expense of the manganese, even at the pre-war price differences. Some electric railways have found that they could afford to renew a curve three times with open-hearth steel for the same total expense as was involved in one manganese curve. The tendency in the use of expensive manganese curves is also toward permitting the curves to remain in service long beyond the time when good maintenance would call for their removal.

Similarly it was found that only in certain exceptionally severe locations was it advisable to install the excessively expensive manganese special track work. The steam roads are beginning to find out the truth of this matter also, if the reports of tests on alloyed steel rails in service in curves, as recently rendered by the committee on rails of the American Railway Engineering Association, can be taken as a guide. Here, two different railroads report that when the high cost is considered, the proposition can hardly be considered economical. It is also noted that the manganese rails become distorted more easily than bessemer or open-hearth rails, an observation which confirms electric railway experience. In fact, in electric railway service, the distortion has been the real cause of removal in several instances, rather than direct abrasion. Similarly, in special work for steels in many cases so-called soft centers (medium-steel or sometimes chromium-steel) will serve the purpose better than manganese at less cost.

The lesson to be learned from these combined experiences seems to be that a very careful study of conditions should be made before a decision is had as to the advisability of substituting manganese steel in curves and other special work, since it will often be found that some other alloy-steel or even open-hearth steel will eventually prove more economical.

What the Committee of 100 Can Do

IF THE plans of the American Electric Railway Association and its committee of one hundred in connection with the presentation of its case to the Federal Electric Railways Commission are carried out, the work will be most exhaustive. No such comprehensive review as that proposed has probably ever before been made of any industry, because parallel conditions in any other have not occurred. The investigation and testimony will necessarily be largely along financial lines because the present crisis is a financial one. Nevertheless, the inquiry will necessarily also cover to an extended degree questions of engineering, law, social betterment, government and banking.

The task which the industry, through the association and its committee of one hundred, has set for itself is outlined in the program presented on July 10 by the committee on presentation, and published elsewhere in this issue. Briefly this program may be divided as follows:

1. To describe the present status of the industry,
2. To outline the causes which have led up to the present condition,
3. To prove the continuous social need of urban and interurban transportation service.

The duty of supplying the data covered by these three divisions belongs to the committee on presentation, while that of suggesting means of escape from the existing tangle is the work of the committee on recommendations.

In a general way the facts covered by the three paragraphs given above are known to most men in the industry, but they are known only in a general way. In consequence the data which the association and its experts are collecting ought to be most instructive even to men actually engaged in railway service, as it will be derived not only from operating sources but from every collateral direction. Incidentally, we believe, the inquiry will accomplish a great deal of good in addition to proving the need of greater financial return for electric railway properties. It should prove the close connection between community prosperity and that of the local transportation system and the advantages of active co-operation between municipal and railway authorities for the common good. It ought also to explode some popular misconceptions about the prevalence of water in electric railway capitalization and the profits of railway operation.

From the evidence thus presented by the association it will be the duty of the federal commission to make recommendations, and if we assume that the industry proves its case in regard to clause (3), i.e., that there is a continual social need for urban and interurban electric railway transportation the recommendations of the federal commission on the presentation of this evidence will have to be constructive. At present railway construction is not only at a standstill, it is going backward, and electric railway credit is dead. The work of the commission, therefore, if its members accept the electric railway as a necessity, will be to suggest such means that a reasonable return will be earned on utility capital, not only in the immediate future but at all times. In this way only can electric railway credit be restored so that urban and interurban properties of the country can expand their facilities to accord with the community needs.

On Editing a Technical Journal

THE editors of this journal are not endowed with powers of omniscience. They sometimes wish that they could be, to the extent that they might have a more all-seeing knowledge of things which are going on in the electric railway industry. Possessed of such power, the task of editing and producing a paper which will best cover all phases of the business would be greatly simplified. In the absence of such ability and being merely human, the editors must depend upon their personal contact with the men in the industry for most of the information which is necessary, in order to keep in touch with the progress in such a many-sided industry.

That progress may obtain, it is the chief function of a technical or trade publication to gather and disseminate news and information which principally is of interest as a record of progress. In the gathering of such matter, the tendencies of the trade activities are focused or centralized in the editorial office. From this center of information, the editors attempt to select articles which will be of interest to the greatest number of readers. Incidentally they attempt, from time to time, to direct attention upon matters of timely interest by comment in these columns.

The task of issuing a paper of this character fifty-two times a year is no light one and the editors wish again to remind the readers of the JOURNAL that its columns are at all times open to the discussion of timely topics. The receipt of communications from the men in the field, either for publication or for information and use editorially is always appreciated and the editors will be glad to have the feeling prevail that the JOURNAL aims to be of the utmost possible service to the individual as well as to the industry as a whole. The motto of the JOURNAL is "Service."

Transfer Charge Granted in New York

THE approval of Public Commissioner Nixon of the first district, New York, to a charge of 2 cents for transfers at 99 points on the surface lines in Manhattan is a most encouraging sign of the times. It can hardly be said greatly to relieve the situation in which the railway systems have been placed by the rising costs of labor and materials. But it will bring in some additional revenue and, what is more, it will establish a precedent for further public recognition of an intolerable situation and encourage the security owners to work toward substantial rehabilitation. The form of relief granted, a charge for transfers, is that for which the companies originally petitioned and is one to which the general plan of New York with its distinctive longitudinal and crosstown avenues and streets makes it better adapted than would be the case with a fan-shaped city.

The opponents of the charge for transfers are loud in their complaints of the additional "burdens" placed on the traveling public, but have no substitute except municipal ownership. That there is really an additional burden, we do not admit. The fare is nominally higher, it is true, but actually it is not as high as before the war, and the slight additional charge is not a burden if recognized as a substitute for the only other courses open, namely, dissolution of the New York Railways into its constituent elements with a separate fare on each, serious deterioration of the service or municipal ownership and operation. Of these especially the last would be a very onerous burden on the city of New York whose large investment in the dual subway agreement is not only entirely unproductive, but is having piled against it a constantly increasing amount of preferred charges, simply because the city will not recognize changed business conditions in its rapid transit investments. The 2-cent charge for transfers is the first ray of light since the war began on the New York Railways situation.

Take Traffic Checks of the Non-Riders

TRAFFIC studies of the non-riders, as a source of data that might show the way to an inauguration of service which would attract many of the pedestrians to the street cars, was a suggestion made by Chairman Ainey of the Pennsylvania Public Utilities Commission at the recent meeting of the Pennsylvania Street Railways Association. He referred to these potential riders as representing the unearned increment of the electric railway business.

The suggestion offers possibilities. The idea has been presented before, but no one has really gone into it extensively, so far as we know, since the days of prospecting new lines. Now that there is a decided trend of thought through the industry along the line of selling transportation as a merchandising proposition, this idea of seeking out new sources of riders may perhaps be more feasible. Its value goes hand in hand with the ability of a company to supply transportation of a kind and quantity and at a price which will induce these walkers to ride. That means fast, frequent and fairly low-priced service. As Mr. Fairchild well said in the discussion, the railway company, like the merchant, must be ready to furnish the kind of merchandise that is wanted, but the size of package will vary. And when one thinks of those requirements, he immediately associates with them, for most municipalities, the safety car.

To get a traffic check of a reasonable proportion of the walkers offers some difficulties, for it is hardly practicable to trail each individual found walking on the street. But there are undoubtedly localities in every community where there are considerable numbers of factory or office employees who walk in a few fairly well defined common paths from work to home and thus form a movement that a traffic checker may readily analyze. Having plotted on a map or chart the various main courses of these pedestrians, the cause of the excessive walking may be determined and the practicability of meeting that condition with a suitable service studied.

It seems logical to assume that at least all persons (excluding those who ride in automobiles) who must walk in excess of one mile between their home and work, may be considered as car riders. And if the traffic study shows that there is a large percentage of such persons among the walkers, then it should serve as good evidence that additional business can be secured and how much. Mr. Ainey has done the industry a service in emphasizing in the Harrisburg meeting and also in the address presented by him at the Chamber of Commerce meeting last May the essential merchandizing phase of the electric railway industry.

The Zone Fare in Practice

LEEDS, PART II

Recent Fare Increases of from 50 to 100 Per Cent Have Borne More Heavily on the Clerical than on the Working Class—Despite Higher Fares and a Cut in Service, Traffic Fell Off Only 3.4 Per Cent and Revenue Jumped 23.3 Per Cent Last Year

BY WALTER JACKSON

IN THE last issue of this paper an account was published of the development of the housing conditions and tramway system at Leeds, the important manufacturing city in the midlands of England. The purpose of this article is to describe the present tramway operating conditions in Leeds and how the tramways increased fares 50 per cent and decreased its car mileage more than 4 per cent, yet its decrease in passengers carried was less than 3½ per cent. The present article includes a statement of the local labor conditions in the city.

Up to June 10, 1918, a ½d. ticket was available for general riders to a distance of ½ mile, while the standard penny ticket was good for an average of 2 miles. In its day, the ½d. ticket was a great success in getting people to ride extremely short distances. It is significant, however, that when experimentally the ½d. rate privilege was extended to permit a ride of about ¾ mile, it had to be restored to the ½-mile basis because a ¾-mile ride for a ½d. cut too deeply into the 1d. riders. This example from Leeds' experience is simply another illustration of the opportunity which the zone-fare principle provides for scientific traffic analysis and development.

PARK ROW, AN IMPORTANT STREET IN THE BUSINESS DISTRICT OF LEEDS

A LIVELY DAY ON A LEADING THOROUGHFARE IN THE CITY OF LEEDS

A 50 TO 100 PER CENT INCREASE HAS NOT DISCOURAGED TRAFFIC

For the year ended March 31, 1918, the earnings per car-mile were 14.746d. on the basis of ½ mile for ½d., 2 for 1d., 2½ miles for 1½d., 4 miles for 2d. and 6 miles for 3d. With the great increase in cost of tramway operation, Leeds could no longer afford to give a general fare of ½d. It was therefore necessary to go to the 1d. fare as a starting point. In making the change, the management generally consolidated two of the old ½d. fare stages so as to give about 1 mile for 1d. The 2 miles formerly given for 1d. now cost 1½d. The highest regular fare is now 10½d. for the 13.62 miles between Guiseley (White Cross) and Roundhay. In general, fares above 1d. have been increased about 50 per cent. In one sense, the substitution of a 1d. for a ½d. fare meant an increase of 100 per cent; but when averaged out the increase was less inasmuch as it did not effect at all those passengers who rode between ½ and 1 mile.

The only ½d. fare that remains now is a ticket good before 7.45 a.m. for workmen and at any time for children between five and twelve years of age. The ½d. ride for a penny privilege is also granted to children up to fifteen years of age in going to and from school. The 1½d. ride is available to children for 1d., the 2½d. ride for 1½d. and so on, but no special tickets are used in such cases as the conductor simply punches the ticket forward for the appropriate additional number of stages.

Special rates for workmen also include afternoon return or round-trip tickets up to 10½d. The last represents the Guiseley-Roundhay ride previously mentioned. Here is a case where a workman pays only 10½d. for 27.24 miles, whereas the ordinary passenger has to pay 21d. Although the workmen's return half must be used the same day, as hereinafter explained, it is obvious that the concession is more than generous. Here, again, it may be emphasized to those who associate congestion with zone fares and the laborer, that it is precisely the workman who has had less-than-cost transportation for years. Even though the proportion of workmen's fare travel in Leeds is only 10 per cent of the total revenue or 17 per cent of the total passenger rides, it costs the Leeds system at least £12,000 a year more than the revenue. This is in reality a subsidy to one class of the population at the expense of the rest.

As is admitted by all, the greatest sufferers from war are the clerical classes. In Leeds, the effect of the increase in fare was to interfere appreciably with the riding habit of this portion of the population. Many shop clerks and others who had been in the habit of riding home for lunch seem to have adopted the expedient of bringing it with them. Moreover, it is evident from the traffic returns that some of the old penny riders are walking at least one way because they feel that they cannot afford to pay 1½d. Conditions of this sort indicate unfair the archaic rate for workmen has become.

Table II herewith shows the weekly traffic return for the week ended Feb. 8, 1919, compared with the same period of the preceding year. To the original figures on Table II has been added the consumption of tickets report for the week ended Feb. 9, 1918, to show how the proportions of the different classifications have been shifted by the change in fares.

In 1918, for the week under consideration, the most popular full-rate ticket was the 1d. one, amounting to 63 per cent of the total; in 1919 it was the 1½d. ticket, amounting to 43 per cent of the total. What might be defined as "the average ride passenger," therefore, dropped in numbers to the extent of 20 per cent. The actual drop of passengers overall was only 9 per cent, as the number of passengers paying a higher rate than 1½d. was naturally augmented by the advancement from the lower-rate classifications. At the same time, it is to be observed that the number of maximum ride passengers at 7½d. was less than at 5d., from which it is apparent that even the long rider can cut down on his traveling if necessary.

TABLE I.—LEEDS TRAFFIC RETURN FOR WEEK ENDED FEB. 8, 1918 AND 1919

Route	Passengers	Number of Regular Cars	Miles Run	Total Receipts 1919, £	Total Receipts 1918, £	Average Receipts per Car Mile 1919 d.	Average Receipts per Car Mile 1918 d.	Average Receipts per Car Mile Previous Week in 1919, d.
Hunslet (Leeds cars)	61,440	.....	......	293	277	.....	.....	.....
Hunslet (Wakefield cars)	60,200	.....	......	301	261	.....	.....	.....
		9	6,477	595	538	22.04	19.40	22.37
Cardigan Road and Balm Road	134,255	10	8,189	730	571	21.41	16.81	21.33
Dewsbury Road and Beckett Street	245,682	18	14,370	1,222	1,007	20.42	15.89	20.92
Beeston, Woodhouse, and Belle Vue Road	229,915	21	15,181	1,173	938	17.23	15.33	19.48
Morley and Meanwood	141,109	18	13,313	1,040	807	18.74	14.64	19.22
	....	3	......	......	......	.....	.....	.....
Domestic Street and Circular Route	64,289	6	4,546	323	260	17.06	13.95	18.10
Whitehall Road and Harehills Road	11,703	2	1,251	54	52	10.40	8.94	7.56
Lower Wortley and Easy Road	101,853	9	7,017	529	486	18.17	16.65	18.78
Upper Wortley and Halton	217,638	25	16,990	1,319	1,033	18.63	14.61	19.32
Pudsey and Stanningley	101,469	9	8,520	733	512	20.67	14.26	20.21
Leeds and Bradford (Leeds cars)	61,395	7	6,940	471	265	16.30	16.00	17.18
Leeds and Bradford (Bradford cars)	......	4	......	......	200	.....	.....	.....
				471	466			
Rodley and Corn Exchange	57,964	8	6,439	426	351	15.91	13.24	16.14
Guiseley, Horsforth, and Roundhay	405,412	47	38,540	2,826	2,105	17.60	13.10	17.90
Lawnswood and Street Lane	305,813	33	25,367	2,070	1,513	19.02	14.22	20.02
Farnley (rail-less)	7,409	.....	1,421	65	45	11.05	7.55	11.15
Otley and Burley (rail-less)	7,691	.....	1,688	91	81	13.00	12.34	12.67
Shadwell Motor Bus	1,248	.....	272	10	......	9.65	6.00	10.21
	2,222,028							
Parcels	....	.....	......	......	21	.....	.....	.....
Miscellaneous receipts	....	.....	......	......	......	.....	.....	.....
Conductors' shorts collected	....	.....	......	21	35	.....	.....	.....
	....	222	176,521	13,647	10,830	18.55	14.72	19.05
Overs	....	19–18–11	......	......	......	.....	.....	.....
Shorts not charged	....	1– 2– 6½	......	......	......	.....	.....	.....
		18–16– 4½						
Shorts	....	....	......	51	......	.....	.....	.....
				13,698				
Decrease on previous week	....	.....	......	......	......	.....	£87	.....
Increase on corresponding week last year	....	.....	......	......	......	.....	£2,817	.....

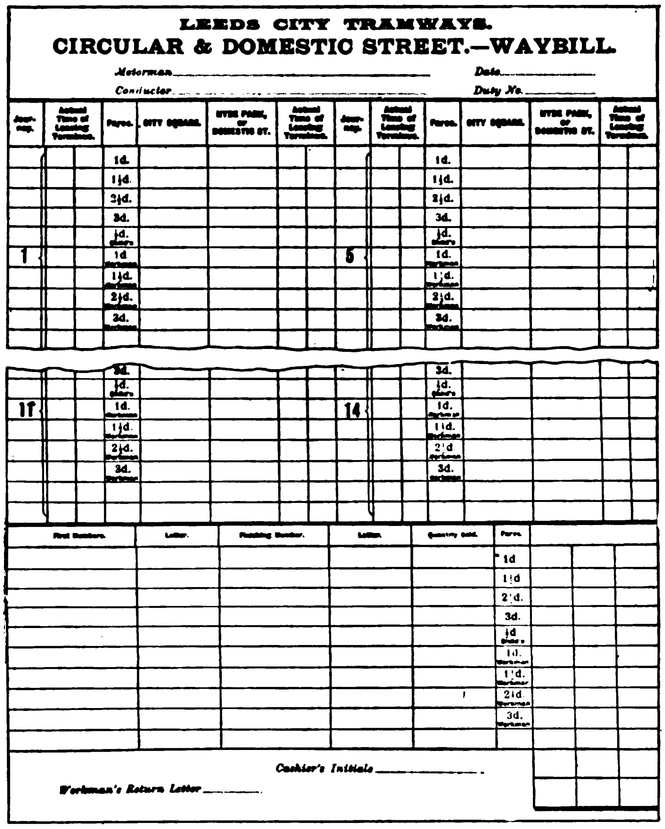
Consumption of Tickets:

	Week Ended Feb. 8, 1919		Week Ended Feb. 9, 1918	
	1 d.	535,387	½ d.	355,933
	1½ d.	953,258	1 d.	1,542,891
	2 d.	287	1½ d.	102,314
	2½ d.	142,684	2 d.	155,094
	3 d.	102,719	2½ d.	10,198
	4 d.	15,283	3 d.	52,591
	4½ d.	36,684	4 d.	6,399
	6 d.	5,420	5 d.	5,285
	7½ d.	3,747	6 d.	....
Workmen's	½ d.	57,413	½ d.	21,089
Workmen's	1 d. return	56,770	1 d.	20,826
Workmen's	1½ d. return	98,200	2 d.	55,624
Workmen's	2½ d. return	20,759	3 d.	9,707
Workmen's	3 d. return	20,070	1 d. (exchange)	13,610
Workmen's	4 d. return	4,762	2 d. (exchange)	88 50,184
Workmen's	4½ d. return	4,021	3 d. (exchange)	8,666
Through tickets	1½ d. child's			502
Through tickets	3 d.			3,518
Through tickets	3 d. workmen			437
Through tickets	3 d. exchange			264
		2,037,455		2,418,220
		184,573*		
		2,222,028		

* This represents the number of return tickets issued, being included twice to get the total passengers.

From the same table it will be noted that the 2d. ticket for both one-way and workmen's return use has been eliminated. The thought that lay behind this was that the passenger who has to travel at least 1½d. worth will not be likely to get off and walk the rest of the way in order to save a penny.

The fiscal year of the Leeds City Tramways ends March 31, and as the fare increase did not become effective until June 10, 1918, complete comparative results are not available. Table II, on page 58, giving the statement for the year ended March 31, 1919, however, shows an increase of 23.36 per cent in receipts as compared to the normal increase of 11.7 per cent from April 1 to June 9, 1918, before the increase in fare. In spite of the 50 per cent increase in fares and abolition of halfpenny fares, the number of passengers carried was only 3.426 per cent less despite a cut of 4.109 per cent in mileage. The actual cut in mileage on individual lines was much greater than this average indicates, because on lines with war industries it was actually necessary to increase the service. Thus the actual cut on the lines of lesser industrial importance was severe enough to have a bad influence on the retention of short-haul riders, who must have a frequent service regardless of the rate of fare. The results cited for the last fiscal year, however, indicate that traffic will return once it is possible to restore the compulsory cuts in service.



LEEDS CITY TRAMWAYS.

CIRCULAR & DOMESTIC STREET.—WAYBILL.

Motorman ______ Date ______

Conductor ______ Duty No. ______

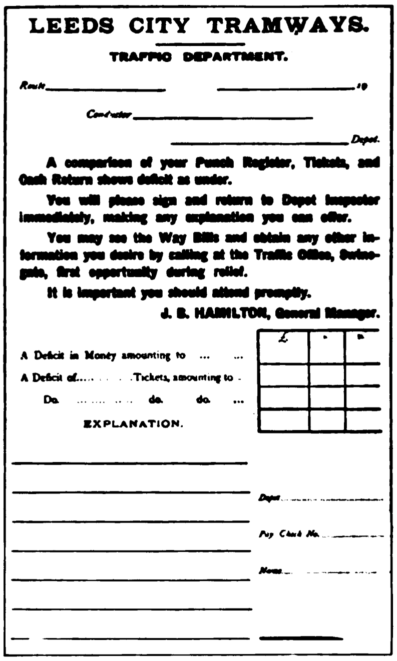
1d. 1½d. 2½d. 3d. ½d. 1d. 1½d. 2½d. 3d.

Cashier's Initials ______

Workman's Return Letter ______

CONDUCTOR'S WAYBILL FOR COMPLETE DAY'S WORK IN LEEDS

As previously intimated, no attempt is made to carry separate ½d. tickets for workmen and children respectively, or to have special tickets of higher denominations for children only. The workmen's return ticket, however, does call for special treatment. The rule in connection with these reduced-rate tickets is that they must be presented for the return trip on the same day as issued. The conductor on getting his waybill when beginning his day's work is advised by a rubber-stamp initial thereon that such initial is the one he is to punch that day when issuing a return ticket. The conductor who gets the ticket in the afternoon can see at once whether or not it is valid. Before returning the ticket to the passenger for use as a receipt, the second conductor cancels it against re-use by punching to the hour and quarter hour in the spaces provided on the back of the ticket. This cancellation is made with a separate pricker to avoid confusing the count of the ball punch, which is employed only in the issuance of tickets. In this way no exchange tickets are required—an advantage of more importance on a large system in simplifying the number of tickets than any possible abuse of the return-ticket privilege.



LEEDS CITY TRAMWAYS.

TRAFFIC DEPARTMENT.

Route ______ ______ 19

Conductor ______

______ Depot.

A comparison of your Punch Register, Tickets, and Cash Return shows deficit as under.

You will please sign and return to Depot Inspector immediately, making any explanation you can offer.

You may see the Way Bills and obtain any other information you desire by calling at the Traffic Office, Swinegate, first opportunity during relief.

It is important you should attend promptly.

J. B. HAMILTON, General Manager.

	£	s.	d.
A Deficit in Money amounting to			
A Deficit of...... Tickets, amounting to			
Do. ...... do. do. ...			

EXPLANATION.

Depot ______

Pay Check No. ______

Name ______

HOW A LEEDS CONDUCTOR IS NOTIFIED OF SHORTS

The general control of the correct use of tickets is effected in the customary manner through thirty-six ticket inspectors. These men average sixty cars a day, the same car being boarded by different men three or four times a day. Their visits are always attested by the signature of the conductors. The ticket inspectors work nine hours each, but their shifts are so arranged that all are on hand during the heavy hours. Besides handling their ticket-check duties, these men help to correct irregularities in traffic, running time, etc.

Since the Leeds system gets its tickets from an outside printer, the plan of using individual serial numbers for conductors until 10,000 of each kind have been exhausted is not followed. Instead, the ticket boxes issued daily to the conductors are filled from a common stock (kept up three weeks ahead) to the extent that traffic fluctuations on the given routes justify. These boxes, together with punches and waybills, are forwarded to the inspectors at the several depots. The waybill, as shown herewith, is divided to cover a full day's work, individual journey bills not being considered necessary. The depot inspectors issue the boxes to conductors as they book on for duty.

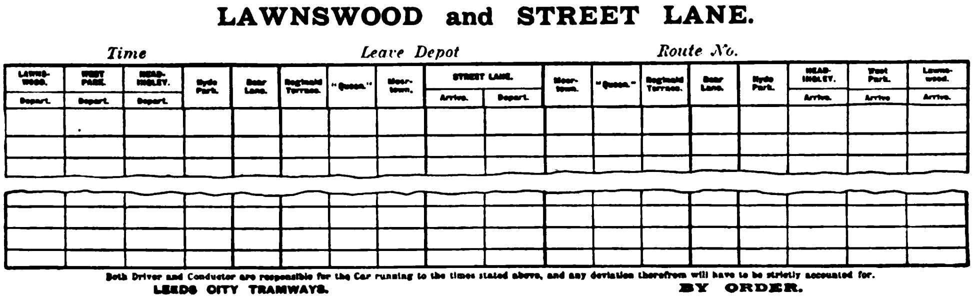
In the matter of cash returns, a conductor may make his turnover either at the central cashier's office downtown or to his depot inspector. In most cases the conductors hand the returns, including tickets and waybills, to the night depot inspector, who checks the cash in their presence and delivers receipts out of his dupli-

TABLE II.—COMPARATIVE STATISTICS OF LEEDS CITY TRAMWAYS FOR THE YEAR ENDED MARCH 31, 1918 AND 1919

	1919	1918	Increase or Decrease	Percentage Change
Total receipts.....	£723,022-3-11*	£586,086-8-9	+£136,935-15-2	+23.364
Number of miles run............	9,155,355†	9,547,670	—392,315	—4.109
Number of passengers carried.....	120,252,950*	124,519,119	—4,266,169	—3.426
Receipts per mile (d.)	18.953*	14.732	+4.221	+28.652
Average fare paid per passenger (d.)	1.418*	1.110	+0.308	+27.747
Population served.	542,000*	542,000	....	....
Number of times population carcarried.........	222*	230	—8	—3.478
Amount paid per head of population...........	26/3*	21/3	+5/0	+23.529

*Fares increased 50 per cent and ½d. fares abolished, June 10, 1918.

†Shortage of rolling stock owing to inability to obtain repair parts and sufficient labor.



LAWNSWOOD and STREET LANE.

Time Leave Depot Route No.

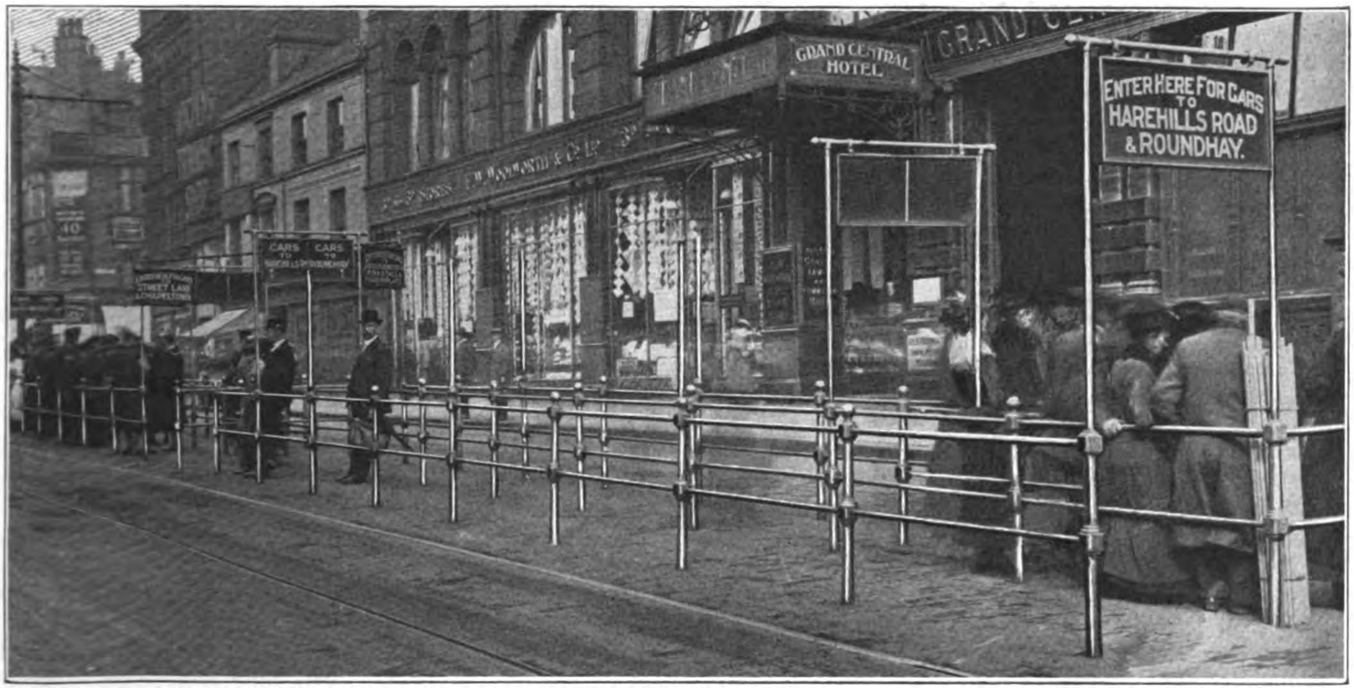
Lawnswood.	West Park.	Headingley.	Hyde Park.	Bear Lane.	Reginald Terrace.	"Queen."	Moortown.	Street Lane.		Moortown.	"Queen."	Reginald Terrace.	Bear Lane.	Hyde Park.	Headingley.	West Park.	Lawnswood.
Depart.	Depart.	Depart.						Arrive.	Depart.						Arrive.	Arrive.	Arrive.

Both Driver and Conductor are responsible for the Car running to the times stated above, and any deviation therefrom will have to be strictly accounted for.

LEEDS CITY TRAMWAYS. BY ORDER.

TIME POINT BOARD CARRIED ON EVERY LEEDS CAR cate receipt book. Cash does not get into the ticket department at all but is forwarded to the cashier at the central office. Here it is counted independently, checked against the totalized receipts of each depot inspector and tallied against the statements of the ticket department. The cashier's office is open from 6 a.m. to 9 p.m. In it there are, besides the cashier, three male assistants and twelve girls. Two of the assistant cashiers are always on duty during the busy periods.

In the ticket department there are thirty-seven employees, all female except two laborers. Of this number twelve take care of ticket boxes and four handle the punches. Miscellaneous duties include the preparation of the daily and the weekly traffic returns similar to those shown in Table I. For 557 conductors 1050 punches are required. These are supplied by the Bell Punch & Ticket Company, London, at a rental of 9s. a year each, including upkeep, transportation, etc. It may be appropriate to say here that punchings are counted so seldom that this tedious work does not call for all the time of even one girl. The employees required at the seven depots in connection with the miscellaneous transportation and ticket and cash-handling duties number fourteen.



RAILED LANES FOR SEGREGATING PASSENGERS AT IMPORTANT LOADING POINT IN LEEDS

British tramways, which use the uniform system of accounting adopted by the Municipal Tramways Association, place all charges strictly due to the ticket system under Account No. 7, "Ticket Check," covering "cost of tickets, conductors' punches, wages of ticket inspectors, clerks in punch and ticket office, less deductions from receipts from advertisements printed on back of tickets." The summary herewith shows the exact distribution of expenses under "Ticket Check" and the relationship to general revenues.

"Ticket Check" does not include the cashiers. These come under Account No. 1, "Superintendence," since the cash would have to be handled in any event. Moreover, no account is taken of the depot clerks or inspectors, who would also be required under any fare system. Their wages are charged against Account No. 3, "Wages of Other Traffic Employees."

COST OF TICKET CHECK ON THE LEEDS CITY TRAMWAYS

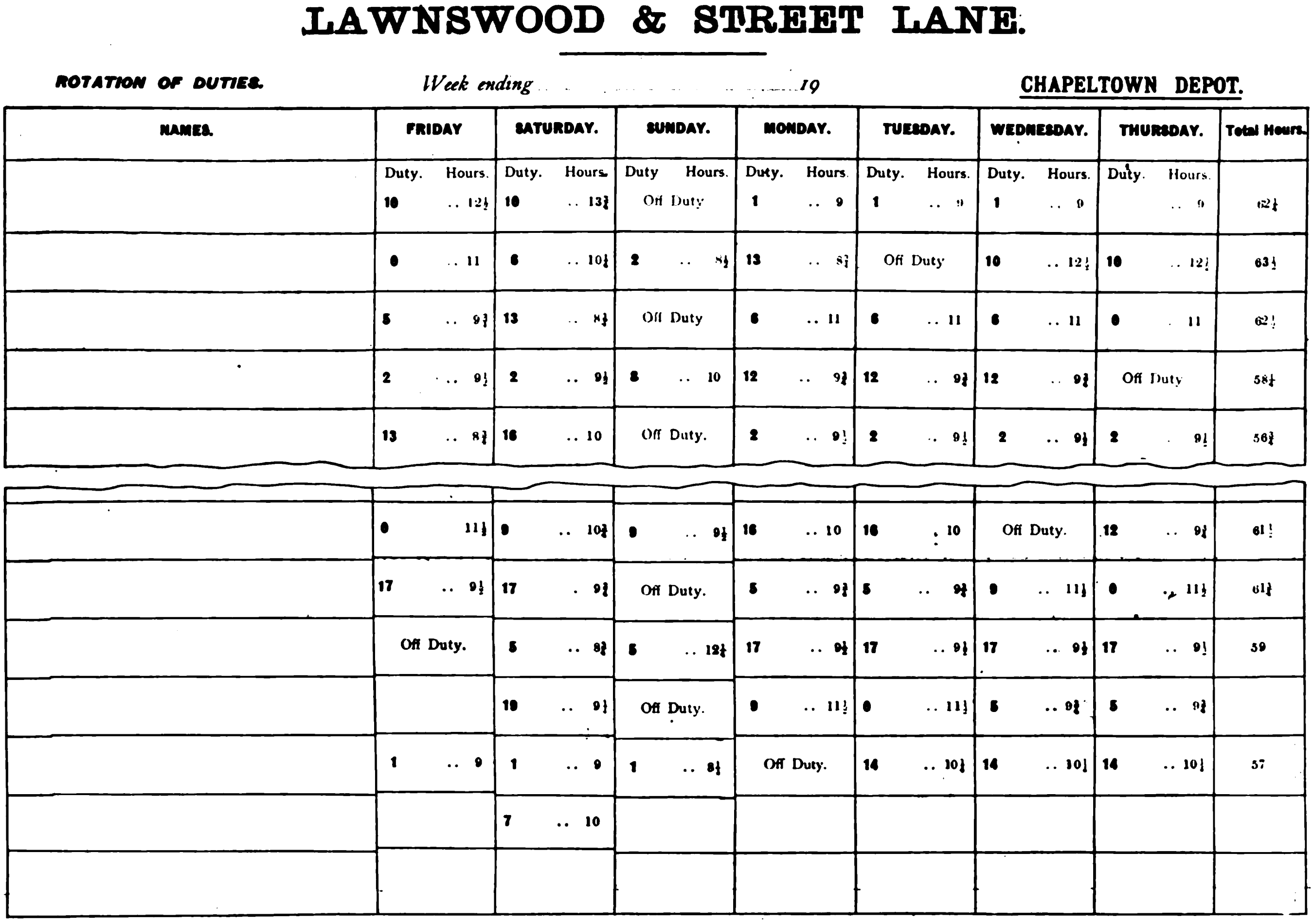
	1913–1914		1917–1918	
	Total Cost £	Cost per 100 Passengers d.	Total Cost £	Cost per 100 Passengers d.
Tickets, ticket boxes and repairs	1,149	0.294	4,277	0.825
Punch seals and hire of punches.	399	0.102	438	0.085
Ticket inspectors............	2,509	0.643	3,689	0.711
Ticket-room and punch-room staff......................	1,224	0.313	2,571	0.494
Sundries....................	81	0.921	249	0.048
Total....................	5,362	1.373	11,224	2.163
Per cent of revenue		1.27		1.95

The Leeds City Tramways follows the usual British practice in the assignment of duties for the platform employees, but the management has gone a step farther for the convenience of the men by printing both the "rotation of duties" sheet posted at the depot and the more detailed "duty sheet" (see illustration). The latter is also printed, route for route, in book form for the employee to carry in his pocket. The lists are made out for weekdays, Saturdays and Sundays to show a man with a given duty (run) number at what times and places he is to report. The booklet also contains a miniature of the "rotation of duties" sheet, so that on and off days and the total hours to be worked in one week can be seen at a glance. In addition, a time-point board is also put on each car by the first motorman of the day. Bundy time recorders are installed ½-mile from twelve terminals for ringing in and out.

As stated in the "duty sheet" booklet, the following times are granted to motormen and conductors in addition to actual time on the car, so as to allow for examining the car, reporting at depot or cash office, etc.:

Fifteen minutes when taking car out of depot.
Fifteen minutes when taking car into depot.
Ten minutes when commencing duty on route.
Ten minutes when finishing.
Five minutes when relieved for meals.
Five minutes when leaving or taking up a car not at meal times.

Before the war fifty-four hours was a normal working week, but by arrangement with the men a sixty-



LAWNSWOOD & STREET LANE.

ROTATION OF DUTIES. *Week ending* ....19 CHAPELTOWN DEPOT.

NAMES.	FRIDAY		SATURDAY.		SUNDAY.		MONDAY.		TUESDAY.		WEDNESDAY.		THURSDAY.		Total Hours.
	Duty.	Hours.	Duty.	Hours.	Duty	Hours.	Duty.	Hours.	Duty.	Hours.	Duty.	Hours.	Duty.	Hours.	
	10	.. 12½	10	.. 13¾	Off Duty		1	.. 9	1	.. 9	1	.. 9		.. 9	62¼
	9	.. 11	6	.. 10¼	2	.. 8½	13	.. 8¾	Off Duty		10	.. 12½	10	.. 12½	63½
	5	.. 9¾	13	.. 8¾	Off Duty		6	.. 11	6	.. 11	6	.. 11	6	.. 11	62½
	2	.. 9½	2	.. 9½	8	.. 10	12	.. 9¾	12	.. 9¾	12	.. 9¾	Off Duty		58¼
	13	.. 8¾	16	.. 10	Off Duty.		2	.. 9½	2	.. 9½	2	.. 9½	2	.. 9½	56¾
	9	11½	9	.. 10¾	9	.. 9½	16	.. 10	16	.. 10	Off Duty.		12	.. 9¾	61½
	17	.. 9½	17	.. 9¾	Off Duty.		5	.. 9¾	5	.. 9¾	9	.. 11½	9	.. 11½	61¾
	Off Duty.		5	.. 8¾	5	.. 12¼	17	.. 9½	17	.. 9½	17	.. 9½	17	.. 9½	59
			19	.. 9½	Off Duty.		9	.. 11½	9	.. 11½	5	.. 9¾	5	.. 9¾	
	1	.. 9	1	.. 9	1	.. 8½	Off Duty.		14	.. 10½	14	.. 10½	14	.. 10½	57
			7	.. 10											

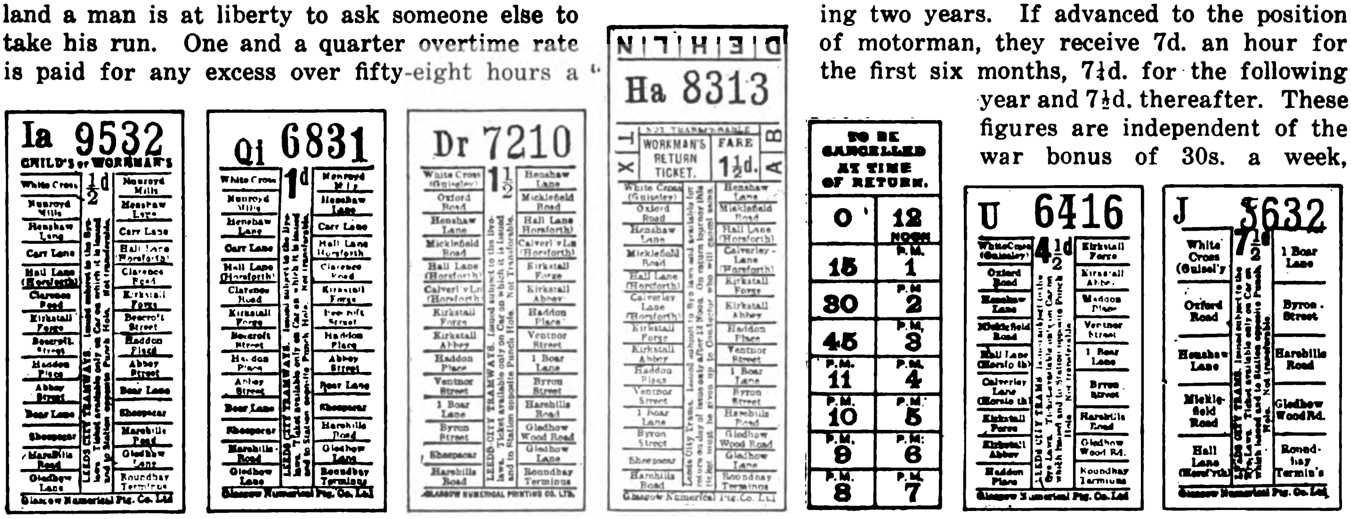
ROTATION OF DUTIES IN PRINTED FORM FOR A LEEDS DEPOT

hour week has been the rule during the period of man shortage. At this writing, negotiations are in hand that will seriously modify both working hours and wages. The following additional facts may, however, be information of value and prove of interest to the American operator:

Platform employees receive uniforms, great coat, mackintosh and other outer clothing free. Rest days are one in seven. One week's holiday with pay is granted after twelve months' service, but during the war if a man elected to work during his vacation he received double pay. Christmas work also earns double pay, but as that holiday is a great home-festival in England a man is at liberty to ask someone else to take his run. One and a quarter overtime rate is paid for any excess over fifty-eight hours a week. Spare conductors or extras are guaranteed five and one-half days work out of a six-day week.

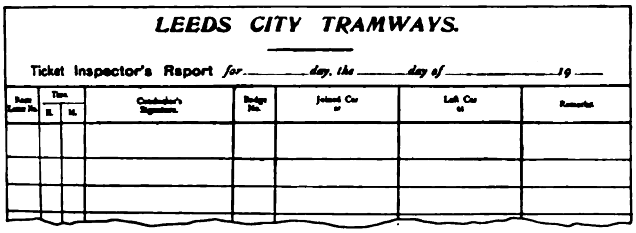
As for spreads for any class of platform men—when the spread does not exceed twelve hours, a margin or off-duty period of three hours is agreed upon with no deduction for meal time. On all duties exceeding a twelve-hour spread and up to fifteen hours, a margin of two hours is allowed. On all duties exceeding a fifteen-hour spread a margin of one hour is allowed. On all duties exceeding twelve hours, a half hour is deducted for meal time.

Conductors start at 5½d. an hour, advance to 5¾d. after six months and then to 6d. and 6½d. in the following two years. If advanced to the position of motorman, they receive 7d. an hour for the first six months, 7¼d. for the following year and 7½d. thereafter. These figures are independent of the war bonus of 30s. a week,


Ia 9532
CHILD'S or WORKMAN'S
½d
Qi 6831
1d
Dr 7210
1½
Ha 8313
WORKMAN'S RETURN TICKET.
FARE 1½d.
TO BE CANCELLED AT TIME OF RETURN.
U 6416
4½d
J 5632
7½d
LEEDS CITY TRAMWAYS.
White Cross
Oxford Road
Henshaw Lane
Carr Lane
Hall Lane (Horsforth)
Kirkstall Forge
Kirkstall Abbey
Haddon Place
Boar Lane
Sheepscar
Harehills Road
Gledhow Lane
Roundhay Terminus
Glasgow Numerical Ptg. Co. Ltd

SOME VARIETIES OF LEEDS FARE RECEIPTS, INCLUDING RETURN TICKETS WITH TIME LIMITS so that the actual earnings an hour are practically double the rates given. Platform men who have served seven years wear a chevron and receive an additional shilling a week. Platform instructors receive 3d. an hour extra while teaching.

Women conductors begin at the same rate as men but are not advanced at the same rate. Their war bonus is 24s. a week. With regard to the matter of retaining women in the service, Mr. Hamilton points out that this rests largely with the employees themselves. The women are full-fledged members of the union, and they see no reason why they should make way for men unless they have failed to make good themselves. One woman conductor said: "My man was a conductor. He went into the army, leaving me with two children, and I took his place. I am sorry to say that he'll never come back. I wouldn't think it unfair if I had to give up this job to a tramwayman who did come back, but I wouldn't care to give it up to anybody else. I like the work and I need the money."



LEEDS CITY TRAMWAYS.

Ticket Inspector's Report *for* ________ *day, the* ________ *day of* ______________ *19* ____

Route Letter No.	Time H.	Time M.	Conductor's Signature.	Badge No.	Joined Car at	Left Car at	Remarks

FORM OF REPORT FOR USE BY LEEDS TICKET INSPECTOR

GOOD FOOD CONDUCES TO GOOD WORK

Strangely enough, it was not until women conductors were employed in large numbers that the management found it highly desirable to see that employees got plenty of nourishing food. Whereas the men always brought or purchased solid nutriment, the women were inclined to get along on a cup of tea and a cream puff with dire results to themselves and the duty sheets. The management consequently arranged to offer first-class meals at a first cost of 7d. (since increased to 9d. and 10d. because of rise in food prices). The Corporation of Leeds furnishes the necessary equipment and labor without charge. The food is so good and so well cooked that it is regularly furnished to the officers' mess. The officers pay a few pence more to get coffee, cheese or other extras.

Beside these meals at the central office and depot, fully-cooked meals are sent out hot to four mess-rooms at other depots. Men on early runs are also supplied at nominal cost with hot soup purchased from the national kitchens. Leeds, to be sure, is not the first electric railway to supply meals at or below cost, but the Leeds management also realizes that nothing but the best will do. If other executives would eat the same meals as the rank and file, there might be less grumbling about the ungrateful platform man.

A British contemporary states that in one of the industrial districts of Manchester a crowd on two successive nights recently stopped the tram cars to call attention to the insufficient supply of liquid refreshment in the local public houses. The nucleus of the crowds consisted of workingmen who were disgusted at the frequent display of "No Beer" signs.

Transporting Shipyard Workers at Quincy

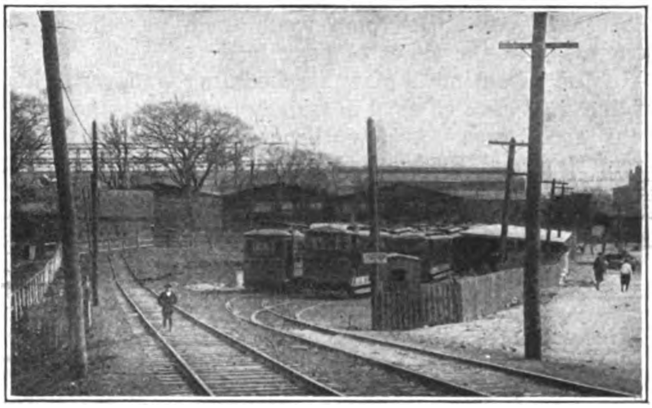
Bay State Street Railway Is Handling Throngs at Fore River Shipyard in Spite of Impracticability of Using "Split-Shift" Plan

By W. B. Conant
Concord Junction, Mass.

THE Fore River shipyards of the Bethlehem Steel Corporation are located on Weymouth Fore River, in the city of Quincy, Mass., 4 miles more or less from the outer limits of Boston. From 12,000 to 15,000 workers are employed at the yards. About 50 per cent of the working force come from distances which necessitate the use of public transportation facilities. A large number live in Boston and in the suburbs to the north of the city. These use the Boston Elevated lines as far as the junction with the Bay State system at Neponset Bridge, which is about 4 miles from the plant.

When the war broke out the shipbuilding company employed about 3,000 persons. Of these the Bay State Street Railway, which is the only line reaching the works, was called upon to carry 1000 to 1100. The cars ran between the plant and the central square in Quincy over a single-track road, which was totally inadequate to handle the additional load. From Quincy Square, the half-way point, the route in the direction of Boston, via Neponset Bridge, was also limited to a single track on the bridge. The condition of the roadbed and the rolling stock of this railway, which has for some time been in the hands of a receiver, made the task of handling the workers one of great difficulty.

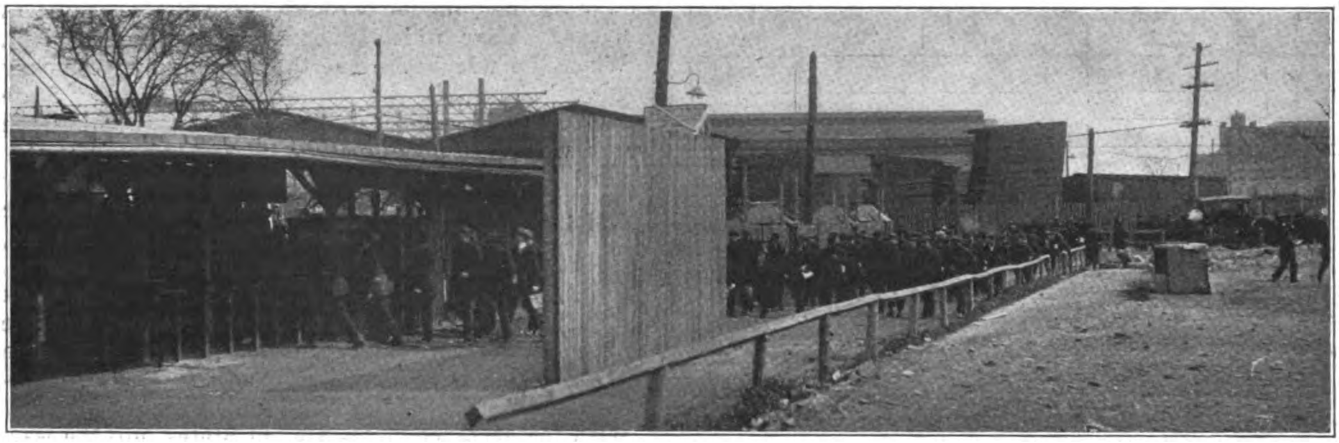
With the entrance of the United States into the war, the plant at Fore River increased its force rapidly, and it was apparent that a constructive plan of some magnitude would have to be worked out in order to meet the transportation situation. A contract was entered into between the railway, the Emergency Fleet Corporation, agent for the federal government, and the City of Quincy for the financing of the construction of a double track and the widening of the street between the plant and Quincy Square, a distance of 1½ miles; for the construction of a double-track loop at the shipbuilding plant, with a prepayment inclosure; for the construction of a loop at the square; for the building of a new substation, and for the double-tracking of the line on the Neponset River Bridge and the establishment of a prepayment station at Neponset where the Bay State system joins the Boston Elevated system. The company



LOOP AT FORE RIVER SHIPYARD, QUINCY, MASS.

agreed to repay the funds advanced on the basis of fares collected at the terminal.

About the middle of January, 1918, the double track and loop at the works were first used, and within a month the daily traffic had increased about 2000 arrivals and 2400 departures. At this time all departments of the works opened at 7 a.m. and closed at 4.30 p.m., except that many workmen worked overtime, until 6 p.m. The night force came to work at 6 p.m. and left at 6 a.m. The number of employees increased rapidly, so that on April 22 the opening and closing hours were so changed as to spread over an hour morning and night. The change provided that certain departments opened at 7 a.m. and closed at 5 p.m., while others opened at 8 and closed at 6. The night shift began work at 6 p.m. and left at 5.30 a.m. On Saturdays, the hours were from 7 a.m. to 12 m. and 8 a.m. to 1 p.m. It was hoped that this "split-shift" plan would help to relieve the congestion at the times of peak load.



FORE RIVER SHIPYARD WORKERS ENTERING BAY STATE PREPAYMENT STATION, QUINCY, MASS.

In the meantime a new rescheduling and rerouting of lines had been effected in Quincy to improve the rush-hour conditions. A new through double-track route from Neponset Bridge had been opened, and a special depot car service had been established between the plant and the New Haven Railroad station at Quincy.

"SPLIT-SHIFT" PLAN OF OPERATION HAD TO BE ADVANCED

Unfortunately the "split-shift" plan was strenuously objected to by the employees, who deplored the loss of the daylight hour in the evening, "when they wished to work in their war gardens." The men, too, were dissatisfied because they believed that the difficulty could be met in some other way. On two occasions a strike was narrowly averted from this cause. The shipbuilding management, moreover, held that the plan caused loss of efficiency through one crew having to wait for the coming of another in the morning, and because tasks could not be completed in the late afternoon after a part of the men had left. The departments so overlapped that it was impossible to make up separate groups of workers without a loss in efficiency and co-operation which was estimated to be equivalent to 6000 to 8000 man-hours daily. It was thus seen to be very desirable to return to the old system of one shift, and the plan was abandoned on Aug. 19, 1918, after about four months of use, although transportation experts from the Emergency Fleet Corporation had reported to Washington that it was impossible properly to handle the traffic with but one opening and one closing hour.

The joint shop committee of the shipbuilding Company, however, issued a circular letter to the employees in which the co-operation of the men was solicited. They were asked to take early cars for the works in the morning, to avoid later congestion which had resulted in about 20 per cent of the employees being late to work; to buy tickets in advance so as to aid ticket sellers and conductors, and to make way quickly in boarding cars and in moving inside the works gates.

A card index was made up of the places of residence of the employees, showing whether they came by trolley, jitney or private conveyance, or walked to and from work. Each rider was assigned to his proper car by the proper routing. The loop at the works, which was of two tracks separated by ordinary spacing, was spread so as to form a double loading space, with 8 ft. of space between tracks. A total of about sixty trips morning and evening through the loop was thus made possible. Of these cars, forty are now moved in fifteen minutes. A portion of the outgoing cars had previously started from a street area with no prepayment facilities, resulting in a great loss of revenue to the road. These cars were brought inside a second prepayment inclosure near the main office by means of other tracks. Four cash turnstiles and six ticket entrances were provided at the works loop, and three ticket booths were opened in the yard from which eight women of the Bay State, Boston Elevated and New Haven sold tickets every noon and evening. The cost of this service was borne by the shipbuilding company.

One of the main reasons for the successful working of the "Quincy plan" is the readiness with which the shipyard workers have adapted themselves to the situation. They have recognized the fact, as shown them by the joint shop committee, that it is best to subordinate personal conveniences to the general good, with the result that all are better served than otherwise would be possible. In addition, the improved power situation brought about the presence of the new substation; the addition of thirty-seven new cars of the double-truck type and large capacity operated in trains, and the double-tracking of the principal routes to the yard and on the bridge have relieved a situation which government experts, and indeed the officials of the railway, had despaired of, with the single opening and closing system in effect.

C. E. R. A. Cruises on Great Lakes

At Meetings Held on Board S.S. "South American," Discussion Centers Around Safety Car and Relief for Electric Railway from Illegitimate Burdens

As LAST WEEK'S issue of this paper went to press the Central Electric Railway Association was concluding its summer cruise from Toledo to Chicago via Perry Sound, Mackinac Island, Harbor Springs, Macatawa and Benton Harbor. Three hundred and sixty persons made up the party and every possible provision was made for their comfort, entertainment and instruction by the committee of arrangement. This comprised S. D. Hutchins, Westinghouse Traction Brake Company, chairman; John Benham, International Register Company, secretary; James H. Drew, Drew Electric & Manufacturing Company, in charge of entertainment; F. R. Coates, Toledo Railways and Light Company; H. A. Nicholl, Union Traction Company of Indiana; L. G. Parker, Cleveland Frog and Crossing Company, and H. E. Rasmussen, Indianapolis Electric Supply Company. Dr. R. C. Harpster, Toledo Railways and Light Company, served as ship's surgeon.

A humorous daily, *The Central Daily Spray*, was issued during the cruise under the direction of H. H. Norris and L. C. Paul of the ELECTRIC RAILWAY JOURNAL staff, with the assistance of other present and former newspaper men in the party and of L. E. Earlywine, assistant secretary of the association. This served to supplement the formal program and also served to encourage informality and good-fellowship.

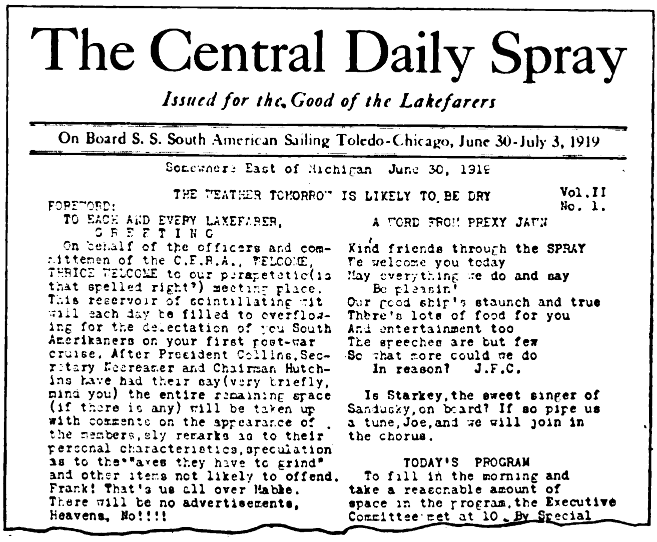
An interesting feature of the meeting was the presentation to C. L. Henry, Indianapolis and Cincinnati Traction Company, and F. D. Carpenter, Western Ohio Railway, of traveling bags, in recognition of their long and fruitful service to the association. Mr. Henry celebrated his seventieth birthday anniversary and Mr. Carpenter his sixty-ninth, on July 1. In responding to addresses of felicitation the former said that the "Central" is the best association in the country, and the latter dwelt upon the changes which have occurred in the industry during the time of his connection with it.

ONE-MAN CAR OPERATION HAD THE FLOOR TUESDAY AFTERNOON

A paper on "One-Man Car Operation" was presented by S. W. Greenland, general manager Fort Wayne and Northern Indiana Traction Company, on July 1. The paper is abstracted elsewhere in this issue. In introducing Mr. Greenland President J. F. Collins, vice-president Michigan Railways, said that two subjects of great importance today are one-man cars and higher fares. He said, however, that one-man cars alone cannot run a railway and that that which is needed most is organization and co-operation. The employees must be educated and this fact is just as important as the increased fare and the one-man car. In connection with the paper Mr. Greenland said that his company is planning a line extension on which only one-man cars are to be used. The track for this will probably be made lighter than the usual type to take advantage of the light weight of the cars. It is expected that by fall all of the eighty-five cars in Fort Wayne will be equipped for one-man operation. He said that his company had not found the use of safety devices necessary, but their use might be warranted if necessary to "sell the idea" to public and employees.

The discussion was opened by a communication prepared by F. J. Moore, general superintendent Ohio Electric Railway, and read by L. A. Mitchell, Union Traction Company of Indiana. This will be abstracted in a later issue.

The next speaker was E. M. Walker, general manager Terre Haute lines, Terre Haute, Indianapolis and Eastern Traction Company. He outlined the experience at Terre Haute as covered in the article in the issue of this paper for June 28, copies of which were distributed at the meeting. In that city the people want the whole property put on a safety-car basis. Mr. Walker expressed his disbelief in the advisability of using converted cars; both public and employees want something better than this. He favors light cars, which, he said, will prove durable with proper care. To illustrate the truth of the principle that "service increases business" Mr. Walker cited the experience in Terre Haute where the replacing of four cars on ten-minute headway by six cars on six-minute headway brought in $35 of additional revenue per day.



The Central Daily Spray

Issued for the Good of the Lakefarers

On Board S. S. South American Sailing Toledo-Chicago, June 30-July 3, 1919

Somewhere East of Michigan June 30, 1919

THE WEATHER TOMORROW IS LIKELY TO BE DRY

Vol. II
No. 1.

FOREWORD:
TO EACH AND EVERY LAKEFARER,
GREETING

On behalf of the officers and committemen of the C.E.R.A., WELCOME, THRICE WELCOME to our perapetetic(is that spelled right?) meeting place. This reservoir of scintillating wit will each day be filled to overflowing for the delectation of you South Amerikaners on your first post-war cruise. After President Collins, Secretary Neereamer and Chairman Hutchins have had their say(very briefly, mind you) the entire remaining space (if there is any) will be taken up with comments on the appearance of the members, sly remarks as to their personal characteristics, speculation as to the "axes they have to grind" and other items not likely to offend. Frank! That's us all over Mable. There will be no advertisements, Heavens, No!!!!

A WORD FROM PREXY JAWN

Kind friends through the SPRAY
We welcome you today
May everything we do and say
Be pleasin'
Our good ship's staunch and true
There's lots of food for you
And entertainment too
The speeches are but few
So what more could we do
In reason? J.F.C.

Is Starkey, the sweet singer of Sandusky, on board? If so pipe us a tune, Joe, and we will join in the chorus.

TODAY'S PROGRAM

To fill in the morning and take a reasonable amount of space in the program, the Executive Committee met at 10. By Special

PART OF SAMPLE PAGE OF C. E. R. A. CONVENTION DAILY

In reply to a query Mr. Walker said that the safety cars are adaptable to zone fare collection with the aid of a fare box. For example, on a two-zone line passengers boarding in the first zone would pay one fare upon entering, those leaving in the second zone would pay one fare upon leaving, these being the only collections necessary.

W. S. Rodger, Detroit United Railway, said that his company is using one-man converted cars in several small cities on its system.

J. M. Bosenbury, Illinois Traction System, traced briefly the story of the modern safety car. His company had been operating cars with one man since 1892, but in 1911 it became apparent that something must be done to produce a car especially suited to one-man operation. A car was designed, which, however, the local city authorities did not consider safe, but they agreed to permit its use if operation were duly safeguarded. The Westinghouse Air Brake Company was asked to co-operate. Cars weighing, at first 32,000 lb., later 16,500 lb., were placed in operation in 1913, and orders were later placed for a total of sixty-two Birney cars. Mr. Bosenbury's experience has been that the cities demand the use of safety appliances.

SAFETY CAR LENDS ITSELF READILY TO STANDARDIZATION

Following Mr. Bosenbury, the general principles of the safety car were explained by Carl H. Beck, Westinghouse Traction Brake Company. Of course, said he, this car is an innovation in street railway practice or it would not be up for discussion at this time. It is suitable for use in cities of any size. Standardization has been an essential but "ticklish" element in connection with its development. The new car contains so many new elements that there was an excellent opportunity for standardizing in the construction of the car unit and in its operation. As a result the car has been standardized to a remarkable extent and Mr. Beck expressed the hope that the standardization will be maintained. In approaching the subject on the basis of standardizing the car unit it is necessary that the best possible obtainable unit be put on the city streets as the car must be "sold" to so many interests. Otherwise all that is possible cannot be secured from it.

Mr. Beck pointed out that the "safety" car is not the "one-man" car. It is the safest unit used in any form of transportation to-day. It is necessary to prove to commissions that this is the case. For safety it is essential that the motorman should "perform some conscious act" to keep the car in operation, that otherwise the automatic apparatus shall bring it to a stop. After going into some detail of the equipment of the car, which has been covered in earlier issues of this paper, the speaker said that the public and the employees must share in the benefits if the new type of car is to succeed. If they do the result is sure. The matter of weight of car is secondary, but all of the benefit is lost without standardization. The operating men simply must get together with regard to it.

WALTER JACKSON GIVES RESULTS OF OBSERVATIONS AT HOME AND ABROAD

The safety car and related topics were next taken up by Walter Jackson, formerly business manager ELECTRIC RAILWAY JOURNAL, who explained that he had visited safety car installations as rapidly as they had been made. It would seem unnecessary to argue nowadays regarding the benefits to be derived from its use, but there are heard certain notes of dissonance which indicate that operators have not all grasped its real meaning. Referring to Spokane he said that in this city previous to the coming of the safety car, the cars in use were exceedingly heavy. This was typical of the liking of the industry for heavy cars at that time. The importance of developing the riding habit was not then realized. With the development of safety appliances it was possible to produce with the small car the same effects as with the long car. All of these devices save time and the small car sometimes yields more seats per unit of time than the large ones.

Mr. Jackson said that in Spokane the large cars, when operated by one man, made a low schedule speed. They could, in some cases, make only one trip during the "peak" whereas the small cars could make two. It is, he said, very important to automatize the operation of the car, without which he considered the car as of the "stone age" of electric railway operation. Mr. Jackson urged increase of business as an essential feature of safety-car operation, reduction of expenses being far from the whole story. Jitney and automobile competition have brought real competition into the business. A rider in an automobile is like the lion who has tasted human flesh, he wants more. In England even municipally-owned lines cannot secure protection from bus lines, and the only remedy is the giving of service of a quality that the jitney cannot match.

The speaker deplored the tendency to increase weights of safety cars, pointing out that it is not now necessary to use the same materials as entered into car construction ten years ago, as better materials have been develepod. The question is then not how much heavier the car should be, but rather how much better it can be built. Increased weight means greater energy consumption, and energy is very expensive now. Mr. Jackson said further that remodeled cars are not safe. It certainly strengthens the case of a railway, on the occurrence of an accident, if a railway can say that it has the best obtainable equipment.

In conclusion Mr. Jackson discussed the fare situation. Why, said he, have fare increases failed to produce the desired effect? His answer was that the emphasis is in the wrong place; it should be on increase in service. On one property where a 6-cent fare prevails, safety cars were introduced with a 50 per cent service increase. The result is 50 per cent more traffic. In England fares have been increased more than in this country and with better success, due to the wide development of short-haul traffic. The inhabitants of the two countries are not substantially different, and Americans will ride for a few blocks if service is increased and the zone fare system introduced. In Aberdeen 25 per cent of the passengers ride but 0.6 mile. In Reading short-haul traffic is still further developed. In a certain town in this country the flat fare is 5 cents, but the railway is operated by a merchant as a side line and he sells tickets at 3⅓ cents each in quantity. Such reduction develops traffic.

A. W. BRADY SOUNDS A NOTE OF ENCOURAGEMENT

On Wednesday C. L. Henry read for R. F. Rifenberick, Detroit United Railway, a paper on "Burdens from Which We Should Be Relieved." This also is abstracted elsewhere this week. The discussion on this paper was opened by a communication sent by Arthur W. Brady, Union Traction Company of Indiana, and read by L. E. Gould, Economy Electric Devices Company. Mr. Brady said that Mr. Rifenberick had set forth clearly and forcibly a number of factors which enter into the electric railway problem, but are often overlooked or receive insufficient weight even by electric railway men. The fundamental difficulty, he said, with the relations between the electric railways and other public utilities on the one hand and the public on the other is mentioned at the beginning of the paper. Every student of utility problems knows that "the consumer pays the cost," but there is a large part of the public, including many of its leaders, who do not know or realize the effect of this principle. The people applaud the imposition of undue taxes, the return of excessive verdicts, the encouragement of unrestricted jitney competition, the establishment of unwise regulations, and other similar measures, as attacks on that which the common people hate above almost all else—monopoly. They fail to see that every unfair burden cast on a utility must be paid for. Payment may be made by increased rates, by reduced or insufficient service, or by the checking of development essential to the growth and prosperity of the country; yet payment is always made. Even though the utility may seem at the time to be the payor, ultimately, it is the public itself that foots the bill. This is true even though the utility be pushed to the wall, for the effects of a mistaken or unjust policy in the treatment of the utilities are likely to be felt for years after the original sufferers have disappeared from the boards.

THAT "THE CONSUMER MUST PAY THE COST" IS INCREASINGLY RECOGNIZED

In the times there are some signs to encourage the electric railway man, in spite of the unwillingness manifested by the voting public in some important cases to assume any part of the burdens cast on electric railways by the war. There are other indications, however, of the drift of the public mind which carry hope. The increasing of railroad, express, telephone and telegraph rates by the federal government has opened the eyes of many who once saw not. These increases were necessary to meet advancing costs, as was announced by the government as the reason for them. What the government was forced to do, it recommended to the state and municipal authorities of the country that the privately operated utilities be permitted to do. Commissions have very generally adopted these recommendations to a greater or lesser extent. The public has, as a rule, recognized the fairness of the action taken, and accepted uncomplainingly these increases as necessary. It can safely be asserted that never before has a greater proportion of the American people recognized the principle that the consumer must pay the cost, and that if the cost be not paid in rates the consumer nevertheless must pay in some other way. It is the duty and the interest of every man connected directly or indirectly with the electric railway industry to see that this elementary yet often overlooked truth is so well known by the public that it will be acted on as a matter of course by their chosen representatives.

Following the reading of Mr. Brady's letter, W. S. Rodger, Detroit United Railway, stated that on Aug. 14 of this year all electric railways in Michigan reporting earnings of less than $8,000 a mile will be permitted to charge 2½ cents a mile. When the earnings reach $10,000 a mile the rates must be reduced to 2 cents a mile. The rate for children will be 1½ cents a mile and baggage will be carried free. The new rates will be under the jurisdiction of the new Public Utilities Commission of Michigan.

R. N. Hemming, Fort Wayne & Northern Indiana Traction Company, then announced that from Sept. 29 to Oct. 1 the electric railway sessions of the National Safety Council will be held at Cleveland, Ohio, and urged a representative attendance.

The business of the convention was purposely limited in order that all might thoroughly enjoy the trip. A short meeting of the executive committee was held on Monday morning at which time the handling of mail on interurban cars was discussed and a meeting was called to be held at Indianapolis within a few days to decide upon a general plan to be presented at Washington. Interurban freight and motor truck competition was also taken up. At a business session on Monday afternoon the applications of eight new supply members were accepted. This brings the total supply membership to 151, the largest by two in the history of the association. On motion of Harry Reid, president Interstate Public Service Company, it was decided to send A. L. Neereamer, secretary of the association, as a delegate of the association to the Atlantic City convention of the American Electric Railway Association in October.

SOCIAL FEATURES KEEP EVERYBODY HAPPY

The social program was ably handled so that none ever found time hanging heavily with nothing to do. Each evening an entertainment was held in the "grand salon." The program included moving pictures, story telling, vocal music, community singing, sleight-of-hand, a mock wedding, a lecture on some of the American battles of the great war, and local talent exhibited in various ways. The entertainment was over at ten each evening following which a dance was held in the ballroom. Moving pictures were also taken on the boat and at the various stopping places. An open air, wire-enclosed playground provided amusement for the many "kiddies" aboard.

The opportunity to visit a number of points of historic interest was appreciated by the party. The town of Parry Sound, Ontario, was inspected briefly on Tuesday. On Wednesday morning a three-hour stop was made at Mackinac Island, and most of the members of the party visited historic and other interesting points on the island such as old Fort Mackinac, Sugar Loaf Rock, Arch Rock, etc., and otherwise passed the time in purchasing curios and other trinkets for the folks at home.

Two hours were spent at Harbor Springs, Mich., on Wednesday afternoon and a short stop was made at Macatawa, Mich., early Thursday morning. Benton Harbor was reached about 11 a. m. and here special interurban cars from Indiana, Ohio and Michigan met those who wished to reach home for the Fourth. At Macatawa Mr. Collins' private car was in waiting and took a large party, via Holland, Grand Rapids and Battle Creek, to Jackson, whence its members scattered in all directions. Many continued on to Chicago and the trip officially ended at the Municipal Pier about 4.30 p.m. on Thursday, July 3.

All in attendance agreed in extending congratulations to the committees in charge of the arrangements, particularly to Messrs. Hutchins, Benham and Drew on whom fell the heaviest responsibilities of the cruise and entertainment, to Chas. L. Henry, chairman of the program committee, and to Secretary A. L. Neereamer.

The steamship *South America* proved to be well adapted to the purposes of the C. E. R. A. cruise. There was sufficient reserve in capacity to prevent crowding, and captain, steward and purser and their subordinates vied with each other to insure the comfort of the passengers. Fortunately the weather was such that the voyage was unmarred by cases of sea-sickness.

Burdens from Which We Should Be Relieved*

Five-Cent Fare Should Be Retained Until All Possible Operating Cost Reduction Has Been Achieved

By Robert B. Rifenberick
Consulting Engineer, Detroit (Michigan) United Railway

THE present-day electric railway industry is of recent origin, and has improved so rapidly in the science of its art, that only lately has time and opportunity afforded or necessity required a careful analytical study of its cost of service, and of the elements that constitute such cost. This study has been brought to a scientific, logical and economical conclusion, but for political reasons government officials have not as yet wholly availed themselves of such conclusion. Under these circumstances it is very probable that in many instances the consumer of such service did not and is not now paying in full the cost of service received. This fact, however, in no sense impairs the logic of the axiom: "The consumer pays the cost."

If the electrical railway industry is to be kept off the rocks of complete financial disaster (and it appears to be the aim of some politicians and newspapers to put it there) it is up to every member of the C. E. R. A., to every employee of all the utilities of which the industry is composed and also of all our allied industries to acquire this knowledge, then to impart it to the public without any further waste of time.

The most economic basis of fare applies to the single coin, and as our national government has not as yet produced a single coin of greater value than its 5-cent and less value than its 10-cent coin, we should use every endeavor to continue as long as financially possible the 5-cent coin as the basis of a single fare. To permit this, relief from the numerous unjust burdens to which the industry as a whole is now encumbered must be had.

REGULATION SHOULD BE SIMPLIFIED

Electric railway utilities should be relieved from the burden of being subject to and regulated by the numerous regulative bodies which now have supervision over their various functions. Such diversified regulation with the heterogeneous burdens imposed is necessarily expensive, and for this largely unnecessary expense the patrons pay the cost. As a natural public utility monopoly the industry should properly be reasonably controlled, but such control should be judicial to pass upon complaints concerning the reasonableness and adequacy of rates, passenger and traffic, and to prescribe a uniform system of accounts. The executive and administrative duties of operation should rest in the management of the properties, subject only to such judicial rulings as above prescribed.

The promiscuous, conflicting and excessively burdensome regulation under which many electric railway utility properties are being operated today, seriously restricts the natural development and resources of these properties and is in fact, and in some instances deliberately, forcing them onto the rocks of bankruptcy.

Electric railway utilities should be relieved of the numerous political investigations, surveys and appraisals of their property to which many of them have been subjected. To my own knowledge one electric railway utility has in the past ten years been compelled to expend over $500,000 and the city in which it operates has spent more than $200,000 for such purposes to no end whatsoever to date. The game of making this utility the stepping-stone to public office has been going on for twenty-five years, during all of which time the utility has continued to render to its patrons the best service the management could devise under such irritating and adverse conditions.

TAXATION NEEDS ADJUSTMENT TO INSURE FAIRNESS TO ALL

Electric railway utilities should be relieved from the burden of all taxes, state, county, city and national, except possibly the usual taxes on such property of the utility as is devoted exclusively to furnishing service to its patrons, namely, real estate and personal property other than foundations for tracks, and paving in public streets and thoroughfares. In the days of the horse railway the burden of paving in and adjoining its tracks was imposed wholly on the utility. There was some logical reason for this because the horses of the company were, supposedly at least, the greatest users of such paving. However, then as to-day the best paving of the street was generally in the car tracks, which naturally drew the vehicle-using public to the use of the tracks. Thus an unjust burden was imposed on the patrons of the utility in paving requirements, which to have been equitable, should at least have been apportioned between the general public and the street railway car rider.

To-day there is no reason for the continued imposition of this burden on the patrons of the utility. Furthermore, vehicles other than electric railway cars should be absolutely prohibited from the use of the tracks, and such use by these other vehicles should be at their own risk and damage liability.

Electric railway utilities should be relieved from the burden of paying for damages to vehicles, and for injury to persons occupying them, caused by collision with their cars, because these cars have an absolutely fixed line of travel on which they have the right of way. If the utilities, in case of a collision between a vehicle and its car, would bring suit against the owner of such vehicle for damage to their property, and the court would render judgment for such damage, these unnecessary collisions would very soon disappear.

Other tax burdens from which the patrons of the utility should be relieved, that are wholly in the nature of exclusively class taxation, are franchise, gross income and license taxes, which penalize the patron for requiring electric railway utility transportation.

Another serious, unjust and expensive burden from which the utility patron should be relieved is that of free transportation of policemen, firemen and other public officials. Further, street lighting, sprinkling and street cleaning should not further continue to be a burden on the utility patron, exclusively as such, but the cost of these should also be paid from the general taxation.

Electric railway utilities should be relieved of the burden of building extensions in advance of such extensions being self-sustaining. They should be relieved of the burden of such limited term grants, the existence of which by their very nature require the accumulation of a large amortization fund, paid by its patrons, during such limited term, to protect its investment at the end of such term. They should be relieved of the burden of carrying the mails without just recompense for the service rendered.

---

*Abstract of paper read at meeting of Central Electric Railway Association, S. S. "South American," on Great Lakes Cruise, July 2, 1919.

SHOULD PRESENT FARES INCLUDE PROVISION FOR ULTIMATE PURCHASE OF UTILITY?

Another penalty imposed on the user of electric rail way transportation from which he should be relieved, is that of requiring him to pay a profit to the city for the privilege of being transported by the utility. That efficient and prudent utility management should be rewarded is a good economic policy for the consumer; but by what law of economics can it be sanely reasoned that A, B and C should pay enough for transportation to the electric railway utility, so that at some future time D, E, F and the rest of the alphabet should own such utility? Wherein lies the reason for placing such an unjust burden on the present generation? Each generation must take care of its own social, political and economical problems as they arise, but no present generation should shift such burden onto a future generation or relieve, at its own expense, a future generation from the problem that rightly belongs to it to solve.

Electric railway utilities should be relieved from the burden of competition, whether from competing lines, jitneys, motor buses, or otherwise, to the end that its patron shall not be required to pay an iota more for his transportation than is economically necessary. If this statement is unsound, the proposition that a public utility is natural monopoly is also unsound. It seems only necessary to bring into review the operating and financial methods of a day long since passed, to prove the logic for, and necessity of, a public utility being recognized as a natural monopoly and being protected as such for the economical benefit of the user of its service.

The electric railway utility should and must be relieved of the burden of the political and newspaper hazard that so often causes the utility increased operating and capital expenses, for which its patrons must pay. This hazard is wholly unnecessary and unjust.

SUMMARY AND CONCLUSIONS

I have endeavored to outline the principal burdens from which the electric railway industry must be relieved if any successful attempt is to be made to maintain the 5-cent coin as the single unit of fare. It is a grave question whether the removal only of the burdens outlined, including any which may have been omitted, will make possible the use and continuation of the 5-cent fare, but the experiment is well worth a trial.

Should such trial prove that still further revenue is necessary, then must come a charge for a transfer, with this transfer charge increasing, if necessary, until it reaches a practical maximum; and finally before getting away from the 5-cent fare, should come a more restricted zone in which this rate of fare would apply.

In closing I would emphasize the fact that the repressing burdens herein outlined, have made it impossible for the electric railway utilities to obtain capital for the improvements and extensions so urgently needed to render the service required, or properly to maintain their existing properties. The limit of oppression is reached. A reaction must set in that will provide such just and reasonable rates of fare as will enable the utilities to exist and perform their functions to their patrons; otherwise such of our utilities as are not already in the hands of receivers, will speedily land there to the irreparable damage, not only to the owner of and investors in these properties, but to the patrons of the service.

One-Man Car Operation*

The Author Gives Recent Data Showing That the Light-Weight Car with One Operator Is a Demonstrated Success

BY SAM W. GREENLAND
General Manager, Ft. Wayne & Northern Indiana Traction Company, Ft. Wayne, Ind.

THERE are 102 cities and towns in this country and Canada where 1164 one-man cars of all descriptions are being used. This number has increased rapidly during the past two years on account of the conditions through which our industry has passed. Undoubtedly the one-man car is at least one of the good things coming to the industry out of this experience.

The development of the art has brought us the prepayment type of car, the light-weight motor, the fare box, the low or stepless car and the elimination of the conductor. If with these are combined the light-weight car-body and truck construction, we have the modern one-man car. This development has proceeded step by step.

There seems to be no limit to the use of the one-man car, so far as the population of a community is concerned. Probably the smallest community in which this type of car is being used at present is Columbus, Ind., where five cars are serving a population of 3000. The largest city in which it is being used extensively is Spokane, Wash., where eighty-five cars are operated to serve a population of 135,000.

The one-man car is not a "cure-all," or a car that can be operated under absolutely all conditions. There are, however, lines in almost every community where its use will improve service.

Local conditions exist with all companies, which at times we feel cannot be changed, but in reality a number of these can be changed. For example, the problem of flagging railroad crossings can be solved in a number of cases by the electric railway companies paying one-half of the steam railroad companies' expenses for flagmen. In some cases, the operator of the one-man car can do his own flagging, say at railroad crossings where the use is infrequent by the steam railroad.

While we all look upon the one-man car as being new, the following companies have been operating one-man cars for more than ten years: East St. Louis & Suburban Railway, Beaver Falls Traction Company, Hattiesburg Traction Company, Owensburg City Railroad, and Salina Street Railway.

These companies, of course, have not had the latest type of one-man car, but have been operating the regular single-truck car, designed in such a way that the entire operation is in charge of one man. On an average ninety-eight companies in the country have operated one-man cars about three years, so that the specially designed and built one-man car has surely passed the trial or test period.

There are in service as one-man-operated cars the converted car, the Birney car, and other one-man designed cars. In the converted car, the saving is in the operators' wages. In the Birney car, the saving is in the reduction of power consumed as well as operators' wages. In the other type of one-man cars, the savings are the same as in the Birney cars and in addition to these savings, the comfort and convenience of the passengers are very much improved.

---

*Abstract of paper read at meeting of Central Electric Railway Association, S.S. "South American," on Great Lakes cruise, July 1, 1919.

In the above comparison it is assumed that the converted cars are equipped with platform doors, which have reduced the number of boarding and alighting accidents.

ENERGY IS SAVED IN PROPORTION TO WEIGHT

Power consumption has, of course, been one of the principal items considered in the designing of the latest type of cars. This consumption varies, naturally, with the weight of the car. Some information has been obtained in a typical Middle West city, where several types of single-truck cars are being operated, the energy consumption being taken at the car and including only that used for motors and compressors. The readings obtained were as follows:

Weight of car, lb.	Number and capacity of motors	Average kilowatt-hours per car-mile
26,900	2—40 hp.	2.32
21,000	2—25 hp.	1.30
13,500	2—25 hp.	1.05

The average reduction in power consumption by all companies using the Birney type of car in the country, was 51.2 per cent. On the converted type of car, the power consumption remains the same as when the car was operated by two men. In some cases, this consumption has been increased, as cars have been equipped with air brakes in order further to reduce the work of the motorman.

MOST COMPANIES PAY HIGHER WAGES

The rate of pay to trainmen for the operation of one-man cars varies throughout the country. A number of companies do not pay any additional amount for one-man operation; other companies pay an additional amount per hour ranging from two to ten cents. Some companies have found it advisable to place this matter on a percentage basis ranging from 10 to 30 per cent of the existing rate. This is governed entirely by local conditions, but inasmuch as additional duties are assigned to the operator some increase in pay should be granted. Furthermore, it is necessary to have operators of a higher grade on the one-man cars, if they are to be operated properly.

In many instances it appears that a conductor develops into a more efficient one-man-car operator than a motorman because he has had the general experience of dealing with the public, making change and issuing transfers. It is therefore only necessary for him to learn physically to operate the car. The motorman has much more to learn. This, of course, does not hold good in all cases.

SCHEDULES CAN BE IMPROVED WITH ONE-MAN CARS

With the placing in service of one-man cars it has been necessary in many instances to revise the schedules. According to reports from ninety-four companies, sixty-four have not increased the number of cars operated, while twenty have done so. Of the companies making increases in their schedules, the increase has averaged fifty per cent. Some of the increases, however, have been much greater, and in a number of cases reductions in running time of 15 to 20 minutes have resulted. It is undoubtedly necessary in most cases to increase schedules and furnish more frequent service if the full advantage of the car is to be realized. During these days, when the automobile is so generally used, more frequent service will to a certain extent be justified, because the operation of the one-man car so materially reduces the operating expense. This frequent service will assist very considerably in meeting "jitney" competition and in some cases it has been known entirely to eliminate it.

Reports from forty-three companies show they have had an increase in earnings from the operation of one-man cars, while thirty-five companies report that their earnings have not been affected either way by such operation. It seems to be invariably true that where the converted cars have been used there has been very little, if any, increase in earnings. The greatest increases in earnings are shown where the new type of car has been placed in service. This is not surprising when one considers the viewpoint of the public. In most cases the cars that have been converted still retain the same general appearance, with the undesirable longitudinal seats and high steps. Practically all that has been done has been to install additional doors and, possibly, air brakes. With the new type of car the public is immediately impressed by the low step, cross seats and other items of improvement. While this may be a purely psychological effect, the increase in earnings surely justifies the adoption of the new rather than the converted type of car.

One illustration of increased earnings where the new design of car has been installed is in the Central West, where a population of 20,000 is being served by eight regular cars with a daily mileage of 135 miles per car. Formerly this system operated with the same number of cars on the same schedule, the cars being of the converted type with longitudinal seats and platforms protected by doors manually operated. During the five months from Jan. 1 to June 1, 1919, the earnings were $40,980, or 25.3 cents per car-mile. For the same period in 1918 the earnings were $25,522, or 18.5 cents per car-mile. The increase is $15,458, or 60.6 per cent, the greater portion of which is, in the opinion of the operators of this property, due to the one-man cars of new design. Similar reports have been received from other communities.

It should not be understood that increased earnings will be shown immediately when the new cars are placed in service, as there are a number of improvements that must be installed on a system where the service is frequent if the public is to be better served and all of the advantages realized. The following changes and improvements appear to be necessary prior to the placing in service of this type of car: (1) An educational campaign for the benefit of the public. (2) Training of the operators. (3) The adoption of the simplest form of transfer possible. (4) The provision of change racks for the operators, where fares are other than five cents. (5) The installation of automatic blocks instead of hand-operated blocks for protection on single track. (6) The installation of electric track switches.

In considering the question of accidents from the operation of one-man cars, the relative values of the data depend entirely upon the classes of equipment operated previously. When the platforms have been protected by doors in the past, the reduction in accident expense has not been material. With the loading and unloading of passengers under the supervision of one man, the operator should be able to reduce to the minimum the boarding, alighting and platform accidents. Collisions with automobiles and other vehicular traffic have been somewhat reduced because the lighter car is under excellent control. The employment of a better class of operators, as previously referred to, will materially reduce collision accidents.

As to cost of maintenance, both on cars and track, the little information available is largely an estimate on the part of the officials of the operating companies. However, with the reduction in weight there undoubtedly will be less track maintenance. Apparently no operating company has attempted to construct its track for the special operation of the lighter cars. This undoubtedly will be done in the extending of present tracks and in rebuilding. The one-man car has come to stay and changes in the design of track construction will follow.

CARS CAN NOW BE PURCHASED ON CAR TRUST CERTIFICATES

In the total of 102 companies now operating the 1164 one-man cars, there are in service 620 converted cars, 443 Birney cars and 111 other one-man cars, so that more than 50 per cent of the present cars operated are of the converted type. This undoubtedly is due in many cases to the inability of the operating companies to secure new cars. Arrangements have been made by the car builders whereby the new type of car can be purchased on car trust certificates, with an initial payment of 25 per cent. These certificates run for three to five years, the unpaid portion of the certificates bearing interest at 6 or 7 per cent. There is available at the present time, therefore, a plan which permits of the purchase of these safety cars on a fairly liberal basis.

The weight of the one-man car has probably been discussed more than any other phase of this subject and it is interesting to note that the newly designed car was built, in some instances, with a total weight of 10,000 lb. The standard Birney car to-day, I am advised, weighs 13,500 lb.

On specifications which have been recently prepared by one of the larger eastern companies for one-man cars, the weight has been placed at 16,000 lb. From the experience we have had on our system, where twenty-five of these newer type of cars have been operated, it is our opinion that a reasonable weight for a car of this type would be approximately 18,000 lb. The manufacturers who furnish the motors state that this is the maximum weight to be handled by their present design of motor. This weight permits of a sufficiently large platform to provide both entrance and exit doors at the front; provides for a double floor, comfortable, reasonably wide seats, and an aisle of ample width. All of these items are of great importance for the convenience of passengers.

While it undoubtedly will require more power to operate this car, weighing 350 lb. more than the present standard, the difference will not be serious when the question of the public's comfort and convenience is considered. Therefore in designing standards it may be necessaory to have cars of two weights.

Pacific Claim Agents Hold Large Meeting

Automobile Accidents and Analysis of Human Nature in Making Claims Demand Principal Attention of the Association

RESUMING pre-war activities, about 100 members of the Pacific Claim Agents' Association met at the Hotel Oakland, Oakland, Cal., on June 19 to 21 for the tenth annual convention of that body. The three-day meeting was presided over by President H. G. Winsor, Tacoma Railway & Power Company, Tacoma, Wash. By way of diversion from the business meetings the members were entertained with luncheons at the Hotels Oakland and Claremont and a dinner at Canyon Inn, a theater party, a street car ride over the scenic route in San Francisco, an automobile ride to Canyon Inn and another over Sky Line Boulevard in San Francisco.

The first paper read at the Thursday afternoon session was by J. H. Handlon, claim agent United Railroads of San Francisco, on "The Psychology of Claim Adjustment," an abstract of which will appear in an early issue. At this session a paper by F. J. Lonergan, attorney Portland Railway, Light & Power Company, on "The Claimant, the Claim Department and the Physician and Surgeon," was read. This was followed by two papers on "Motor Vehicle Accident Investigation and Adjustment," by S. A. Bishop, claim agent Pacific Electric Railway, Los Angeles, and by V. Laursen, solicitor British Columbia Electric Railway, Ltd., Vancouver.

MORE SAFETY MUST BE TAUGHT

"The Safety Problem" from the viewpoint of the companies and of the public was presented respectively in papers by Thomas G. Aston, claim agent Washington Water Power Company, Spokane, Wash., and Police Lieut. H. S. Lewis, in charge of the police traffic bureau of Portland, Ore., and occupied the attention of the members on Friday morning. A written discussion of these papers was presented by Charles A. Blackburn, claim agent Butte (Mont.) Electric Railway. In his paper Mr. Lewis remarked that, speaking generally, he had found the owner of an insured automobile to be more careless or indifferent in his handling of motor vehicles than the uninsured, for he feels that if an accident occurs the insurance company will pay the bill, and it is therefore no concern of his. After much study and investigation of the subject of automobile accidents Mr. Lewis said he was convinced that every city should establish a board of examiners for automobile drivers, and refrain from issuing certificates until the applicants had shown proficiency in handling the wheel and brakes, passed a reasonable eye test, and demonstrated a thorough knowledge of traffic laws. He believed this to be the foundation of any plan for the prevention of accidents. His conclusion from much study of this question was that traffic bureaus should be established in every city for the purpose of handling and solving the problems of traffic only. The members of the bureau should be specialists in their subject and should meet from time to time with members of the traffic bureaus of other cities, in convention, or otherwise, in order that the very best results might be obtained through the interchange of ideas and viewpoints.

In his written discussion of the safety problem Mr. Blackburn lamented that our great nation, leader in practically everything pertaining to the sciences and industry, is suffering annually the economic loss incident upon 14,000,000 casualties, while the public is so apathetic that disciplinary measures, coercion, if you please rather than education, have been found to be most effective in dealing with this tragic condition. He said the trend of modern safety work as applied to the public, as well as to the employer, was in that direction. He called attention to how ineffective education had been among automobile owners, how strenuously individual owners and automobile clubs have objected to traffic regulations, and how prone they are to disregard and violate not only the moral obligations resting upon them to avoid careless practices but also the statutes and ordinances enacted by the authorities.

Nevertheless, the educational work must be persistently and methodically continued. But more must be done. The co-operation of the public must be sought, and a corrective education promoted. Every accident should serve as an object lesson and should be used as a text in training employees and the public. In no sort of industrial work, and particularly in electric railway operations, can the employment of men who are personally incapacitated for the work, who become negligent due to laziness or thoughtlessness, indifference, because of the monotony of their calling, or because of willful negligence, be continued.

The responsibility of the railway management, he pointed out, does not end with the bare instructions and admonitions to the men to practice the safety-first principles. A man must be shown the correct way to work, and then by frequent inspection and careful observation, the management must see to it that the correct method is followed. The men must be made to understand that they must maintain a certain standard of efficiency in the matter of accident prevention, as well as in other matters, and this is about the only way to answer the question of how to keep the employees interested in the safety-first work. The end sought should be to have all employees so imbued with the safety movement that the careful workman will insist upon his co-worker being careful and will report him (turn him in) for carelessness just as he now turns in a report concerning a defective machine or appliance. The fear, now quite general among workmen, that if they do this they will be considered by their fellow workmen as a "snitch" or "stool pigeon," must be overcome, not alone by appealing to pride and self-interest, but also through fair treatment and consideration, and by making an honest effort to correct improper efforts by other than disciplinary measures.

OFFICE SUGGESTIONS—BENEFITS OF ASSOCIATION

On Friday afternoon, Thomas A. Cole, claim agent, Los Angeles Railway Corporation, read a paper on "Office Kinks in Claim Departments," in which he called attention to the great desirability of settling as many claims as possible in the company's claim offices, saying that in that manner one man could dispose of more cases or make more settlements in one week than a field man could make in one month. He also thought that it was important that the offices of the claim department should be attractively furnished. He could not agree with the old-time idea that it was necessary to impress claimants with the poverty of the company by having dilapidated chairs, bare floors and bare walls with which to receive them. On the contrary, he felt that the offices should be so equipped and furnished that they would impress the claimant with the comfort, attention and courtesy of the place, and indicate to him that the department was run in a business-like manner, and that the company had abundant resources for defense.

At this session a paper was also read by Frank D. Oakley, attorney Tacoma Railway & Power Company, on "How to Handle Fraudulent Claims and Actions Having No Merit." This session was closed by a paper by Secretary B. F. Boynton on "Benefits of the Pacific Claim Agents' Association," in which he reviewed at quite some length the accomplishments of the association and the benefits derived by its membership from its activities. By way of emphasizing the great importance of the safety work of the association, Mr. Boynton quoted some figures showing the tremendous toll of life taken through accidents in this country. He said that during the nineteen months of our participation in the war, while there were 56,227 American troops killed on the field of battle and in the various ways pertaining to war activities, there were killed in peaceful America, where we have plenty, with no uprisings, 126,654 through accidents. In other words, 70,427 more people were killed by accident in peaceful America in various ways than were killed in the great war, and also, during that same period more than 2,000,000 people were injured sufficiently severely so that a record was made of the case. This meant that there were 220 people killed or injured every day, or one every twenty-two seconds.

The Saturday morning session of the association was devoted to an open discussion of "Claim Department Problems," and this discussion was led by A. M. Lee, claim agent Northern Pacific Railway Company, Seattle.

OFFICERS ELECTED

The following officers were elected: President, W. H. Moore, claim agent San Diego (Cal.) Electric Railway; first vice-president, Charles A. Blackburn, claim agent Butte (Mont.) Electric Railway, and secretary-treasurer, B. F. Boynton, claim agent Portland Railway, Light & Power Company, Portland, Ore.

Americanization—What Is It?

The National Safety Council recently sent out a letter on Americanization, which is suggestive for the electric railways which are taking, or will take, an active part in this important movement. The letter says, in part:

> Americanization is not simply conducting classes in English for foreigners, or even putting them through the ceremony of naturalization. It is much more than that.
>
> Americanization means accepting the immigrant as a brother, and in the spirit of brotherhood, helping him to understand us, our traditions, ideals, standards and institutions. It is an effort to establish contacts and to provide facilities whereby he may more easily adjust humself to his new environment and become an integral part of our nation. The alien comes to our shores with great expectations of enjoying the benefits and privileges of a free man in a free country. Americanization aims to help him share those benefits, and to fit him for his responsibilities and duties as a citizen. The final purpose of every Americanizing influence is to instill in his heart a love for America, so that he will desire always to remain here and serve the country of his adoption loyally, and in the whole measure of his power.
>
> It is just as important for Americans to understand the peoples who come to them from foreign lands as it is for those peoples to understand us. All these foreigners who have chosen to live and labor under our flag bring more than hands with which to toil. They bring personal qualities, traditions, customs, ideals, new points of view, experience in other forms of social organization, many of which may become valuable contributions to American culture.

Cleveland Rapid Transit Report

No Rapid Transit Recommended Now — Downtown Surface Car Subways to Relieve Congestion — Unification of Street Car and Ultimate Rapid Transit a Necessary Step in Financing

THE report to the Rapid Transit Commission of the City of Cleveland on a rapid transit system which has been in course of preparation by Barclay Parsons & Klapp, consulting engineers, and directly in charge of H. M. Brinckerhoff, since September, 1918, was made public last week. The general object of the report is defined as being primarily to suggest a means of relief for the present street railway, vehicle and pedestrian congestion in the center of the city, and secondarily so to plan this relief as to form a logical nucleus for the development of a rapid transit system for the city as it may grow in the future.

As the result of their study, the engineers arrived at conclusions which may be summed up in the following ten recommendations:

1. A definite plan should be decided upon under which the city rapid transit line may be built as part of or co-ordinated with the city controlled surface lines, in order to eliminate the duplication of investment which would result from building competing lines and secure to the traveling public the greatest variety of routes and transfer privileges with the lowest practicable fare.

2. The first step toward rapid transit and one which is now warranted should be the construction of subway loops in the center of the city in order to place the surface cars under ground and relieve the congestion in this district.

3. All sections of the subway should be designed of such a size as to accommodate full-sized rapid transit and interurban cars and so located that they may become part of rapid transit routes.

4. A system of subway loops in the public square should be provided and constructed in sections as required to relieve the most crowded streets, such as Ontario, Euclid and West Superior avenues.

5. These subway loops in the public square should be so connected as to permit of turning cars at this point and also of running them through, since both methods of operation on the surface lines will be necessary for the best results, especially up to the time when through rapid transit can be established. A general typical diagram illustrating how this may be done is shown in Fig. 1.

6. The initial rapid transit line should consist of a central through route east and west, passing under the public square and planned to collect passengers from intersecting and branch lines of surface and other cars by transfers, so as to concentrate a traffic of sufficient density to support a train service at frequent intervals. Provision for this rapid transit track is made as shown in Fig. 5. This main trunk line east and west should be arranged to receive branch lines to radiate southeast and southwest as the city development may require.

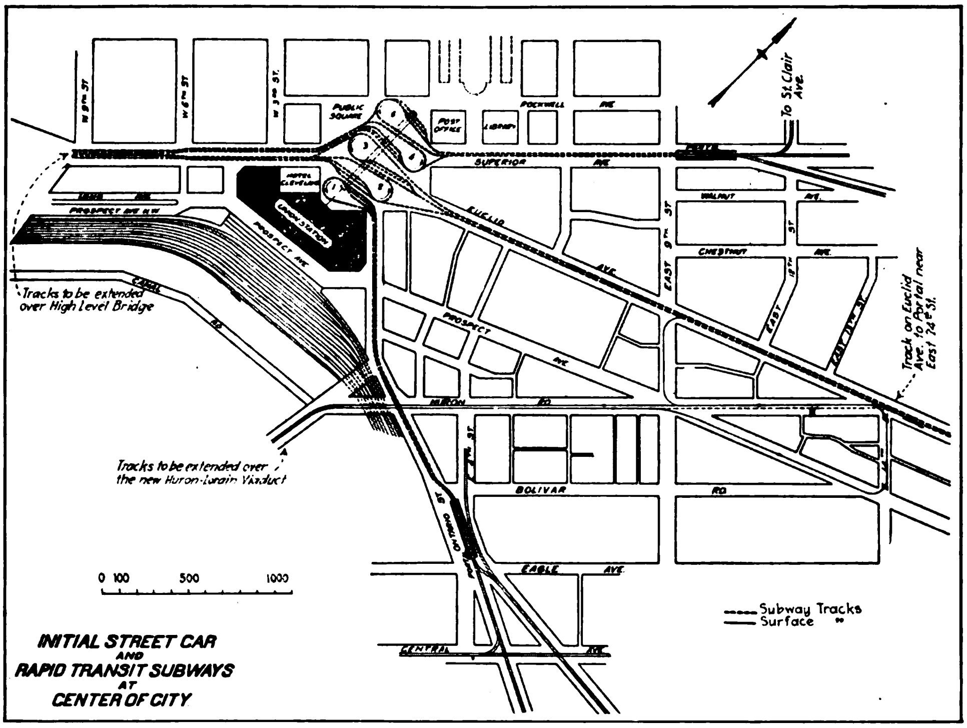

W 9th ST.
W 6th ST.
W 3rd ST.
PUBLIC SQUARE
POST OFFICE
LIBRARY
ROCKWELL AVE
To St. Clair Ave.
SUPERIOR AVE
HOTEL CLEVELAND
UNION STATION
PROSPECT AVE N.W.
PROSPECT AVE
EUCLID AVE
WALNUT AVE
CHESTNUT AVE
EAST 9th ST
EAST 18th ST
EAST 22nd ST
CANAL RD
Tracks to be extended over High Level Bridge
PROSPECT AVE
HURON RD
Track on Euclid Ave. to Portal near East 24th St.
Tracks to be extended over the new Huron-Lorain Viaduct
BOLIVAR RD
ONTARIO ST
EAGLE AVE
CENTRAL AVE
0 100 500 1000
Subway Tracks
Surface "
INITIAL STREET CAR AND RAPID TRANSIT SUBWAYS AT CENTER OF CITY

FIG. 1. SUGGESTED ROUTES OF INITIAL SUBWAYS FOR SURFACE CARS IN CLEVELAND

7. Arrangements should be made for turning back special surface tripper service short of the public square in order to induce passengers to walk outward from the districts in returning home at night, rather than inward toward a central point. This system of subsidiary loops can be developed in connection with the subway when the through trunk line becomes overcrowded. The idea should be to maintain and increase capacity and speed of service to and through the main delivery district and handle the surplus by surface cars from the edges of the district. The most practicable arrangement will be a progressive shifting of the long-haul travel to rapid transit routes and the handling of short haul by surface cars.

8. Efforts should be made to provide further routes from the east to the west sides by bridges, and thus keep out of the central district the passengers who wish to cross the city.

9. Streets especially adapted to vehicle traffic across the city should be developed to facilitate the diversion of this kind of traffic from the congested area. By this means the necessity for part of the extensive subway construction may be postponed.

10. The building of subways should be limited to the congested business districts, and other cheaper forms of rapid transit such as open cuts, elevated lines, or the use of steam and suburban railway rights of way should be resorted to whenever possible, since by such economy the development of rapid transit lines to the greatest number of outlying districts would be possible in the shortest time.

In brief, the general scheme recommended for relieving the situation in Cleveland is first to alleviate the extreme congestion which is now present at the public square, by in effect making the square a two-surface level, and operating some of the car lines in subway loops.

As the traffic grows, one after another of these loops can be put under ground and the cars thereby removed from the congestion on the surface, and then when the total traffic warrants, this underground system through the central district may be connected up with a rapid transit subway extending east and west parallel to the lake.

The cost of carrying out the plan, involving the construction of the subway loops in the public square, and the connecting subways to 22nd Street on Euclid Avenue, 9th Street on East Superior, the Market House on Ontario Street and the high level bridge on West Superior Street is estimated to be between $14,000,000 and $15,000,000, figuring costs at the present prices. The report does not include any estimate of the expenditure which would be required to construct the extensions to the rapid transit systems (beyond the subway portion), and which in effect will be necessary before a transportation which may be classed as rapid transit will be possible. The subway construction indicated above is shown in the heavy lines of Fig. 2 exclusive of the loops, which are shown in Figs. 1 and 5.

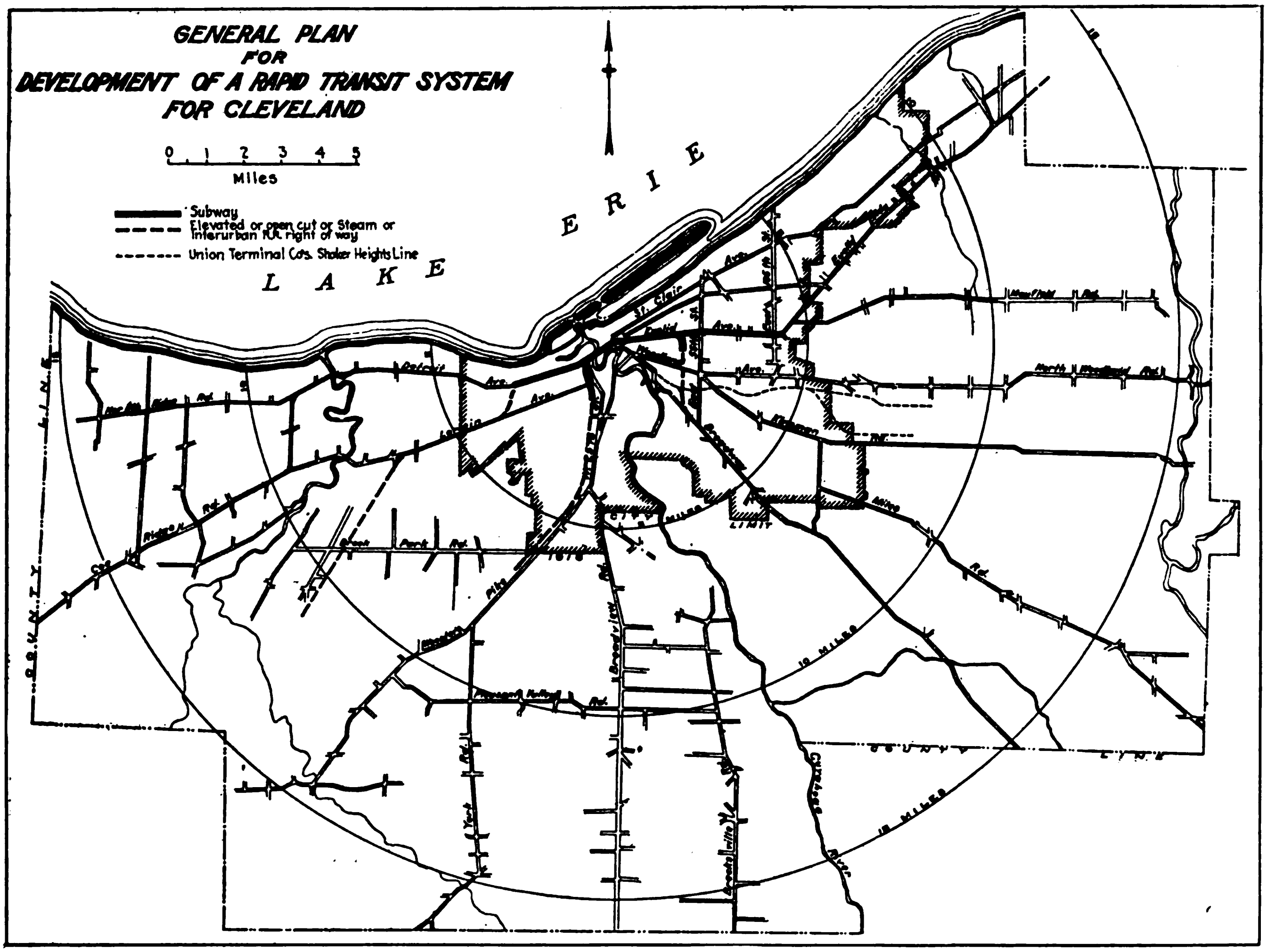

GENERAL PLAN
FOR
DEVELOPMENT OF A RAPID TRANSIT SYSTEM
FOR CLEVELAND
0 1 2 3 4 5
Miles
Subway
Elevated or open cut or Steam or Interurban R.R. right of way
Union Terminal Co's. Shaker Heights Line
LAKE
ERIE
Detroit Ave.
St. Clair
Euclid
10 MILES

FIG. 2—ULTIMATE SUGGESTED SUBWAY AND ELEVATED RAPID TRANSIT SYSTEM

SUPPORTING DATA

POPULATION STUDY

After considering in some detail the conditions surrounding Cleveland favorable to its commercial growth, the engineers arrived at the conclusion that the present population of approximately 1,000,000 people will reach 1,500,000 by 1930, and 2,000,000 not later than 1940.

In arriving at the proper location for a rapid transit line, the engineers made an exhaustive study of the distribution of the present population of the city and endeavored to learn what the probable future distribution would be.

For this study, data were collected showing the density of population for each quarter-square-mile area of the city and suburbs, the grouping of factory employees about and within walking distance of their employment, the number of building permits issued in each of the natural sections of the city in the years 1910 to 1918, etc. The analysis of these data led to the conclusion that the further development of the city must be looked for by a filling-up process of the vacant spaces between the various outlying residential groups along the lines of transportation, this depending largely on the development of rapid transit facilities. These residential groups and the delivery districts are so located as clearly to indicate that the logical initial rapid transit line should be laid out along Euclid Avenue on the east side and Detroit Avenue on the west side.

TRAFFIC CONDITIONS

Along with the growth in population, the total passengers carried by the street railway company has advanced rapidly, and in fact has practically doubled since 1907. In that year the total passengers carried were 188,192,508, whereas in 1917 there were 398,358,894. The number of fares collected per capita for 1910 was about 285, and this had increased to 326 in 1917. Of the revenue passengers about 36 per cent transfer to other lines. From the general characteristics of the Cleveland traffic, the engineers conclude that the number of rides per capita will have reached from 350 to 360 rides per annum when the estimated 1930 population is reached. This would result in the necessity to handle 525,000,000 to 540,000,000 revenue rides per annum. With a population of 2,000,000 and 370 rides per capita, there would be 740,000,000 revenue rides.

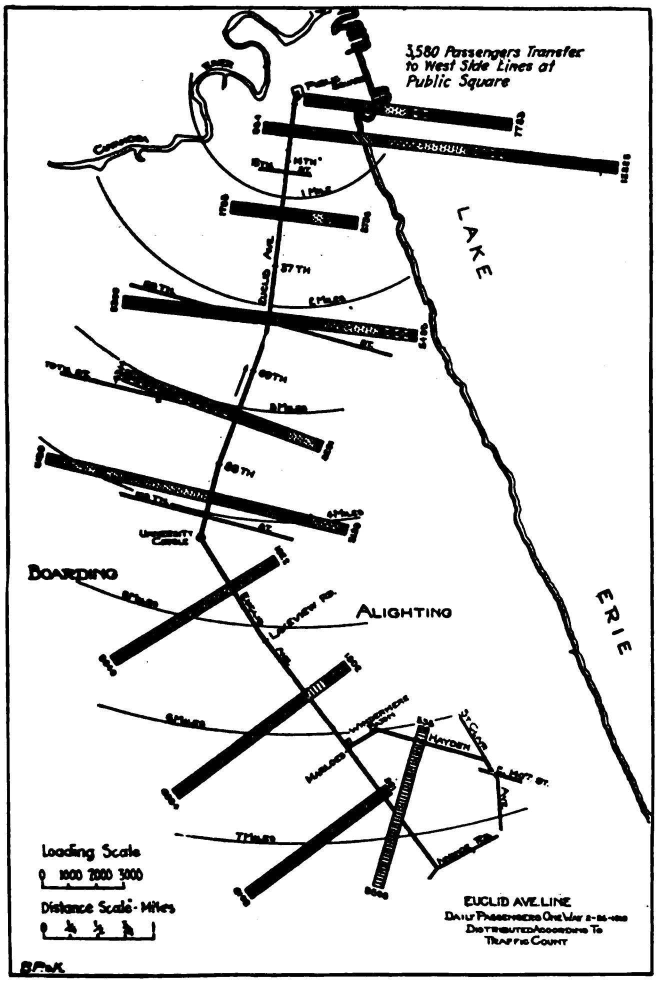

3,580 Passengers Transfer to West Side Lines at Public Square
LAKE
ERIE
Euclid Ave.
37th
1 Mile
2 Miles
Boarding
Alighting
Hayden
Loading Scale
0 1000 2000 3000
Distance Scale-Miles
EUCLID AVE. LINE
Daily Passengers One Way
Distributed According To
Traffic Count
B.P.&K.

FIG. 3—TYPICAL "ON AND OFF" CHART MADE FOR EACH OF TEN PRINCIPAL LINES

SUMMARY OF LENGTH OF PASSENGER RIDES

	Annual as of 1918	Per Cent of Total
Passengers riding less than 1 mile	5,034,357	18.22
Passengers riding between 1 and 2 miles	5,263,693	19.05
Passengers riding between 2 and 3 miles	5,432,242	19.66
Passengers riding between 3 and 4 miles	4,440,291	16.07
Passengers riding between 4 and 5 miles	2,309,946	8.36
Passengers riding between 5 and 6 miles	1,765,617	6.39
Passengers riding between 6 and 7 miles	1,646,804	5.96
Passengers riding between 7 and 8 miles	1,737,986	6.29
Total	27,630,936	
Average haul	3,017 miles	

It is pointed out that with a population in Cleveland now approximately at the million mark, it compares about equally with the population which existed when the first rapid transit lines were installed in Chicago, Boston and Philadelphia.

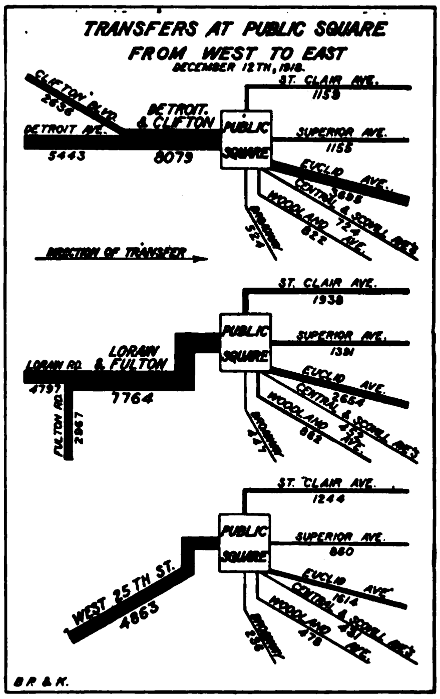

TRANSFERS AT PUBLIC SQUARE
FROM WEST TO EAST
DECEMBER 12TH, 1918.
CLIFTON BLVD.
2636
DETROIT AVE.
5443
DETROIT & CLIFTON
8079
PUBLIC SQUARE
ST. CLAIR AVE.
1153
SUPERIOR AVE.
1155
EUCLID AVE.
3695
CENTRAL & SCOVILL AVES.
724
WOODLAND AVE.
822
BROADWAY
524
DIRECTION OF TRANSFER
ST. CLAIR AVE.
1938
LORAIN & FULTON
LORAIN RD.
4797
FULTON RD.
2967
7764
PUBLIC SQUARE
SUPERIOR AVE.
1391
EUCLID AVE.
2654
CENTRAL & SCOVILL AVES.
253
WOODLAND AVE.
882
BROADWAY
247
ST. CLAIR AVE.
1244
WEST 25TH ST.
4863
PUBLIC SQUARE
SUPERIOR AVE.
860
EUCLID AVE.
1614
CENTRAL & SCOVILL AVES.
431
WOODLAND AVE.
478
BROADWAY
236
B.P.&K.

FIG. 4—CHART SHOWING DISTRIBUTION OF TRANSFER PASSENGERS AT PUBLIC SQUARE

The general character of the street railway traffic of Cleveland is into the central business district from the various residential districts and to and from the factories, much of the latter passing through the central business district. The traffic to the central district is essentially radial, coming from east, west and south. The travel to the factories, however, was found to be largely of a crosstown character. Of this riding, a complete traffic check giving the origin and destination of passengers on ten of the principal lines of the city, and a special check on two crosstown lines, together with a classification of the transfers collected on the entire city system for a twenty-four hour period, reveals the fact that the average haul on the principal lines of Cleveland, such as Euclid, St. Clair and Detroit, is noticeably long. The report indicated this to be as high as on the principal surface lines in Chicago. The percentage of the passengers riding three or more miles is also as high and in most cases higher than either Detroit or Chicago. The Detroit Avenue line, for instance, with an average haul of 3184 miles per passenger carries over 46 per cent of its passengers 3 miles or more, and over 22 per cept 5 miles or more. The Euclid Avenue line with an average haul of 3.017 miles per passenger, carries over 45 per cent of the passengers in excess of 3 miles. The St. Clair Avenue line with an average haul of 3.122 miles per passenger carries over 44 per cent of its passengers more than 3 miles.

The average haul on the ten lines checked was 2.53 miles per passenger. Estimating the haul on the remaining lines by observation and from the city's and company's records, the engineers found the average haul on all lines in the city systems to be 2.48 miles per passenger. The average passenger journey, including the average distance ridden on transfers, for which an average fare of 5.30 cents is collected is about 3.113

miles. This compares with 4.16 miles in Chicago on the surface lines for 5 cents.

These Cleveland lines are only eight or nine miles in length, while on lines of similar length in Chicago the average haul is found to be from 2.7 to 2.9 miles per passenger. The Chicago lines, however, have a much higher proportion of transfer passengers, which makes the passenger journey longer.

The density of traffic on the Cleveland street car lines is relatively light compared to other cities such as Detroit and Chicago. Thus the Euclid Avenue lines in 1917 carried 2,628,000 total passengers per mile of single track, as against 4,640,000 passengers for Woodward Avenue in Detroit and 3,230,000 for Halsted Street in Chicago. It is pointed out, however, that the density of traffic on Euclid Avenue is low because it has been intentionally reduced by routing car lines over adjacent streets, in order to facilitate surface car operation and overcome the increasing delays from vehicle and other interference. The engineers conclude, from this condition, that by revising the process and feeding into Euclid Avenue a system of cars from St. Clair and Superior and other lines, the density of traffic on this thoroughfare could be increased sufficiently to produce the traffic density necessary for the support of a rapid transit line.

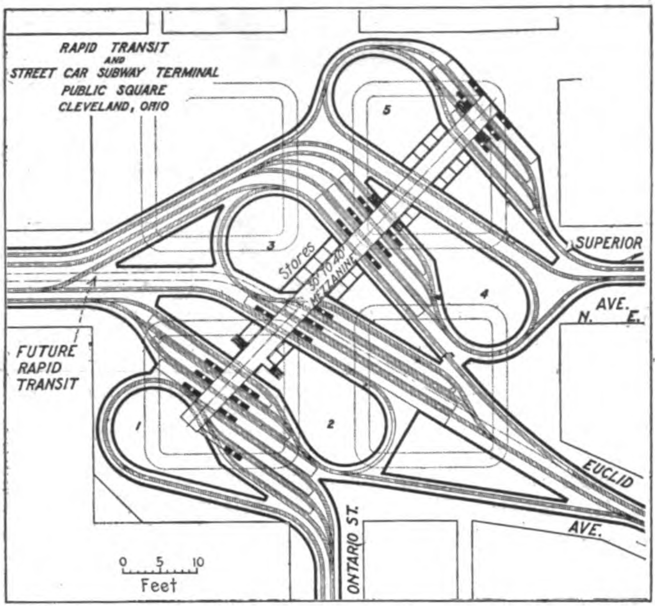


FIG. 5—PUBLIC SQUARE SUBWAY LOOP SYSTEM WITH MEZZANINE PASSAGE FOR PASSENGERS' USE IN TRANSFERRING

Analyzing the result of the 24-hour check on transfers, the engineers found that for the entire system 272,336 passengers used the privilege of the transfer, and of these, 79,458 transferred at the Public Square. This represented 29 per cent of the total for the city. Of the balance, 137,141, or 50 per cent of the total transferred to and from the two cross-town lines, 55th and 105th Streets at various intersections with other lines. The remaining 21 per cent were distributed in relatively small groups at the various street-car transfer points throughout the city. The heaviest transfer outside the public square at a single intersection of surface lines was found to be at St. Clair Avenue and 55th Street, where 6139 passengers transferred on the day checked.

The transfers at the public square are found to be broken up into a great diversity of routes, with the heaviest transfer movement from the Detroit and Clifton lines to the Euclid Avenue line and from the West 25th and Loraine lines to Euclid Avenue, St. Clair and Superior. The transfer at the public square is therefore seen to be principally a matter of convenience in distributing passengers to various destinations from the central point. The diversity of destination of passengers on each line makes through routing from one side of the city to the other very difficult. For even if cars were run through from Euclid to Detroit, or from St. Clair to Lorain, there would still be a large proportion of passengers on these cars who would transfer to other diverging routes at the public square.

FINANCING THE PROJECT

Sizing up the practicability of a rapid transit system for Cleveland, the engineers point out that the difficulty which is most apparent in the whole problem is the question of cost. On account of the radiating character of the city's thoroughfares and the large number of directions in which the residential section can and probably will extend, a system of rapid transit to serve the city best, must give the greatest diversity of routes into the residential sections, but financial considerations demand that the mileage must be reduced to a minimum consistent with adequate service. The concentration upon a few rapid transit lines of a large part of the passengers, with frequent transfer connections to distributing surface lines, seems to offer the most practicable solution in providing Cleveland with any rapid transit at an early date. The expense of attempting to reach all these outlying residential districts from the heart of the city by subway or elevated lines would be so great as to seriously delay the materialization of these facilities. If the existing street-car system, the suburban lines, and parts of the rights of way and other facilities of the Union Terminal Company are utilized in combination with city-built sections of subway in the business district, adequate service and most economical operating cost will be produced with the minimum investment.

These considerations led the engineers to the conclusion that a through line extending from the city limits at Lakewood, on or parallel to Detroit Avenue, passing through the public square and out Euclid Avenue a suitable distance east, appears to be the initial step in the development of rapid transit. The capacity of a two-track rapid transit line of this character with train operation would accommodate for many years east and west long-haul business, and would be capable of handling transfers from the north and south and other divergent lines. Additional rapid transit lines, as indicated in Fig. 2, would then evidently form part of later developments of the transportation system.

Speaking of the initial subway construction consisting of loops under the public square, the engineers point to the difficulty which arises that while the construction of subways in this part of the city for use of surface cars would be very effective in facilitating the movement of traffic of all classes and greatly relieving the congestion on the surface at that point, now, it will nevertheless not produce sufficient revenue to cover the charges on the new investment, although a material saving would be effected in the cost of operation. In another part of the report, however, it is stated that the advantages of such a plan to the public, should be so apparent that it should be willing to provide the necessary funds through bond issue to make this construction possible.

Methods of Observing and Analyzing Passenger Traffic*

The Merits of Several Methods of Obtaining Data Are Pointed Out, Together with Helpful Advice on How to Use Traffic Study Data

BY R. H. HORTON
Traffic Engineer, Philadelphia Rapid Transit Company

TRAFFIC ANALYSIS has perhaps for its prime object the elimination of wasted effort. It should always lead to better service by having the cars on the streets when and where the people need them. A few of the points the traffic analyst looks for are:

1. *Fitting the Service to the Traffic.*—Too often a solid schedule is continued longer than necessary after the morning rush and is started earlier than necessary before the evening rush.
2. *More Efficient Routing.*—Combinations of routes are sometimes possible, to make one car do the work of two. A through routing often makes a remarkable decrease in operating expenses.
3. *Decrease in Running Time.*—Increasing the schedule speed with the consequent decrease in running time is one of the most effective methods of securing economy of operation, and it also results in one of the greatest benefits to the traveling public. A factor in speeding up schedules is the elimination of unnecessary stops.
4. *Turn-Back Points.*—No more cars should be scheduled to the end of a line than the traffic justifies. Herein lies one of the greatest sources of wasted effort. The proper turn-back points can be easily determined by means of a simple traffic count and this information is useful in meeting the inevitable complaint arising from the few passengers located near the end of the line.
5. *Regulation of Vehicular Traffic.*—A knowledge of the characteristics of vehicular traffic leads to co-operation on the part of the city authorities in securing better regulation of this traffic so as to reduce interference with street car traffic. Proper regulation of vehicular traffic usually results in speeding up all classes of traffic.
6. *Development of the Community.*—A constantly checked industrial survey of the community is most essential to efficient street railway management. This not only tells the changing traffic requirements as to sections of the city but leads to great possibilities in building up short distance riding.

Traffic analysis may be broadly divided into field work or observations, office work or compilations, and drawing conclusions or deductions.

Some of the methods employed in field work are as follows:

By using conductors and thus avoiding the expense of observers, some very excellent records often result, but when such work is in progress there should be an inspector or street superintendent on the line to remind the conductors of their duty, as it is sometimes found that if no such reminder is given they will be back to the carhouse in the evening with the blank form just as blank as it was handed to them in the morning, and when reminded by the carhouse clerk that a traffic slip should be turned in they will proceed then and there to fill it out. Naturally the data given are far from accurate.

If inspired with the proper interest conductors can give very good information as to the maximum load on each half-trip. They should be supplied with a form that calls for a notation of the greatest number of passengers on the car at any one time on each one-way trip. This information is most useful in scheduling, as will be explained later.

A similar form might be used asking the conductors to count the load at any given point or any series of given points. In this case even more particular attention must be paid to the work and the conductors reminded of their duty when approaching the point of observation.

In the same manner register readings may be obtained. From the register readings and the load on the car, deductions may be made concerning "local traffic" or "short riders."

STREET CORNER OBSERVATIONS

The work by trained observers usually produces the best results. We have found the trainman excellent for this class of work and he rapidly becomes quite expert in counting passengers.

In the ordinary street corner observation, an observer is stationed at the corner to note the passengers boarding and leaving each car, and the passengers on the car when leaving. The instructions given the observer are to note the destination sign, block or car number, and the time, while the car is approaching and before it comes to a stop. The passengers waiting to board the car will sometimes form a compact knot of people and thus may be counted before the car comes to a full stop. Then a check may be made of the alighting passengers, and during the last few seconds the car is at the corner the observer is able to walk alongside and count the number of passengers on board. We have found that after about a week's work a man will be sufficiently expert so that his data may be used for work requiring considerable accuracy.

ON AND OFF COUNTS

On the riding count, or "on and off" check as it is sometimes termed, an observer boards the car at the starting terminal and rides the entire trip, counting the number of passengers that board or leave the car at each stop. This is one of the most satisfactory methods of making a general check on a line, as it will include the maximum load on the trip, the point at which the maximum load occurs, whether too many cars are operated to the extreme outer terminal, whether a turn-back point is feasible, and nearly every variation of the traffic. We have found it possible to use the same form on this count as on the street corner observations, by writing in the names of the stops in the block number, direction, and destination sign columns. The work of observers is comparatively simple and requires no detailed explanation.

---

*Abstract of paper read at meeting of the Pennsylvania Street Railway Association, Harrisburg, Pa., June 27 and 28, 1919.

IDENTIFICATION TICKET COUNT

There have been a few attempts to count the passengers by means of identification tickets; that is to tag each passenger and thus determine the point at which he entered and at which he left the car. For this purpose two observers are used; one placed at the entrance of the car and the other at the exit. The man at the entrance hands to each passenger entering a ticket which indicates either the exact point at which the passenger boarded the car or, if the line has been previously divided into traffic sections or zones, the traffic section in which he boarded the car. When the passenger alights the slip is taken up by the observer at the exit and the point or traffic section at which he left the car is indicated thereon. There have been very successful counts made by this method, one in particular on an elevated railway in which more than 99 per cent of the passengers retained the slips and turned them over in good order to the observer. This count should give all of the data obtained in the "on and off" count previously described, and in addition should show the exact origin and destination of passengers on the line observed, giving an indication of the amount of short-haul riding and at which part of the line it takes place.

ORIGIN AND DESTINATION COUNT

Efforts have been made in several cities to take a complete origin and destination count. The method, which is a further refinement of the identification ticket count, is to give the passenger a slip indicating his point of origin on the line, this slip to be later collected by another observer who asks the passenger to what point he is destined, not only the point on the line observed but, if he intends to transfer, to what line and to what point he is going on the line to which he transfers. There have been some very good results obtained by this method, and also some which are very much open to question, but it is so complicated and so susceptible to error that it is very doubtful if results would be secured which were accurate enough to form a basis for the consideration of any very important matter.

CHECK ON RUNNING TIME

There have been few systematic checks on running time, but on the Philadelphia Rapid Transit system we have just completed a very thorough check along the following lines:

The check was based on the relation between stops per mile, the length of stop and the possible schedule speed of the car. This point will be discussed more fully later. Observers were sent out with stop watches and forms calling for the information indicated in the following paragraph:

In the first column headed "street" the stops were listed. At each stop the number of passengers boarding and leaving the car was noted in the column marked "B" and "L," and the column "O" was used for noting at frequent intervals the number of passengers on the car. Under the heading "stops" the length of stop as determined by the stop watch is entered in the proper column; passenger stops under "P"; stops caused by vehicular traffic under "T"; stops caused by car ahead under "C"; and stops for safety under "S." Under the heading "slows" a checkmark was made whenever the car slowed down. The check was made in the "T" column for slow-downs caused by vehicular traffic, in the column "C" when caused by car ahead, and in the "S" column when slow-downs are made for safety such as passing an intersecting street where ordinarily no stop is made. There is also a column for recording the actual time at each stop and the running time between that and the last stop.

These observations have been made on every eighth car on two different days, or the equivalent of every fourth car in service. When the field work described was completed the car with the heaviest loads was selected and on this car at a later date we placed a crew to make the same observations as before, but the car was operated by an expert motorman under instructions to operate at the highest possible speed between time points and to wait at each time point and leave on the scheduled time. He was cautioned to obey all rules of the company and give due regard to safety, this being done to place a practical check on the theoretical, and knowing that the theoretical speed should never exceed that which this expert actually makes on such a test run.

ANALYSIS OF TRANSFERS

Much can be learned through the analysis of the transfers used. The transfer is usually granted in lieu of a direct line, and situations may very easily develop where it is wise to sort out the transfers and determine the number used at each point and the direction of the traffic, so as to be sure the transfer is the most economical manner of handling the various streams of traffic.

INDUSTRIAL SURVEYS

As a matter of general information and to keep in touch with the conditions in the community, the traffic man may often find it advisable to take certain large manufacturing plants or business houses and plot on a map the address of each of the employees of such institution. We are now engaged on this work in Philadelphia for several large institutions and for the purpose have divided a map of the city into square-mile sections. Then with the aid of a street guide, we have listed alphabetically all of the streets, showing the house numbers on each street falling in each square-mile section. Thus, in using the card index of the plant, a reference to this directory will show immediately in which section the employee lives. We expect that three men should be able to plot about 2500 names a day.

We have occasionally found it advisable to treat petitions received from associations, etc., in the same manner and have secured some surprising results, as we have sometimes found that a large percentage of the signers would be adversely affected by the change they were requesting.

Where there are groups of industrial plants, a study of the opening and closing hours and the number of employees on each shift rewards one with much valuable information.

A study of population in connection with the built-up section of the city usually gives very interesting results. It is important that in a system of considerable size one be advised not only of the growth of the city but the direction of that growth. These studies can be conducted through maps, either by spotting the population, which is the most common method, or plotting in different colors the different character of buildings in the city and showing the growth of different sections in recent years.

OFFICE WORK.

In the field work as described, we have accumulated certain information as observed by conductors or observers on the street showing the maximum load, the load at any one point or at a series of points. These observations are usually taken for schedule purposes as a measure of the service and traffic. Therefore, the most convenient method in which these statistics may be accumulated is to list them and show for each point of observation, in the order that the cars are operated, the load at that point. To make the data more comprehensible they should then be summarized by half hours, and it is strongly recommended that these half-hour periods be determined at the starting terminal of the line; that is the final sheet should show for the half-hour ending at 7:30 a.m. the number of cars leaving the terminal, the total load and the average per car load on those same cars at the various points observed. The advantage of this may be more readily seen by considering the results in the case of the maximum load observations. The summary will then show that cars leaving the terminal in a certain half-hour will be required to lift a total load of such an amount regardless of the time they arrive at the maximum load point, which is really not an essential matter when considering service. What we first desire to know is how many people we are required to lift and at what time the cars should leave the terminal to lift them. Then we can get into the finer points as to where they are to be lifted and to what point they are to be carried.

Register readings are usually observed for determining the local traffic in a certain district or the passengers riding through a certain district. The compilation in the office should be a fairly simple matter with the application of a few formulas as follows: Having observed the register reading and load on the car at two points *A* and *B*, the reading at *B* being less, the register reading at *A* should show the number of passengers boarding in the district between *A* and *B*. The difference added to the load at *A* and subtracting therefrom the load at *B* will show the number of passengers leaving within this area. If the distance between the two points is not too long; that is, if it is a distance in which one would expect that few, if any, people would make their total ride within two points, an estimate of the passengers riding through may be made as follows:

From the load at *A* subtract the passengers leaving as determined above, or from the load at *B* subtract the passengers boarding. This should give a fairly correct figure.

There are a great variety of methods which are used in the compilation of the "on and off" counts, depending largely upon the purpose for which the count was taken; that is, what particular question was to be answered. The more general method is to first accumulate the data on each observation sheet; that is, starting at the beginning of the line to determine the net of the passengers boarding or leaving the car at each stop, then take the algebraic sum of this net and it will show the number of passengers on the car at each stop. These data are then compiled into one statement, which as a rule should show the stops down the left hand side of the sheet and the results for each separate trip placed in a column by itself and in chronological order. This, then, may be totalled across the sheet by rush-hour periods or for the total day as may be desired.

A typical chart is sometimes developed from these data illustrating the conditions of the evening rush period, averaged to represent one car. The stops are laid off along the bottom to scale, and the number of passengers are laid off on the upright scale. The chart when completed shows the number of passengers on the car at every point on the line. The area of the figure inclosed by the line and the horizontal axis shows the total passenger mileage.

The chart as so far described has been criticised in that it does not show the interchange of passengers at different points along the line; that is, that at a transfer point, for instance, all of the passengers on the car might leave and an entirely new group of equal number board, and the chart would show no record of this transaction whatever. This has been obviated by drawing at right angles to the horizontal axis a line showing to scale the number of passengers boarding

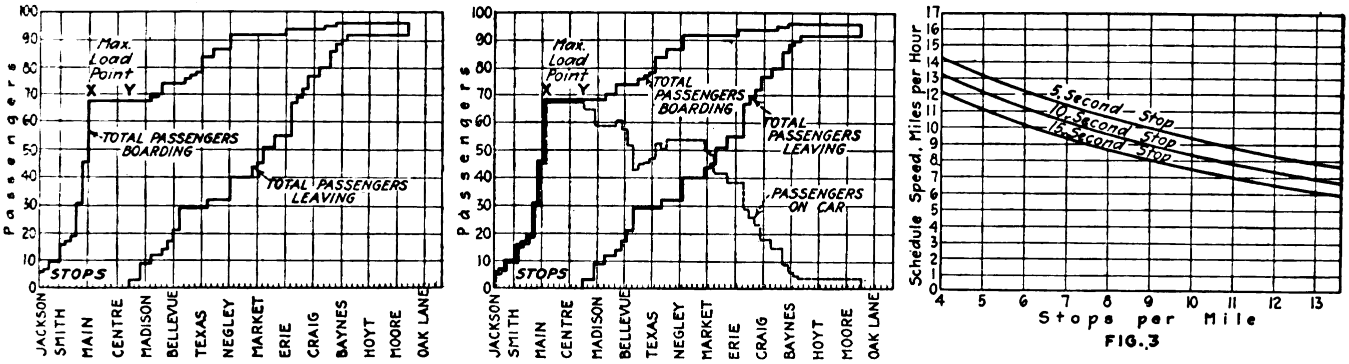


FIG. 1 FIG. 2 FIG. 3

FIG. 1—PASSENGERS-BOARDING AND PASSENGERS-LEAVING CURVES PLOTTED IN THE SAME QUADRANT. FIG. 2—PASSENGER-ON CURVE COMBINED WITH FIG. 1 DATA. FIG. 3. CURVE DERIVED FOR USE IN ESTIMATING INFLUENCE OF STOPS ON SCHEDULE SPEED

the car at each stop, the boarding passengers being drawn above the horizontal axis and the leaving passengers below.

If, in the study being made, it is more important to consider this interchange of passengers, a chart similar to that shown in Fig. 1 may be used. In this case, the accumulated total of the passengers boarding the car at each stop is plotted, and similarly, the passengers leaving. The vertical distance between the two lines thus formed represents the passengers on the car. It will be observed that it more or less obscures the important point of maximum load and is only recommended for use where the interchange of passengers is a very important factor.

On important work the data of the passengers-on-car curve and of the passengers-boarding and pasengers-leaving curve may be combined as shown in Fig. 2. The objection to this latter chart is the large amount of work required for its compilation and the fact that it is apt to be complicated.

With the origin and destination and identification check counts a great mass of detailed office work is necessary. It has been found that the Hollerith card sorting machines give much help. In the case of these counts there is a multitude of slips showing the origin and destination of each passenger; these data are transferred to Hollerith cards and indicated on those cards by means of holes punched in them, for which purpose special machines are provided. The Hollerith mechanism will then sort the cards out in almost any combination which may be desired.

The final point to be covered is the running time check. In the field data we obtained the number of passengers boarding and leaving the car at each stop and the length of all stops in seconds. I wish to point out that in the running-time check as laid out you have with it an "on and off" check, since this is one of the most essential points observed. The first step in working out these data is to divide the line into zones or sections which may be those zones or sections formed by the present time points or others formed by points arbitrarily placed. The traffic conditions, that is, the conditions pertaining to vehicular as well as passenger traffic, should be the same throughout the zone.

Then it is desired to accumulate the observed data for each zone. The form used is laid out to care for one trip and is, in fact, a summation of the observed data for each time point on that trip; that is, it shows the total number of stops, the total slow-downs and the total seconds stopped for each class of stop, with such derived data as stops per mile, slow-downs per mile, speed, etc. These data are then transferred to another form so that the totals shown on the previous form for an entire day's record for a certain time point appear on this sheet. Since the total number of passengers boarding and leaving has a direct effect upon the number of stops and the length of stops, we can then note from the data upon this general form the fluctuations and the time at which they take place.

In a community in which there is any vehicular congestion or large numbers of passengers carried, it is a mistake to continue the same running time throughout the entire day, and these data will show conclusively the periods of the day at which more time is needed than at others. These periods are then located and a summation made of the most important points; that is, the total number of stops, the total length of time stopped, and the number of slow-downs. It was not attempted to measure the length of time consumed in slowing down because it was not deemed practical to make an observation of this, and it was thought to be valueless unless the speed before and after slowing down could also be determined. Therefore, we have assumed three traffic slow-downs or two safety slows (that is, a slow-down at intersecting streets where no stop is made) equal to one stop. For instance, if we have a time zone in which there are five stops, three traffic slow-downs and two safety slows, we would have what we term seven equivalent stops. This is one of the basic factors in the derivation of the proper running time for this particular zone. The other is the average length of stops. The total time stopped divided by the total number of stops (that is, actual stops and not equivalent stops) shows the average length of stop. Fig. 3 has been developed by a tedious process from the motor characteristics chart for the motor equipment in use and should be fairly correct for almost any 20-ton car in city service. From this chart with the stops per mile and average length of stop as previously determined, we arrive at the average scheduled speed for this particular zone, and with that the proper running time.

If we were to take this as the final result we would many times make grievous errors, for those intangible points of the human equation must be given exceedingly careful consideration. Therefore, taking the maximum conditions which might hold forth in this particular zone, that is, assuming that the car would be required to make every stop and each of a length of time equal to that found by observation, and slow down at all points required for safety, a second figure as to the scheduled speed under these conditions is determined from Fig. 3. This figure should be almost as much too low as the first figure might be too high. Then pick out the maximum trip under actual conditions and, in a similar manner determine the theoretical running time under those conditions and compare it with the actual observed. Then average the running time for all trips observed in the period under consideration, and finally, analyze the work of the expert motorman on his test run and compare the theoretical running time under the conditions of the test run with the actual observed.

Thus we have six different figures for consideration: (1) the theoretical time under average conditions, (2) theoretical time under maximum conditions, (3) actual time under maximum conditions, (4) the average actual time, (5) the theoretical time for expert motorman on test run, and (6) the actual time of the expert motorman.

With these six figures, good judgment should easily determine a proper running time which can be made with safety and proper operation of the equipment.

The first motor-bus ever used in Tokyo, Japan, has just been introduced. The bus weighs 1½ tons and has accommodation for sixteen seated passengers. It is capable of developing a speed as high as 12 m.p.h., which is the regulation limit in the city. A fare equivalent to 5 cents is collected for each section of the ride. It is proposed to order 150 more of this type of bus if it proves satisfactory.

Incentive to Efficiency Is Needed

Fixing of Rigid Rate of Return Limits Value of Service-at-Cost Franchises

BY W. C. CULKINS
Director of Street Railroads, Cincinnati, Ohio

THE service-at-cost plan of electric railway franchise pre-supposes a desire upon the part of the municipal government to provide adequate street car service to its people at the lowest rate of fare commensurate with such service. The basic principle of such grants is that the city shall determine the character of the service, and that the company may charge such rate of fare as will provide a sufficient revenue to cover operating expenses, taxes and an agreed return upon the investment of the company.

Such an arrangement is so obviously fair that it has appealed strongly to both governmental and utility officials as a solution of the perplexing electric railway problem. But panaceas often carry their own dangers because they are unable to justify the miraculous results expected, and practical values which really exist are disregarded in the disappointments which follow. If the service-at-cost plan is to be adopted as generally as tendencies now indicate, it might be well to consider its inherent weaknesses in connection with its method of application.

The first and most important of these is that the fixing of a definite and rigid return on the investment destroys all incentive for the officers of the company to exercise efficiency and introduce economies in the operation of the property. Stockholders think in terms of dividends, and as long as these are produced at the maximum officials need have no fear of removal. Carlyle has said "Every man is as lazy as he dare be," and electric railway executives are no exception to this rule. There may be a very natural tendency to yield to exorbitant demands of employees, to be listless in making purchases, and in general to pass the buck to the city authorities in the matter of service requirements. Thus the city will be deprived of the keen coöperation of the trained and experienced executives of the company, which is so necessary to the successful operation of this plan.

A second difficulty, perhaps depending largely upon the first, is that while it seems a very simple process to have fares rise indefinitely with the cost of service there is a third party to be considered. This is the short-haul rider, who has the option of walking; and also, if fares become sufficiently high, the long-haul rider, who may elect to pay even more for his transportation by some other means than endure the inconvenience of rush-hour service at what he may regard as an unreasonable rate of fare.

Experience has already shown that there is a point at which the economic law of diminishing returns begins to operate, and increases of fares no longer produce corresponding increases in gross revenue. Inasmuch as the fetish of the nickel has so strongly impressed the American mind, the danger becomes greater as the rate of fare rises above this standard, out of all proportion to the operation of the economic law as it applies to the price of other commodities besides transportation.

If the success of the service-at-cost plan is to be measured by the extent of the departure of fares from the pre-war standards, then it obviously calls for the closest coöperation of governmental and traction officials in the introduction of the highest efficiency in operation that fares may be kept to the lowest point consistent with good service. It is equally obvious that if a rigid rate of return tends to retard such coöperation, the opportunity to earn an additional reward would bring about the desired results.

In the Cincinnati franchise a provision is included by which higher fares will always work to the financial disadvantage of the company. Whenever fares are higher than 6 cents, all of the surplus remaining after the payment of operating expenses, taxes and a fixed return to the company, is paid into a reserve fund toward the reduction of fares. When fares are 6 cents, however, the company is permitted to retain 20 per cent of such surplus in addition to its fixed return. When fares are reduced to 5½ cents, the company retains 30 per cent of the surplus; and when fares are 5 cents or lower, 45 per cent of the surplus. The remainder, in each case, goes to the reserve fund.

It is believed that this provision is so simple and easily understood that were the officials of a company to fail in putting forth the desired joint effort, there would be little difficulty in arousing the interest of the stockholders who were thus being deprived of the opportunity for increased dividends.

The danger that this incentive may be abused and that the company will seek to reduce expenses by impairment of service is obviated by other provisions of the ordinance, through which the city has reserved to itself the complete and final determination as to the character and the quantity of service to be supplied.

The Cincinnati ordinance has been in effect only since last October, and the "surplus" thus far has been a minus quantity. Fares were advanced to 6½ cents on July 1, and it is now hoped that this will be the maximum. The attitude of the company during this period has appeared to justify fully the wisdom of the incentive provision in the ordinance.

To Arrange for Convention Transportation

THE transportation committee of the American Electric Railway Association, under L. E. Gould, Economy Electric Devices Company, master of transportation, and Clarence Sprague, General Electric Company, chairman, is now well organized. Regional chairmen have been appointed as follows: New England, R. M. Sparks, Boston, Mass.; New York State (exclusive of New York City), W. H. Collins, Gloversville, N. Y.; New York City, Bertram Berry, New York; New Jersey, Pennsylvania, Delaware and Maryland, N. D. Bolen, Newark, N. J.; District of Columbia, Kentucky, Virginia and West Virginia, H. S. Newton, Fairmount, W. Va.; Indiana, Ohio and Michigan, E. J. Smith, Detroit, Mich.; North and South Carolina, Georgia and Florida, W. H. Glenn, Atlanta, Ga.; Tennessee, Mississippi and Alabama, F. W. Hoover, Chattanooga, Tenn.; Texas, Oklahoma, Arkansas and Louisiana, L. C. Bradley, Houston, Tex.; Colorado, Arizona and New Mexico, F. W. Hild, Denver, Colo.; Illinois and Wisconsin, H. J. Kenfield, Chicago, Ill.; Minnesota, North and South Dakota, Iowa and Manitoba, J. J. Caufield, Minneapolis, Minn.; Missouri, Kansas and Nebraska, J. R. Harrigan, Kansas City, Mo.; Montana, Idaho, Utah and British Columbia, W. G. Murrin, Vancouver, B. C.; California, Oregon and Washington, W. R. Alberger, Oakland, Cal.; Eastern Canada, Patrick Dubee, Montreal.

Outline of Plan Adopted for Presenting Case of Electric Railways Before the President's Commission

STATEMENT IN BEHALF OF ASSOCIATION

STATEMENT IN BEHALF OF COMMITTEE OF ONE HUNDRED

THE PRESENT STATE OF THE INDUSTRY

A.—PHYSICAL:

Statistics based on census reports showing:

- (a) Miles of line
- (b) Miles of track
- (c) Number of cars
- (d) Employees
- (e) Power consumed
- (f) Riding habit

These statistics will include a comparison between the different census years so as to bring out the retardation in the extension of lines.

In addition—(h) Abandonments

B.—FINANCIAL—

- (a) The balance sheet of the industry, in a form as nearly similar to the balance sheet of an ordinary company as it can be made, comparative for census years
- (b) The income account of the industry. Comparative for census years
- (c) Record of receiverships
- (d) Distribution of the securities among general public, savings, trust companies, etc.
- (e) Shrinkage of security market values
- (f) Yearly capital requirements of electric railways—
  - (1) Refunding operations
  - (2) New capital
- (g) Relation to condition of banking and trust companies and the general financial structure of the country

CAUSES FOR THE PRESENT STATE OF THE INDUSTRY

A.—Not caused by inefficient management:

- (a) Evolution of the modern electric railway in the matter of apparatus, methods and practice.
- (b) Economic development of the industry

B.—Decline in the purchasing power of the nickel:

- (a) General
- (b) As affecting these elements of the cost of the service.
  - (1) The cost of capital
    - (*a*) Destruction of electric railway credit
    - (*b*) High interest rates on securities
    - (*c*) Failure of market for stock
  - (2) The cost of operation:
    - (*a*) The cost of labor
    - (*b*) The cost of fuel, copper and lumber
    - (*c*) Cost of other materials
  - (3) The cost of taxes
    - (*a*) Increase in normal taxes
    - (*b*) Imposition of additional taxes
  - (4) Replacements

C. Elements of the cost of service

D. Increased value for fare demanded by and given to patrons and communities—

- (a) Extension of lines in unroprofitable territories
- (b) Inauguration and extension of transfer system
- (c) Improvement in character of track and equipment
- (d) Imposts (paving, grading, bridge construction, franchise taxes, etc.) levied by communities
- (e) Use of money obtained from railway taxes to provide right of way for competition
- (f) Varying cost of operation in different communities

E.—Competition of motor vehicles:

- (a) The private automobile
- (b) The jitney
- (c) The motor truck

F.—Increased physical difficulties of operation in cities:

- (a) Traffic congestion and its effect on schedules, accident accounts, etc.

G.—Restrictions put upon operation economies by authorities:

- (a) Limitation of speed
- (b) Veto upon skip stop
- (c) Requirements as to stopping places
- (d) Limitations on use of one-man cars
- (e) Limitations on short-routing of cars
- (f) As to proper traffic regulation

SOCIAL NEED FOR ELECTRIC RAILWAYS

A.—The continuing need for urban and interurban electric railways:

- (a) Effect of service on the growth of cities
- (b) Effect of service on the growth of rural communities
- (c) Effect of service on growth of industry and commercial business
- (d) Effect of service on social and living conditions

DEFECTS IN REGULATION

(Applicable to cases where state authorities have jurisdiction)

A.—Failure of commissions of their own initiative to protect the railways

B.—Long time to consider and act on cases

C.—Suspension of filed schedules for lengthy periods

D.—Impossibility of accurately forecasting revenues and expenses

E.—Regulation should be automatic

F.—Defective jurisdiction of some commissions

THEORIES

A.—Fundamentals:

- (a) Electric railways in Great Britain
- (b) Independent business men's viewpoint
- (c) Duty of government to electric railways
- (d) State regulation through commissions rather than local regulation; this does not prevent a proper degree of local control over service.

B.—Public co-operation:

- (a) Mutuality of interest
- (b) Theory of principal and agent
- (c) Relationship of car-rider and tax-payer

C.—Flexible fares based upon the cost of the service:

- (a) Value upon which return should be allowed
- (b) Rate of return
- (c) Franchises
- (d) Service at cost agreements
- (e) Profit sharing agreements
- (f) Incentive to efficient and economical management.

D.—Methods of adjusting revenues to meet expenses:

- (a) Increase of fares through
  1. Zone system
  2. Flat rate
  3. Charges for transfers
- (b) Decrease in expenses through
  1. Elimination of unprofitable lines
  2. Protection from competition
  3. Elimination of special taxes
  4. Elimination of all imposts (paving, etc.)
  5. Participation of property owners, in cost of constructing and operating extension
  6. Employment of operating economies (one-man cars, turn-back, skip stop, et cetera)

Committee of One Hundred Ready for Hearings

At Meeting of Committee on Thursday, Plans Were Announced for Presenting the Railway Case Before the Federal Commission at Hearings to Be Begun in Washington Next Tuesday—Plea Made for Holding Some of the Sessions in Cities in the Central West

AN ENTHUSIASTIC meeting of the Committee of One Hundred, appointed recently by President Pardee of the American Electric Railway Association, to take charge of the presentation of the case of the electric railways before the recently appointed Federal Electric Railways Commission, was held in one of the rooms of the Engineering Societies' Building, New York, on the morning of Thursday, July 10. There was a representative attendance.

Gen. Guy E. Tripp opened the meeting shortly after 10 o'clock and announced that the sub-committees appointed at the previous meeting of the committee had been organized and had prepared reports for submission to the full committee. He then called upon Joseph K. Choate, chairman of the committee on presentation, to give the plans adopted by that committee and approved by the executive committee for presenting the case of the electric railways to the commission. The plan, which Mr. Choate said was tentative, covered the points which the electric railways hoped to prove to the commission. The plan is published on the opposite page.

REPORTS OF SUBCOMMITTEES

In continuation, Mr. Choate explained that the committee was collecting data and would arrange with different witnesses to present testimony on the points mentioned in the program. He added that Bentley W. Warren of Boston had been selected by the committee as its general counsel and that Thomas Conway, Jr., Ph.D., of the Wharton School of Finance, Philadelphia, would assist in the presentation of the case. Tuesday, July 15, has been designated by the commission as the date of the first hearing, and it was understood that the hearings will be held in the hearing room of the Interstate Commerce Commission in Washington and will be continued each day until the case is closed. The plan of holding continuous hearings has been adopted for the purpose of reaching an early decision in the matter.

Mr. Choate said that the program as given covered only the line of testimony for which the association was responsible. He added that he understood the Commission did not expect to take up cases presented in individual cities but only the broad aspects of the question.

Upon motion, the report of the committee on presentation was accepted.

On being asked to present the report of the committee on recommendations, O. D. Young, vice-president General Electric Company and chairman of the committee on recommendations, said that the committee obviously could not present a detailed report of its recommendations until after the testimony had been presented.

B. C. Cobb, New York, then reported for the committee on information and service. He explained that the committee expected, among other things, to report the sessions adequately and to prepare daily abstracts of the most important data presented for the benefit of the press and others interested, and that copies of these daily abstracts would be mailed to all railway companies.

Samuel Insull suggested that it would be very desirable to have some of the meetings of the Commission held in the Central West, if that were possible, and the chairman was authorized to appoint a committee to confer with the commission to learn whether this could be done.

H. L. Stuart, of Halsey, Stuart & Co., chairman of the committee on finance, then made a verbal report on the expenses of preparing and presenting the case of the electric railways and urged that the committee receive the support of all electric railway companies, the manufacturing interests, and others concerned with the prosperity of the electric railways.

Mr. Insull then suggested that other groups of public utility organizations be invited to co-operate in the presentation of the electric railway case. He thought that the fundamentals in the electric railway case applied to the gas, water, electric light, and power industries. The plan was approved by other speakers, and on motion was adopted.

GOOD ATTENDANCE AT HEARINGS DESIRED

In conclusion, General Tripp urged all members to assist the committee by suggestions and to attend as many of the hearings before the Commission as possible.

The committee then adjourned to meet in Washington at the first hearing and will meet each day until the Association's case is complete. Association headquarters will advise all electric railway companies of the dates set for the hearings and urge executives to attend as many of the hearings as possible, it being important that the industry manifest through its representation at the hearings its interest in and support of the work of the commission.

Hydro-Electric Development Plans

THIRTY-THREE municipalities covering a territory about 75 miles in length with towns extending from Southampton to Wingham and across to Mildmay, organized as The Associated Municipalities of Northwestern Ontario at a meeting called at Port Elgin by the local Board of Trade on May 8.

The principal object in view is to secure electric power for the district included from the Provincial Hydro-Electric Commission. A resolution was adopted requesting the commission to proceed at once with the development of power on the Sapgeen River and that the southern portion of the territory should be at once supplied from Eugenia Falls. The meeting also strongly favored the electrifying of the railroads and radial construction to serve the district.

The following officers were elected: Chairman, H. H. Stevens, Port Elgin; vice-chairman, Mayor Gurney, Wingham; secretary-treasurer, E. Roy Sales, Port Elgin; executive committee, W. J. Greer, Wingham; J. J. Hunter, Kincardine; Reave Steele, Paisley; Fred Lippert, Walkerton; J. A. Constantine, Ripley; R. Johnson, Lucknow, and A. McLean.

Rehabilitating Track Joints with an Arc Welder

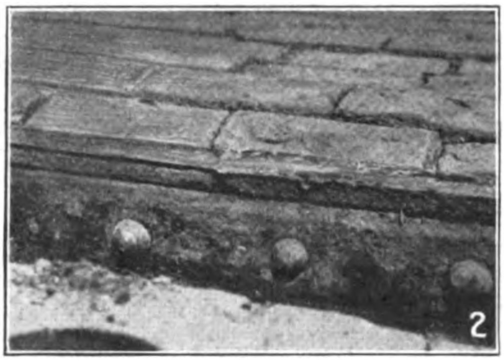
Union Traction Company of Indiana Builds Up Joints in Paved Streets by Reversing Joint Bars and Inserting Plate Under Joint

THE accompanying photographs show the method used by the Union Traction Company of Indiana, for repairing in paved streets track joints which have become badly worn and out of surface. The first illustration shows the joint before any work had been performed. It will be noticed that in addition to the bad rail joint the working of the rail ends has loosened the paving. In the second view the bricks have been removed and the joint bars are shown to be worn under the head of the rail so as to leave a space of about ⅛ in. between the rail head and the bar. This makes it impossible to tighten these bars successfully.

The bars, which are continuous joints, are therefore removed, the base is sheared off and the bars are replaced with the base under the head of the rail as shown in the third illustration. Two bolts are used to draw the bars tightly under the rail. The rail is then loosened from the ties and a steel plate, 1 in. thick, 6 in. wide (for a rail base of 5 in.) and 24 in. long, is placed under the base extending from tie to tie. The ties are adzed for a good bearing surface if they are sound, otherwise new ones are installed. The entire joint is brought to a good surface, thoroughly tamped, and the bolts drawn as tightly as possible.

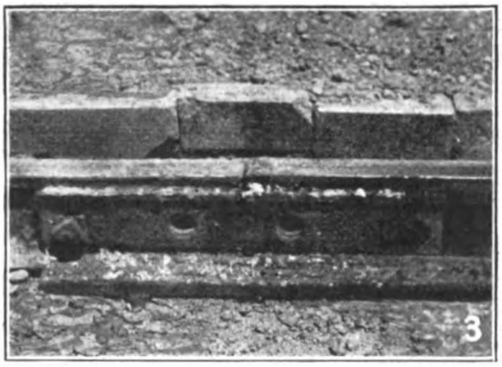
An electric arc welder is used to weld the joint bars to the head of the rail, using as a shoulder the portion of the base that was not sheared off. The lower part of the splice bar is welded to the base of the rail, which in turn is welded to the 1-in. plate on which it rests. A soft grade of welding steel is used for this purpose. At most of these joints the head of the rail is more or less cupped, in which case this is filled with hard steel by the same welder. After relaying the paving, the joint is ground to a smooth surface to remove any possibility of pounding. The last illustration shows the joint after the brick has been relaid and the grinding done.

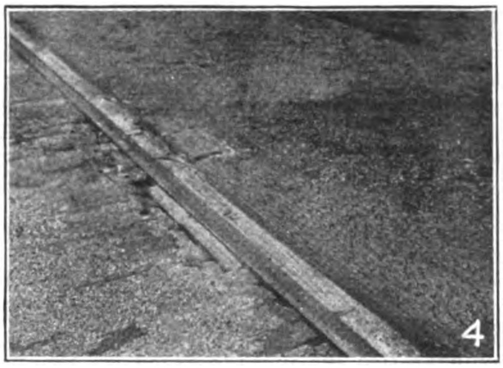
This method of rehabilitating joints obviates the necessity of bonding and has been employed on 6-in. and 7-in. rail with very satisfactory results. Joints of this type have been in use on interurban track for a year and a half and are still in excellent condition. The cost of the work has varied from $6 to $9 per joint, depending on the condition of the ties, whether or not the joints were laid opposite, and how badly the rail ends were split or broken.



1. A bad joint before rehabilitation.
2. Paving removed showing wear on joint bars.
3. Bars are inverted and welded to head and base of rail, and steel plate is welded on base.
4. Rehabilitated joint after building up and grinding.

METHOD OF REPAIRING BADLY WORN TRACK JOINTS





Building Up Flat Spots on Wheels and Repairing Worn Axle Collars by Welding

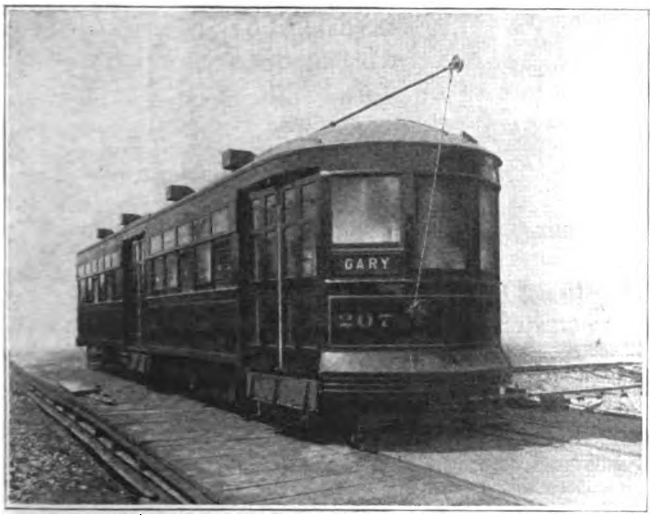
IN THE DISCUSSION which took place following the presentation of the report on "Welding Truck Side Frames, Bolsters and Arch Bars," at the June convention of Section III, American Railroad Association, mention was made of the great saving which results from building up the collars on axles and filling in flat spots on cast steel and rolled steel wheels by welding.

In connection with the building up of axle collars it was stated that where the collars are built up simply to prevent excessive lateral movement, the welding process does not materially affect the strength of the axle. Several prominent railway men stated that they had reclaimed many axles by building up the collars, and that with the prices of axles as they are to-day such a process is a source of great saving.

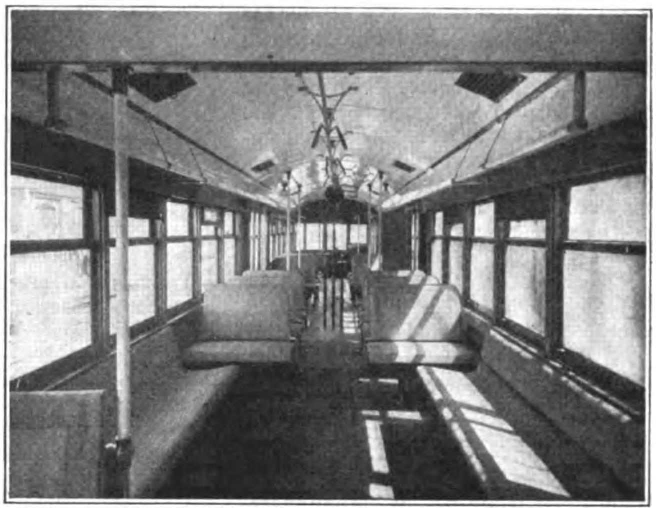
Railway officials also spoke of the satisfactory results they were obtaining in building up flat spots on wheels by electric welding and stated that if the flat spots are properly cleaned off and cut in around the edges before the weld is made, rather than applying the metal direct to the top, no trouble is experienced with with the electric welding process. Mr. Dickson, master mechanic Oregon Electric Railroad, said that his company has been welding flat spots successfully by the electric process. He finds the best material to use for filling-in to be cuttings from steel-tired wheels. Some difficulty was experienced when other material was used.

Double-End Pay-as-You-Pass Cars for Gary

TEN double-end Peter Witt cars were recently delivered to the Gary (Ind.) Street Railway. The bodies are mounted on Brill 77-E-1 trucks. As was explained in detail in previous issues of this paper, the design provides for the handling of large crowds during rush hours and for preventing delays in loading as well as for getting the passengers away from the congested points very quickly. As the conductor is stationed in the center of the car body the entire front half of the car serves as a loading platform. Only those passengers who pass the conductor to get to the rear of the car pay their fares upon entering. Those in the front section do not pay until they have reached their destination.



NEW CAR FOR GARY (IND.) STREET RAILWAY READY FOR SERVICE



INTERIOR VIEW AND SEATING ARRANGEMENT OF NEW GARY CAR

The new equipment is constructed for double-end operation with entrance doors located at diagonally opposite corners. Exit doors are provided on both sides of the car at the center, one set of these being locked when the other set is in operation. The space directly in front of the doors is provided with hinged seats which can be raised out of the way when the doors are in use. The side construction of the car body is of semi-steel with plate-girder construction. The girder consists of a steel plate riveted at the bottom to the angle-steel sidesill and at the top to a flat-bar steel belt rail. The side posts are of T-section and the letter panel is of pressed steel. In addition to the angle sidesill the underframe is constructed of commercial steel shapes throughout.

Two special features of these cars are the Brill Renitent side posts and the automatically placed window screens. This post is made up of a casing of spring brass attached to the T-section side post by means of clips fastened to the casings and fitted into the stirrups riveted to the post. The casing offers elastic resistance to the pressure of the sash and makes the contact watertight, preventing warping of the sash. The sash may be removed without tools, is interchangeable between windows and when raised will not drop suddenly if released.

An iron wire screen of 2-in. diamond mesh is fitted to the bottom rail of each sash and when windows are shut the screens are inclosed in pockets formed between the outer steel sheathing and the inner finish below the belt. By this arrangement when the sashes are raised the window screens attached to them are drawn up and automatically close the window.

A signal light gives the indication to the motorman when the center doors are closed and the car may be started without danger of accidents.

Some of the general dimensions of the car are:

Length over all	48 ft. 1 in.
Extreme width	8 ft. 4 in.
Height from rail to top of roof	10 ft. 8¾ in.
Width of center door opening	5 ft. 6 in.
Seating capacity	51 passengers
Truck wheelbase	5 ft. 4 in.
Truck centers	22 ft. 3¾ in.
Diameter of wheels	26 in.

The electrical equipment furnished with these cars consists of GE-258 motors and GE-K-12 control. The motorman's door signal and the door and step operating mechanism is furnished by the National Pneumatic Company. The Ohio Brass Company's trolley base and trolley retriever is used, and the heating equipment is of the Consolidated Car Heating Company's type. The cars were built by the G. C. Kuhlman Car Company, Cleveland, Ohio.

Theory and Practice in Electric Welding

In the London *Electrician* for May 23, 1919, H. S. Marquand describes some power sets for the supply of energy for arc welding and makes a brief comparison between direct and alternating-current processes. He states that the direct-current process should be used where possible but that the alternating-current system is satisfactory where proper skill in the operation is used.

In a previous article in the May 2 issue Mr. Marquand gave information relating particularly to wire welding. The preparation of the work, regulation of the current and the power necessary for making resistance welds was described.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Progress in Detroit

Agreement to Study Service-at-Cost Plan—Preparing for Fare Arbitration

At a recent meeting of Mayor Couzens, the Street Railway Commission and the City Council of Detroit, Mich., the Council agreed to study the Tayler plan as it is in effect in Cleveland, and then discuss a plan for the city of Detroit with executives of New York rapid transit lines. This conference with the New York experts has been arranged for July 18 at Detroit.

MAYOR STILL FAVORS COMPETITION

Mayor Couzens did not oppose the plans as decided upon, although he is apparently still in favor of a bond issue to build subways under downtown streets and obtain trackage to operate in connection with them. The Mayor's explanation that he meant that the Council had surrendered to the company "in the interest of peace and harmony" and not that he considered that they had received any political or monetary consideration when he made the charge that the Council had sold out "body and soul," was accepted by all parties concerned. The Mayor's contention that no rapid transit system should be planned until its future relation to the surface lines had been determined was backed by extracts read from the report of Barclay Parsons & Klapp.

In the Mayor's opinion the subway system itself could not be self-supporting. A unified system of transportation combining subway, surface and overhead systems was necessary to provide satisfactory service and prove a financial success.

He also set forth that it would not be possible for the city under its present charter to finance both the construction of rapid transit lines and the purchase of the surface systems.

COMMISSION AGAINST COMPETITION

Various members of the Council agreed fully with Abner E. Larned when he stated that the Street Railway Commission, of which he is president, believed it proper to enter into a partnership agreement with the existing company. He said the commission did not favor the piecemeal construction of competing lines.

At a special meeting of the Council on July 3 William H. Maybury, former commissioner of public works, was chosen by the Council to represent the city on the board of three arbitrators to determine the justice of the claim of the railway of the necessity for a 6-cent fare. Councilman Lodge argued that little time remained before July 10, the date set by Judge Marschner's court order, in answer to contention by some of the members of the Council that the Detroit United Railway should appoint its member of the board first. The Mayor has not yet approved the appointment of Mr. Maybury.

The Detroit United Railway has announced the appointment of John J. Stanley, president of the Cleveland Railway, as arbitrator for the company, and at Mr. Stanley's suggestion the names of several men have been proposed from whom the third member may be selected. None of the men named, however, appears to meet wholly with the approval of the members of the Detroit City Council.

Two accountants will be appointed by Corporation Counsel Clarence E. Wilcox, to make daily examination of the railway's books and report to the city's arbitrator. The company's figures will be furnished to the company's arbitrator for the same purpose.

Wage Adjustment Near at Wheeling

The wage disagreement between the Wheeling Traction Company and the West Virginia Traction & Electric Company and their employees has been partially settled, according to an official announcement. The annual wage scale has been signed by both factions for the electricians and firemen without the assistance of the arbitration board.

The wage scale of the platform men and the engineers is still unsigned, but it is anticipated that an agreement will likely be reached between the companies and the union within the next few days. The scale for the inside electricians has not as yet been signed. The scale signed affecting the two crafts gives the men a substantial increase and more satisfactory working conditions. The water tenders receive an advance from $4.15 to $4.65 a day of eight hours; ash wheel and coal passers from $3.36 to $3.80; firemen from $3.56 to $4.10. Thus far an effort to agree upon the third member of the arbitration committee has been unavailing.

The old wage scale of all the crafts affiliated with the railway workers' union involved in the disagreement expired on May 1, last, followed by a one-day strike. The men returned to work after they and the officials of the companies had agreed upon placing the disagreement in the hands of an arbitration board composed of three members. For the past several weeks both sides have suggested a number of men as the third arbitrator, but no selection has been agreed upon.

Pittsburgh Plans Subway

$6,000,000 Appropriated at Election for Constructing Loop for Surface Cars in Downtown Section

The voters of Pittsburgh, Pa., on July 8 authorized a $6,000,000 bond issue for the construction of a downtown subway loop.

The money for the loop subway, which has long been talked about, therefore is now available. Just what the city will do with the fund is not certain. The question submitted to the voters did not specify particulars of construction, except that the tube is be located in the two downtown wards and be built to specifications to be drawn up by the Mayor and Council by ordinance.

DOUBLE-TRACK LOOP LINE

Tentative plans prepared by city engineers and used in the campaign preceding the special election, provide for construction of an underground loop approximately 1½ miles long. This is planned as a downtown terminal for a majority of the surface lines of the Pittsburgh Railways, to which it is proposed to lease the tube.

The subway, according to the tentative plans, is to be double-tracked, traffic to be in the same direction on both tracks, every car using it to make the whole loop. Four portals are planned, at which surface cars will pass in and out, and six loading platforms. It is not planned at first to route cars from the northside section to the city through the subway.

While the whole project is based upon the assumption that the subway will be leased to the Pittsburgh Railways, no agreement has been entered into with that company as yet, and as far as is known its officials have not been approachable in the matter. The lines of the company are being operated by receivers now.

CONSTRUCTION TO START SOON

While it appears the city plans the subway terminal as a start toward a more extensive underground traction system, it has been put forward primarily as a means of relief from congestion in downtown Pittsburgh. Construction is expected to start within sixty days.

With the subway bond item, there were presented to the voters at the special election six other improvement items, the whole issue totaling $22,000,000. All were approved. Most of this sum will be spent in street widening and bridge building, with the same aim as actuated the initiation of the subway proposal—relief of congestion.

Twelve-Cent Wage Advance in Cleveland

Short Strike Ends with Full Compliance with Men's Demands and Arbitration of Company's Main Counter Demand

Motormen and conductors of the Cleveland (Ohio) Railway walked out at 4 a.m., on July 6, because their demand for an increase of 12 cents an hour in wages was not granted when they thought it should be. They had threatened to strike some time before. The final decision was made when the company's officials refused on the previous afternoon to yield unless the City Council granted the company the right to pay stockholders an additional 1 per cent on their holdings, as requested when the question of an advance for the men was presented.

Company Prepared to Operate

The company sent out a number of cars Sunday morning manned by dispatchers and inspectors, but quickly withdrew them on account of lack of police protection.

J. J. Stanley, president of the company, afterward informed the city authorities that 600 men were ready to man cars on the morning of July 7 if the police department would furnish two officers for each car. Mayor Harry L. Davis said the police department did not have a sufficient number of men to do this. He insisted that the company should operate cars and allow its claims to be considered later on.

An advertisement appeared in the newspapers Sunday morning asking for men and women as motormen and conductors. The wage scale offered was 49 cents for the first three months, 52 cents for the next nine months and 54 cents thereafter. This is an increase of 6 cents an hour over the scale that has been in effect. It is said that the number of responses to the advertisement was very satisfactory.

Council Seeks Solution

The Council sat as a commission of the whole on the afternoon of July 5 for the purpose of devising some means of averting the strike. It was decided to make an additional appropriation to the operating expense to cover the increase of 12 cents an hour for the motormen and conductors and other employees, but the request for an additional 3 cents per car-mile for the maintenance fund and for a 1 per cent increase in the return on the investment was refused. Mayor Davis approved the refusal to pay a higher return than 6 per cent on the value of the property as fixed in the Tayler grant, under which the company operates. The company then refused the appropriation for increased wages.

President Fred F. Telschow, secretary W. M. Rea and Business Agent Fred J. Schultz, representing the men, met President Stanley on the afternoon of July 5, but after the conference announced that no conclusion had been reached. Mr. Stanley made the same announcement and added that he had instructed George L. Radcliffe, general manager, to operate all the cars he could the following day.

The resolution adopted by Council, giving an additional appropriation for the employees, contained a condition that 1 cent per car-mile instead of 3 cents should be added to the maintenance allowance. In the discussion of this amendment, members of Council suggested that the request for an additional 1 per cent return on the investment be submitted to a vote of the electroate. Mr. Stanley informed Council that he would not agree to this unless the question of an advance of 12 cents in wages for the motormen and conductors be submitted to a vote at the same time. He expressed the opinion that the advance in wages and the extra 1 per cent dividend could be paid from the receipts under the present rate of fare, which is 5 cents and 1 cent for transfers. He said, however, that if wages went any higher than the 12-cent advance, the present fare would not be sufficient. An offer of an advance of 6 cents an hour was made to the men, with the stipulation that if this was accepted the demand for an additional 1 per cent return to stockholders would be dropped. The men refused this offer. They stated that they would accept nothing less than a 12-cent raise.

On July 6 the rate of fare was reduced from straight 5 cents and a 1-cent charge for transfers to eleven tickets for 50 cents. This followed a demand made by Street Railway Commissioner Fielder Sanders, although Mr. Stanley informed Mr. Sanders that the reduction in fare seemed unwise when everything pointed to an increase in fare to 6 cents becoming necessary within a few months, if all the demands made upon the company were granted. The interest fund is now more than $700,000, and this sum, according to the Tayler franchise, marks the point where the rate shall be reduced. Existing conditions point in the other direction, but the company concluded to follow the agreement.

Settlement Reached

At a conference of representatives of the company, the Chamber of Commerce and the City Council, on the afternoon of July 7, Mayor Davis proposed that the demand for an additional 1 per cent in dividends be submitted to arbitration. Mr. Stanley said that if the city would promise to make an effort to pay the additional dividend, he would grant the demands of the men for an increase at once and then, if the dividends were not increased within a reasonable time, he would reduce the wages 6 cents an hour. The members of the Council refused to entertain the Mayor's proposition.

A settlement of the strike was reached on the night of July 7 in time to put the owl cars into operation shortly after midnight. Operation on full schedule was begun on the morning of July 8.

The agreement was reached at a special meeting of the City Council, at which Mr. Stanley and other officers of the railway, Street Railway Commissioner Fielder Sanders, Mayor Harry L. Davis, President Paul L. Feiss of the Chamber of Commerce and officers of the local branch of the Amalgamated Association were present. The terms of the agreement are:

> That the company shall grant the men an increase of 12 cents an hour in wages, as had been demanded; the contract to continue for one year from June 1.
>
> That the company shall receive an increase in the operating allowance of 3½ cents per car-mile; and increase of 2 cents in the maintenance allowance; that the war-time emergency amendment to the Tayler grant providing that the maximum rate of fare shall be 6 cents with 1 cent for transfers be made a permanent part of the franchise, and that the demand for an increase of 1 per cent in dividends to stockholders be submitted to arbitration.

The agreement was brought about through correspondence between the company and Mayor Davis and between the company and President Feiss of the Chamber of Commerce. Members of Council changed their minds in respect to the suggestion of Mayor Davis that the matter of additional dividends be arbitrated.

Wages under the 12-cent advance will now be 55 cents an hour for the first three months, 58 cents for the next nine months and 60 cents thereafter.

The Chamber of Commerce officials suggested arbitration of the wage question on the ground that their contract provided for arbitration of all differences, but the executive committee of the local branch of the union refused, advancing the old excuse that there was nothing to arbitrate.

Mr. Stanley yielded his contention for the removal of the maximum fare limit from the franchise and accepted the extension from 4 cents and 1 cent for transfers, as provided in the original franchise, to the war-time maximum of 6 cents and 1 cent for transfers.

$960,000 Wage Increase

The increase for the motormen and conductors will entail an additional expenditure of about $960,000, while a proportionate increase for the other employees will require about $500,000 more. The present rate of fare of eleven tickets for 50 cents will prevail until the interest fund drops below $300,000, when it will again go to 5 cents with 1 cent for transfers. It is believed this will occur within a few months, with the increased expenditures, dating from June 1.

Interurban cars were run to the city limits only during the strike. An agreement, apparently, was reached between the city and interurban men that no cars should be operated on the city tracks. Some of the interurban roads arranged to transport their passengers within the city in buses.

Tri-City Strike Averted

Company at Davenport and Employees Reach Agreement Based on Action in Pending Fare Cases

After nearly two months of negotiations the Tri-City Railway, Davenport, Ia., has averted a threatened strike of 425 trainmen and shopmen by granting an increase in wages, a nine-hour day and giving the men the right to open up the wage question on Aug. 1, if an increase in fare is granted on the company's Iowa and Illinois lines by that time. The settlement was reached without arbitration after the company and the men had appointed arbitrators and were ready to submit their arguments to the findings of a board.

A Fifty-Cent Maximum

The new scale is 46, 48 and 50 cents an hour, retroactive to June 1, the date when the old contract expired. The men have been working during the war on a scale of 36, 38 and 40 cents. The war-time scale superseded the contract scale existing at that time, which specified 28, 29 and 33 cents an hour.

If a 7-cent fare is granted, either party can ask for a revision of the wage scale on Aug. 1. Should a 6-cent fare go into force prior to Aug. 1, the scale will be 42, 44 and 46 cents, with either party having the right to ask for a revision as in the 7-cent clause. If this new scale is fixed after Aug. 1 it is to be retroactive to that date.

If no increase in fare is granted the scale is to drop to 36, 38 and 40 cents an hour, with the provision that either party can ask a wage revision at any time. Time and a half will be paid for overtime. This is the agreement for Davenport, Ill., and the Clinton, Davenport and Muscatine interurban lines.

In the city of Muscatine, where one-man cars are in operation, a scale of 43, 45 and 47 cents goes into effect at once, retroactive to June 1. If a 6-cent fare is granted in Muscatine the trainmen get 39, 41 and 43 cents, and if no increased fare is given wages will drop to 35, 36 and 37 cents. Separate contracts were entered into with the Amalgamated Association, meaning that if different fares are granted on the Iowa and Illinois lines the rate of pay to the men will be different.

Sixty-two Cents Asked Originally

In their original demands the men asked for a scale of 58, 60 and 62 cents an hour. Negotiations were opened on May 5. The company and the men reached a practical agreement on all questions except wages within a few weeks. Both sides wished to arbitrate that question, but the men demanded that the company arbitrate according to their stipulations and passed a strike vote when the company officials demurred. The company then agreed to the men's stand to avert a tie-up in Davenport, Ia., Rock Island, Moline, East Moline and Silvis, Ill.

Richard Schaddelee, Grand Rapids, Mich., vice-president, was then appointed the company's representative on the arbitration board and the men chose Mayor Robert McNutt of Muscatine.

When the case was all ready to go before the arbitration board, ,with the provision that these two men were to select a third in case they could not agree, the company officials, with their fare increase at stake both in Iowa and Illinois, decided to accede to the demands of the employees and signed with the union. The union agreement and its stipulations were publicly announced on June 29.

Another Strike in Windsor

Failure to Approve Fare Increase Results in Suspension of Service in Canadian Cities

The by-laws to authorize the Sandwich, Windsor & Amhurstburg Railway, Windsor, Ont., to charge higher fares was defeated by a large majority in the vote in Windsor and Walkerville on July 5. The defeat of the measure was attributed by company officials to the attitude taken by Sir Adam Beck, chairman of the Ontario Power Commission, who in opposing the measure contended that the grant of a higher fare by the voters would enhance the value of the franchise held by the company. It was evident that the defeat of the measure for increased fares could result in nothing other than a second tie-up of transportation in the territory served by the railway, as the company was unable to meet the demands of its employees without the right to collect higher fares.

The strike which went into effect on July 7 again tied up the lines in the border towns. The original demands of the men have been increased to 50 and 60 cents an hour, depending upon the length of service.

The Council of Windsor will notify the Ontario Municipal Railway Board that the border municipalities are without railway service. Mayor Winter of Windsor is quoted as saying that further dickering with the company and the men is useless, as evidenced by the results of the attempts to settle the former strike when service was suspended for eleven days.

It is believed that the railway board will ask the Council to grant an increase in fare for six months, and that this action could be approved by the Council without approval by the electors, regardless of the large majority vote cast against the fare-increase measure by the electors at the election on July 5.

No statement has been made by the railway officials as to what action will be taken in case the railway board takes over the lines, but the officers of the railway have said emphatically that the cars will remain in the carhouses until the employees return to their duties.

Working for Relief

Attempts Before State Legislature to Ease Electric Railway Burdens in Massachusetts

The committee on street railways of the Massachusetts Legislature has been at work lately on measures for the relief of the financial situation in which the companies, generally, find themselves, and is about to introduce two measures into the Senate for consideration during the present session.

One of these will provide that electric railways not under public control are to be relieved of all present taxes, except those on real estate, and in place of these taxes to substitute a tax of 6 per cent no the net income.

The second measure provides that changes in fare by electric railways shall be effective pending a decision of the Public Service Commission as to their propriety.

The committee endeavored to introduce into the House a measure providing for the purchase by the State of the Cambridge subway from the Boston Elevated Railway at a price not to exceed $8,000,000; but it is a question whether this particular legislation can again be brought up at this session, in view of its having received adverse action in the lower branch. The failure of this bill a few weeks ago was a serious blow to the hopes of the trustees of the Boston company to postpone, if not to avoid, the increase of the fare unit to 10 cents, which became effective on July 10.

The Worcester Consolidated Street Railway and the Springfield Street Railway have appealed to the Public Service Commission to revise the amounts of taxes assessed them for street repairs in various municipalities, claiming that in nearly every case the assessments exceed the municipal expenditures on the streets concerned.

Official Statement of Jersey Settlement

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., on July 2 issued the following statement in regard to the settlement of the differences of the company with its employees, to which reference was made in the ELECTRIC RAILWAY JOURNAL for July 5.

> At a conference of representatives of the employees of Public Service Railway with myself and other officers of the company, held in the company's offices to-day, an agreement was reached which will save the public the inconveniences and business disturbances that would result from a strike. The recent award of the National War Labor Board including the supplementary decision filed by Charlton Ogburn to-day was accepted by both sides and the men were informed that in the interest of stability and with their promise of full co-operation in operation and a feeling of responsibility on their part for its success, the company would agree to enter into a simple contract for a period of two years with its employees, members of the Amalgamated Association, for the maintenance of the wage scale and working conditions provided for by the award of the National War Labor Board. The men promised the heartiest co-operation on their part and agreed to submit a form of contract to be signed.

Reserve Engineers' Traveling Expenses

National Service Committee of Engineering Council Ready to Help Secure Legislation if Needed

An account was published on page 1105 of the issue of this paper for June 7 of the efforts being made by the National Service Committee of the Engineering Council in Washington in connection with the discharge of engineers enrolled in the Reserve Corps at points other than those in which they were enrolled. The case was cited of some twenty-five or thirty engineers who entered the service while residing in the Philippines and of several who enlisted from Alaska, who were discharged in the United States, most of them in the eastern part. Further investigation disclosed the fact that there were some 800 engineer officers who were deprived of mileage payment to their first stations under the present act. The correspondence between the National Service Committee of Engineering Council and the War Department mentioned in the previous article showed that the latter recognizes the situation but is powerless, under the existing law, to apply any general remedy.

In a recent statement, the National Service Committee says it is willing to see what can be done in the way of legislation, but adds that it is obvious that Congress cannot be expected to take the time to correct the situation if those in whose benefit it is proposed are too indifferent to relate the facts as they know them. It therefore urges that any engineering officers who have had similar experience communicate promptly with the committee, whose headquarters are in the McLachlan Building, Washington, D. C.

$500,000 for Betterments

The City Council of Seattle, Wash., recently passed ordinances appropriating $500,000 for betterments and extensions of the Seattle Municipal Railway, the appropriation being a loan from the general and electric railway funds to enable the railway department to start work immediately on a number of important improvements. One of the most important of these works to be undertaken at once is the double-track line on Avalon Way, West Seattle, to cost $60,000. This will provide a direct route to that suburb on a much easier grade, and will eliminate the trestle approach on the West Alaska Street hill.

Another item is $57,000 for tie-in tracks at East Union and Madrona. East Union will be double-tracked from Twenty-ninth Avenue to Thirty-fourth Avenue, allowing the residences of the Madrona district direct route to the city without transfer, and eliminating 2 miles of travel over the present route.

An item of $49,800 is allowed for rerouting on Leary Avenue, to avoid several dangerous turns. Tie-tracks will be provided to the Fifteenth Avenue, West Bridge, to cost $30,000. The existing tracks on the bridge will be connected with the former traction lines on Forty-seventh Avenue. Other items include $26,000 for double tracks on West Sixty-fifth, Twenty-eighth Northwest, and Twenty-fourth Northwest; construction of tracks on Third Avenue, from Stewart to Pine Streets, to cost $18,650; and numerous other minor improvements, designed to facilitate operation.

Toledo Company Ordered Off Streets

The City Council of Toledo, Ohio, has passed an ordinance ordering the Toledo Railways & Light Company, a subsidiary of the Cities Service Company, to vacate the streets over which the railway lines of the company operate by Aug. 1, this action affecting only the railway department of the company, and not in any way interfering with the operations of the electric light and power or gas departments.

The passing of this ordinance followed the action of the Toledo Railways & Light Company in increasing fares from 5 cents and 1 cent for transfers to 6 cents and 2 cents for transfers. This increase was rendered necessary by the award of the Federal War Labor Board increasing wages of employees of the railway department of the Toledo Railways & Light Company.

Through the Toledo Traction, Light & Power Company, the Toledo Railways & Light Company is an operating subsidiary of the Cities Service Company, but it is stated at the offices of Henry L. Doherty & Company that this action by the Toledo City Council will not be detrimental in any way to the income of the Toledo Traction, Light & Power Company, or of the Cities Service Company. For some time the railway department at Toledo has furnished transportation facilities to the city of Toledo and suburbs at a loss.

Power Plant Rehabilitation Ordered

Immediate steps to rehabilitate the Anderson power plant of the Union Traction Company of Indiana so that adequate and regular service can be given to the cities along the line were ordered on June 13 by the Public Service Commission of Indiana.

The order is the result of a complaint filed with the commission by a number of prominent business firms of Marion. It was pointed out in the complaint that the franchise with the company called for hourly service through the city and that the company was giving only two or three-hour service and at times there were breaks of four or five hours in service. The Marion business men said the poor service was caused by the power plant at Anderson.

The commission ordered an investigation of the plant by the engineering department of the commission, which filed a report saying that the basic difficulty lies in the Anderson plant and was caused by deferred maintenance.

Dispute Over Hours Results in Strike

Railway Service Suspended on Illinois Traction Lines in Urbana and Champaign

Railway service of the Urbana & Champaign Railway, Gas & Electric Company has been partially tied up since July 3. It seems that part of the employees were affiliated with the Amalgamated Association and part with a brotherhood. It is said that the union men were dissatisfied with the hours, claiming that the nine-hour day was agreed upon by the company last September, when the lines were tied up by a strike for about three days. The men say that they returned to work in September as a patriotic duty in time of war, with the understanding that the day would be shortened to nine hours. This, they say, has not been done. There is no difficulty regarding wages. The men who belonged to the brotherhood interpret the matter differently and did not strike.

SUGGESTS SETTLEMENT BY VOTE

George M. Mattis, vice-president and treasurer of the Illinois Traction System, of which the Urbana & Champaign Railway, Gas & Electric Company is a part, says that as the union men demand a nine-hour day and the brotherhood favors another set of hours the only fair way to settle the matter is to determine just how many hours should constitute a day's work. The company proposed, in writing, on March 20, 1919, that a vote be taken of all employees. It renewed this proposal on June 28. To both of these offers the union men turned a deaf ear, maintaining that the nine-hour day was promised as soon as the war period was over, and that they conceded a point in returning to work in the emergency.

The union employees have also demanded the return to the service of the company of four men who had been discharged. Mr. Mattis, in his published statement, says that only two men have been discharged and that the company has stated all the time to the union that the officers of the company are willing to arbitrate the dismissal of these men on request in writing to the company that the cases be arbitrated. With reference to wages Mr. Mattis says that the rates paid in Champaign-Urbana are the same as those paid in Danville, Decatur and Galesburg and higher than those paid in Bloomington, Springfield and Quincy.

LOYAL MEN REFUSE TO JOIN STRIKERS

The brotherhood was organized early in 1919, chiefly by older employees of the company. Members of the brotherhood prefer the long runs and the split runs rather than work nine hours straight. They are abiding by their contract and are at work, but are too few in numbers to keep all the cars running on anything like schedule. The strike had not been settled at 7 o'clock p.m., July 7.

Cincinnati Employees Reject Agreement

The terms of the new agreement between the Cincinnati Traction Company and its employees were rejected by the street railway employees' union at a recent meeting.

Platform men are asking a 2-cent-an-hour increase, with an eight-hour day and time and a half for overtime. The old agreement provided for 44, 46 and 48 cents an hour for motormen and conductors, with time and one-third for overtime.

Carhouse men who have joined the union are also asking for an increase. They formerly were paid a sliding scale, but were allowed 42½ cents an hour by the War Labor Board.

W. Kesley Schoepf, president of the company, accepted most of the proposals of the union, but stated that the company does not agree to the increase of 2 cents an hour in the wage of trainmen from the maximum of 48 cents fixed by the War Labor Board last November, as the company does not believe conditions have changed so as to warrant an increase. The company proposes to continue the War Labor Board award to miscellaneous employees, except to car washers, curve cleaners and watchmen, whose rates it holds were fixed too high.

The possibility of a strike is remote, since the old agreement provides that if the company and the union fail to arrive at a satisfactory agreement by June 30, thirty days grace shall be granted for a settlement by arbitration.

Strike Ended in Vancouver

The men on the British Columbia Electric Railway's Vancouver city lines resumed work on June 30 after a strike of twenty-five days. They quit work in sympathy with the general strike in Vancouver and Winnipeg.

The men went back, although the general strike in Vancouver had not yet been called off but was collapsing. Following telegrams from the international ordering the men back to work in accordance with their agreement, a meeting was held on June 25 which was addressed by union leaders and by W. G. Murrin, assistant general manager of the railway. It was then decided to take a ballot. The vote showed a majority of forty-five in favor of resuming work out of a total of 750.

The New Westminster city lines and the Central Park and Burnaby Lake interurban lines, all of which came under the New Westminster local, were not in operation from June 18 to June 23. The New Westminster trades and labor council declared a general strike on the arrest of the strike leaders in Winnipeg, and although the street and interurban railway men voted 70 per cent to stay at work, they were forced out. On June 23, however, of their own volition, they decided to go back to work. Station agents and despatchers on the Fraser Valley and Lulu Island lines were involved in this phase of the strike and the company reduced its passenger service by one train a day on the Fraser Valley line and discontinued most of its freight service. The trainmen on these lines are members of the railroad brotherhoods and did not strike.

New Franchise Planned for Covington

An ordinance outlining a twenty-year franchise has been drawn up by legal representatives of the South Covington & Cincinnati Street Railway, Covington, Ky., and was read at a recent meeting of the City Commissioners. The new measure, patterned largely after a similar ordinance enacted in Cincinnati, proposes a service-at-cost system with a sliding scale of fares.

Increases or decreases in fares are to be made on a half-cent basis, dependent on the operation cost and the condition of the reserve fund, which shall be $50,000 at the minimum. Three appraisers are to ascertain the physical valuation of the company's property in Kenton County.

The twenty-year franchise is to replace the perpetual franchise which the company purposes to surrender. The changes in fares must be approved by Ludlow and Cincinnati before the ordinance becomes effective.

News Notes

Strike in Ottawa.—The employees of the Ottawa (Ont.) Electric Railway went on strike on July 2. A board of conciliation is sitting on the dispute and on June 30 a request was made to the men by the chairman, Darcy Scott, to withhold drastic action until the award was made, but it was refused.

Petition for Higher Salaries—Twenty employees of the Rapid Transit Commission of Cincinnati, Ohio, signed a petition lately asking for an increase in salary. Chief Engineer Frank Krug, Assistant Chief Engineer Frank Raschig and Chief Clerk E. E. Humphries were the only members who did not sign.

Strike of Linemen Settled.—The strike of linemen in the employ of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been settled on a basis of an increase in wages of 10 per cent, effective from July 1 for all linemen, groundmen and truck drivers, with an additional increase of 5 per cent for linemen only, effective from Aug. 1.

Union Recognition Made an Issue.—Conductors and motormen in the employ of the Oklahoma Union Railway, which owns and operates an interurban line from Tulsa to Keifer and the local railways in Tulsa and Sapulpa, formed a union recently and struck to enforce their demands for recognition of the union. They won their point after being out a few days. Service on the interurban and on the local lines was badly crippled until the settlement, when all men went back to work and all cars were started running on schedule. No question of wages or shorter hours was involved.

Elevated Damaged by Fire.—A fire said to have been caused by an electrical short-circuit consumed five passenger coaches of the Third Avenue elevated line of the Interborough Rapid Transit Company, New York, N. Y., at the South Ferry terminal on the afternoon of July 2, damaged the front of the Staten Island ferry house, endangered hundreds of persons, and resulted in the injury of a half dozen firemen called to fight the flames. The fire forced a suspension of ferry service to Staten Island. The elevated structure was charred for a distance of about 300 ft. north of the ferry house. At one time the structure, the front of the ferry house and the four coaches were a mass of flames.

Program of Meeting

Illinois Electric Railways Association

The mid-summer meeting and outing of the Illinois Electric Railways Association will be held at the Rockford Country Club, Rockford, Ill., on July 16. Through the courtesy of R. A. Moore, general manager of the Aurora, Plainfield & Joliet Railway, an invitation has been extended to join the members from Joliet on Mr. Moore's private car "Louisiana" on Tuesday evening, traveling over the properties of several of the member companies, and arriving in Rockford on Tuesday night. Lunch will be served aboard the car. Those who do not go on Tuesday night can take a special car on the Illinois Central train Wednesday morning, and will be met at Rockford by a special car for the Country Club.

The convention will assemble at 10.30 a.m. Three papers will be presented and discussed. They are as follows:

"Safety Cars and the Results of Their Operation," by E. M. Walker, general manager of the Terre Haute & Western Railway.

"Track Maintenance," by John B. Tinnon, engineer of maintenance of way of the Chicago & Joliet Electric Railway.

"Public Utility Life Insurance," by Bernard J. Mullaney, director of the Illinois Committee on Public Utility Information.

Dinner will be served at the Country Club, following which those who desire may enter a golf tournament, the winner to receive a cup offered by the president of the association. This will be a handicap tournament. For those who do not play golf, a specially conducted automobile trip to and through Camp Grant has been arranged.

Financial and Corporate

I. T. S. Costs Heavy

Higher Rates Give Increased Revenues, but Expenses Rise at Greater Rate

While general increases were authorized in electric railway, lighting and heating rates of the Illinois Traction System, Peoria, Ill., during the calendar year 1918, these were insufficient to offset the advanced operating costs. As a result the net income for 1918 was only $413,744 as compared to $1,172,153 in the preceding year.

INCOME STATEMENT OF ILLINOIS TRACTION SYSTEM FOR CALENDAR YEARS 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Interurban lines........	$4,740,079	31.1	$4,609,898	32.8
City lines.....	3,351,256	21.9	3,198,056	22.8
Gas..........	1,282,104	8.4	1,035,169	7.4
Electric......	4,887,743	32.0	4,295,501	30.6
Heat.........	412,779	2.7	383,092	2.7
Water.......	15,636	0.1	15,151	0.1
Miscellaneous	571,406	3.8	504,004	3.6
Total gross revenues,	$15,261,003	100.0	$14,040,870	100.0
Operating expenses and taxes.......	10,966,998	71.9	9,149,176	65.1
Gross income....	$4,294,005	28.1	$4,891,694	34.9
Interest on bonds, etc...	3,880,261	25.4	3,719,541	26.5
Net income.	$413,744	2.7	$1,172,153	8.4

In spite of the so-called "lightless nights" and the influenza epidemics, the gross revenues of the various subsidiaries in the system increased $1,220,133, or 8.7 per cent. Each department contributed to the result, the increase for the interurban railway lines being $130,183 or 2.8 per cent and that for the city lines $153,200 or 4.8 per cent. These gains compare with 15.4 per cent and 2.8 per cent respectively for 1917 over 1916.

The total increase in operating expenses and taxes, which materially exceeded the gain in revenues, was $1,817,822 or 19.9 per cent. Of this advance in expenses a total of $1,505,675 was made up as follows: Wages, $700,086; steam coal, $545,636; materials and supplies, $142,425, and $117,527 for gas coal and oil. Had it not been for the company's direct control of considerable coal tonnage on its interurban lines, the expense for steam and gas coal would have been further materially increased.

The effect of the revenue and expense changes upon the gross income for 1918 was a loss of $597.689 or 12.2 per cent below the 1917 figure. The fixed charges increased, and the result was the big decline in net income above noted. Detailed figures for the last two years are given in the accompanying statement.

The utmost effort was made by the management early in the year to secure an adjustment in rates necessary to provide revenue which would harmonize with the greatly increased operating expenses. On the interurban lines an increase of 25 per cent in joint freight rates became effective June 25, followed by an increase of 25 per cent in local freight rates on intrastate and interstate traffic, effective Aug. 3 and Nov. 1 respectively. On Nov. 15 an increase of 50 per cent in intrastate passenger fares became effective, and on Dec. 19 the Interstate Commerce Commission issued an order authorizing a corresponding increase in interstate fares, effective early in 1919.

Segregation Decision Put Off

Court Says Commission Decision in New York Transfer Case Changes Complexion of Affairs

Judge Mayer in the United States District Court in New York City on July 8, after listening for more than an hour to numerous lawyers representing various interests at a hearing on the motion made some days ago to separate the Eighth and the Ninth Avenue Railroad lines from the New York Railways because of default in rental, announced that he thought further consideration was called for under existing circumstances and he accordingly adjourned both cases.

In the case of the Ninth Avenue line, Receiver Job E. Hedges had suggested that inasmuch as the amount due it was less than $100,000, that amount be paid over at once in order to avoid separation, and as the problem was comparatively simple as regards that company, Judge Mayer adjourned the further hearing until Aug. 28. The amount due to the Eighth Avenue company is considerably larger and the situation is somewhat complicated by the fact that it owns some $3,000,000 worth of real estate. Judge Mayer said that he thought it would be desirable to have some further conferences respecting that company and he adjourned the hearing to July 11.

In making this announcement, Judge Mayer said that the whole situation had been changed since the motion for separation has been made owing to the decision announced by Public Service Commissioner Nixon, permitting the charging of 2 cents for transfers at ninety-nine points in the system. This decision is referred to at length elsewhere in this issue. The court said:

> Commissioner Nixon, in making this decision, has not only co-operated with the court in a very serious problem, but he has in my opinion rendered a very distinct service by the promptness of his decision. Without in any manner commenting upon the course pursued by his predecessors, the fact remains that, although voluminous testimony was taken in similar proceedings no decision was rendered and that at the end no one knew more than they had at the beginning. Under existing circumstances, it is only fair that the court should co-operate with the commission in an endeavor to work out the problem under the changed conditions and to study the exact situation as it shall develop before coming to a final opinion.

Seattle's May Profit $5,301

Superintendent of Municipal Railway There Points Out Wherein Service Has Been Bettered

According to a report filed by Superintendent Thomas F. Murphine, the Seattle (Wash.) Municipal Railway during the month of May showed greatly increased service and a large gain in revenues compared with the corresponding month of May of last year.

The city operated during May, 1919, a total of 148,758 car-hours, or 33,225 more car-hours than in May a year ago, or 4153 eight-hour days of service more than was provided in May, 1918. The figures include the combined lines of the Puget Sound Traction, Light & Power Company, and the Municipal divisions "A" and "C." The report also shows that 260,347 more car-miles were operated last month than in May of last year by both railway systems. The revenues from all sources for May of this year totaled $439,932, a gain of $18,680 over April of this year, and an increase of $66,637 over May of last year.

OPERATING EXPENSES HIGHER

Operating expenses are shown to be considerably higher, due to increased wages in the car shops, payment of time and a half overtime, and to an increase, in some instances, in service. The report claims a net profit of $5,301 for the month. The letter of Mr. Murphine containing a summary of the report follows in part:

> The recapitulation of the financial statement of railway operating expenses and revenues for May, 1919, shows the revenues from all sources for said month to be $439.932, a gain of $18,680 over the month of April, 1919, and an increase of $68.637 over May, 1918 Known operating expenses are shown to be $354,458, as compared with $331,242.32 in April.
>
> This increase in expense is due to an increase of wages in the car shops, the payment of time and one-half for overtime (which was not in effect in April), and to an increase, in some instances, in service. However, there is shown a gain or profit for the month of May of $85,473. From this amount we have deducted an item of $66 260, being the interest on outstanding bonds, and an item of $6,911, being the maximum amount payable when called for as industrial insurance; also an item of $7,000 to pay this month's share of damage claims. Depreciation is more than offset this month by extraordinary expenditures in the way of maintenance.
>
> These various items deducted from the gain would leave a net profit of $5,301.
>
> It will be noted that the statement shows that we operated during this month a total of 148,758 car-hours, or 33,225 more car-hours than were operated in May, 1918, by the combined lines of the Puget Sound Traction, Light & Power Company and the Municipal Street Railway, Divisions "A" and "C."
>
> It is also shown that we operated 260,347 more car-miles than in the corresponding month of last year by both railway systems.
>
> These figures show the increased service that the people of the city are now getting over the operation of last year.
>
> Wages paid to employees this month totaled $103,779 more than was paid in May, 1918.

$33,040,795 Buffalo Valuation

Arbitration Board Fixes Upon This Amount as Fair Basis for Rate Purposes

The board of arbitration appointed by the International Railway, Buffalo, N. Y., and the municipal authorities to determine the valuation of the company's property within the city, filed its report with E. G. Connette, president of the company, on July 3. The property is held to be worth $33,040,795. The report of the appraisers is not binding on either party, however, as the arbitration proceeding which was expected to lead to an agreement between the city and the company for municipal control of service was abandoned by the city after Governor Smith had vetoed the enabling act.

FINAL REPORT A COMPROMISE

If the New York State Court of Appeals decides on July 15 that the Public Service Commission has power to fix fares in Buffalo regardless of the company's franchise, the International Railway will probably use the report of the board of appraisers as a basis for raising fares from 5 cents to 7 or 8 cents.

The final report of the arbiters is a compromise between the $44,000,000 valuation sought by the company and a valuation of $22,000,000 sought by the city. James E. Allison, the company's member of the board, would add $1,825,000 for going value, making a total of $34,965,795. Orson E. Yeager, the umpire, agreed with Professor Albert S. Richey, the city's member of the board, in opposition to the going value figured by Mr. Allison.

The arbiters allowed the claim of the company for superseded property. Such property was defined by them as property that has become obsolete and discarded through progress in inventions and the arts or has become inadequate or otherwise rendered useless before the termination of its useful life. The board found that $2,764,125 should be allowed for this item and he included in the valuation entitled to a return until such time as it may be amortized out of future earnings.

MANY DEFERRED RENEWALS

No allowance was made by the board for depreciation of the company's property. The members think, however, that the company should be required to place all parts of its property in a condition of proper operating efficiency, such necessary renewals to be paid out of earnings, but without diminution of a proper return on the valuation found.

Much evidence was submitted to the arbitration board to the effect that there is at present a considerable amount of deferred renewals, principally in the form of track and pavement. The report says in part:

> This is a condition in which many electric railways are found at the present time, in general due to the inability of the companies to secure proper materials and labor during the past year or two, and also to the fact that many companies on account of rapidly increasing prices and fixed fares, with a falling off of traffic due to war conditions and automobile competition, have not been able to make such renewals after paying for operating expenses, ordinary maintenance and taxes.

Explaining the allowance for promotion and consolidation, the arbitrators say:

> In the history of every property of the character of the one under consideration there have been numerous special costs which have been incurred for promotion and consolidation. These costs are often met by the giving of securities or by consideration in the price at which securities are taken by promoters and organizers. This portion of the expense, which is an actual expense to the corporation, is not usually traceable in the books on account of the nature of its payment, and even if it were it would be impossible to take as a figure in determining a rate base the sometimes fanciful amount of securities obtained as a reward for promotion. It is, therefore, necessary in this case, as in nearly all of them, to assign arbitrarily an amount which in the opinion of the board should cover these outlays. In this case we believe $1,250,000 to be a proper allowance for these costs.

A summary of the items entering into the value of the property, as fixed by the arbiters, is as follows:

Physical value stipulated by city and company	$22,356,736
Capital additions, real estate	300,000
Capital additions, new line	17,000
Omissions and contingencies	768,994
Engineering and superintendence during construction	613,354
Injuries and damage during construction	167,976
Legal expenditures during construction	93,419
Administrative and miscellaneous expenses during construction	176,768
Taxes during construction	104,293
Interest during construction	737,947
Superseded property	2,764,125
Cash working capital (in addition to store and supplies)	284,026
Physical value, including overheads	$28,384,638
Promotion and consolidation costs	$1,250,000
Cost of assembling capital	567,693
Capitalization of initial risk, including going value	2,838,464
Total finding of majority of board	$33,040,795
Addition in Mr. Allison's opinion to cover initial deficit or "going value"	$1,925,000
Total with Mr. Allison's addition	$34,965,795

As soon as the New York State Court of Appeals hands down its decision with respect to the right of the Public Service Commission to intervene in local traction matters and fix an adequate rate of fare despite the provisions and restrictions of local franchises, the company will apply for an investigation into local conditions so that a higher rate of fare can be fixed.

Case Before St. Louis Special Master Closed

The hearing in the case of John W. Seaman, New York, a holder of preferred stock of the United Railways, St. Louis, Mo., against directors of the company for their discharge and for recovery from them of funds alleged to have been wasted through power contracts, mill tax litigation and other means, before Special Master Lamm at St. Louis came to an end at the close of the week of June 23 after several of the directors had testified in their own defense.

The directors who took the witness stand were Frank O. Watts, Murray Carleton, Alanson C. Brown, A. L. Shapleigh and Henry S. Priest, who was formerly general counsel for the railway. Mr. Priest, who has been acting as counsel for himself and the other directors during the hearings, asked each of the directors the following question in regard to the passage by the board on July 9, 1918, of a resolution declining to accept the resignation of Bruce Cameron, superintendent of transportation, following his indictment in connection with the referendum petitions theft:

> What knowledge or information had you at the time that Mr. McCulloch or Mr. Cameron had any part in the theft?

Each director replied that he had none. Mr. Shapleigh went on to say that Mr. McCulloch had told him he knew nothing of the theft.

Collateral Securing St. Louis Loan Being Sold

Attorneys representing the various interests involved in the suit for a receiver and an accounting against the United Railways, St. Louis, Mo., appeared before Special Master Lamm on June 30 to discuss the application of the receiver and the directors of the railway for permission to issue receiver's certificates in sufficient amount to take up the loan of $2,500,000 made to the United Railways by the War Finance Corporation. As a result of the failure of the attorneys present to agree on any essential point, the Special Master postponed the hearing until July 10 to give the attorneys time to study the situation.

The application for permission to issue the certificates was made by Charles W. Bates, attorney for the receiver. The directors of the railway joined in this request, but differed with the attorney for the receiver on details. Mr. Bates' plan was for the issue of general receiver's certificates. Henry S. Priest, representing the directors and attorneys for other interests, said these would not be subscribed, as investors would not have the confidence that they represented an actual lien against the property. Mr. Priest suggested one-year notes secured by the Union Depot bonds. He said these could be marketed easily. This plan was objected to by counsel for the Leed Mining Company, one of the intervenors in the receivership suit.

The War Finance Corporation loan became due on June 1. It has not been paid. It is secured by $3,485,000 of the Union Depot Railway bonds deposited with the War Finance Corporation. Of this collateral $800,000 in bonds already has been sold by the War Finance Corporation. The principal purpose of the hearing was to lay plans for preventing further sale of these securities. Insisting that the matter be settled quickly, Attorney Priest said that the War Finance Corporation was becoming very impatient. Special Master Lamm then urged the lawyers to act with dispatch.

Ten-Year Traffic Increase 51.9 Per Cent

Previous Census Figures Supplemented by Capitalization and Traffic Details

Director Samuel L. Rogers, of the Bureau of the Census, Department of Commerce, has issued the following statement, supplementing that of April 21, in regard to electric railways in the United States:

ELECTRIC RAILWAYS: UNITED STATES

Capitalization	1917	1912	1907	Per Cent of Increase * 1907-1917	1912-1917	1907-1912
Capital stock	$2,473,846,651	$2,379,346,313	$2,097,708,856	17.9	4.0	13.4
Funded debt †	3,051,179,272	2,329,221,828	1,677,063,240	81.9	31.0	38.9
Total	$5,525,025,923	$4,708,568,141	$3,774,772,096	46.4	17.3	24.7
Investments in securities and non-operating property	642,261,722	465,250,414	374,664,197	71.4	38.0	24.2
Net capitalisation	$4,882,764,201	$4,243,317,727	$3,400,107,899	43.6	15.1	24.8
New England	352,553,026	320,491,727	263,842,127	33.6	10.0	21.5
Middle Atlantic	1,696,403,938	1,312,329,549	1,194,940,494	42.0	29.3	9.8
East North Central	1,109,374,472	1,024,768,763	900,387,383	23.2	8.3	13.8
West North Central	341,884,368	300,821,223	251,673,038	35.8	13.7	19.5
South Atlantic	415,149,716	361,599,371	250,135,621	66.0	14.8	44.6
East South Central	141,410,566	118,166,868	99,599,823	42.0	19.7	18.6
West South Central	160,936,399	128,049,146	84,192,034	91.2	25.7	52.1
Mountain	88,125,354	75,630,871	45,920,878	91.9	16.5	64.7
Pacific	576,866,362	601,460,209	309,416,502	86.4	—4.1	94.4
Net capitalization per mile of track	111,233	104,930	100,495	....	....	....
New England	64,474	61,577	54,724	....	....	....
Middle Atlantic	167,942	134,702	140,724	....	....	....
East North Central	88,163	87,102	87,292	....	....	....
West North Central	94,848	97,807	102,948	....	....	....
South Atlantic	130,144	125,409	112,013	....	....	....
East South Central	97,518	92,051	93,925	....	....	....
West South Central	95,695	93,272	100,083	....	....	....
Mountain	71,987	77,514	76,358	....	....	....
Pacific	125,596	145,428	102,272	....	....	....

* A minus sign (—) denotes decrease.

† Not including real-estate mortgages: 1917, $7,197,895; 1912, $6,097,245; and 1907, $4,059,805.

The total capitalization of the electric railways, street and interurban, for the year 1917 was $5,525,025,923, representing an increase of 46.4 per cent over 1907; and deducting investments in securities and non-operating property, the net capitalization was $4,882,764,201, as compared with $4,243,317,727 in 1912 and $3,400,107,899 in 1907, representing an increase of 15.1 per cent for the period 1912-1917 and of 24.8 per cent for the period 1907-1912, the rate of increase for the decade being 43.6 per cent.

The net capitalization per mile of track was $111,233 in 1917, as compared with $104,930 in 1912 and $100,495 in 1907. The roads of the Middle Atlantic States, New York, New Jersey, and Pennsylvania, taken as a group, showed the heaviest net capitalization per mile of track, namely, $167,942 in 1917 and $140,724 in 1907; and those of the New England States the lowest, $64,474 in 1917 and $54,724 in 1907. The South Atlantic States averaged $130,144 in 1917; the Pacific States, $125,596; the East South Central, $97,518; the West South Central, $95,695; the West North Central, $94,848; the East North Central, $88,163; and the Mountain States, $71,987.

For the United States the total number of revenue passengers was 11,304,660,462 in 1917, 9,545,554,667 in 1912, and 7.441,114,508 in 1907, representing an increase of 51.9 per cent for the decade. The roads of the Middle Atlantic States carried 4,225,287,044 revenue passengers, an increase of 48.8 per cent over 1907: those of the East North Central States, 2,712,624,699; increase, 68.7 per cent; of the New England States, 1,242,076,786; increase, 41.9 per cent: of the West North Central States, 902,368,927: increase, 46.6 per cent; of the South Atlantic States, 747,561,816; increase, 53.2 per cent: of the Pacific States, 707,310,819; increase, 45 per cent: of the West South Central States, 313,203,554, increase, 62 per cent: of the East South Central States, 292,004,689; increase, 32.2 per cent: and of the Mountain States, 162,222,128; increase over 1907, 43.2 per cent.

The average number of revenue passengers per mile of track (based on total track mileage, including sidings) was 252,323 in 1917 and 216,522 in 1907; the average number per passenger-car-mile, 5.4 in 1917 and 4.7 in 1907; and the average number per passenger-car-hour, 53.7 in 1917 and 43.1 in 1907. Details appear in the tables herewith.

ELECTRIC RAILWAYS: UNITED STATES

Traffic	1917	1912	1907	Per Cent of Increase 1907-1917	1912-1917	1907-1912
Passengers carried	14,506,914,573	12,135,341,716	9,533,080,766	52.2	19.5	27.3
Revenue	11,304,660,462	9,545,554,667	7,441,114,508	51.9	18.4	28.3
Transfer	3,021,137,935	2,423,918,024	1,995,658,101	51.4	24.6	21.5
Free	181,116,176	165,869,025	96,308,157	88.1	9.2	72.2
Revenue passengers by divisions:						
New England	1,242,076,786	1,051,161,737	875,115,527	41.9	18.2	20.1
Middle Atlantic	4,225,287,044	3,513,720,591	2,839,019,161	48.8	20.2	23.8
East North Central	2,712,624,699	2,159,620,746	1,607,894,497	68.7	25.6	34.3
West North Central	902,368,927	787,301,146	615,630,852	46.6	14.6	27.9
South Atlantic	747,561,816	616,724,741	487,981,528	53.2	21.2	26.4
East South Central	292,004,689	268,785,533	220,887,485	32.2	8.6	21.7
West South Central	313,203,554	270,745,675	193,338,141	62.0	15.7	40.0
Mountain	162,222,128	154,224,248	113,304,063	43.2	5.2	36.1
Pacific	707,310,819	723,270,250	487,943,254	45.0	—2.2	48.2
Average number of revenue passengers:						
Per mile of track (all tracks)	252,323	232,556	216,552	....	....	....
Per mile of running track	260,868	(2)	(2)	...	....	....
Per passengar car-mile	5.41	5.06	4.70	....	....	....
Per passenger car-hour	53.69	48.38	43.06	....	....	....
Per mile of track (all tracks) by divisions:						
New England	223,468	198,536	179,546	....	....	....
Middle Atlantic	400,322	349,867	321,520	....	....	....
East North Central	214,346	183,142	155,789	....	....	....
West North Central	246,184	254,081	245,432	....	....	....
South Atlantic	228,064	208,193	212,699	....	....	....
East South Central	201,355	208,947	207,466	....	....	....
West South Central	186,162	196,730	229,831	....	....	....
Manhattan	127,877	153,104	188,404	....	....	....
Pacific	150,824	172,790	160,951	....	....	....

(1) A minus sign (—) denotes decrease. (2) Figures not available.

Merger at Indianapolis Approved

Commission Modifies Its Original Order and Companies Involved Arrange to Carry Out Plan

Following the order handed down by the Indiana Public Service Commission on June 28 conditionally approving the merger of the Indianapolis Traction & Terminal Company and Indianapolis Street Railway, as reported in the ELECTRIC RAILWAY JOURNAL of July 5, page 42, an appeal was made to the commission to modify its order so that the consolidation could take place at once without calling a further meeting of the stockholders.

FIRST COMMISSION APPROVAL CONDITIONAL

Under the terms of the order of the commission issued June 28 the merger petition was approved subject to fourteen conditions to be accepted by the parties involved on or before Sept. 1, 1919. Several of the conditions, however, would have required the amendment of the original consolidation agreement as submitted to the stockholders. This could not have been accomplished by July 1. In issuing the original order the commission contemplated that the merger could be made effective at once and the conditions met by the consolidated company. The attorneys for the two companies, however, showed that it would be impossible to reduce the stock of the Indianapolis Traction & Terminal Company. below the amount of $2,500,000 provided in the merger agreement without the consent of the trustee, and the suspension of sinking fund payments would also have to be referred to the trustee for the bondholders.

The commission thereupon issued an order superseding its order of June 28. The modified order issued by the Public Service Commission on June 30, takes the place of the order issued Saturday.

In the first order were fourteen points or conditions, precedent to approval of the merger. In the modified order there are ten conditions precedent, which were complied with at once by the constituent companies, and several additional conditions which are to be complied with by specified times in the future by the consolidated company.

Of the conditions to be complied with by the consolidated company in the future, one requires that on or before Aug. 1, 1919, there shall be surrendered to the consolidated company $1,500,000 of the $2,500,000 stock to be issued in exchange for the $5,000,000 stock of the Indianapolis Traction & Terminal Company. This would bring the amount down to $1,000,000, which the commission decreed in its first order. It was contended by the merger advocates that the trustee for the bonds of the Terre Haute, Indianapolis & Eastern Traction Company, with which is deposited the Indianapolis Traction & Terminal Company stock, would have to consent to the reduction to $1,000,000. The trustee had consented to a reduction to $2,500,000, as provided in the merger agreement, and the articles of consolidation provide for the $2,500,000.

In the condition requiring a reduction of $1,500,000, it is provided that if the Public Service Commission should find the value of the property as of July 1, 1919, to be in excess of all the stocks and bonds of the consolidated company, then "additional stock to the amount of such excess value may be reissued."

MUST MEET ALL CONDITIONS BY SEPT. 1

All other conditions not precedent to the merger are to be met by Sept. 1, 1919, the chief one being that the consent of the trustees of the bondholders would have to be obtained in connection with the suspension of sinking fund payments until Jan. 1, 1923, and eliminating the payment of interest on bonds already in the sinking fund.

After the order was issued the company filed acceptance with the commission, and articles of incorporation of the new consolidated Indianapolis Street Railway were filed with the Secretary of State.

The members of the new board of directors named in the merger agreement to serve until the next annual meeting of the company are: Dr. Henry Jameson, chairman; Charles H. Becker, Walter J. Ball, W. T. Durbin, R. K. Willman, C. Thomson, J. A. McGowan, John J. Appel and Robert I. Todd. The directors met on July 2 and elected Robert I. Todd president of the new consolidated company, and J. A. McGowan, auditor of the Indianapolis Traction & Terminal Company, secretary and treasurer of the new company.

As soon as the final order of the commission had been issued and accepted by the company, payment was made of bond interest on the Indianapolis Street Railway bonds. This payment had been been deferred at the first of the year.

Financial News Notes

Deferred Dividend Paid.—The dividend of 3 per cent on the preferred stock of the Virginia Railway & Power Company, Richmond, Va., declared on Dec. 20, 1918, payment on which was deferred, will be paid on July 20.

Another Road Sold for Junk.—The Stoughton & Randolph Street Railway, Randolph, Mass., has been sold to a Chelsea junk dealer for $12,000, and work on removing the rails and ties will soon be started.

Mr. Budd a Middle West Director.—Britton I. Budd, president of the Chicago (Ill.) Elevated Railways, has been elected a director of the Middle West Utilities Corporation, succeeding Francis S. Peabody, resigned.

Company Accepts Offer from City.—The mortgagees of the defunct London & Lake Erie Traction Company have accepted an offer of $25,000 from the city of St. Thomas, Ont., for all of the property of the company in the city, including carhouses, freight house, etc.

Compensation Fixed for Hudson & Manhattan Road.—Director-General of Railroads Hines on July 1 signed railroad contracts with the Hudson & Manhattan Railroad, operating under the Hudson River between New York and New Jersey, fixing the annual compensation by the government for that system at $3,003,362.

Application for Receiver Heard.—Argument on the application for a receiver for the Rock Island (Ill.) Southern Traction Company has been heard by the Master in Chancery of Knox County, Ill. The Continental Trust & Savings Bank, Chicago, representing the holders of bonds, is the complainant.

Two-Year Notes Ready for Payment.—H. M. Byllesby & Company, Chicago, Ill., operating managers, announce that the $450.000 of 6 per cent gold notes of the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., which matured on July 1, 1919, are payable at the office of the Continental & Commercial Trust & Savings Bank, Chicago.

Amount of Outstanding Bonds Reduced.—The amount of first and refunding mortgage 5 per cent bonds of the Kentucky Traction & Terminal Company, Lexington. Ky., due on Feb. 1, 1951, has been reduced from $2,892,000 to $2.342,000. $550,000 of the bonds having been retired and cancelled by operation of the sinking fund as of June 5, 1919.

Would Abandon New York City Lines.—The New York City Interborough Railway, whose lines are now operated as a part of the Third Avenue Railway System, has applied to the Public Service Commission for the First District of New York for permission to abandon parts of unused or little used lines in the borough of the Bronx. Commissioner Nixon has fixed July 24 as the time for a hearing upon the applications involved. The proposals to abandon have already had the approval of the directors of the company.

Court Confirms Receiver's Authorization.—The United States Circuit Court of Appeals has affirmed Judge Julius M. Mayer's order authorizing Lindley M. Garrison, receiver of the Brooklyn (N. Y.) Rapid Transit Company to issue receiver's certificates for $20,000,000. The Appellate Court, however, modified the order which made the certificates a lien superior to that of the first refunding gold mortgage of the Brooklyn Rapid Transit Company by maintaining the lien of that mortgage unimpaired.

St. Louis Payments Authorized.—Federal Judge Dyer, on the recommendation of Special Master Henry Lamm in the so-called Seaman suit against the United Railways, St. Louis, Mo., has authorized Rolla Wells, receiver of the company, to pay out of the revenue of the company certain income, license and mill taxes due the city of St. Louis under franchise ordinances. Judge Dyer also authorized payment of the unpaid coupons of the St. Louis Transit Company's bonds and the continuance of various depositaries for this purpose. The payment of these coupons had been strongly objected to by attorney for the plaintiff in the John W. Seaman receivership suit.

Commission Administers Quietus.—The Illinois Public Utilities Commission on its own motion has directed the Chicago, Fox Lake & Northern Electric Railway to cease selling its one-year 7 per cent notes and to desist from transacting any further business in Illinois. The company was granted a certificate of convenience and necessity on July 28, 1916, to operate a suspended monotype railway between Palatine and the Wisconsin State line. On April 17, 1918, the commission denied an application for a certificate of convenience and necessity to construct the mono-railway over a specified route between Palatine and the Wisconsin State line, and denied authority to issue capital stock in the amount of $2.500 and bonds in the amount of $5 680.300. The commission held that while some preliminary work had been done in connection with the laying out of the line and the securing of the right-of-way, outside of about one hour's work done in July, 1918, no work for the actual construction of the railroad, as proposed, was done until October, 1918, and that the company has not exercised its right conferred by the certificate of convenience and necessity granted under date of July 28, 1916, within the two-year period and that the certificate authorizing the road is null and void.

Traffic and Transportation

Tri-City Company's Appeal

Iowa and Illinois Railway in Receiver's Hand Except for Aid from Holding Company

By making the concession to its employees noted on page 86 in this issue, the Tri-City Railway, Davenport, Ia., hopes to secure the active support of all its employees and the public in the petition for higher fares, although the fare case is backed by strong arguments in the failure of the company's Iowa lines to pay operating expenses and in the great decrease in revenue compared with cost of operation in Illinois.

The petition of the company for increased fares was presented to the Public Service Commission of Illinois nine months ago. No decision has yet been rendered. The company has been placed in the embarrassing situation of not being able to ask an increase on the Iowa side until it was informed of the finding of the Illinois commission.

The officials felt that they could not ask a 7-cent fare in Iowa if the Illinois board turned down its petition. It also believed that the company could not hope to get a 7-cent fare in Davenport if the Illinois commission awarded only 6 cents on the lines in Illinois. It had to wait until the Illinois board returned a verdict so that, if an increased rate were granted, the same rate could be asked in Iowa.

It was at first believed that the rate in Iowa would be determined by a special election in Davenport. The company's attorneys, however, found in the Davenport franchise a provision which enables the City Council to change the passenger fare. Officials of the Tri-City Railway then presented their case in preliminary form before the Council of Davenport, notifying that body that it would ask in Davenport the same rate that the Public Utility Commission of Illinois granted.

COMPANY MAKES STATEMENT

The Illinois commission, however, has as yet made no decision, so the railway company has its hands tied, waiting for word from Springfield.

On June 20 the company, in a statement from J. G. Huntoon, vice-president and general manager, called the Illinois board's attention to its embarrassing situation, reviewed its labor trouble, emphasized for the commission's benefit the fact that the fare situation was holding up a settlement of its labor trouble, and stated that its financial condition demanded an immediate increase in revenue if the company was to be kept out of the hands of a receiver. In conclusion the company made an earnest plea for a speedy decision of the case. In this statement Mr. Huntoon said:

> Had these companies (Tri-City Railway of Iowa, Tri-City Railway of Illinois, and Moline, Rock Island & Eastern Traction Company) not been allied with a strong holding company organization (United Light & Railways Company), which has been able and so far willing to finance their need for new capital, to give them the advantage of holding company contracts at more favorable prices for materials than would have been posssible under unit management, and to provide the best of management for their operation, they severally would have long since been compelled to resort to the bankruptcy courts for relief.

The company closed its appeal with the request of a prompt decision to enable it to put into effect at once "such street car fares as will enable us, in your judgment . . . to realize an income sufficient to enable us to pay our legitimate operating expenses . . . plus a proper reserve for depreciation and a reasonable return upon the fair value of our properties."

The statement was accompanied by an exhibit showing the financial condition of the companies.

Seven-Cent Fare Predicted for Youngstown

The predictions of William L. Sause, Street Railway Commissioner, are to the effect that the fare of the lines of the Mahoning & Shenango Railway and Transit Company at Youngstown, Ohio, will go to 7 cents on Aug. 1, under the recently enacted service-at-cost grant. On June 1 the stabilizing fund, which is the barometer for the rate of fare, dropped below the required $50,000 and the rate of fare was automatically increased to 6 cents and nine tickets for 50 cents. The increase in operating expense from 22 cents to 27 cents a car-mile, recently granted, was retroactive to May 1 and the allowance for May was $14,853 more than it would otherwise have been.

The operating report for May shows receipts of $117,238. Deductions for operating and maintenance were $104,978, leaving a balance of $12,259. This amount was transferred to the stabilizing fund. From this fund was deducted $32,796, used in paying return on capital and taxes, leaving $47,070.

Under the 27 cents per car-mile the company operated during May at a deficit of $424 and under the 5-cent maintenance allowance there was a deficit of $703, making a total deficit of $1,127. These figures show the reason for Mr. Sause's prediction that another increase in the rate of fare will have to be made. Reports show that operation is costing more than the allowances, even as advanced, and the income, which is guaranteed, must be enough to prevent deficits.

Fare Contest Expected

Strong Opposition Before Commission to Ten-Cent Cash Fare in Pittsburgh Seems Certain

Physical valuation of the properties of the Pittsburgh (Pa.) Railways, looked forward to for more than a year as a possible basis for final adjustment of the tangle in which that unfortunate corporation finds itself, probably will be a leading factor in the contest over the fare increase announced recently by the receivers, when the protest of the representatives of the city is heard by the members of the Public Service Commission within the next two weeks.

ENGINEERS NOW MAKING VALUATION

Five engineers have been engaged in making physical valuation of the Pittsburgh traction lines ever since the compromise agreement reached between the city and the company early in 1918 when the fare was advanced to 5½ cents. On July 7 Chairman W. D. B. Ainey, of the Public Service Commission, announced that the commission expected to complete its task in time to report before the new fare increase hearing.

This announcement was received with great interest by holders of the securities of the Pittsburgh Railways, who regard it as presaging the next step in the development of a way out of the company's difficulties. All interests involved have been marking time, practically, since the properties were turned over to the receivers, it being desirable, of course, before attempting to proceed with the reorganization of the company to have a valuation as a guide.

The appointment of the valuation commission, comprising two representatives of the company, two of the city and the surrounding boroughs, and one of the Public Service Commission, was one of the items of the 1918 compromise agreement, it being understood that the value set upon the properties should constitute the basis of future tariff changes. Its existence probably has contributed fortuitously to an earlier final adjustment of the company's difficulties, as it was well along with its work when the federal court named receivers.

TEN-CENT CASH FARE PROPOSED

The fare increase, which is to be contested before the Public Service Commission, is from the present 5 and 7-cent rate to a straight 7½ cent fare by ticket and a 10-cent cash fare, effective on Aug. 1. A detailed account of the announcement made by the company with respect to the establishment of the new fare tariff was published in the issue of the ELECTRIC RAILWAY JOURNAL of June 28, page 1293.

A slight extension of the transfer privilege will accompany the proposed new fare. Rebate slips will be attached to tickets sold under the new rates and given to payers of cash fares.

Two Cents for Transfers in New York

Commissioner Nixon Hopes Companies Will Relinquish Long-Term Franchise and City Consent to Flexible Fare

Public Service Commissioner Lewis Nixon announced, on July 7, that he would issue an order granting Job E. Hedges, as receiver of the New York Railways, authority to charge 2 cents for transfers at ninety-nine of the 113 points of the railway system throughout the city of New York where transfers heretofore have been given free. Receiver Hedges had asked for authority to charge 3 cents for such transfers. Commissioner Nixon announced his decision, as follows:

> The receiver who makes this application is an arm of the Federal Court. He has appeared before this commission, stating in substance that if some immediate relief is not granted he will be compelled to disintegrate the lines under his control. Such a course, if possible, should be avoided. Having in mind the interests of the city and its taxpayers, the commission has resolved to grant the receiver temporarily a measure of the relief which he seeks. It has determined to empower him to charge 2 cents for transfers at points where he is legally entitled to charge for them.
>
> This relief, as stated, is temporary. The order will continue in force for one year. That will enable the city in the meantime to make the necessary appraisals. If at the end of six months the city is not satisfied with the appraisal of the receiver, it is authorized to apply to have this proceeding reopened. This hearing, therefore, is adjourned to July 7, 1920. This order is made upon condition that the lines of this company are not disintegrated. If they are disintegrated by order of Judge Mayer, this commission will make such further order as the situation demands. Counsel for the respective parties will agree upon the form of the order.

Later Commissioner Nixon issued a statement in which he reviewed the finances of the New York Railways at length, and the necessity for the appointment of a receiver. He said:

> This case concerns the application of the receiver of the New York Railways Company to charge 3 cents for transfers at all intersections of lines where there are no specific requirements by local franchise to furnish free transfers. It is really a continuation of the application of the New York Railways in April, 1917, Case No. 2212, where the company asked for a charge of 2 cents for transfers. During the pendency of the application the Court of Appeals decided in the Quimby case that the Legislature had not given the commission power to increase street railway charges above those fixed by local franchises.
>
> In line with this decision, the commission held in the Third Avenue Railway case, No. 2211, also an application for a charge of 2 cents for transfers, that its power to grant the desired relief was limited by local franchise provisions, which fixed the maximum single fare at 5 cents, and pointed out that relief must be sought from the city as represented by the Board of Estimate and Apportionment. Following this declaration, the New York Railways did not pursue its application in Case No. 2212, but turned to the city for a modification of the franchise restrictions. When the city did not act upon the application, the company again turned to the commission, which body as then constituted went out of office before action was rendered.

The case of the company was presented to the commission as a matter of great emergency, and it was so considered by the commission. The property has been operated by a receiver since March 20, 1919, and there is a motion before Judge Julius M. Mayer in the United States District Court for the Southern District of New York to separate some of the leased lines on account of default in the payment of rent. The case was presented by counsel of the receiver from the standpoint that if no financial relief was granted the court would authorize the separation of the property, but that with relief the present system may be maintained.

Commissioner Nixon pointed out that the greater portion of the case before Judge Mayer had been presented on the basis of operating results for the six months ended March 31, 1919, and he said that for these six months the operating income above operating expenses and taxes, exclusive of any allowance for reserves, amounted to $200,000 in round figures, and that, accordingly, the earning power of the company at present fares had been set at about $400,000 a year. He continued:

> Testimony was presented showing that a 3-cent charge for transfers would bring a maximum additional revenue of $900,000 a year, so that if the application be granted the company would have available a total income above operating expenses and taxes of about $1,300,000 a year. This would be far from being an adequate return on the investment. It would not even be sufficient to pay rents on the leased properties. but would enable the receiver to pay the rentals on the most important lines and thus keep the heart of the present New York Railways system together.
>
> Counsel for the receiver believes that if only the least profitable lines were now cut off from the system the owners would finally be compelled to accept a substantial reduction in their present rentals and the properties could ultimately be brought back into the system with greatly reduced rent charges. The present operating condition of the company was so presented that conclusions might be misleading. While the income above operating expenses and taxes for the six months ended March 31, 1919, amounted to only $200,000, this does not properly show a present earning power of only $400,000 a year. Stating the operating results separately by months, it appears that the low return of only $200,000 for six months was due to the very exceptional months of October, November and December, when traffic was demoralized on account of the influenza.

The commissioner stated that in January operating conditions began to improve and in March, the last of the six months period, the net earnings above operating expenses and taxes amounted to $109,238, or over 50 per cent of the total for the entire six months. For April, he said, the net earnings were $188,865, for May the gross receipts were about $34,000 greater than for April, while in June they were about $5,000 less. Figures for operating expenses and taxes for these two months, he said, were not available, but if they were in the same proportion as for April the net earnings above operating expenses would be about the same as for April. Mr. Nixon then said:

> April is considered a typical or average month of the year. Its gross receipts are not the greatest of the year, but about normal, as are the expenses. If, then, the April results for this year be taken as representing what may reasonably be expected during the next year, we have resultant net earnings in excess of $400,000 per year. On the other hand, the commission realizes that maintenance of the property has probably not been adequate because of lack of resources, that there has been no allowance for reserves, which should properly be made, and that huge present obligations exist that must be paid. The commission is thoroughly convinced that in spite of the great improvements in operating conditions since the beginning of the year the company is not now earning and is not likely to earn a fair return upon its investment, if indeed it will hereafter be able to earn even rentals on leased lines. The commission, after careful consideration of all the facts, has decided to grant conditionally a charge of 2 cents for transfers.

AVERAGE RETURN NOT 6 PER CENT

Commissioner Nixon said that on the basis of the return to the State Tax Commission it is shown that the average return since the reorganization of the company in 1912 has been under 6 per cent, and during the last year has been far below fixed charges. The commissioner said in closing:

> The case, however, is not a simple one in spite of the company's financial difficulties. I believe that, except where there are specific requirements for free transfers at intersections of two lines, the commission possesses ample authority to deal with transfers as may seem reasonable under the circumstances, and I am now acting according to this view.
>
> My decision is this: I shall allow a charge of 2 cents for transfers at all points except where free transfers are now legally required. But this permission shall extend only to July 7, 1920, and is further conditioned upon the entire New York Railways system being kept together as at present constituted. Under ordinary circumstances I should consider a charge for transfers as wholly unreasonable, resulting in gross discrimination between different classes of passengers and different parts of the city and in establishing a disjointed system of rates.
>
> But in the present case the choice is between an unreasonable system of rates and dissolution of the service. Which of these evils will cause the greater inconvenience to the public? The answer, to my mind, is clear, and I therefore seek to maintain the unity of the present system at the cost of a very unsatisfactory method of charging for service.

MOVE TO GAIN TIME

> The charge for transfers becomes reasonable only because it would be more unreasonable to permit the collapse of the service. My thought in limiting the increase to one year is in part to await further traffic development, but chiefly to make possible a satisfactory permanent settlement between the companies and the city.
>
> The present franchise under which the company operates is unreasonable in two respects: first, restrictions on fare, and, second, the permanent or long-time rights granted in the streets. Neither restriction nor privilege is justifiable. Both should go, the one with the other. My desire in granting temporary relief is to obtain sufficient time to get these adjustments.
>
> I hope that the city may be prevailed upon to consent to a flexible fare, while the company or the various financial interests will, in turn, give up their long-time or permanent rights to the streets. If these two things be accomplished it would then not be difficult to determine the value of the property and to fix reasonable rates. The city would then have the way clear for any transportation policy that may seem reasonable in the future, while the company would have safeguarded its investment. But unless the two things be accomplished there can be no final satisfactory settlement. In the end the charge for transfers would prove unsatisfactory and probably unworkable. It is justified only as a financial makeshift to gain time for settlement along proper lines.

Mayor Hylan immediately announced that he was opposed to abolishing the transfers in any part of the city, as that would mean an increase in fare and would place additional burdens on the people. In consequence it is expected that the city through Counsel Burr will seek to obtain a restraining order from the courts in a test case to determine whether Mr. Nixon has the right to allow a charge for transfers. It is said that Mr. Burr will contend that the city has not been given ample opportunity to prove that a charge for transfers is unnecessary.

It was announced on July 9 that the order of Mr. Nixon, authorizing a charge for transfers, would not be formally entered for a day or two. Mr. Nixon left the city on July 8 on a two weeks' vacation and is said to have taken with him the papers in the Brooklyn Rapid Transit rate case. He is quoted as saying that he intended to study the situation carefully and might be prepared to make a decision with respect to Brooklyn within a week.

Denver Sorely Tried

Enforced Fare Reduction, Court Decision on Commission Jurisdiction, Reduction in Wages, Strike and Other Complications

A decision by the Supreme Court of Colorado rendered on July 7 on rehearing reaffirms the court's former decision in the case of the city of Denver against the Mountain States Telephone & Telegraph Company giving jurisdiction over the utilities in the home rule cities in that State to the municipal authorities. As in January last, when the original decision was rendered, the court on July 7 held that the sole power to regulate rates is vested in the people and that in home rule cities the Public Utilities Commission has no jurisdiction.

FIVE-CENT FARES RESTORED

The 6-cent fare ordinance in Denver was repealed effective on July 5, reducing the fare on the lines of the Denver Tramway to 5 cents. On July 7 the tramway announced a reduction in service, abandoning entirely or partially eight lines, installing stub line service on six others and cutting the schedules materially on twelve additional lines. Only eight or nine lines are unaffected by the service reduction.

The railway also notified the employees that the 1917 wage scale would be effective from July 8, trainmen's rate being 30 cents the first year, 32 cents the second year and 34 cents thereafter.

On Monday night, July 7, the City Council passed on first reading an ordinance allowing jitneys to operate at a 5-cent fare on prescribed routes and schedules for a period of ninety days. This measure cannot become a law until the week ended July 19.

At midnight on July 7 the employees voted 976 to 2 to strike at 4 a.m. on Tuesday, July 8. In consequence, on July 10 nothing but mail cars and milk cars were operating in the city. The interurban cars are being operated by union men to the city limits as no fare or wage reduction was made on the interurbans.

JITNEYS OPERATING WITHOUT LICENSE

On July 8 the Mayor authorized the jitneys to operate without schedules on certain routes for a 5-cent fare. About 370 dollar jitney licenses had been taken out up to July 19. The Mayor the same morning stated that the electric railway was no longer necessary to the city, and that motor buses would give adequate service permanently for a 5-cent fare. Business men report 50 per cent losses in local business.

The tramway adjustment committee of fifty-five citizens, which was appointed in January by the Mayor and which recently recommended service-at-cost operation, met on July 8 to work out a solution of the problem on the basis of their previously-advocated settlement plan, referred to in the ELECTRIC RAILWAY JOURNAL for June 14, page 1183. The Mayor on July 10 intimated that he would not oppose an initiated petition for a 6 or 7-cent fare to be referred to the people if the company would pay the expenses of the special election.

The company has made repeated attempts to operate cars with company officials and supervisors, but it was blocked by the strikers although there was no violence. F. W. Hild, general manager of the railway, has announced that no professional strike breakers will be imported at present to operate the cars. He is advertising for men, but is offering only the 1917 wage scale. More than 1200 out of 1400 employees are on strike from every department of the railway except the power house and the general offices.

MEN MAKE NEW DEMANDS

The jitney service is inadequate and the unlicensed jitneys are charging 10 cents to $1.50 to haul passengers.

On July 9 local union No. 746 presented a contract to the company providing for a closed shop and a 60, 65, 70-cent wage scale for trainmen with proportionate increases for all other employees. No action was taken on this by the management.

The Mayor charges collusion on the strike between the strikers and the company. This the management denies flatly, stating the strike to be the inevitable and prophesied consequence of the Mayor carrying out his election platform promising a 5-cent fare.

Five Cents for a Month

The Grand Rapids (Mich.) Railway returned to a 5-cent fare on July 1 for an experimental period of one month. That the company would do this was noted previously in the ELECTRIC RAILWAY JOURNAL. The conditions under which operation will be carried out for July are reviewed in a letter of Benjamin H. Hanchett, president of the company, to the City Commission. In this letter Mr. Hanchett said:

> In accordance with the understanding at a meeting of your honorable body held on June 12, when this company agreed to put into effect, for the month of July, the 5-cent fare, and discontinue the 6-cent fare, as authorized by the ordinance passed Nov. 4, 1918, orders have been issued to the conductors to begin collection of a 5-cent fare on July 1, and to continue during the month of July, to test out the question whether the earnings of the company on this rate of fare will be sufficient to care for the operating and other necessary expenses.
>
> Notices have also been placed in all the cars, as requested by your resolution, passed on June 19, and the public has been advised through the newspapers that the 5-cent fare rate would be in effect for the month of July as above.
>
> This company will furnish from its cashier's office a sworn statement of the car earnings daily, compared with the same week of the previous year, that is, the days of the week will be used in comparisons, and also a schedule of all cars operated on the various lines from 6 o'clock in the morning until the last car at night. Both of these statements will be sent to the City Manager for the information of the special committee having the matter in hand, and also for the information of any of the commissioners who may be interested in knowing how the 5-cent fare is working, as compared with last year. These statements of the car earnings will show the percentages of increase for each day in the month of July.
>
> The company will be willing to have a daily inspection of the earnings as well as the car service reports and will co-operate to this end in any way it may suit the pleasure of your honorable body.

Louisville Suburban Rates Revised

Reduced rates on all lines of the Louisville & Interurban Railway, Louisville, Ky., will go into effect on Aug. 1. This action is the result of an agreement between the railway and the Suburban Protective Association reached before the State Railroad Commission at a joint meeting on June 24.

Under the new agreement, single-trip fares on the five Beargrass lines will be computed on the basis of 2½ cents a mile; on the Lagrange and Shelbyville lines fares will be charged at the rate of 2¾ cents a mile. Round-trip tickets from all points where such tariffs have been arranged will be sold by conductors on all cars without extra charge to passengers.

In the future, twenty-trip commuters' books will be sold at the rate of 2 cents a mile, except where book fares average more than the round-trip fare. In such a case the lowest fare will prevail. Commuters' books for the full month on the Lagrange and Shelbyville lines will contain sixty-two tickets instead of fifty-four, allowing for Sunday travel on these books in the future.

A minimum fare of 6 cents will be charged on all lines. The minimum fare heretofore has been 5 cents.

Books for school children on all lines will contain forty-trip tickets and will be sold at the same rate as prevailed prior to the tariff changes July 1, 1918. Recently, these books for school children contained forty-six tickets, which had to be used during the month in which the book was purchased. The forty-trip ticket books may be used during any month of the school year, and unused tickets are redeemable.

The new fare scheme, as announced by Chairman Finn, of the commission, shows large reductions over the scale of cash fares now in existence. The reduction on the Beargrass lines will amount to 16⅔ per cent; on the Lagrange and Shelbyville roads 8⅓ per cent. On all lines the commuters' book rates will be lowered approximately 25 per cent.

In order that a check may be kept on operations under the new schedule of fares, the railway will make a monthly report to the State Commission. The figures thus forwarded will be compared with corresponding months of 1917 and 1918. The revised rates could not be put into effect on July 1 because of the many new ticket forms which will of necessity have to be printed.

Jitney Regulation Proposed for Kansas City

The City Council of Kansas City, Mo., is considering ordinances for the regulation of jitney traffic. There are this summer fully 800 jitneys on Kansas City streets, of which about forty are large buses. The jitney drivers have an organization which from time to time has promised co-operation in such regulation as will provide the public with more regular and reliable service, and with protection against the many hazards involved in the operation of jitneys. So far, however, the chief activity of the organization has been to fight ordinances for regulation.

A regulatory ordinance was passed by the lower house of the City Council on June 30, which required bonds, limited the parking privileges, and otherwise curtailed the liberties the jitney operators have enjoyed. Another ordinance has been introduced in the Council, which will be heard soon, requiring jitneys to maintain scheduled runs all day, and extend their service further into the suburbs.

Jitney organization men say that they have not been able to secure bonds, the requirements of private companies for bonding being prohibitive. As an alternative, there is talk of some form of mutual insurance among the local owners themselves.

Stockholders Asked to Aid in Fare Campaign

Out in Columbus, Ohio, the voters are to be asked on Aug. 12 to approve the ordinance passed by the City Council granting an increase in fare from eight tickets for 25 cents to six tickets for 25 cents. As part of its campaign in behalf of the increase the company will put to a practical trial the suggestion made in an editorial in the ELECTRIC RAILWAY JOURNAL of June 28 by appealing to its stockholders in Columbus for help. The letter to the owners of the securities of the company, signed by P. V. Burington, secretary, follows:

> An increase in rate of fare is of vital importance to all stockholders of the company.
>
> The City Council has passed an ordinance granting an increase from eight tickets for 25 cents to six tickets for 25 cents.
>
> Before becoming effective a referendum vote of the people is to be had at the primary election to be held on Aug. 12, 1919.
>
> Whether the ordinance shall be sustained or defeated, is largely up to you and your efforts with other fair-minded citizens in voting to sustain the ordinance.
>
> The need of an increase to maintain the service properly and protect the company is beyond question, and though small, the proposed increase will help.
>
> Be sure to place the importance of voting right in this matter plainly before all voters with whom you may be associated or come in contact.
>
> You can do much between now and Aug. 12 to secure this measure of relief by personal touch with voters.
>
> If convenient, I would be glad to hear from you in this matter.

Court Sustains Fare Emergency

The Supreme Court of Wisconsin has reversed the judgment of the lower court in the La Crosse case in which Judge Stevens held that an emergency did not exist in establishing a 6-cent fare on the lines of the Wisconsin Railway, Light & Power Company in that city. The court said:

> In the instant case the petition was broad enough to cover a proceeding for emergency relief in due course under section 1797-12, statutes. It is clear from the record that the commission had jurisdiction to proceed, and that all parties interested were before the court and a full and exhaustive hearing had, and the hearing covered all issues in the matter and the procedure was the same as in other cases where a general rate hearing is had before the commission. There was ample credible evidence in the record to show that the income was not sufficient to pay a reasonable return on the investment after allowing 3 per cent depreciation. It is unnecessary to go into a discussion of the facts and figures in the record, which are very voluminous and which appear to have been carefully considered by the commission.
>
> Treating the order as an order in due course under section 1797-12, it cannot be said that it was either unlawful or unreasonable.

The issues involved in this case were reviewed at length in the ELECTRIC RAILWAY JOURNAL for April 12, page 759. As explained at that time the Wisconsin Railroad Commission had on Sept. 12, 1918, granted a 6-cent fare in La Crosse upon the ground that an emergency existed because the old rate was insufficient to cover operating expenses, taxes and a 7½ per cent return on the property value. Judge Stevens on March 21 held, however, that the grant of a higher fare was unlawful because no emergency existed within the meaning of the law. His general argument was that a utility has no right to an emergency rate that would maintain its normal rate of income, and that the fact that a utility has set aside a substantial surplus was one of much weight in determining whether an emergency exists. It is this decision that is now reversed.

Seven Cents in Quincy

The Quincy (Ill.) Railway, included in the Illinois Traction system, has been authorized by the Public Service Commission of Illinois to increase rates in Quincy. The company has made a contract to secure power from the Mississippi River Power Company at Quincy. The commission held in this matter that it would not be necessary for the existing power station or equipment to retain the service until such time as an opportunity may arise to dispose of it to advantage, and in case of disposition it must be presumed that some sacrifice will have to be made on the part of the Railway, particularly as to the costs of the foundations, connections and other appurtenances which would be unsaleable in the case of the removal of the equipment. The issues on this point were whether the cost of the power station equipment should be included or excluded in the value of the property.

It appeared to the commission that the change constituted an economic good for many reasons; that it enabled the utilization of water power that would otherwise go to waste, thus resulting in the conservation of fuel. If the value of the power station building and equipment were entirely excluded from the initiation of this improvement and the operating expenses determined solely upon the cost of the purchased energy then it is obvious that no incentive would exist for the development of a project of this character.

In this case the commission will consider the cost of the power plant and equipment depreciated to date as contributing to the value of the property and in giving consideration to the equity of the rates for railway service will consider that a sufficient amount must be allowed to amortize property over a reasonable period of time, while at the same time giving the public a portion of the benefits that will accrue from this improvement; and it would appear that ten years would be ample time to effect the amortization. The rates authorized until Dec. 31, 1919, are as follows:

For single continuous passage between any two points:

Cash fare	7 cents
Four tickets	25 cents
School children's tickets—good between school hours—forty-ticket book	$1

Each Division on Its Own Basis

The trustees of the Eastern Massachusetts Street Railway, Boston, Mass., on July 1 made effective a new system —known as the "home rule" system— by which they plan to determine the fare rate on each of the twelve divisions of the road.

Under the new plan the manager of each division is held responsible for the service provided on his division. He is to be in charge of accounts, assisted by a clerical force entirely independent of the main office; of complaints and maintenance of service. At frequent intervals the district managers are to issue statements showing receipts and expenditures, in order that patrons in the respective districts may know the operating costs. On these figures will be based the fare rates for the different lines.

The trustees took possession of the property on June 1. An estimate of the earnings and expenses for the previous month under the old system of management indicated a deficit of $300,000. Nothing was earned toward the interest charges or the principal of the State-guaranteed bonds.

The twelve divisions of the road are in Chelsea, Lynn, Salem, Gloucester, Lowell, Lawrence, Haverhill, Hyde Park, Quincy, Brockton, Taunton and Fall River.

Transportation News Notes

Presenting Valuation Testimony.—The League of Municipalities of New Jersey is now engaged in presenting its case with respect to the valuation of the property of the Public Service Railway, New Jersey, for rate-making purposes in connection with the plan suggested by the company for the proposed zone-fare system.

Six-Cent Fare Sustained.—The Railroad Commission of Wisconsin has handed down a decision denying the petition of the city of Sheboygan to reduce to 5 cents the 6-cent fare recently ordered, and also denying the application of the Eastern Wisconsin Electric Company to make the rate permanent that was ordered as an emergency measure. The commission held that the conditions at present do not warrant the re-establishment of the 5-cent fare at this time.

Wage Increase for Municipal Employees.—Wage increases for platform men, track and office employees of the San Francisco (Cal) Municipal Railway have been approved by the Board of Public Works and sent to the Board of Supervisors with recommendation that the ordinances fixing the depreciation and accident funds be amended. It is asked that the depreciation fund be decreased from 14 to 12 per cent and the accident fund from 4 to 3 per cent to take care of the proposed wage increase.

Zones for Worcester.—The Worcester (Mass.) *Telegram* of June 30 said: "Plans are being considered by officials of the Worcester Consolidated Street Railway for establishing a 5-cent fare in a general zone which would include parts of Worcester in what might be termed the central section of the city and a 10-cent fare for the remainder or outlying districts. In connection with the above plan the company officials are also giving consideration to the establishment of shorter zones in the suburban lines with a reduction in fare."

Free Rider a Poser.—The finance committee of the City Council of Seattle, Wash., has asked Corporation Counsel Meier for an opinion on the question of whether the city's policemen and firemen can be compelled to pay fare on the cars of the Seattle & Rainier Valley Railway. The company has called the attention of the Council to the new tariff granted by the Public Service Commission which makes no provision for carrying policemen and firemen free, but the finance committee is under the impression that the company's franchise provides that these employees shall be carried without charge.

Fare on Suburban Line Increased.—The fare on the Westerville line of the Columbus Railway, Power & Light Company, Columbus, Ohio, has been increased from 5½ cents to 6 cents per zone. This makes the total fare between Columbus and Westerville and return 42 cents, as a city ticket must be used for fare within the city. There are three zones on the line. The franchise under which the company now operates provides for service at cost. Before it was adopted, the round-trip fare from Westerville to the center of Columbus was 25 cents.

Another Ten-Cent Road.—The Middlesex & Boston Street Railway, Newtonville, Mass., has again filed with the Public Service Commission a schedule of fares, effective on Aug. 1, which puts the system practically on a 10-cent fare basis. All present 8-cent lines go to 10 cents, as do all but routes "B," "D," and "E" of the 7-cent lines. The three sections remaining unchanged are certain lines through Newton, Waltham, Waverly and Watertown. Free transfer privilege will be eliminated under the schedule as filed, which proposes a charge of 3 cents for each transfer issued.

Two Sevens Replace Two Fives.—The present fare on the Corry & Columbus Traction Company's line between Corry and Columbus, Pa., is 10 cents, namely, two 5-cent fares. It is proposed, after July 20, to charge 14 cents, namely two 7-cent fares, with eight tickets for 50 cents. If there is no opposition on the part of the public to the increase and the results under the increased fare justify, the road will be continued in operation, at the rates named. Otherwise another increase will be requested. If the road can not in some way be made to pay, the owners are prepared to shut it down.

Wants Six-Cent Fare Continued.—Extension indefinitely of authorization for a 6-cent fare is asked by the East St. Louis (Ill.) Railway in a petition filed with the Public Utilities Commission of Illinois on June 25. On the application of the company for a 7-cent fare a year ago the commission authorized a 6-cent fare until July 31, 1919. The petition now filed points out that the 6-cent fare was allowed last year after the trainmen had been awarded an increase in wages and that these employees are now demanding an additional increase in wages of about 100 per cent. A decision on the wage demand by the War Labor Board is now awaited.

Patrons to Decide Skip-Stop Matter.—The skip-stop system in Dallas, Tex., has been abolished on July 1 for a period of three months. during which time the old system will be tested and patrons will have an opportunity to compare the two systems. At the end of the three months it is planned to have a referendum in which the railway patrons will express their choice. The railway promises to abide by the result. The Dallas Railway will keep close check of the cars on the various lines during the three months test period. The office of the Supervisor of Public Utilities of Dallas has also made arrangements to check all the lines of the city to see that the service is kept up to the proper standard.

Safety Cars for Galesburg.—The Public Utilities Commission of Illinois has passed an order authorizing the Galesburg Railway, Lighting & Power Company, included in the Illinois Traction System, to operate one-man cars in the city of Galesburg, provided that such cars shall not be operated across railroad crossings unless flagged over the crossings after the car has come to a full stop and a conductor or flagman has proceeded ahead to view the crossing, the motorman remaining in control of the car. The order of the commission is to apply only to cars especially modeled and equipped with safety appliances for one-man operation. Specifications and descriptions of the proposed type of cars are to be filed with the commission for its approval.

Service to Be Resumed in Hastings.—Thomas J. Goodwin, president of the village of Hastings-on-Hudson, announced on July 2 that electric railway service from Yonkers to the center of Hastings will probably be resumed soon. The formal consent of the Board of Trustees of the village, giving the Yonkers Railroad a new franchise, has been filed in White Plains with the County Clerk. The new franchise will permit the cars from Yonkers to continue to the corner of Main Street and Warburton Avenue, instead of stopping at the village line, as they have done since the old franchise expired. The Uniontown branch, however, in the northern end of the village, which has torn up its track, will be discontinued. The discontinuance of service in Hastings was referred to in the ELECTRIC RAILWAY JOURNAL for May 10, page 938.

Illinois Traction Increasing Facilities.—New schedules were placed in effect by the Illinois Traction System, Peoria, Ill., on July 6. On the lines between Peoria and Bloomington and Bloomington and Decatur the service has been almost doubled, giving an hourly service between these cities most of the day as compared to practically a two-hour schedule previously. Few changes will be made on the Peoria-Springfield-St. Louis line, as service on this division was maintained at a high level during most of the war period. Two parlor cars will leave Peoria every day for Springfield and St. Louis. Traffic on the various divisions of the Illinois Traction System is reported to be increasing. The company, itself, resumed the handling of express June 29. The new department will be known as the Illinois Traction Express Company. It will be in charge of C. F. Handshy, assistant general manager. No express has been handled over this system since the Adams Express Company was absorbed by the American Railway Express Company. The company reports a heavy tonnage of coal this summer.

Personal Mention

New Engineer for Pacific Electric

Eugene C. Johnson Made New Chief Engineer for the Pacific Electric Railway, Los Angeles, Cal.

Eugene C. Johnson, who has served in the capacity of assistant chief engineer in charge of maintenance of way and structures of the Pacific Railway System in Southern California since the year 1911, was recently appointed chief engineer, vice George E. Pillsbury, who retired on account of ill health. The position of assistant chief engineer has been abolished.

Mr. Johnson becomes the active engineering head of the system in this new position, having jurisdiction over all track, paving, bonding, signal, bridge and structure manitenance, as well as all new construction, together with full charge of the valuation report of the company's entire properties as directed by the California State Railroad Commission during the year 1912. The jurisdiction of his new duties covers a trackage of 1092 miles.

Mr. Johnson was born on July 16, 1881, at Des Moines, Ia., and was educated in the public schools at Minneapolis, Minn. Later he took a preparatory course in civil engineering at Armour Institute of Technology of Chicago, Ill., and upon graduation from the Armour Institute he entered Cornell University. In 1905 he was graduated from Cornell University with the degree of civil engineer. In 1905 he was engaged as assistant engineer of the Buffalo Terminal Division of the Delaware, Lackawanna & Western Railroad. In 1906 he accepted the position of terminal engineer of the Western Pacific Railroad at San Francisco. During his work for the last-mentioned company Mr. Johnson had more or less to do with the Southern Pacific construction work of the Bay Shore Cut-off.

In 1908 Mr. Johnson was recommended to the Los Angeles Pacific Company to handle the construction of two large and difficult tunnels for the Los Angeles Pacific Company's lines in the city of Los Angeles, these being known as an extension of the Hill Street line to afford a more accessable route for penetrating the Hollywood district. Upon the completion of this tunnel construction in 1909, Mr. Johnson took charge of the Arizona Eastern Railroad's construction of its Gila Canyon Cut-off line, one of the most difficult pieces of construction the Southern Pacific had ever undertaken in Arizona.

After the completion of this work Mr. Johnson was appointed chief engineer of the Los Angeles Pacific Company. This was in 1910. He then continued with that company until the consolidation of the local and interurban lines at Los Angeles in 1911 as the Pacific Electric System. Since then he has had charge of maintenance of way and structures of the Pacific Electric Railway with the title of assistant chief engineer.

Mr. Cameron Resigns

Retires As Superintendent of Transportation at St. Louis, After Nineteen Years of Service

Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., has handed his resignation to receiver Rolla Wells. In transmitting his resignation Mr. Cameron said in part:

> In July, 1918, immediately after the action of the Grand Jury which indicted me, I directed a letter to the board of directors of the United Railways telling them I had no connection whatever with the theft of the referendum petitions and did not see how I could be indicted upon the testimony of a man named Jackson, who confessed that he did the deed himself, and that I did not wish to embarrass the board in any way whatever and if they thought it was best for the railway for me to discontinue my services with the company to consider that as my resignation, effective at their pleasure.

BRUCE CAMERON

> The board did not accept the resignation and I have been continued as superintendent of transportation ever since.
>
> Recent developments have caused a great deal of unpleasant newspaper comment, and I am quite sure you are in an unenviable position, hence I do not wish to embarrass you in the least and you may consider this as my resignation as superintendent of transportation of the United Railways to take effect at your pleasure.
>
> I want to repeat, I had no connection with the referendum petitions in any way and future developments will prove this statement.
>
> May I ask that you, the public which you represent, as well as the stockholders of the company, reserve your personal opinions until this unfortunate muddle has been cleared up or my innocence established in the courts?
>
> I have dealt honestly with every one of the many problems coming to my department, and, in doing so, have, no doubt, made some enemies. My work has necessarily kept me on the job all of the time and Mrs. Cameron has passed through a year of unjust and unfair criticism leveled at me, but her faith supports her, as she knows it will come out all right in the end. If at any time you wish to consult with me I am at your service.

Bruce Cameron was born on a farm in Missouri in 1877. After attending public and high schools of Nevada, Mo., he took a course at Fort Worth College, Fort Worth, Texas. His first business adventure was in the asphalt business at Dougherty, I. T. In 1900 he went to St. Louis and was employed by the St. Louis Transit Company in the enginering department. Later he was assigned to the operating department, where he has been continuously since that time.

As head of the transportation department of the United Railways it fell to Mr. Cameron to employ, instruct, train, discipline and commend the men who actually run the cars, also the superintendents, supervisors, clerks, dispatchers, switchmen, car sweepers and curve cleaners. In the department of which he had charge there are at present approximately 3400 efficient, loyal, capable and honest men and women, many of whom have shared in establishing a record of accident reductions for the last eighteen months, the present ratio being twenty-five accidents to 1,000,000 passengers carried. Mr. Cameron personally gave the property the very best that was in him. In fact he worked for the company from fifteen to twenty-four hours a day for nineteen years with only one vacation. Mr. Cameron has had several opportunities to better his condition within the last two years. At present he is taking a much needed vacation. He has not made any definite plans for the future.

George Kidd, general manager of the British Columbia Electric Railway, Vancouver, B. C., who left for England on April 12 in connection with affairs of the company, expects to return to Vancouver by Aug. 1.

H. O. Buder, assistant superintendent of transportation of the United Railways, St. Louis, Mo., has temporarily been given the duties of superintendent of transportation of the company following the recent resignation of Bruce Cameron.

R. V. Rose has been appointed superintendent of the Niagara Junction Electric Railway, Niagara Falls, N. Y. He succeeds Joseph McSweeney, who has been appointed head of the welfare department of the newly-consolidated Niagara Falls Power Company.

Col. George Alan Green, who as chief engineer and superintendent of the Fifth Avenue Coach Company, New York, N. Y., operating the buses on Fifth Avenue in that city, is largely responsible for the steady improvement and progress of the company, has been elevated by the board of directors to be general manager of the company. Colonel Green recently returned to the company after active service in France in the British Tank Corps.

James Watt, Pittsfield, Mass., has been appointed superintendent of equipment of the Hudson Valley Railway, Glens Falls, N. Y., succeeding George C. Murray, who resigned to return to Mexico City where he was employed previously. Mr. Watt has been with the Third Avenue Railway, New York, and the Public Service Railway of New Jersey.

Lieut. Walter A. Neeley, formerly superintendent of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., has received his discharge from the army after spending nearly two years overseas. He received severe wounds about the arms and body in the battle of the Argonne Forest and still has one of his wounded arms bandaged. Lieutenant Neely was a member of the old New Jersey National Guard for many years. He resigned from the railroad to enter the army. He will probably resume his old position with the New Jersey & Pennslyvania Traction Company when he recovers entirely from his wounds.

Horace E. Allen has been appointed general superintendent of the Saginaw-Bay City Railway, Saginaw, Mich., which includes the local railway systems in both Saginaw and Bay City, and in addition operates an interurban line from Saginaw to Bay City. The Northeastern division of the Michigan Railway, of which Mr. Allen is also in charge, operates through cars from Bay City and Saginaw to Flint and Detroit. Mr. Allen was formerly assistant general manager of the Springfield (Ill.) Consolidated Railway. Before that he was with the Michigan Railway. After completing the course in electrical engineering at the Massachusetts Institute of Technology Mr. Allen accepted a position with the Westinghouse Company at East Pittsburgh and in 1910 became connected with the Toledo Railways & Light Company, serving with that company for six years.

George B. Willcutt, secretary of the United Railroads, San Francisco, Cal., and its oldest employee in point of continuous service, has been made vice-president and secretary of the company. Mr. Willcutt is a native of San Francisco, in which city he received his early training and prepared for the University of California. While in college he majored in chemistry and after graduation in 1879 taught the subject at the University of California for three years. Leaving his professorship to take up mining, he was an early associate of John Hays Hammond and Henry Butters. His father, J. L. Willcutt, was at that time general manager of the Market Street Cable Railroad, San Francisco, and in 1886 Mr. Willcutt joined this company as assistant to the general manager. In 1893 there was a consolidation of fourteen or fifteen of the small horse car and cable railways of San Francisco into the Market Street Railway Company and J. L. Willcutt was made secretary and comptroller, with his son as his assistant. In 1900 George B. Willcutt succeeded his father, who wished to retire from active life, and since that time has held the position of secretary and comptroller, being re-elected to the same office in 1902, when the United Railroads of San Francisco was formed. He has been a director of the company since 1907 and is considered perhaps the highest authority on the history of street railways in San Francisco. He has an intimate acquaintance with the many changes that have occurred during the past two decades and his service to the company is of inestimable value on this account alone.

Mr. Buffe Made Manager

Former Assistant to President at Kansas City Succeeds Mr. Gibson—Other Departmental Changes

F. G. Buffe, connected with the Kansas City (Mo.) Railways since August, 1917, has been appointed general manager of the company, effective from July 1. Mr. Buffe had been acting in this capacity since the resignation of James E. Gibson, who had been general manager since the reorganization of the company.

Following the appointment of Mr. Buffe, readjustments were made in the personnel, with the end in view of closer co-ordination and a reduction in the channels through which reports reach the officers of the company. Mr. Buffe had been assistant to the President P. J. Kealy for more than eighteen months.

F. G. BUFFE

A. E. Harvey, who has been superintendent of ways and structures, has been appointed chief engineer, in charge of ways and structures, and the electrical distribution system is added to his responsibilities. He will report to the general manager.

S. H. Grauten, electrical engineer, will report to Mr. Harvey.

H. W. Smith, now assistant superintendent of ways and structures, becomes engineer with this subject in charge.

In the shop department George J. Smith, superintendent, will have the assistance of Henry S. Day, equipment engineer. Mr. Day will have particular charge of details of inspection, maintenance and division repairs.

W. C. Harrington, formerly superintendent of equipment, will be supervisor of division repairs. Mr. Harrington will report direct to the equipment engineer.

Mr. Buffe, the new general manager of the Kansas City Railways, was born on Sept. 5, 1881. He was graduated from Illinois Wesleyan University, Bloomington, Ill., and did newspaper work in Denver, Col., and Peoria, Ill. He was formerly managing editor of the Peoria *Herald-Transcript*. In 1909 he became connected with the Illinois Traction System, as manager of the department of publicity which he installed. Later he served as special representative for H. E. Chubbuck, vice-president executive of that company, in connection with franchise and public service commission work. Mr. Buffe entered the service of the Kansas City Railways in August, 1917, for work in connection with labor matters, and also served in the educational work of the utilities of the State of Missouri on the relations of these companies to the public. He was made assistant to President P. J. Kealy on Jan. 1, 1918. Upon the resignation recently of James E. Gibson as general manager, Mr. Buffe was made acting general manager.

Mr. Day is a new man in the Kansas City Railways organization. After service with the Boston (Mass.) Elevated Railway, Mr. Day spent several years with the Westinghouse Electric & Manufacturing Company, specializing on railway equipment. He had charge of all electrical equipment in connection with the electrification of the New York, New Haven & Hartford Railroad, and was in complete charge of the shops, inspection and maintenance work for this company. He has recently returned from France, where he served as captain of engineers. He also served with Sanderson & Porter, New York, N. Y., on valuation work.

C. C. Bullock has been appointed superintendent of transportation of Shreveport (La.) Railways to succeed J. W. Robertson, who resigned to accept a similar position with the Sheffield (Ala.) Company, operating the railway in Sheffield. Mr. Bullock entered electric railway work as a conductor with the company in 1910. Some years later he became night dispatcher, serving in this position during the winter months, and as assistant secretary for the local baseball club during baseball season in summer months.

Obituary

John F. Merriam, seventy-one years of age, died on July 1 at his home in St. Joseph, Mo. About 1870 Mr. Merriam acquired an interest in the Citizen's Street Railway which operated on South Eleventh Street, St. Joseph. He served as superintendent of the line. The franchise of the company was purchased in 1888 by the People's Electric Railway and Mr. Merriam retired from railway work to devote himself to banking and traveling.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Rail Inquiries Continue Favorable Showing

Under Curtailed Production, Rush of Orders from Railroads Would Lengthen Shipments

Conditions in the rail mills are becoming better. Better orders for rails are coming in from domestic consumers, but the principal increase in orders is from abroad. Inquiries, too, are in larger volume, not only in number of orders, but also in size of order.

The recent government order for 200,000 tons of rails has had little effect on rolling mills. The order was so split up among producers that it resulted in merely a mouthful per mill compared with normal orders. There seems to be no foundation to the rumored further order on the government's account for 300,000 tons of rails at this time. Manufacturers state that the withholding of the rail orders causes more injury to railroads than it does to the rail mills. This, of course, is true of the electric railways as well.

IMMEDIATE SHIPMENTS NOW

Mills are operating at between 40 and 50 per cent of capacity, producers state. No stocks of rails can be made up in advance of the ordering, which manufacturers feel sure will soon come in, because of the number of different sections required by the various types of railways. It is expected that when ordering does start in it will be in large volume and for a great part all at once. At that time shipments will be extended to long periods. For the present, shipments can be made immediately. All orders are about completed.

Export orders are looking up. The British mills have capacity well below demand and are not in a way to produce rails to compete in price or delivery with American rails. Manufacturers of steel products in Great Britain are studying American methods of production with a view to the adoption of measures that will reduce the present high costs of British manufacture. Glasgow has recently purchased 5000 tons of street railway rails from America. The lowest British offer was given at £19 1s. 3d. per ton. The reported American quotation of £17 9s. is believed to be too low, but it was under £19. Great Britain has done little electric railway work in five years, and her rail condition is seriously in need of care.

Japan is reported in the market for 5000 tons of rails, although she only recently purchased 30,000 tons. France is in need of 5000 tons of rails and a like tonnage of other steel, while Spain is inquiring for axles, wheels and other equipment. Brazil also is extending railroads. These are merely indications or rail activity, and expected further export orders will have their effect on the already curtailed rail mill production and shipments.

Prices are holding firm for domestic consumption at the rate suggested the latter part of April, but there is a tendency upward with other steel products.

Fare Box Inquiries on the Increase

Buying of New Boxes and for Changes Expected When Commissions Grant Relief

Many inquiries are in the field and several orders for small numbers of fare boxes are in manufacturers' hands. Traction companies in many cases feel that the period of higher fares is drawing closer, and they are getting information on new fare boxes and the work necessary to equip present boxes to handle different coins in advance of this change. Many of the inquiries concern applications of metal tokens.

Actual buying of this equipment is being put off, it is stated, owing to uncertainty about the possibility of getting the desired increase in fare or doubt as to the permanency of any higher fare that might be obtained just now. Too long holding off of ordering, manufacturers say, will result in congestion of manufacturing conditions and shipments and will hold up deliveries for some time. There are lots of orders ready to come through, they say, and when relief is assured the railways will release them in considerable numbers.

No recent change in prices has been reported. The tendency, sales representatives state, is upward, along with other railway material.

It is expected that charge for transfers, such as it seems is about to go through for the New York Railways Company, will not require fare box changes, as it can be made merely a matter of the issue of a transfer by the conductor and the receipt by him of the pennies.

Crossarms Higher

Price increases have just gone into effect, although at this writing the amount of increase is not available. It will probably be in the nature of a 10 to 15 per cent rise. Stocks are in quantity to make good deliveries.

No Price Drop in Glass Expected

Curtailed Production and Increasing Domestic and Foreign Demand Will Probably Keep Stocks Low

The market for window glass has increased considerably in the last few weeks. In the agreement whereby one-half of the factories should work from December to the latter part of May and the other half from August to December, there is a belief among the trade that present consumption and that expected in the fall and winter, will so reduce stocks that longer periods of production could have been permitted.

Probably two-thirds of the year's production is already in storage. Manufacturers have a large part of this in stock, although dealers and jobbers are fast taking on large stocks for their own use. Jobbers' stocks, however, it is stated, are not yet in sufficient quantity to meet all demands.

Manufacturers can make immediate deliveries on most common grades of window glass, although there is one instance where no deliveries under thirty days can be made. Carload lots have been set down at sixty days. For some of the thicker sizes, around 22 to 29 ounces, deliveries are running from three to six months. This is because of the heavy automobile top demand which the glass factories cannot supply in a short time with their present capacity.

Prices on window glass have been holding firm for some time and no intimation has been given by manufacturers that there will be any reduction this year. For single strength, first three brackets, A and B quality, New York discount still holds at 80 per cent, while double strength, all sizes, AA quality, has an 81 per cent. New York discount.

Although fall production will start up in August, present building demands, both domestic and foreign, dealers state, will take a large proportion of the window glass stock and production. The export demand in particular is in creasing to a great extent. The glass factories of France and Belgium are not yet in a position to supply the needs of those countries and, according to present indications, will not be for a long time, so that stocks in this country naturally will be drawn upon to a large degree to fill their requirements. The result to domestic consumers, it is stated by the trade, will be longer deliveries and, if stocks get much smaller, possible higher prices.

Copper and Brass Products Holding Firm for the Present

Copper continues its advance, and at this writing is quoted at 20 cents a pound spot delivery. Copper and brass products which went up a cent a week ago have not undergone any further advance, although such advances are not expected.

No increase has been noted in the price of commutator bars nor field and armature coils during the recent ascent of copper, but it is likely that price changes in this class of maintenance equipment will follow. Among orders for armature coils there is found one for about $80,000 in the New York district.

Rolling Stock

Delta Light & Traction Company, Greenville, Miss., has purchased two cars for early delivery.

Arkansas Valley Interurban Railway, Wichita, Kan., expects to equip its limited cars with heavier type motors to cut down the running time between Wichita and Hutchinson. Additional standard freight cars will also be needed by this company.

Georgia Railway & Power Company, Atlanta, Ga., has ordered from the American Car Company for October delivery fifteen new cars, seating 51 people each, with center-entrance doors opening very little above street level. These will be the first cars of this type to be seen in Atlanta, though they already have been tried in a number of other cities and have proved very successful. The new cars will be turtle-back, like the latest pay-as-you-enter cars built in Atlanta. They will have steel sides and steel reinforced timber underframing. They will be double ended, with no bulkhead at either end and no difference of level between platform space and car floor. The motorman will have his own enclosure shut off from the rest of the car. The cost of these new cars is given as $9,000 each delivered.

San Francisco-Oakland Terminal Railways, Oakland, Cal., recently placed upon its lines a new street car which was built in its own shops from material bought in Oakland. It is known as double end drop platform with monitor roof and is divided into two compartments, one compartment for smoking, occupying about one-third of the car. The seats are transverse reversible and of spring rattan. Its length is forty-eight feet, width nine feet, and has large commodious platforms. The framing of the car is steel throughout, with the exception of the roof, which is wood and steel combined. The latest system of lighting is installed, with opal shades. The interior of the car is finished in Spanish cedar, natural finish. The car seats fifty-two people and operates on the College Avenue line. The directors have authorized the building of seventeen additional cars similar in all respects to this one.

Recent Incorporations

Sistersville & New Martinsville Traction Company, Sistersville, W. Va.—The Sistersville & New Martinsville Traction Company and the West Virginia Power Company have been incorporated with a capital stock of $500,000 as successor companies to the Union Traction Company and the Sistersville Electric Light & Power Company. The extension of the road above New Martinsville to Clarington or Moundsville is contemplated. Important improvements are also being worked out for Paden Park, which will make it one of the most popular and convenient pleasure resorts in that part of the Ohio Valley. Incorporators: R. Broadwater, W. J. McCoy, Nell Burns, W. R. Reitz and E. C. King, all of Sistersville.

Franchises

Little Rock, Ark.—L. Garrott has asked the City Council of Little Rock for an extension of his franchise to construct a line from Little Rock to Hot Springs.

Miami, Fla.—The Dade County Commissioners have granted a thirty-year franchise to the Miami Beach Electric Company to operate a street car line over the causeway. It is stipulated that within four months after the completion of the causeway tracks the company shall have constructed and ready for operation a line extending from the eastern terminus of the causeway to Miami Avenue, and that within a year it shall have completed and ready for operation a belt line at the beach.

Track and Roadway

Wichita Railroad & Light Company, Wichita, Kan.—The Wichita Railroad & Light Company has ordered 12,000 new ties to be used this year on streets to be paved.

Frankford & Shelbyville Traction Company, Shelbyville, Ky.—L. C. Lashmet, secretary and engineer of Wadell and Sons, engineers of New York and Kansas City, who will construct the Frankfort-Shelbyville electric line, has arrived in Louisville to begin work. The last connecting link has been surveyed and it is planned to begin construction work so as to have it completed January 1, 1920. It was thought that a new bridge over the Kentucky River at Frankfort would be necessary but the present plan is to use the bridge now in service over that stream. (Mar. 8, '19.)

Springfield, Ill.—It is proposed to construct an electric line between Springfield and Rushville, via Petersburg and Chandlersville. John Rosenwienkyle, 2145 North Racine Avenue, Chicago, is reported interested.

Boston (Mass.) Elevated Railway.—Work will be begun soon by the city of Boston and the Boston Elevated Railway on the paving of Tremont Street from Berkeley and Dover Streets to Northampton Street. The city will spend $152,000 on the work and the Boston Elevated will spend $104,000 for its part of the work. New tracks will also be laid by the Boston Elevated Railway on this section.

Norwood, Canton & Sharon Street Railway, Sharon, Mass.—A stock company is being organized by F. A. Prince, of Dennet & Prince, Boston, to operate the Norwood, Canton & Sharon Street Railway. It is planned to have the road in operation by Aug. 1.

Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo.—Right-of-way has been obtained and construction will be begun soon by the Kansas City, Clay County & St. Joseph Railway on its proposed extension from Excelsior Springs to Richmond, about 18 miles.

Pittsburgh (Pa.) Railways.—Work will soon be begun by the Pittsburgh Railways on the double-tracking of its line on Chartiers Avenue, Sheraden, at a cost of $103,614.

Power Houses, Shops and Buildings

East St. Louis & Suburban Railway, East St. Louis, Ill.—The East St. Louis & Suburban Railway is in the market for a 60-cycle turbine, switchboard and other electrical equipment to replace material destroyed and damaged by an explosion.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—Improvements and additions to the plant of the St. Joseph Railway, Light, Heat & Power Company planned for the year 1919 will amount to $1,250,000. The plans include the installation of three additional 10,000 kw. generators with their boilers and accessories, the installation of one 10,000-kw. turbogenerator with condensers, pumps, switchboard, boiler, stacks and other necessary equipment. Heavy expenditures are planned for next year as well.

Interborough Rapid Transit Company, N. Y.—Bids for the construction of eleven stations on the Pelham Bay Park branch of the Seventh Avenue-Lexington Avenue rapid transit line have been asked for by Transit Construction Commissioner John H. Delaney. The bids are to be opened on July 24, and work is to be completed within six months after the contracts are awarded. The steel work for the Pelham Bay Park branch of the city-owned rapid transit system is already being erected, and will be ready for station finish within two months. All of the stations are located above ground, and it is estimated the work will cost $650,000.

Trade Notes

E. T. Causer has recently resigned as works manager of the R. D. Nuttall Company, Pittsburgh, Pa.

Holden & White Inc., Chicago, announce that the National Railway Appliance Company of New York, will handle the sale of jewel forced ventilation heating systems and Holden & White electric heaters in the New England, Eastern and Southern states.

Mr. Dennis' Title—A note in this column on June 28 referred to the title of Charles H. Dennis, while with the Railway Audit & Inspection Company, as "general superintendent of employment." This paper is in receipt of a card indicating that his complete title was "superintendent of inspection and employment."

Federal Electric Products Corporation, 52 Broadway, New York City, announces that the corporate name of the Federal Electric Company has been changed to Federal Electric Products Corporation, and the business will hereafter be conducted under that name. Benjamin Blum, heretofore managing director of the Federal Electric Company, has been elected secretary of the Federal Electric Products Corporation, and will be in charge of the company's business with the same duties as heretofore exercised.

Harrison Safety Boiler Works, Philadelphia, Pa., announces that the Monash line of pressure reducing valves and pump governors, formerly manufactured and sold by the Monash-Younker Company, of New York and Chicago, has been acquired by the Harrison Safety Boiler Works of Philadelphia. The purchase includes a stock of manufactured parts and valves, drawings, patterns, trade mark and good-will. The Harrison Safety Boiler Works will manufacture and market the valves under the trade name "Cochrane-Monash," and will supply repair parts for valves now in use.

Allied Machinery Company of America has increased its capital stock to $5,000,000. This was made necessary by the decision of the American International Corporation to group all of its machinery export selling subsidiaries under one head. All shares of the Allied Machinery Company will, as before, be owned by the American International Corporation. J. W. Hook will continue as president and F. A. Monroe, S. T. Henry and T. G. Nee have been elected vice-presidents. Mr. Monroe is in charge of the administrative affairs of the company. Mr. Henry is in charge of sales and advertising and Mr. Nee is at present in Japan devoting his attention to the affairs of the company there. R. P. Redier is general sales manager of the company, with headquarters at Paris.

Henderson - Mockenhaupt Company, Chicago, has been organized to act as sales representatives for manufacturers of electric material. A. F. Henderson, president of the company, was formerly secretary and general sales manager of the Electrical Material Company; B. J. Mockenhaupt, secretary and treasurer of the new company, was formerly vice-president of the W. P. Crockett Company. Among the lines being handled by the Henderson-Mockenhaupt Company are those of the Independent Lamp & Wire Company, Electric Railway Equipment Company, National Enameling & Manufacturing Company, and Rattan Manufacturing Company. A. C. Perrin, formerly railway and mine specialist for the Electrical Material Company, is also associated with the Henderson-Mockenhaupt Company.

National Railway Appliance Company, New York City, has just completed arrangements with Holden & White, Inc., Chicago, Ill., whereby they are prepared to offer in the Eastern and Southern States a new line of car heaters of various types. These include the Jewel hot-blast forced-ventilation stove and a complete line of electric heaters. The stoves are made by the Detroit Stove Works and the motor and blower are located below the fire box. A new type of construction has been introduced into the electric heaters. These are made by the Cutler-Hammer Manufacturing Company and include a nicrome resistance ribbon wound on a mica center strap. This is incased in mica insulation and mounted on a metal bar bound with sheet metal in such a way as completely to sheath the unit.

Col. Douglas I. McKay has been elected president of the Pulverized Fuel Equipment Corporation of 30 Church Street, New York, to succeed John E. Muhlfeld, who retires to return to consulting engineering practice. Since July, 1917, Colonel McKay has been engaged in war work and supply, where he had supervision over the purchasing operations of the several supply corps of the War Department, including the Ordnance Department, Quartermaster's Corps, Medical Corps, Corps of Engineers and Signal Corps. Colonel McKay is a graduate of West Point and a former police commissioner of New York City. Upon resignation of the commissionership he became assistant to the president of J. G. White & Company, Inc., and two years later was elected vice-president and director, which position he held at the time he entered the service.

Park-Union Foreign Banking Corporation formally opened its doors for business on June 1, at 56 Wall Street, New York City, for the development of foreign markets. The new international bank has been in the process of organization since March, when it was incorporated under the laws of New York State, with a capital of $2,000,000 and surplus of $250,000. These figures, however will be increased as occasion demands. For the present the activities of the Park-Union will be devoted particularly to the promotion of American interests in the far Eastern field, says Dr. C. A. Holder, its president. Branches have been established in Yokohama and Shanghai, and negotiations are under way for offices in other important world centers. Offices in the United States have been located on the Pacific coast at San Francisco and Seattle.

Ohio Electric & Controller Company, 5900 Maurice Avenue, Cleveland, Ohio, announces it has appointed as its representatives, the following firms: The Iron & Steel Equipment Company, 1502 First National Bank Building, Pittsburgh, Pa.; Williams, Beasley Company, 343 South Dearborn Street, Chicago, Ill.; Linn O. Morrow, 707 Franklin Trust Building, Philadelphia, Pa.; J. W. Dopp & Company, 18 Columbia Street, Detroit, Mich.; Kelly, Powell, Ltd., 403 McArthur Building, Winnipeg, Canada; Wonham, Bates & Goode, Inc., Dominion Express Building, Montreal, Canada; Shook & Fletcher Supply Company, Birmingham, Ala. For export business the following representatives have been appointed: Wonham, Bates & Goode, Inc., 17 Battery Place, New York, London, Paris, Havana and Rio de Janeiro; Mitsui & Company, 65 Broadway, New York, Japan, China, Philippine Islands and Honolulu; Gustav Neilson A/S, Christiania, Norway, Sweden and Denmark.

New Advertising Literature

Napier Saw Works, Inc., Springfield, Mass.: Form 60 on Napier band saw machines and hack saw machines.

Trumbull Waste Manufacturing Company, Manayunk, Philadelphia, Pa.: Booklet on "Tampico" and how to use it in journal box packing.

Universal Packing & Service Company, Railway Exchange, Chicago, Ill.: Double sheet on "Spring Journal Box Packing."

Electric Arc Cutting & Welding Company, Newark, N. J.: Booklet on "Portable Alternating Current Apparatus for Cutting and Welding Metals."

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.: Folder on the "FFI Electric Locomotive"—the 4800-hp., single 4-0 three-phase freight locomotive.

Electric Service Supplies Company, Philadelphia, Pa.: Bulletin No. 157 illustrates and describes the "Golden Glow" demountable mirror unit for replacing 18 in. x 9 in. metal reflectors.

Thompson-Starrett Company, New York: Two finely printed brochures. One contains views and short descriptions of some of the important buildings erected by the company. The other is a copy of an article which appeared in *Scribner's Magazine* for November, 1918, written by Col. W. A. Starrett, and describes the construction of the city of Nitro, W. Va., at a cost of $50,000,000. This construction included the erection of 3000 individual buildings.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, July 19, 1919 *Number* 3

Cutting Service Is a Dangerous Economy

DESPERATE diseases often need desperate remedies, but the medicine ought not be powerful enough to kill the patient. A few drops of "Cut Service Mixture" if well shaken before taken may enable the patient, Mr. Car Earnings, to hobble along; but a drop too much and he will never travel again. Whenever we read that this or that railway is going to run cars every twenty minutes instead of every ten and inaugurate a little curfew of its own by stopping owl service, we pray sincerely that it will not kill the riding habit. Any measure of that nature is a sad sort of economy. We may not be able to make every car-hour pay with a 5-cent or even a 7-cent fare, but with too deep a cut in service we can bring even the present profitable hours to the wrong side of the ledger. Another factor in cutting down service, particularly night service, is the loss of good-will at a period when good-will is needed more than ever. The traffic which the steam railroads are driving off to-day will have to come back—it has no remedy—but a lot of the traffic which an electric railway drives off can stay at home or walk.

Off Again, On Again, In Denver

PITY the poor traction manager! Developments in Denver in the past year remind a person of one of those up-and-down rides at Coney Island or the adventures of our old friend "off again, on again, Finnegan."

The news columns of the JOURNAL have recorded the vicissitudes of the Denver Tramway Company—the struggle under a 5-cent fare; the move upward to 6 cents and then to 7 cents; the quick slump downward to 6 cents, and then back to its former place in the 5-cent class. When the people of that city approved a 6-cent rate last September, Denver stood forth as an exceptional community because there were few instances where the car riders voluntarily assumed a share in the growing burdens of the transportation company. But the idea that it is a popular move on the part of politicians to bait the corporation will not down; and they were not long in forcing lower fares. The action of the Mayor in giving free rein to jitneys was a sample of what the company management has to contend with. It did not seem to matter that business houses reported a loss of 50 per cent in trade. It is perhaps just as well, however, that the public should have had an opportunity of experiencing what it is to live in a "trolleyless" town.

Later reports indicate that the people of Denver have learned that a railway is really a necessity. They found they could not get along without the cars and that the jitney in many ways was a "fair-weather friend." It is now announced that a 6-cent fare will be restored as quickly as possible, and that a cost-of-service plan will probably be adopted. Meanwhile the trainmen have had the War Labor Board scale of wages restored, with prospects of a further increase later on. We sympathise with the Denver Tramway management and trust that the experimental stage with lower fares is past for ever. Perhaps the people and the politicians have learned something in the past few months.

The Federal Hearings Are At Last Under Way

THE hearings on the electric railway situation begun in Washington on Tuesday, we hope, mark the turning point in a most anomalous situation. Properties organized to provide an essential service for the public are being prevented from furnishing that service and are being driven into bankruptcy because the war has changed the status of values. Profiteering, or the use of the peculiar conditions brought on by the world's conflict to extort unusual and unfair gains from others, a practice rightly condemned both morally and legally, is being brazingly followed in many cities to compel the electric railway companies to furnish transportation at a loss. The unity in aims which should exist between the electric railway companies and the communities which they serve, as regards the provision of the proper transportation facilities on tracks already in existence and the construction of new lines into sections needing such facilities, has disappeared.

The fact that the President has appointed the present commission shows that he recognizes the seriousness of the situation. Just what the commission can do and will recommend remains yet, of course, to be determined. But the electric railways at last have an opportunity to put before a national commission evidence of an impending disaster which is nation-wide and to impress on a governmental body the necessity of doing what is possible to avoid the threatened débâcle.

The hearings during the early part of this week show that the American Electric Railway Association has a well-prepared case, in spite of the short time available since the announcement of the appointment of the commission to collect and collate the facts. It will work under this disadvantage as regards statistics of past years that many of the factors which increase railway operating expenses are of comparatively recent date, while the latest government figures for the electric railways of the country are for the year ended June 30, 1917. It will be necessary, therefore, as the association expects to do, to prove by witnesses not only what has happened, but what the present condition of the electric railways is and what the immediate future has in store unless remedial action is taken.

The evidence being presented at Washington is of great educational value not only to those for whose use it has been primarily compiled but also for the railway men in attendance. There was a good representation of operators at the early sessions this week, but there should have been more. We realize that with conditions as they are at present it is hard for a manager to get away from his property for any great length of time. But there has never been an electric railway rate case in which the testimony has been so extended and of such a high order, and a trip to Washington for a day or more by any railway man, operator or investor who can get away will be well worth while, not only for the individual benefit to be derived but to indicate to the commission the vital interest which the industry is feeling in the hearings and their outcome.

New Capital Cannot Be Coerced, Whatever Is Done to Old

IS CAPITAL entitled to a higher emolument when the present return is no longer sufficient to attract investors? This is the interesting question arising from the recent labor difficulties of the Cleveland Railway Company, wherein the employees were granted their wage demands and the request for increase in the stock dividend rate from 6 to 7 per cent was left subject to arbitration. President Stanley has set a great many persons to thinking over his proposal. Officials of the Chamber of Commerce in Cleveland have expressed the opinion that his demands on behalf of the stockholders are entitled to consideration.

When the late Judge Tayler wrote the Cleveland ordinance in 1908 he foresaw that prices would not be constant and wisely arranged that the rate of fare should fluctuate with the cost of service. One defect in the franchise provisions—which did not become embarrassing until some years later—was the fixing of a maximum in the schedule of fares. This was temporarily cured in a recent amendment to the ordinance by raising the maximum rate of fare. Recent events, however, have proved the contentions of the management that the franchise will never be satisfactory while a maximum rate is fixed in the schedule. In this particular the Boston trustee plan and the Cincinnati franchise have an evident advantage.

But the framers of the Cleveland ordinance—an admirable document in many ways—would have done well to incorporate in its provisions, as well, a sliding scale for the return on new securities. Cost of capital fluctuates as it does for labor and materials, and while it is important to assure an adequate return on securities already outstanding, it is no less essential that the franchise guarantee the market price on future issues of bonds and stock so that when new capital is needed for transportation improvements it will find the utility company as good a customer as any competitor. The people who insist on improved transportation facilities should appreciate this as readily as the company officials. When a million dollars is required and the company's new issue of stock will not sell at par the amount that can be raised is lessened to just the extent that a premium has to be paid.

The Cleveland car strike was as much a strike of capital as it was of labor. Money will not work on unattractive terms any more than the platform men will do so, and when the latter can gain their point by showing that other industries offer a better wage, the investor should get an attentive ear from the public by his threat of going elsewhere to find kindlier treatment.

It might be contended that there is little element of risk in the investment in Cleveland Railway Company stock because the good faith of the municipality is involved in the keeping of its written agreement. It is perhaps true that securities are safest when protected by service-at-cost provisions in a grant; but the fact remains that the Cleveland Railway stock has been selling below par while many other securities, apparently no more sound, attract a higher price.

Interest from bonds and dividends from stock help many a family to meet the cost of living, and if their holdings have depreciated to such an extent that the future is jeopardized it would seem only the part of equity to give a fair hearing to their petition for relief. Capital once invested may have no choice but to remain where it is. But no railway in a growing city can stand still. It must make extensions and improvements, and these means additions to its capital account. And this new capital will not be forthcoming unless the conditions are right. It can be as coy as labor. A community such as Cleveland will not suffer by establishing such a precedent as that proposed and by acquiring a reputation of being liberal to capital and labor alike. The outcome of arbitration proceedings in this unique "strike of capital" will be awaited with interest.

Conserving the Technical Lessons Taught by the War

ON JUNE 25 bills were introduced in Congress with the intent to consolidate the governmental departments having to do with technical matters. The situation was covered in a news item on page 38 of the issue of this paper for July 5. Whether these bills become law or not, the fact that they were introduced suggests the need for capitalizing the successful efforts put forth during the war to increase the productive efficiency of the country's industrial plants and utilities.

The war has taught many vital lessons. Among other things we are learning that science and the scientific spirit in the broad sense are fundamental if we are to make ends meet in the future, that investigation and analysis are the foundation of national prosperity. Our wonderful country is so bountiful in supplying raw materials, and we have such a capacity for getting results somehow in spite of obstacles, that we have not always appreciated the necessity for conservation and effective utilization of our resources.

There are, of course, many instrumentalities at work along scientific lines, some doing research work themselves, some utilizing and applying the work of others. Great industrial establishments have their development departments; the government has its Bureau of Standards and many other scientific bureaus; there is the National Research Council; college and university laboratories are almost numberless, etc. It would seem, however, as if there is need for co-ordination of all of this machinery. In fact, one important lesson of the war will have been lost if such co-ordination is not brought about promptly. Could not the national technical societies, including the American Electric Railway Association and its satellites, get this movement started? The most immediately practical plan for doing so would be to memorialize Congress as to the importance of creating some agency, or utilizing some existing one, to study the problem and prepare a plan for its solution. If a governmental engineering department is erected, such agitation would help it. If not, the agitation might lead to constructive legislation of some other kind.

There Is an Equilateral Triangle of Obligation

THE fundamental object in electric railway operation is now recognized as service, something which can be secured only by co-operative action among the three factors in electric railway operation, namely, the public, the company and the men. In the old days the interests of each of these three were considered opposed to those of the others. It was thought that the public would gain most when it got as much out of the company in the way of taxes and other imposts as it could and at the same time paid a minimum fare, while the object of the company was to give as little service as it might for the revenue received. In the same way, it was believed to be in the company's interest to pay its men the lowest possible wage, while the men, it was thought, could most profit by forcing the company either by strike or otherwise continually to advance their wages.

Actually, the real interests of all are identical. Thus the city will most benefit if it permits the company to earn a reasonable return on the investment made and the company will gain most if it gives as good a service as it is able to do for the fare paid. In like manner, the employees should receive a wage equal to that which they could earn in any outside industry calling for the exercise of an equal amount of skill, while the company can best profit if it pays such a wage. Finally, to complete the triangle of mutual dependence and co-operation, the employees can best serve their own interests if they co-operate with the company in giving the public as good a service as is warranted by the fare charged. If these mutual obligations were generally accepted, strikes and the payment of inadequate wages and fares would disappear.

Strikes are an economic waste, and while they or the payment of inadequate wages may seem at times to be of advantage respectively to the men or the company, yet if the ability of the railway to give good service is thereby impaired the results to both are unfortunate. In the same way, an inadequate fare will retard the proper development of the utility and too high a fare will injure the growth of the community which it serves, so that in either way the interests of both company and community suffer.

Co-operation and a unity of purpose among the three elements of society, the wage earner, the investor and the public, should take the place of that antagonism which is now being recognized as detrimental to the best interests of all. Some advance has already been made in establishing this principle of co-operation between the companies and the men, and the public should be brought in closer touch with the practical workings of our public utility properties, the first duty of which is to give service to the public. It is only through co-operation, under a cost-of-service plan, among the wage earner, the investor and the general public, that the transportation problem can be successfully solved.

Cars Should Be Still Lighter Not Heavier

NOW that the war is over and the metal market has become more normal, the builder of street railway cars will be able to get the higher-grade steels and other light-weight materials like aluminum alloys, that have been almost unobtainable. It is a matter for congratulation that this is the case because of recent tendencies to ask for heavier rather than lighter safety cars.

It is a fact that in a number of places, the safety car has been obliged to carry loads much greater than contemplated, and, in some instances weakness of structural members has also been a factor. The easiest way, seemingly, is to make these parts heavier. But this is not the easiest way in reality because the safety car is practically a unit for which certain motors, compressors, etc., have been especially designed on the basis that the weight would not exceed 15,000 to 16,000 lb. If we exceed this weight, we disturb the entire balance. Greater weight will in turn demand heavier and more costly equipment throughout, while the power will jump back, considering the present increase in fuel cost, to where it was with the old time car that broke the backs of so many street railways.

Actually the easiest way of meeting this situation is to put into the construction of a street car better metal than ever before. This has become practicable now not only because of the better condition of the metal market, and the release of tools for making special shapes, but also by the standardization of the safety car itself. No car builder could be asked to keep special alloys on hand if only a fraction of the non-standard cars ordered would make use of such steels. With the quantity production of cars, the builder will feel at greater liberty to make use of the same high-grade metals and special light-weight materials as the automobile builder. We agree, for example, with the suggestion of J. M. Bosenbury of the Illinois Traction System, that serious attention be given to vanadium steel. This steel is far superior to ordinary steel in withstanding shocks and stresses incident to city railway operation. Put into a truck, it would give say 25 per cent increase in strength with no increase over the weight of the first safety car trucks. For sheathing, ingot iron (or coppered steel) is also an excellent material because of its greater resistance to corrosion. Furthermore, if this sheathing is covered with the cork-like balsa wood, and the latter in turn lined with a little veneer, the safety car will approach more closely the ideal of the noiseless car for all climates in addition to being much easier to heat when used in cold climates.

But no matter how anxious the railway car builder may be to take advantage of these special materials, he can do little without the co-operation of the customers who must be willing to buy the best possible combination available even if they are tempted to ask for something just a bit different or cheaper here or there.

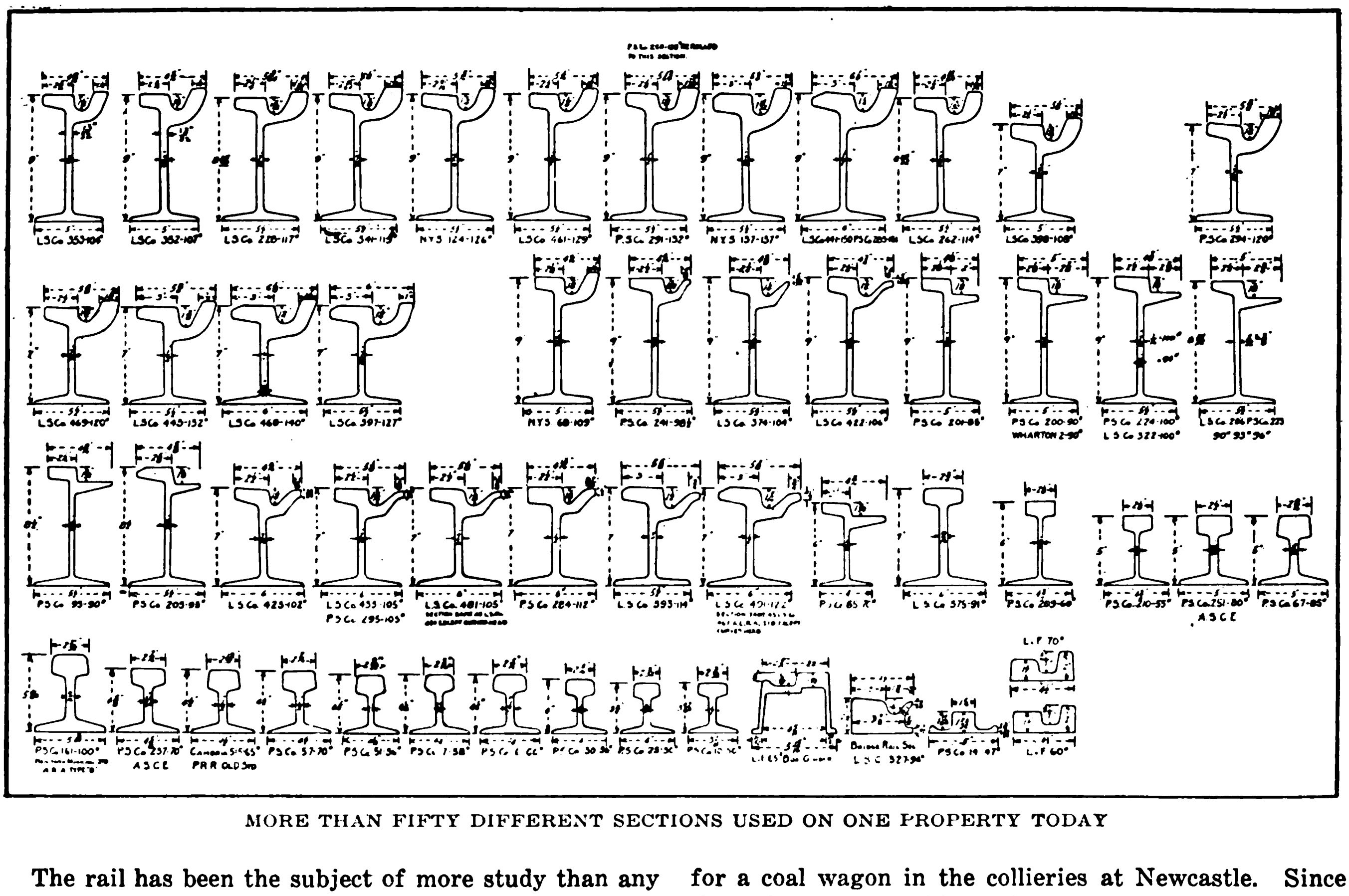
The car builder may also have to charge more money for special steels than for ordinary commercial steel, but the operator will be justified in paying this higher price because of the many savings that he will be able to retain in other directions. In the long run, both the manufacturers and the operators will benefit because the very life of both depends upon the continued ability to conduct electric railway transportation cheaper and better than any other means of carrying people in public vehicles.

Notes on the History and Development of Electric Railway Rails

The Author Takes Up the Practical and Theoretical Considerations Which Are Gradually Leading to Rail Standardization and Simplification

By R. C. CRAM
Engineer Surface Roadway, Brooklyn Rapid Transit System

IN SOME of the previous articles on way department matters the writer has discussed such features as subsoil, foundation, ballast and ties in their relation to track construction. The most important subject of rails is now taken up with considerable hesitation, in view of the vast amount of discussion already given to it. But no series of articles on way department matters would be complete without some mention of the rails, because they represent the fundamental part of the physical equipment of the great electric railway industry and are the direct cause of the creation of way departments. In the main, this article treats of the early history and development of street railway rails.



MORE THAN FIFTY DIFFERENT SECTIONS USED ON ONE PROPERTY TODAY

The rail has been the subject of more study than any or all other parts of the track, and its development represents the general progress in the development of the railroad. In recent years progress in rails has tended to keep somewhat behind the advances made in equipment. Car and engine-weights have increased so rapidly that it has been almost impossible physically to keep up to date with suitable rail sections, even when finance permitted. This is particularly true of rails laid in paved streets, and the street railway track engineer may now be heard giving thanks for the breathing spell which the development of light-weight cars has caused. There is a movement toward making the cars suit the track instead of the long-continued reverse order of trying to make the track fit the ever-increasing weight of cars.

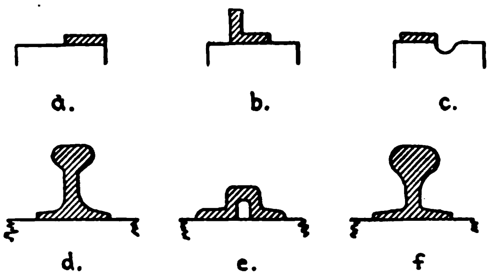
EARLY HISTORY OF RAILS

Rails were first used in the coal mines of England. According to Fred Bland, they were originally of planks or timber and the first record of their use is dated 1576. The word "tram," from which are derived the words tramway and tramrail, originally was the local name for a coal wagon in the collieries at Newcastle. Since the rails were to facilitate the movement of the "trams," the rails were associated with them as tramrails or tramways.

The first rolled rails were pieces of iron straps laid on longitudinal parallel stone or wooden sills or stringers. They were held in place by spikes driven into the wooden stringers or into wooden plugs set in holes drilled in the stone sills. The rails were about ½ in. thick, 2 in. wide and 15 ft. long. All of the early steam road rails used in this country were imported from England. Some of the very early types are shown in the drawing reproduced on page 108.

The street railway is distinctly an American idea and the first use of rails and flanged wheels in streets is credited to this country.

The New York & Haarlem Railroad, built in 1832, was the first street railway ever built. It was not a financial success at first and the opposition to the early street railways was quite similar to the opposition that appeared, many years later, against the construction of electric street railways. In both cases, this great factor in community life and development had to fight great odds for its birthright. How singular it is that to-day it is still fighting for even a bare existence, and against even greater odds!



SOME EARLY TYPES OF RAILS (From Willard's "Maintenance of Way and Structure")

a, b, c, earliest types. d, first T-rail. e, U-shaped rail of 1834. f, pear-shaped rail.

Strap or stringer rails were used by the steam roads and by the early horse tramways in this country up to about 1840, when the T-rail began to be used as a substitute by steam roads because the increasing engine weights caused the rails to turn up at the ends. This by the way, was the beginning of our troubles with joints. The first rail approximating a T-rail was invented in America, in 1830, by Robert L. Stevens.

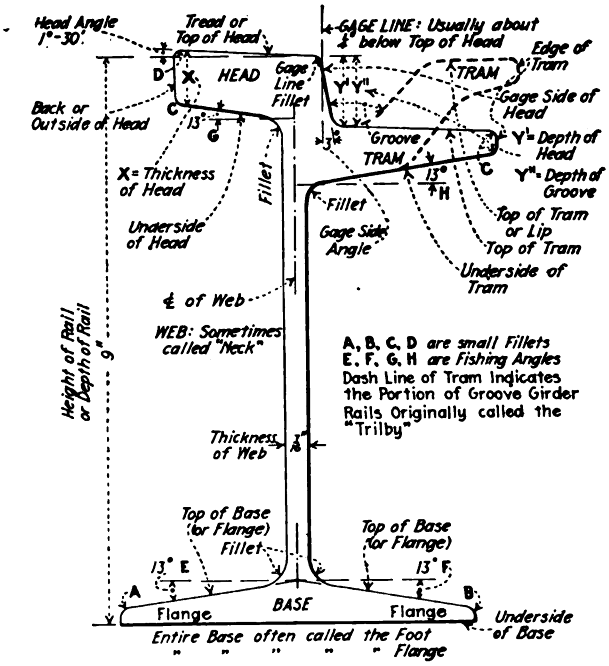
The period between 1840 and 1850 marks the parting of the ways between the steam railroad and the street railway or tramway. The latter continued to use strap rails or flat tram stringer rails from the first real development period of 1852-1855 until the advent of the electrical development period, about 1890. Meanwhile, steam roads had progressed far in the use and development of the T-rail under the far-reaching influence of the American Society of Civil Engineers.

The electrification of street railways, by the use of heavier equipment, virtually forced the tramways to develop and use other rails, just as the steam roads had to do many years before. However, street traffic and pavements tended to cause the development of the tram-rail idea from the flat tram or stringer-rail to the 4½-in., 6-in. and later to 7-in. and 9-in. tram and groove girder rails. The 9-in. tram girder, or Philadelphia rail, was designed by William Wharton, Jr. in 1890 although the general features were proposed by Jos. Quinn, of the Wharton Company about two years earlier. The tram part of the rail was distinctly a concession to, and continuation of, the use of rails by wagons in streets even though the cars had come to use flanged wheels entirely. A few railways went to the steam roads for their designs and developed the deep 6-in., 7-in. and even 8-in. and 9-in. "high-T" rails or plain girder rails, as they are more properly designated. The depth was, like that of the tram girders, largely to provide paving accommodations.

There were several peculiar rail developments at that time which may now seem absurd but they had considerable vogue. One of them, the "Lewis and Fowler" box girder may still be found in sidings and in little-used or abandoned track in a few of our large cities. Some of these early sections are shown in an accompanying figure. It is of interest to note that the modern cross-sections of manganese rails used in crossings in special work have several features (particularly the double-web) in common with the Lewis and Fowler section, and the use of a rather similar double-web for modern heavy T-rails has been suggested by Gustave Lindenthal in his paper read before the New York Railroad Club on May 21, 1915.

As noted in a preceding paragraph, rails were first designed to carry wagon wheels having flat tires. Some of the rails had an upturned flange which acted as a guard in keeping the flat tires upon the track and presented the appearance of equal-legged angle-iron bars. A sample of this kind of construction was until recently found in the colliery at Coalbrookdale, England. It was built in 1767 and was, when dismantled, probably the oldest tramway in existence. It was taken up only a year or two ago.

The advent of the flanged wheel, an American invention, created the need for flangeways. These were provided for in American tram rails by raising a part of the section to form the "head," as the running surface is called. Such a rail was known as a steprail or side-bearing tram rail. Another reason for raising the head was to keep the bearing surface above the general level of the pavement, thus avoiding trouble from accumulation of dirt, snow and ice. The center-bearing stringer rail and the later center-bearing girder rail were distinctly designed with that point in view. This rail also kept the loose paving stones of cobble and similar pavements, then prevalent, from interfering with the path of the wheel. The center-bearing rail became objectionable to teamsters in the large cities and it was legislated out of existence by the State of New York in 1892.


Head Angle 1°-30'
Tread or Top of Head
GAGE LINE: Usually about 1/4" below Top of Head
Edge of Tram
D
X
HEAD
Gage Line Fillet
Y' Y''
TRAM
Gage Side of Head
Back or Outside of Head
C
13°
G
Groove
TRAM
3°
Y' = Depth of Head
X = Thickness of Head
Fillet
13°
H
C
Y'' = Depth of Groove
Fillet
Top of Tram or Lip
Underside of Head
Gage Side Angle
Top of Tram
Underside of Tram
℄ of Web
Height of Rail or Depth of Rail 9"
WEB: Sometimes called "Neck"
A, B, C, D are small Fillets
E, F, G, H are Fishing Angles
Dash Line of Tram Indicates the Portion of Groove Girder Rails Originally called the "Trilby"
Thickness of Web 7/16"
Top of Base (or Flange)
Fillet
Top of Base (or Flange)
13° E
13° F
A
B
Flange
BASE
Flange
Underside of Base
Entire Base often called the Foot
" " " " Flange

NOMENCLATURE OF DIFFERENT PARTS OF A TRAM GIRDER RAIL

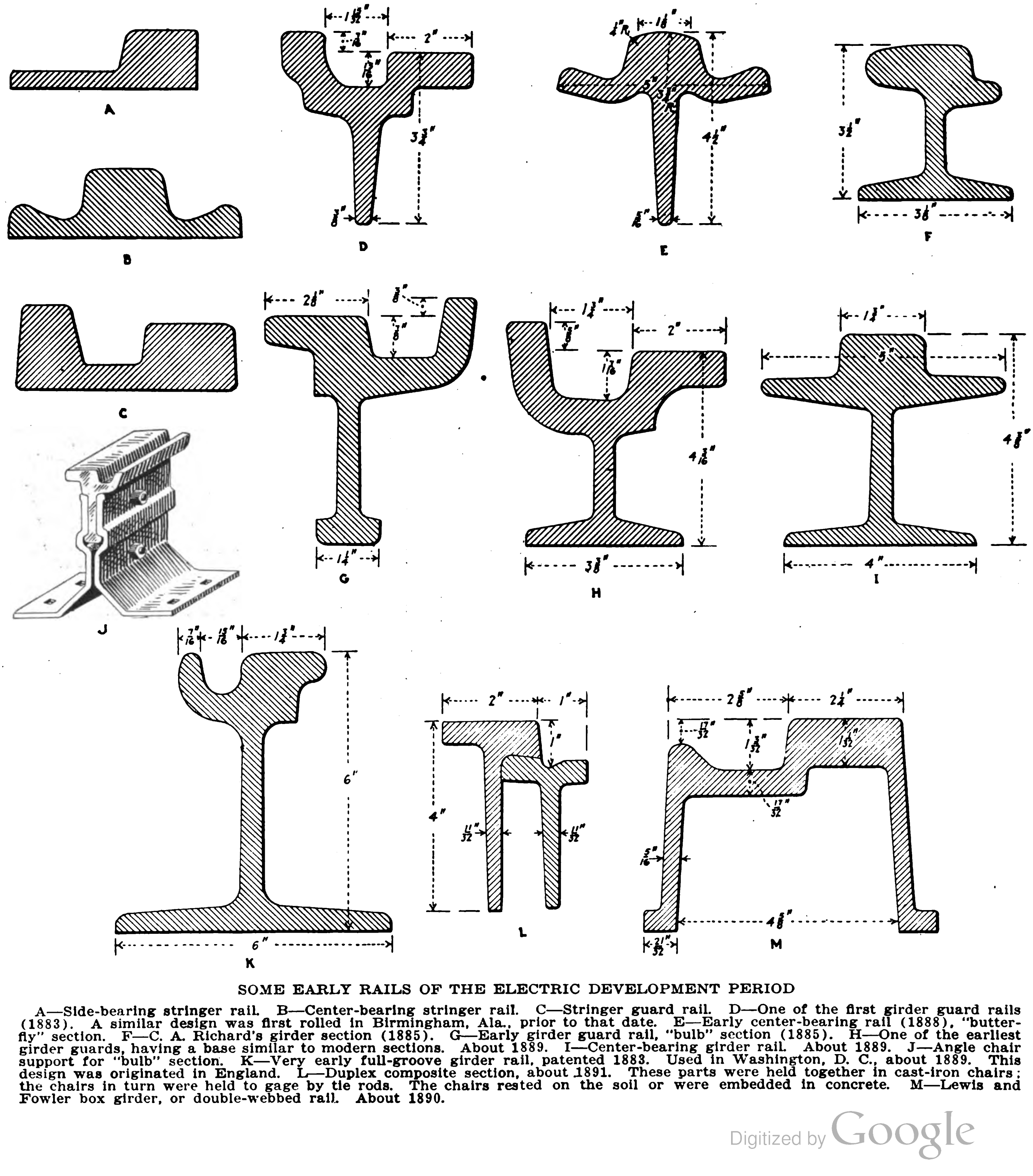
The idea of placing the flange on the rail, instead of on the wheel, as it was in the early days was revived by C. B. Voynow in a paper read before the American Street and Interurban Railway Engineering Association in 1908. While Mr. Voynow presented an ingenious exposition of the subject, the practical impossibility of changing the entire street railway track system, to say nothing of finance, prevented any serious consideration of the scheme. Mr. Voynow's proposed rail section is reproduced on page 109.

The introduction of the groove in the stringer rail was probably the earliest means of providing room for the wheel flanges. It is understood that its invention in 1852 is credited to M. Loubat, a French engineer who was interested in American street railways. Fred Bland, in his paper on tramway track[1], states that with the exception of one or two of the earliest street railways, the English street railways have rigidly adhered to the groove rail and the use of any other form is now prohibited by the Board of Trade, which has jurisdiction in such matters. Incidentally, the better pavements which prevailed in England in the early days permitted a wide use of the groove rail.

The first girder guard rail similar to section "D" on this page was rolled in Birmingham, Ala., at a little mill with which A. J. Moxham, later president of the Lorain Steel Company, was connected. This was prior

---

[1] Journal of Permanent Way Institution, Inc., of Great Britain, Dec. 1918, page 113, abstract in ELECTRIC RAILWAY JOURNAL, Dec. 28, 1918, page 1144.

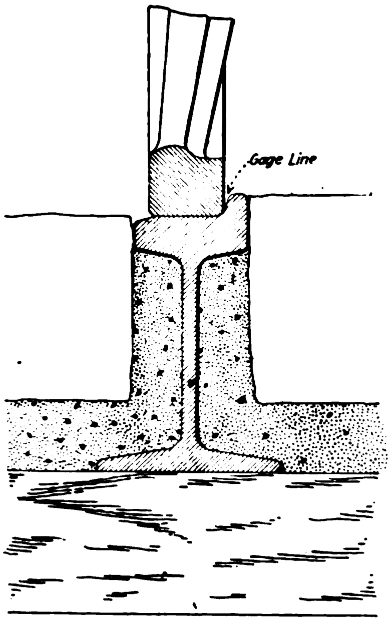


SOME EARLY RAILS OF THE ELECTRIC DEVELOPMENT PERIOD

A—Side-bearing stringer rail. B—Center-bearing stringer rail. C—Stringer guard rail. D—One of the first girder guard rails (1883). A similar design was first rolled in Birmingham, Ala., prior to that date. E—Early center-bearing rail (1888), "butterfly" section. F—C. A. Richard's girder section (1885). G—Early girder guard rail, "bulb" section (1885). H—One of the earliest girder guards, having a base similar to modern sections. About 1889. I—Center-bearing girder rail. About 1889. J—Angle chair support for "bulb" section. K—Very early full-groove girder rail, patented 1883. Used in Washington, D. C., about 1889. This design was originated in England. L—Duplex composite section, about 1891. These parts were held together in cast-iron chairs; the chairs in turn were held to gage by tie rods. The chairs rested on the soil or were embedded in concrete. M—Lewis and Fowler box girder, or double-webbed rail. About 1890.

to 1880. In 1883 the Johnson Company rolled the guard "D." The early girders had no bases at first, and were generally held in some form of chairs. Even when the "bulb" began to appear as a sort of base the chair still prevailed and when the shallow girders having bases came forth, they also were carried on cast-iron chairs to provide for paving depth. A very low girder, about 4 in. high, was rolled by the Cambria Steel Company in 1877.

When we come to the full-groove girders, Washington and Cincinnati both claim priority of use, but the Washington design, imported from England, seems to have the preference. It certainly was patented in this country in 1883, with later patents in 1889.



MR. VOYNOW'S PROPOSED FLANGED RAIL SECTION

The grooved girder was an outgrowth of the tram girder, being formed at first by simply changing the rolls so as to bend the tram upward to form the groove. It was first developed in England as a means of bettering paving conditions near the gage line, to offset the ruts which tend to form as a result of heavy wagon traffic. Its increased use in America has followed the general betterment of paving conditions. Right here a digression may be made to note that the wagon makers are wiseacres. Originally, it is believed the rail gage was made the standard gage of 4 ft. 8½ in. because it was wagon gage also, and wagons were first used on rails. However that may be, the writer has observed that in cities where the gage of the tracks is 5 ft. 2 in., the wagon gage is the same, and that in all cities the wagons generally will readily follow in the tracks whatever the gage may be. We can be thankful that the steel-tired era for wagons is passing in favor of the rubber-tired automobile truck, which generally will transport far heavier loads with comparatively little damage to most track pavements.

FAR TOO MANY RAIL SECTIONS ARE IN USE

In the early days of electric operation, and down to a very recent period, each street railway engineer had his own ideas on rail design which resulted in a multiplicity of sections. In some cases franchises also permitted city engineers to specify what sections should be used and these engineers also exercised their "ability to design" in multiplying the number of sections. The result of all this is realized more fully when we remember that the manufacturers have catalogued over 400 different sections. On page 106 are shown a half hundred different sections which have been used on one large property alone.

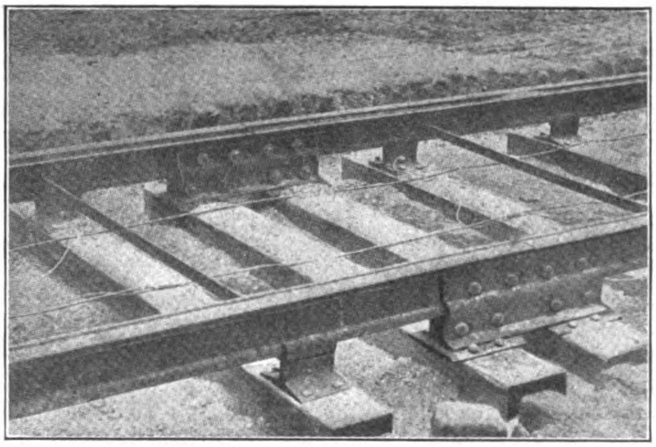
The Massachusetts Street Railway Association considered the matter of standard rails as long ago as 1892 when George W. Mansfield suggested six standard rails in a paper read before that body at its annual convention. The subject was also discussed before the American Street Railway Association in 1892, in a paper by John F. Ostrom entitled "Is a Standard Rail-Head Possible?" Those papers influenced the width of head and some other features to a considerable degree. Then followed a long interval of independent or "personal" designing and it has taken about twenty-three years for the industry actually to settle upon six standard girder rails.

About 1907, the committee on way matters of the American Electric Railway Engineering Association commenced the study of rail sections with the view to standardization. It was not until 1913 that the work reached a conclusion and the association succeeded in adopting two standard groove girder and two girder guard rails to match. Similarly two plain girder (high-T) rails were adopted and a series of low T-rails ("standard section rails") were settled upon. The latter are all American Railway Engineering Association standards.

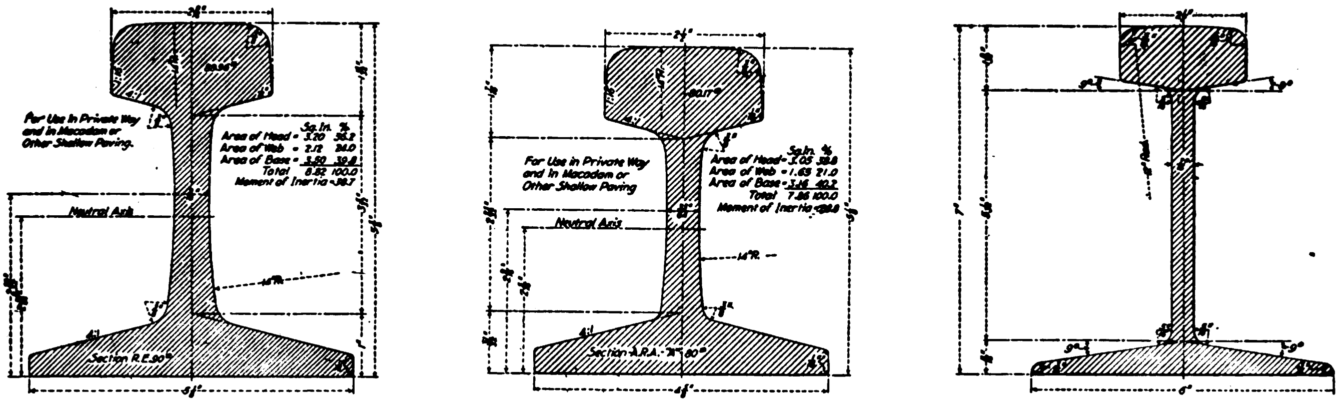
It will be noted that the tram girder was dropped entirely, but there recently has been an attempt in some quarters to revive it. (See article in ELECTRIC RAILWAY JOURNAL for Dec. 1, 1917, page 997.) While two depths of groove girders were adopted, a 7-in. and a 9-in., the writer believes that the 9-in. section has been used but little, as the tendency has been toward a very general adoption of the 7-in. depth, which seems to meet all requirements.

Martin Schreiber discussed these standard rails in an interesting article which appeared in the issue of this paper for April 11, 1914, page 812, giving a historical resumé of the work of the way committee on the subject of standard girder rails.

At first considerable objection was made to the new standard groove girder sections on account of their increased weights. The writer has held, however, that the increase was warranted by the requirements of good design and observations covering over four years of comparative performance of 105-lb. and 122-lb. groove girders has confirmed this view. Weight well distributed gives that very desirable factor of stability which is an essential, particularly in connection with electric railways in view of "deferred maintenance" which in many cases has meant no maintenance whatever until the cars

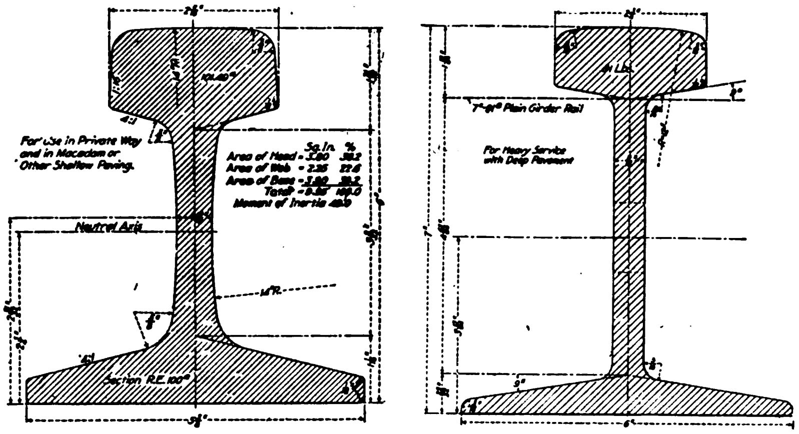


EARLY TRACK CONSTRUCTION IN BOSTON WITH ELECTRICALLY WELDED CHAIRS would no longer stay on the rails. The presence of pavement often causes needed maintenance work to be "deferred." Under such conditions an 80-lb. rail, for instance, will give a track of fair riding qualities when it would be almost impossible to run a car safely over a 60-lb rail. It is quite obvious that for a given car weight and service there is a limit below which we should not go in selecting rails. As between 60-lb. and 80-lb. sections, the latter will require far less maintenance under the same traffic; so much so that the difference in first cost is more than made up in lesser maintenance expense. In more than one instance a difference of 20 lb. in the weight of rail prevailing on a railway has decided the question as to whether a banking firm would finance new enterprises on old roads.



AMERICAN ELECTRIC RAILWAY ASSOCIATION T-RAIL STANDARDS
Left—90-lb. low T-rail; center—80-lb. low T-rail; right—7-in., 80-lb. plain girder (high T-rail)

In spite of the apparent simplicity of outline, there are a large number of factors which have an influence upon girder-rail design. Rails for use in paved streets present several added features which are not required in standard section (low-T) rails. While some of the general requisites of design were outlined by earlier committees, it remained for the 1911 way committee to present an analysis of section or design, which is a landmark in such committee work. That analysis presents a reason for every feature of a groove girder rail.



AMERICAN ELECTRIC RAILWAY ASSOCIATION T-RAIL STANDARDS
Left—100-lb. low T-rail; right—7-in., 91-lb. plain girder (high T-rail)

The more general principles which control design of girder rails are: (1) Performance of existing sections in use with the view of retaining the good features and eliminating defects. (2) Redistribution of metal to give maximum strength at critical points. (3) Use of an outline of section and distribution of metal which will permit ease of rolling without sacrifice of essential characteristics. (4) Possibility of combining all the features that are necessary in a standard.

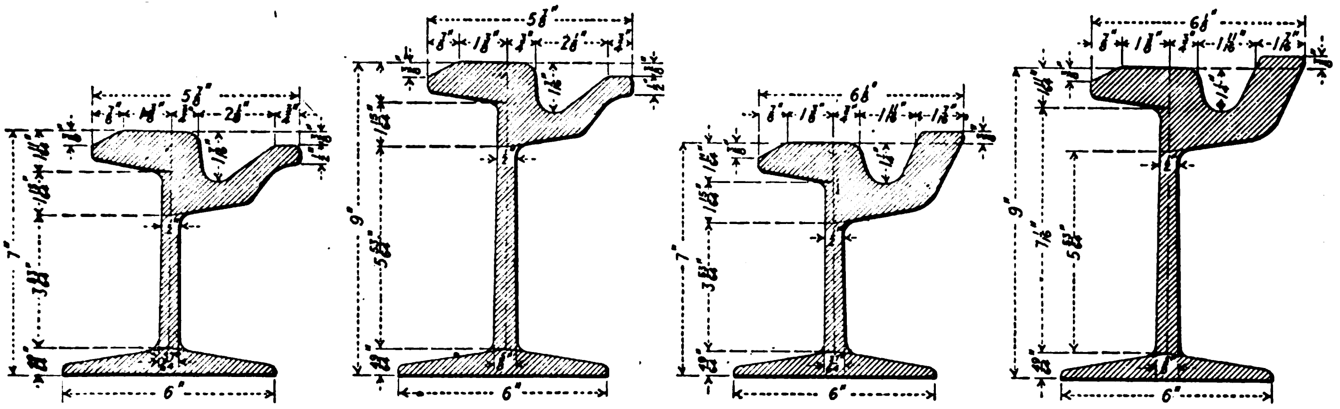
The analysis of section must consider the following items:

1. *Accommodation for Wheels*: (a) Width of head. (b) Outline of tread. (c) Top fillet of head. (d) Side of head. (e) Depth of groove. (f) Width and angle of groove. (g) Tractive contact and electrical contact.
2. *Vertical Stability*: (a) Depth of section. (b) Location of web. (c) Width of base.
3. *Permanency of Joints*: (a) Depth of section. (b) Outline for splicing. (c) Electrical bonding.
4. *Horizontal Stability*: (a) Location of web. (b) Thickness of web. (c) Fillets at web. (d) Width of base. (e) Width of tram. (f) Depth of section.
5. *Distribution of Loads on Foundation*: (a) Width of base. (b) Depth of section.
6. *Accommodation for Paving*: (a) Depth of section (b) Tram of rail.
7. *Accommodation for Vehicular Traffic*: (a) Distance of tram below head. (b) Width and thickness of tram. (c) Width of groove.
8. *Life in Service*: (a) Depth of head. (b) Depth of groove. (c) Thickness of tram. (d) Possible life of substructure. (e) Thickness of base.
9. *Weight*: (a) Economical distribution of metal.
10. *Manufacture*: (a) Distribution of metal for rolling. (b) Various angles and fillet details.

From the foregoing it is evident that the design of a girder rail is far from being a matter of rule of thumb and should only be undertaken after the most careful investigation of available sections, of which there are now far too many.

COMPOSITE RAILS

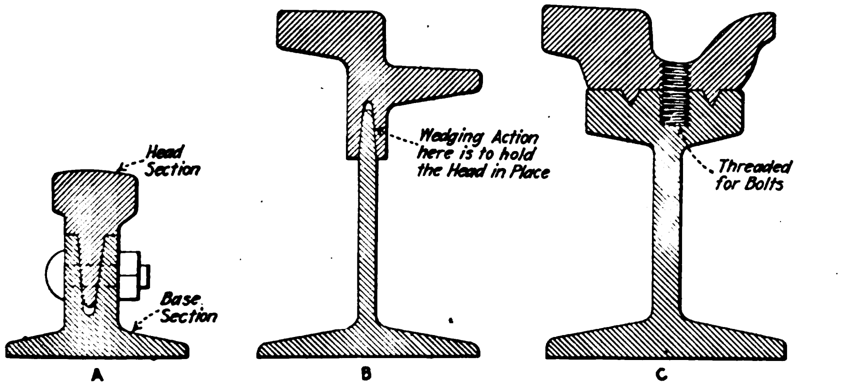
The fact that head wear usually determines the life of the rail and a loss of not over 20 per cent of the total amount of metal in the rail will cause its renewal has led to numerous attempts by inventors to devise some form of composite or renewable-head rails. A few of these sections are shown on page 111. The latest of these, the "Romapac" or continuous rail has been tested in service in Chicago. When the writer last saw it the defects in the scheme were becoming very noticeable and there does not seem to be much chance of its being given further consideration. The scheme is by far the most practical of the many renewable head designs which have appeared. The head section is "crimped" cold onto the base section by an ingenious machine and a similar machine is designed to remove worn heads. The Chicago test seems to have proved that the idea is fallacious in that the renewable feature introduces other conditions, not found in connection with the use of ordinary rails, which far outweigh whatever advantage may attach to the proposition.



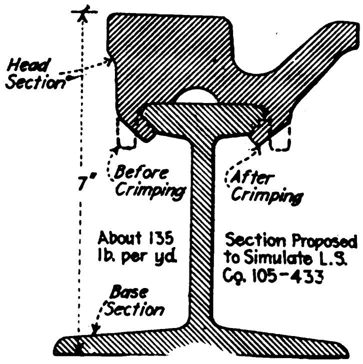
AMERICAN ELECTRIC RAILWAY ASSOCIATION GROOVE GIRDER RAIL STANDARDS
From left to right—7-in., 122-lb. rail; 9-in., 134-lb. rail; 7-in., 140-lb. guard rail; 9-in., 152-lb. guard rail

COMPOSITION OF RAILS

Early stringer rails were made of iron, some of them being cast to shape. About 1860, Bessemer steel came into use and held sway until about 1903, when the open-hearth steel process began to supersede it and there is but a very small tonnage of Bessemer now produced in this country as compared with open hearth. In 1913 the tonnage of Bessemer was only one-third that of open-hearth and in 1918 about one-fifth. This change has been largely due to the increasing scarcity of low-phosphorus ores suitable for the Bessemer process. Furthermore, the chemistry and quality of open-hearth steel is said to be under better control than in the Bessemer process, which tends to production of more reliable steel.



SOME RENEWABLE RAIL-HEAD SCHEMES
A—A. E. Smith's proposed compound rail. B—James Keaton's proposed compound rail. C—Bartheld's proposed compound rail



THE "RAMOPAC" OR CONTINUOUS RAIL DESIGN, HAVING THE RENEWABLE-HEAD FEATURE

Neither the steam nor the electric railways paid much attention to the composition of rail steel until within the last ten or fifteen years and the manufacturers' analyses and specifications were generally accepted without question. Nevertheless, the subjects of specifications and the need for them were discussed in a paper read before the American Street Railway Association at its meeting in Cleveland in 1892. The tendency in manufacture to put tonnage output ahead of quality led the railways into the field of specifications with beneficial results and both the American Railway Engineering Association and the American Electric Railway Engineering Association now have standard specifications for rails in their manuals. The specifications of the latter association cover girder rails only. For low T-rails, the specifications of the American Railway Engineering Association or of the American Society for Testing Materials are largely used. The American Society for Testing Materials also approved the electric railway association specifications.

Aside from iron, which constitutes approximately 98 per cent of the metal, the five most important elements in rail-steel are carbon, manganese, phosphorus, silicon and sulphur. Steel containing these elements with carbon predominating is called carbon-steel. Carbon has the quality of adding hardness to the steel, but too much of it tends to make steel brittle. Early Bessemer rails were low in this element, while recent rails contain three times as much as did the early rails. (See comparative analyses in Table I). The increase has been made in order to obtain greater wearing qualities. Another reason for the increase in carbon, in girder rails at least, was the desire to overcome the corrugation evil. Here it may be said that no very marked effect has been discovered.

An increase in carbon content for street railway rails as a means of increasing resistance to wear was suggested by A. J. Moxham in his paper on Rails read before the American Street Railway Association at its annual meeting in 1898. The late Dr. F. S. Pearson had also experimented along the same lines about that time when he was connected with the old West End Street Railway of Boston. Mr. Moxham's experiments were conducted in Brooklyn and a study of the condition of the experimental rails, including some of Dr. Pearson's rails, as found late in 1917 appeared in the issue of this journal for Jan. 26, 1918.

In recent years several special alloy-steels have been used in experiments with rails with the view of producing such qualities as high resistance to shock, high elastic limit and great resistance to wear. The alloys used principally are manganese, titanium, nickel, chromium and vanadium. In England, a rail having a high percentage of silicon, called the Sandberg rail, has been used with a large degree of success. As a general proposition alloy-steel rails are very expensive and of doubtful value. The addition of ferro-titanium, however, has become a fixed practice on the part of many electric railways. It has been called "rail insurance" and its addition to the steel tends to overcome impurities and prevent segregation. On this page is a reproduction of a sulphur print of a titanium-treated groove-girder rail. In exceptional cases manganese-steel rails have proven of value in sharp curves, having extremely heavy wear. Similarly, experiments with manganese and other alloy-steel rails in steam road curves have led to widely different opinions as to the ultimate economy, with the weight of the evidence somewhat against them. Incidentally, in carbon-steel girder guard rails, it has been found desirable to keep the carbon within the limits of the class A analysis (0.60 to 0.75 per cent carbon) of the American Electric Railway Engineering Association specifications in order to render the rails more suitable for bending to the sharp radii of street railway curves. The specifications of the same association covering materials for use in manufacture of special track work definitely provide the Class A analysis. Even this degree of hardness gives the special work manufacturers considerable trouble.

LENGTH OF RAILS HAS GRADUALLY INCREASED

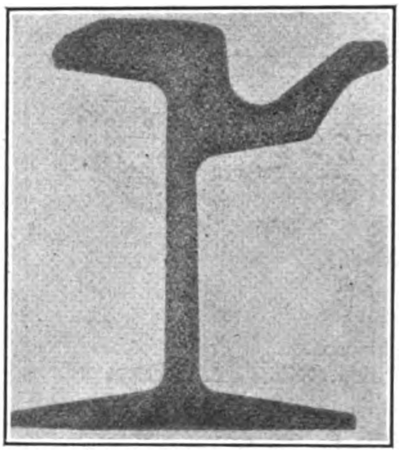
It has been stated that early strap rails were about 15 ft. long. Some of the early cast iron rails of this type were as short as 5 ft. Think of that! Twelve times as many joints as would be needed for a modern girder rail. The desire to reduce joint troubles as much as possible, by eliminating the sources, mainly has been responsible for the increase in length of rails. For many years 30 ft. was the standard length on both steam and street railways. Experiments with welded joints in street work undoubtedly contributed to the increase from the 30 ft. to the 62 ft. length which is now the standard for street railway rails. The necessity of providing for expansion is not present where rails are buried in pavements. This was proven by Moxham's experiments. (See his paper, "Experiments on the Expansion of Continuous Rails," in the 1892 Proceedings of American Street Railway Association.)

TABLE I—COMPARATIVE CHEMICAL ANALYSES OF STEEL FOR STREET RAILWAY RAILS, SHOWING INCREASES IN CARBON CONTENT

			Open-Hearth Steel, Since 1910, Am. El. Ry. Asso.	
Approximate Periods	Bessemer Steel, Prior to 1898, Per Cent	Open-Hearth and Bessemer, 1898-1910, Per Cent	Class A, Per Cent	Class B, Per Cent
Carbon	0.280	0.59	0.60–0.75	0.70–0.85
Silicon	0.026	0.056	0.20	0.20
Phosphorus	0.106	0.097	0.04 Not over	0.04 Not over
Sulphur	0.066	0.059	See Note	See Note
Manganese	0.790	0.830	0.60–0.90	0.60–0.90

NOTE—Sulphur runs under 0.05 per cent in basic open-hearth pig iron.

In open tracks on both steam and electric railways the practice is confined principally to the use of 33-ft. lengths as standard because of the necessity for provision against expansion and contraction of the steel with changes in temperature. However, 60-ft. rails have been used in some cases on interurban roads in open tracks without any particular trouble and with no special provision for expansion and contraction by means of slip joints. There is probably no very good reason why 45-ft. lengths could not be used on most electric railways, particularly in view of the fact that European railroads use lengths up to 59 ft., and 45-ft. lengths are standard on steam roads in England.



REPRODUCTION OF SULPHUR PRINT OF A TITANIUM-TREATED, 7-IN. GROOVE GIRDER RAIL

Mill equipment has probably had more influence than any other factor in keeping rail lengths at the 33-ft. standard because comparatively few mills could roll longer rails without considerable change in equipment. The question of shipping and handling has also entered but electric railways have little trouble on this score. Some manufacturers have claimed that it is impossible to give as good a surface finish to long rails as to short rails, but electric railway use of long rails has not indicated that this is true, unless the tendency of long girder groove rails to corrugate may be taken as an indication. Besides, long plain girder rails (high-T) seldom, if ever, suffer from corrugation. Of course, recognition must be given to the point that the factor which ultimately limits the length of rail in open tracks is the maximum expansion spacing which can be safely used at the joints.

In his annual report, President John D. Ryan of the Montana Power Company, says that aside from the completion of the Holter development and some substations and transmission lines under way at the beginning of the year, very little new construction was done. For the purpose of supplying the development with additional power outlet a new 100,000-volt standard bridge type underhung transmission line was constructed from Holter to the East Helena switching station, thirty-one miles. By means of a complete arrangement of air-brake switches this line offords duplicate service from Holter to the Butte and Great Falls districts, and also a direct feeder line from Holter to the Milwaukee Railway at Josephine, and allows for many combinations of transmission in case of line trouble.

Making Over Open Cars for Repayment Fare Collection

Shore Line Electric Railway Is Rehabilitating Rolling Stock Not Suited to Modern Methods of Collecting Fares

THE Shore Line Electric Railway, Norwich, Conn., has found it desirable to remodel fifteen open cars primarily to simplify the problem of fare collection. At first it was thought that all that would be necessary would be to sheath the sides, provide sash and cut aisles down the center, in order to accomplish the work at a minimum of cost. It was found, however, that a more thorough overhauling would be necessary and the result is as seen in the accompanying illustrations. About a dozen of the cars are now completed and a number have been in operation, very satisfactorily, for some months.

Some of the cars were provided with stationary sash, the remainder with sliding sash. The cost of the work in the latter case was about $1,250 per car, in the other case slightly less. No changes were made in the equipment of the cars.

The first step was to build out the lower portion of the side posts so that ½-in. poplar sheathing could be applied in a vertical plane. On this No. 16 gage sheet steel was screwed, steel strips about 2 in. wide being used to cover the joints. In the cars with stationary sash the sash were held in place by means of screwed vertical strips; for sliding sash the side posts were built out in the manner shown in the illustrations. The car dashers were not disturbed but a stool was fitted on the top of each to furnish a sill for the vestibule sash. To provide ventilation with the cars closed in, the old fixed sash in the monitor were taken out and mounted on pivots so that they could be opened.

Meanwhile the bulkheads were removed. To stiffen the body ends against racking sidewise flat steel carlines 2 in. wide and ½ in. thick, curved to conform to the archways were bolted over the archways, one to each.

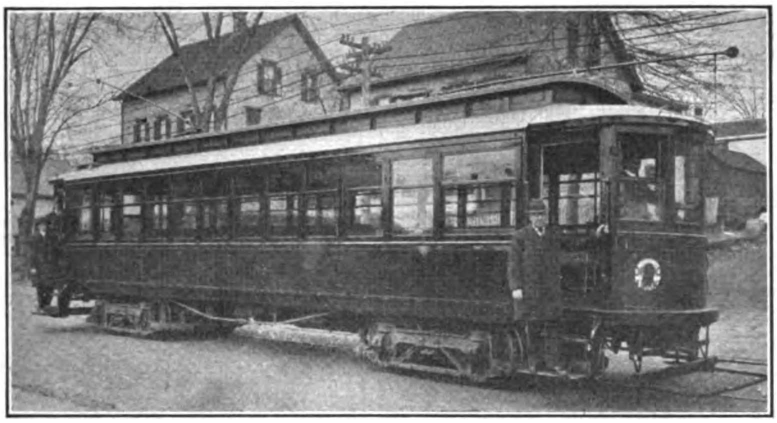
The seating arrangement decided upon was a combination of cross and longitudinal seats, Hale & Kilburn "Walkover" seats being used for the former. In what was originally a fifteen-bench open car this arrangement permitted the use of seven cross seats on each side and two 7-ft. longitudinal seats at each end.

To support the outside end of the cross seat the seat panel was blocked out in the manner clearly visible in the foreground in the car interior view. The old sheet-steel panels were allowed to remain. The seating arrangement provides an aisle 22½ in. wide. Folding steps and doors, with operating mechanism, were purchased from the Wason Manufacturing Company, which also furnished the window sash.

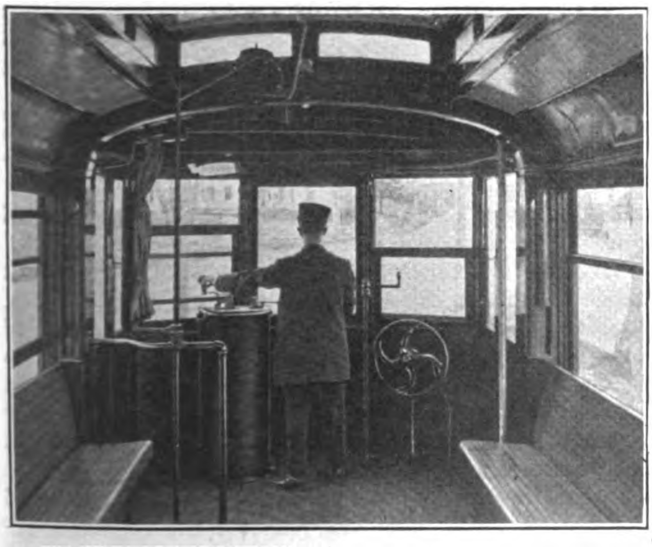
The canvas curtains used in the open car were retained, so that they serve as shades in all seasons and as storm protectors when the sash are removed as they are in summer. When the sash are out a heavy screen, 18 in. wide, is attached to the car side from end to end.

The above covers the principal items in the remodeling, others of which, such as the sliding curtains provided behind the motorman, can be noticed in the illustrations. The weight of the remodeled car is approximately 39,000 lb. All of this work was carried out under the direction of John Mellor, master mechanic of the railway company.

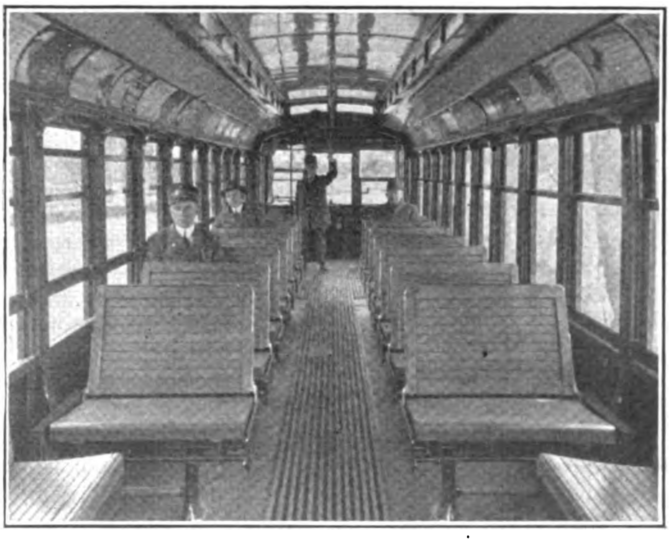
The remodeling of these cars is part of the general program of making the equipment available for modern fare collection, and to decrease the accident hazard to the lowest limit.



SUMMER CAR REMODELED FOR YEAR-ROUND USE AND PREPAYMENT FARE COLLECTION



LOOKING OUT THROUGH THE VESTIBULE OF SHORE LINE REMODELED CAR



INTERIOR OF REMODELED SHORE LINE OPEN CAR—SHOWING CONSTRUCTION DETAILS

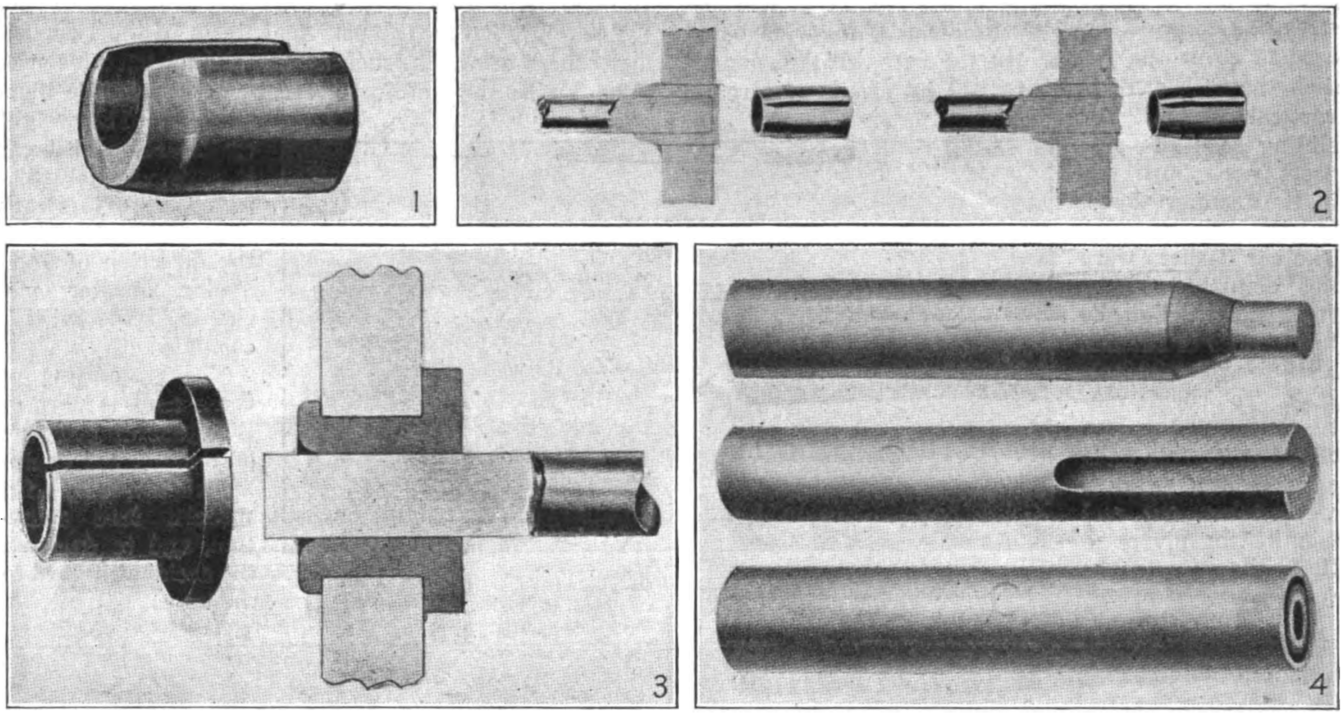
Bonds for Temporary and Permanent Track Construction

In This Article the Author Takes Up Various Types of Rail Bonds and Discusses Their Advantages and Disadvantages from a Practical Standpoint

By G. H. McKELWAY
Engineer of Distribution, Brooklyn Rapid Transit System

THE most common types of bonds are those in which the terminals are driven into or expanded in holes drilled or punched in a portion of the rail, usually the web but sometimes either the head or the foot. The earliest bonds were of this type and there has never been a time when any other type of bond has been more generally used.

The title "expanded terminal" bonds does not apply to all of these bonds, as in many of them there is no change in the shape of the terminal, but the close contact is obtained by driving into holes already drilled in the rail. The terminals are tapered and can be wedged tightly in the hole when driven home.



BONDING SLEEVES, CAPS AND CHANNEL PINS FOR TEMPORARY BONDING

Fig. 1—Channel pin for temporary bonding. Fig. 2—Soft steel bonding caps. Left, regular cap for end connection. Right, cross-connecting cap for through wires. Fig. 3—Copper bonding sleeve and attachment. Fig. 4—Tools for installing copper bonding sleeves. Top, drift punch. Center, driving tool. Bottom, Upsetting tool.

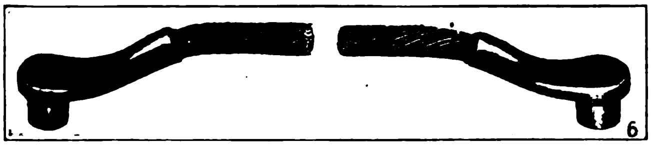
The latter type of bond is seldom used except for temporary work as it will not maintain the close contact and high conductivity of the true expanded terminal bonds. For service where the bonds will be needed for only a comparatively short time or on sidings where the main return circuit will not be affected and where a few high-resistance joints will not materially increase the total drop in voltage, these bonds furnish a cheap and fairly efficient means of connecting the abutting rails electrically.

The cheapest temporary bonding is done by the use of channel pins and pieces of old trolley wire. Holes are drilled in the web of the rail, the diameter of the holes varying from ⅝ in. to ⅞ in., depending upon the size of the conductor to be used with the channel pins. The diameter of the cylindrical portion of the pins should be 1/32 in. greater than that of the hole so as to insure sufficient contact and also provide a good grip on the wire. The wire is placed in the hole in the rail and also in the groove of the channel pin, and the latter is then driven into the hole with a hammer. To keep the pins from rusting and to improve the contact with the conductor and the rail the soft steel of the channel pins should be copper plated by the manufacturer.

Another but very similar type of bond uses what is called a bonding cap instead of the channel pin. This, too, is slipped onto the end of the conductor and placed in a hole which has been drilled in the rail. The cap is made of soft steel with a groove extending almost through the top to permit of its being squeezed tightly against the conductor and the rail. Its diameter is 1/32 in. greater than that of the hole to insure a tight fit between the cap and the sides of the hole. Caps used for cross-bonding have the hole for the conductor extending entirely through them so that the wire can be run through and connect to one or more rails while making connections between two others.

Another type of connection, very similar to the cross-connecting cap, but made of another metal and installed in a different way, is the copper bonding sleeve. This is shaped as shown in an accompanying illustration and, like the bonding cap and the channel pin, is finished with 1/32 in. greater outside diameter than the hole into which it fits. Owing to the softer metal of which this sleeve is made more care is needed in installing it than where steel terminals are used. To install it a hole is first drilled in the rail and then any burrs that may have been formed around the edge of the hole are smoothed off by driving a drift punch into the hole from the side where the wire is to enter. The next operations are to place the wire in the sleeve, insert the end in the hole in the rail, and then drive them home with a special driving tool which is slotted for about half of its length so as not to interfere with the bonding wire. When driven home the sleeve is clinched with an upsetting tool. This tool has a hole in the end into which the wire can enter but not the bonding sleeve. The result is that when hammered in, the projecting end of the sleeve is rolled back, forming a button or shoulder against the rail.

There is still another type of bond which is used for temporary work, which has the terminals attached to the conductor so that the bonds do not have to be made up each time that they are installed. This bond is called a removable mine bond and is made up of a piece of stranded wire 22 in. to 28 in. long soldered into tapered steel terminals, the terminals having slots in the top in which the wire can lie and be safe from the blows of the hammer during installation. The terminals are long enough to project well through the web of the rail so that they can be easily knocked out with blows from a hammer as well as being driven in by the same means.



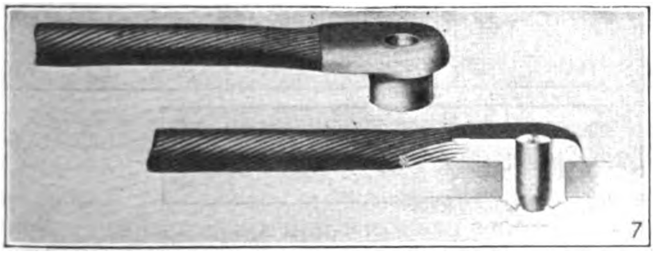


FIG. 6—SOLID TERMINAL PROTECTED RAIL BOND. FIG. 7—HOLLOW TERMINAL RAIL BOND

EXPANDED TYPE BONDS SHOULD BE USED FOR LONG LIFE AND PERMANENT CONSTRUCTION

All of the foregoing types of bonds, however, should be considered as of value for temporary work only, and when bonds are to be installed with the hope of their remaining in good condition as long as the track, some other type should be used. The forms most generally used for permanent work are the solid terminal compressed type or the hollow terminal pin expanded type, the former being in more general use.

The hollow terminal bond is easily installed without the use of any heavy tools and for that reason is preferred by many companies. Another reason for its being in favor, especially on electrified steam roads, or on high-speed lines where traffic delays must be avoided, is that there is no compressor or other equipment necessary for its installation, which would project above and be attached to the rail head, and which would require removal before the cars can pass. Another advantage of the hollow terminal bond is that it can be installed entirely from one side of the rail, which is of great value as it requires that the paving on only one side be opened up and it also makes possible the bonding of joints on curves or at other points where guard rail, which would prevent the use of a compressor, is used.

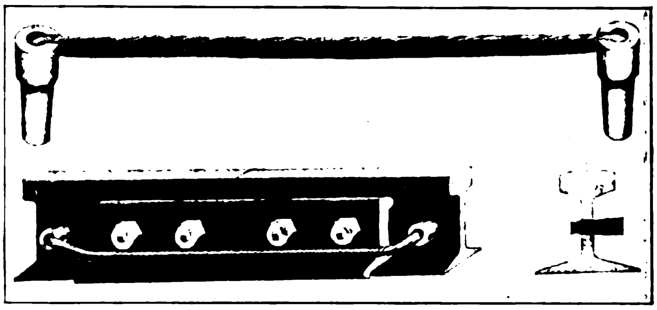


FIG. 5—REMOVABLE MINE BOND FOR TEMPORARY TRACKS

With the hollow terminal bonds the only tools needed for installation, after the holes have been drilled or punched and perhaps reamed, are a heavy hammer, weighing preferably about 3 lb.; a taper punch, and the little drift pins for plugging up the holes in the bonds. Sometimes a driving tool, to receive the larger end of the taper punch and protect it from the blows of the hammer, is also carried. This adds to the amount of the equipment to be carried around but prevents hardened steel pieces of the taper punch from being chipped off when the punch is struck.

The approved method of installing the bonds, after the holes have been prepared, is to insert the terminal into the hole and then drive the tapered punch entirely through the hole in the terminal, this punch having first been greased or oiled. This punch not only prepares the way for the drift pin which is to follow and insures its being driven straight, but also expands the hole in the terminals $\frac{3}{32}$ in., the punch being that much greater in diameter than the hole. The pressure between the terminal and the rail is still further increased, a moment later, by the driving in of the drift pin, which forces the copper out another $\frac{1}{32}$ in.

While the above is the approved method it is not the ordinary one, as it requires the use of too many different tools to be followed out carefully, unless more than ordinarily conscientious bonders are employed or the men are carefully watched. A job that will look just as good and which, in many cases, will be just as good, can be done with fewer tools and less labor, so that to the ordinary man there is no use in going to the extra trouble.

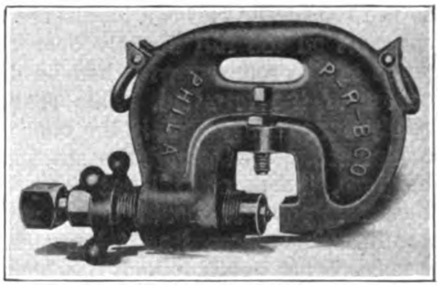


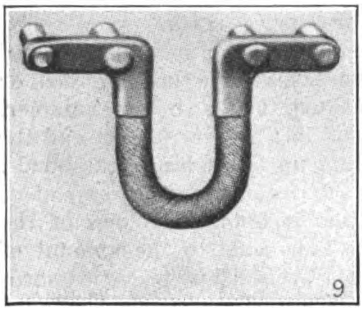
FIG. 8—SCREW WEB TYPE OF RAIL BOND COMPRESSOR

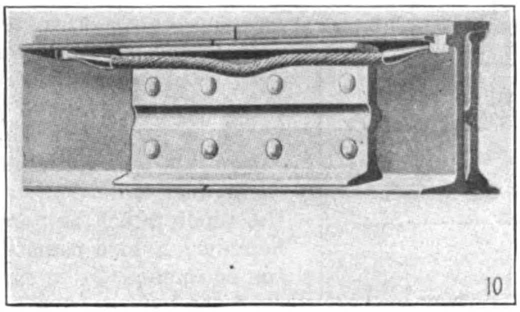
To install bonds in the simplified way, the terminals are merely pushed into the holes, perhaps tapped with the hammer to make sure that they have gone all of the way home, and then the drift pins are driven in, expanding the terminal by ⅛ in. at one operation. When this is done, very often the pin will not be driven in straight, and on other occasions, not being lubricated, it will tear the copper. However, while the railway company is the loser if the latter method is used, the men are gainers as they do not have to carry around any tools other than the hammer and a pocketfull of drift pins. No grease, punch, or driving tool is needed. Greasing the punch is a messy job which the men do not like and the punches are liable to be lost, this being especially true where the men are working on bridges or elevated structures without floors. When the punch is driven through the terminal, unless care is taken, it will not be caught but will drop down between the ties and never be recovered again.

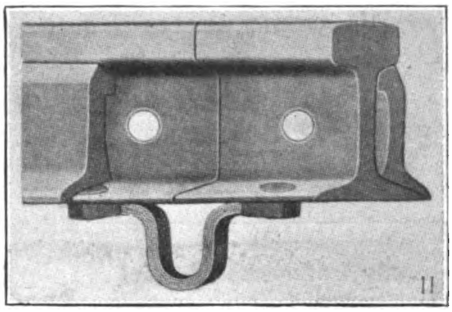
For the installation of compressed bonds less equipment is needed, the compressor being the only tool required, but this is so bulky as to weigh many times more than all of the tools used with the hollow terminal bonds. Bond compressors are made in sizes ranging from 25 lb. for use with the very small sizes of T-rail, up to 156 lb. which is needed to handle the large girder rails of 9-in. size. Hydraulic compressors often exceed 200 lb. in weight. Some of the compressors on the market are fitted with leveling or adjusting screws by which the vertical distance from the point of the plunger to the top of the rail can be altered and the compressor can rest on the rail directly over the bond hole. The point of the plunger will then be directly opposite the center of the terminal. This refinement, however, is really unnecessary and, if the bond holes have not been drilled at exactly the right height, something which often happens, the point will not compress the terminal at the exact point it should, unless the screws are turned again. This proceeding takes time, especially if the wrench is not handy, which it seldom is, and as a result the change in height is seldom made, as the class of men generally employed as bonders usually are none too careful in doing their work.

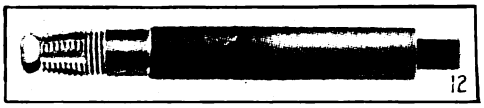
The ordinary way is not to make use of the screws but to remove them, if the compressor is fitted with them, and then not to attempt to place the center of the compressor directly over the hole but rather slightly to one side of it, thus when inclined, the jaws will cover the terminal and the point of the compressor will be at the right height. This height can be easily altered by sliding the compressor a short distance, one way or the other, along the head of the rail.

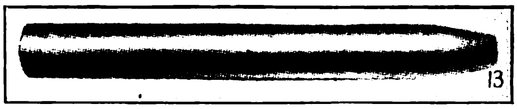
When making a comparison of the efficiency of the solid-terminal compressed bond with the hollow-terminal pin expanded bond, the claim has been made that the surface of the terminal of the latter type is everywhere brought into more intimate contact with the side of the hole than is the case with the compressed bond. The reason given for this is that the pressure from the pin is exerted equally at all points through the hole while the compressor is effective merely at and near the edges of the hole, and so hardens the copper that there is very little outward pressure at the center of the hole. When the copper in the terminals is sufficiently soft, however, and that is almost always the case, this trouble is not experienced in practice. Results of laboratory tests where, of course, greater care than that exercised in the field is taken, seem to indicate that the compressed bond has slightly less contact resistance than the pin-driven one. The difference in resistance of the two types, however, is so small as to be negligible for all practical work if the bonds are installed with the same care in the field as in the laboratory. That this is not done is certain, and it is the writer's belief that it is easier to deviate from the correct practice when installing the hollow terminal bonds than when the solid terminal type is used.











BONDS APPLIED TO VARIOUS PARTS OF THE RAILS AND TOOLS USED IN THEIR APPLICATION

Fig. 9—Twin terminal bond for head of rail. Fig. 10—Bond applied to tram of girder rail. Fig. 11—Rail bond applied to base of T-rail. Fig. 12—Groove cutter tap. Fig. 13—Blunting punch for installing twin terminal bond.

BUTTON-HEAD ON TERMINAL GIVES GREATER CONTACT AREA AND SEALS CRACKS

The compressor forms a "button" on the end of the terminal which not only gives a little more contact area by pressing against the web of the rail, but also seals any cracks that there might be between the terminal and the sides of the hole, thereby preventing the entrance of moisture which would form rust and soon greatly increase the contact resistance. To form this button properly the compressed terminal should be approximately ¼ in. longer than the thickness of the rail web, or about ⅛ in. longer than that required for a properly fitting hollow-terminal bond in the same hole.

It was formerly the custom to taper the bond terminals instead of machining them, but the present practice is to make them perfectly cylindrical and to machine them. The latter practice is much to be preferred, as the finished terminal can be made a very close fit in the hole and yet there can be no danger of its not going all of the way through the hole. The most troublesome form of bond was the old tapered-terminal type, one end of which would easily enter the hole while the other end would be too large, thus forming a shoulder just before the bond was all the way home. The tapered terminal also left too much rope at the small end which had to be filled up with compressed copper.

Compressed bonds have been used both in the base of all types of rail and in the tram of girder rails. Those compressed into the tram of the rails are now very seldom used although at one time they were installed quite extensively. They were made in comparatively short lengths and their installation required the disturbance of very little pavement. It did necessitate, however, the use of a special punch for making the hole in the rail and a special compressor for expanding the terminals in the holes so made.

For bonding under the base of the rail, special compressors and punches are needed of different types from those employed when the bonds are placed in the tram of girder rails. These bonds are still used and in much larger quantities than those in the tram of the rails. Their use, however, is confined mostly to third-rails instead of running rails. The bonds are made of ribbons in the form of a "U," the loop hanging down under the rail. On account of the angle of the base of the rail ordinary terminals cannot be compressed satisfactorily, as much more of the button would be made on the lower edge of the terminal than on the upper. To avoid this the terminals are beveled as shown in the illustration.

For installation on rails imbedded in concrete such bonds would have no flexibility, as they as well as the rails would be fixed firmly in the concrete. In such a situation, however, little flexibility would be needed, but on the other hand it would be almost impossible to get at the bonds in order to make any repairs to them. The U-bonds have been used under the base of the rails in open track and have given fairly good service there although interfered with more or less by the ballast. It is impossible to install the bonds in rail already laid in concrete, and the best way, both there and in open track, is to bond the rails before they are laid and then line up a long section of rail at one time.

BONDS FOR INSTALLATION IN HEAD OF RAIL

There are two types of expanded terminal bonds that have been designed to be installed in the head of the rail. In attaching the bonds, holes are drilled only part way through the head of the rail and then the bond terminals are driven into the holes with a hammer, completely filling them.

In an older type of not more than 250,000 circ.mil section two holes, each ½ in. in diameter and ½ in. depth, are drilled 1¼ in. apart in the head of the rail and close to its end. An annular groove or a series of threads is then cut in each hole, either by revolving a tool with cutting teeth in the hole and swinging it slightly so as to make the teeth cut the groove, or by tapping the hole so as to form the threads.

Any burrs around the edge of the hole are then removed by lightly driving in a blunting punch. After this the terminals, which are 1/16 in. longer than the depth of the holes, are inserted and then driven in with a hammer. The first blows are light ones but more force is used to complete the operation. Directly over each terminal is a boss which receives the hammer blows and these blows are continued until the bosses are flattened out and until that portion of the terminal connecting the studs has been hammered down somewhat. By that time the soft copper in the studs has flowed into the threads or ring in the sides of the hole so that it is practically impossible to remove the bond after it has been installed, and the close fitting ring of copper effectually seals the hole against the entrance of moisture that would cause the contact to deteriorate.

The use of two terminals gives an unusually large contact surface at each end of the bond, especially so since the stud makes contact with the bottom as well as the cylindrical surface of the hole.

Another advantage in the use of two terminals is that each prevents any twisting strain from reaching the other, thereby helping to keep the studs tight in the holes. The wires lead straight down out of the terminals so that there is a minimum of danger of wire breakage due to vertical movement of the rails, while the U-shaped loop is well designed to withstand stresses coming from other directions. These precautions are necessary, however, as the extended length of the bonds is ordinarily only 7 in., too short for track which has not a fairly good foundation and which is not well maintained.

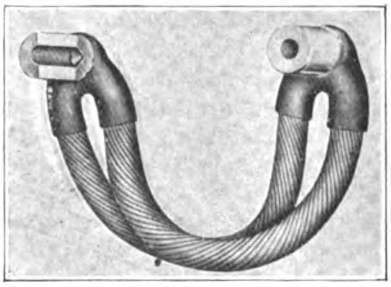


FIG. 14—SINGLE-STUD, DOUBLE-CONDUCTOR RAIL BOND

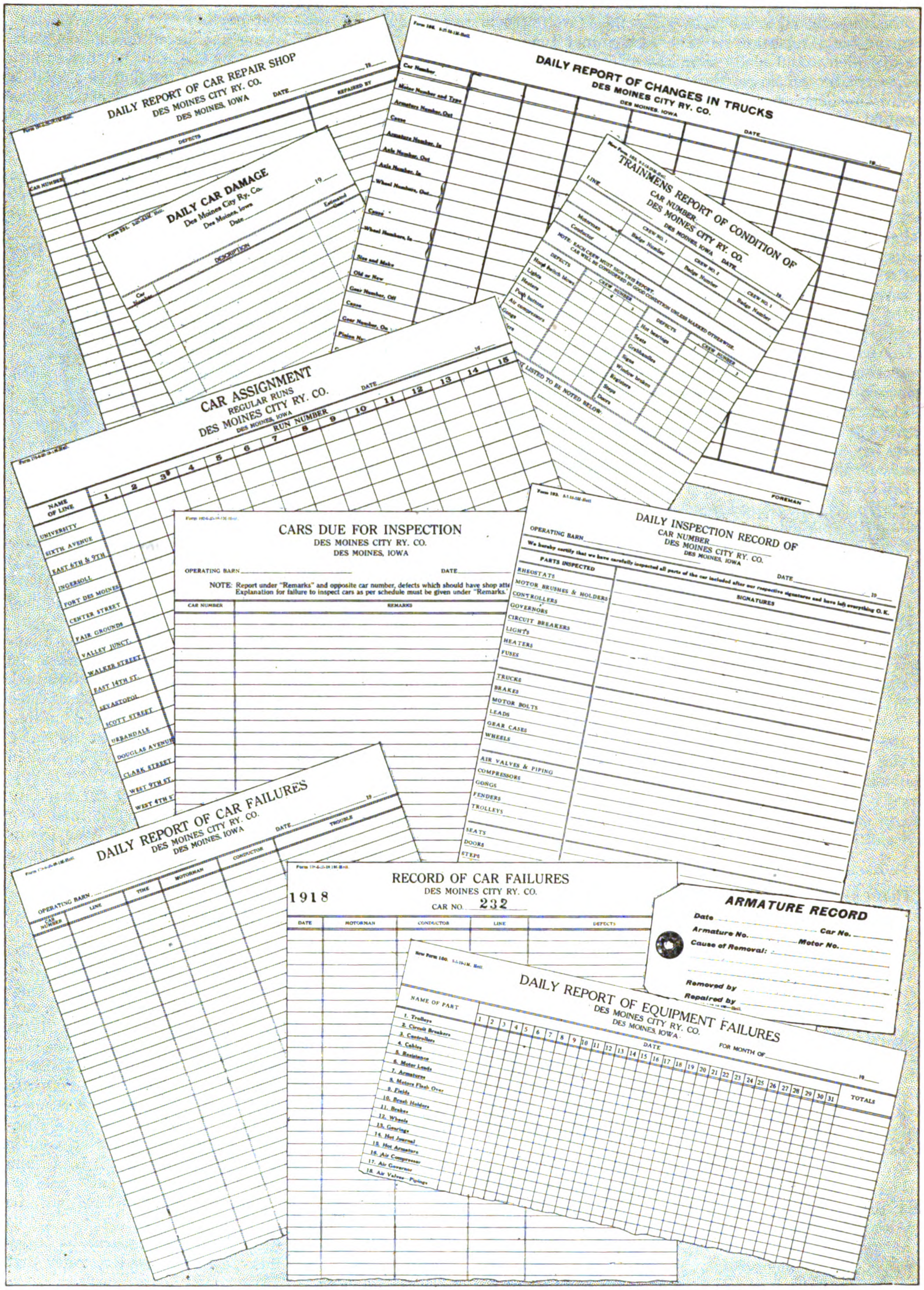
Another type of expanded terminal bond which is applied to the rail head is shown in the illustration on this page. This has only one stud at each terminal. To provide greater contact area than that in a hole drilled with the ordinary twist drill, a special milling cutter is used. This cuts an annular hole in the rail ⅝ in. in diameter and ⅝ in. deep and leaves a ¼-in. pin in the center of the hole. The stud of the bond is hollow to fit over this pin and into the groove surrounding it. The bond terminal is fitted into the hole and then expanded by blows from a hammer as is done in installing the twin terminal bond. The contact area is provided by the three sides of the annular groove.

Survey of Pole Lines

A letter has been sent to member companies of the National Electric Light Association by William C. L. Eglin, chairman of the committee on safety rules and accident prevention, calling to their attention the survey of existing pole lines throughout the United States and Canada, which the committee's engineers are conducting jointly with those of the Bureau of Standards.

The survey is being made to determine for future aerial line construction the effect of the loading requirements proposed in the new issue of the National Electric Safety Code. It will be conducted, so far as possible through the geographic sections of the N. E. L. A., and it is expected that the work will be sufficiently well organized so that each company to be visited will be notified in advance.

Each company is requested to be prepared to designate immediately the lines to be surveyed in order that all possible speed will be made.



DAILY REPORT OF CAR REPAIR SHOP
DES MOINES CITY RY. CO.
DES MOINES, IOWA
DATE 19
CAR NUMBER
DEFECTS
REPAIRED BY

DAILY CAR DAMAGE
Des Moines City Ry. Co.
Des Moines, Iowa
Date 19
Car Number
DESCRIPTION
Estimated Cost

DAILY REPORT OF CHANGES IN TRUCKS
DES MOINES CITY RY. CO.
DES MOINES, IOWA
DATE 19
Car Number
Motor Number and Type
Armature Number, Out
Cause
Armature Number, In
Axle Number, Out
Axle Number, In
Wheel Numbers, Out
Cause
Wheel Numbers, In
Size and Make
Old or New
Gear Number, Off
Cause
Gear Number, On
Pinion No.
FOREMAN

TRAINMENS REPORT OF CONDITION OF
CAR NUMBER
DES MOINES CITY RY. CO.
DES MOINES, IOWA DATE 19
LINE
Motorman
Conductor
CREW NO. 1 Badge Number
CREW NO. 2 Badge Number
CREW NO. 3 Badge Number
NOTE: EACH CREW MUST SIGN THIS REPORT. CAR WILL BE CONSIDERED IN GOOD CONDITION UNLESS MARKED OTHERWISE.
DEFECTS
CREW NUMBER 1 2 3
Hood Switch blows
Lights
Heaters
Push buttons
Air compressors
Gongs
DEFECTS
CREW NUMBER 1 2 3
Hot bearings
Seats
Grabhandles
Signs
Window broken
Registers
Steps
Doors
LISTED TO BE NOTED BELOW.

CAR ASSIGNMENT
REGULAR RUNS
DES MOINES CITY RY. CO.
DES MOINES, IOWA
DATE 19
RUN NUMBER
NAME OF LINE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
UNIVERSITY
SIXTH AVENUE
EAST 6TH & 9TH
INGERSOLL
FORT DES MOINES
CENTER STREET
FAIR GROUNDS
VALLEY JUNCT.
WALKER STREET
EAST 14TH ST.
SEVASTOPOL
SCOTT STREET
URBANDALE
DOUGLAS AVENUE
CLARK STREET
WEST 9TH ST.
WEST 4TH ST.

CARS DUE FOR INSPECTION
DES MOINES CITY RY. CO.
DES MOINES, IOWA
OPERATING BARN DATE
NOTE: Report under "Remarks" and opposite car number, defects which should have shop atte
Explanation for failure to inspect cars as per schedule must be given under "Remarks."
CAR NUMBER
REMARKS

DAILY INSPECTION RECORD OF
CAR NUMBER
DES MOINES CITY RY. CO.
DES MOINES, IOWA
OPERATING BARN
DATE 19
We hereby certify that we have carefully inspected all parts of the car included after our respective signatures and have left everything O. K.
PARTS INSPECTED
SIGNATURES
RHEOSTATS
MOTOR BRUSHES & HOLDERS
CONTROLLERS
GOVERNORS
CIRCUIT BREAKERS
LIGHTS
HEATERS
FUSES
TRUCKS
BRAKES
MOTOR BOLTS
LEADS
GEAR CASES
WHEELS
AIR VALVES & PIPING
COMPRESSORS
GONGS
FENDERS
TROLLEYS
SEATS
DOORS
STEPS

DAILY REPORT OF CAR FAILURES
DES MOINES CITY RY. CO.
DES MOINES, IOWA
DATE 19
OPERATING BARN
CAR NUMBER
LINE
TIME
MOTORMAN
CONDUCTOR
TROUBLE

1918
RECORD OF CAR FAILURES
DES MOINES CITY RY. CO.
CAR NO. 232
DATE
MOTORMAN
CONDUCTOR
LINE
DEFECTS

ARMATURE RECORD
Date
Armature No. Car No.
Motor No.
Cause of Removal:
Removed by
Repaired by

DAILY REPORT OF EQUIPMENT FAILURES
DES MOINES CITY RY. CO.
DES MOINES, IOWA
FOR MONTH OF 19
NAME OF PART
DATE 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
TOTALS
1. Trolleys
2. Circuit Breakers
3. Controllers
4. Cables
5. Resistance
6. Motor Leads
7. Armatures
8. Motors Flash Over
9. Fields
10. Brush Holders
11. Brakes
12. Wheels
13. Gearings
14. Hot Journal
15. Hot Armature
16. Air Compressor
17. Air Governor
18. Air Valves—Pipings

FORMS USED FOR FOLLOWING AND RECORDING MAINTENANCE WORK

Car Maintenance Records Facilitate Work

Simple, Accurate and Adequate Records Enable the Responsible Heads of Car Maintenance Departments to Supervise the Work Intelligently

By C. R. McMAHON
Master Mechanic, Des Moines (Iowa) City Railway

THE Inter-Urban Railway of Des Moines, Iowa, has one main shop, where all cars are sent for heavy repairs, such as changing wheels, armatures, painting, etc., two city operating carhouses, and one interurban operating carhouse where all inspections and running repairs are made. Cars receive a general inspection on a mileage basis with 900 miles between inspections; this work, of course, is being done at the operating carhouses. The record of mileage is kept at the main shop, and as cars are due for inspection the operating carhouse foremen are notified. The accompanying illustrations show several forms which are being used for following and recording this work.

The "Daily Report of Car Repair Shop" form is made out daily and shows all cars in the shop for repairs, also cars not "OK" for service at the end of a day's work. Checks can be made of these sheets to locate cars in shops for repairs, also cars not "OK" for service at the end of a day's work. Comparison can be made of these sheets to locate cars that come to the shop too often.

The form "Daily Report of Changes in Trucks" is filled out by shop foremen when wheels, axles, armatures, gears, pinions, etc., are changed. From this report the information needed to get the proper mileage, etc., is transferred to the respective cards shown in the accompanying illustrations.

The "Armature Record" tag is attached to all armatures removed from cars, and stays with the armature until it is completely repaired and tested "OK". The record is then transferred to a book kept by the armature-room foreman for future reference.

One of the most important of all our records is the blank called "Trainmen's Report of Condition of Car." This report is turned in daily by every car crew that puts a car in the carhouse. One blank report is put in a box provided on the car, nightly, by the man who takes the register readings. The first crew to take out the car signs up on the blank and leaves it with the car for the next crew, while the crew putting the car in the carhouse at night takes the report from the box and turns it over to the carhouse foreman. It is compulsory that all crews handling the car sign the report, regardless of whether there are any defects on the car or not. Reports are examined by the carhouse foreman, and when the defects are repaired he signs the reports and sends them to the master mechanic's office for examination and filing. We have found these reports to be valuable to the claim department in settlement of claims where defects to cars were claimed, as reports quite often show that the train crew had reported the car in good condition on the date of an accident.

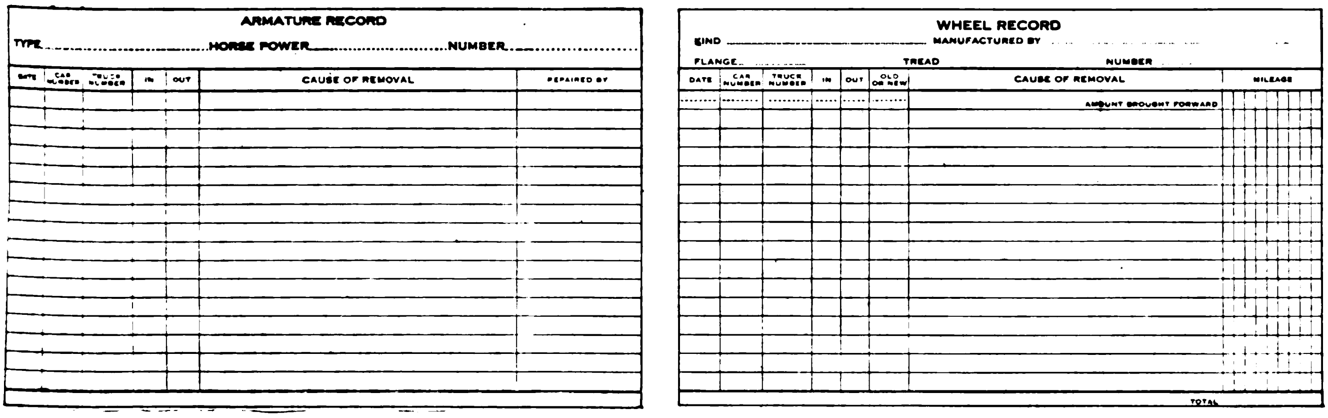
The form "Daily Car Damage" is made out daily and sent to the superintendent of transportation. This lists all damage done to a car, such as broken glass, fenders, steps, collisions, or anything where the crew may be responsible for the damage. With the proper follow-up system, this damage can be kept at the lowest point.

The "Car Assignment" form is sent to the main shop from operating carhouses, showing where all cars are running. One blank is used for regular runs and one for tripper runs. From our sheet showing the mileage of each particular run, the individual car-mileage is added till it totals 900.

The form "Cars Due for Inspection" is sent daily from the main shop to the different operating carhouse foremen. It shows the cars due for inspection on the following day. When cars are inspected the form is returned to the main shop with any notes under "Remarks" to show why cars listed opposite were not inspected.

The "Daily Inspection Record of a Car" form is filled out as to car number, date and operating carhouse, by the foreman and put on all cars due for inspection on that date. As the different men repair and inspect the equipment they sign their names opposite the parts listed. Reports are checked by the foreman at the end of the day and then are sent to the main shop for filing.

The form "Daily Report of Car Failures" is made out daily by the operating carhouse foreman, and sent to the main shop. All cars pulled off the line for any



ARMATURE RECORD

TYPE........ HORSE POWER........ NUMBER........

DATE	CAR NUMBER	TRUCK NUMBER	IN	OUT	CAUSE OF REMOVAL	REPAIRED BY

WHEEL RECORD

KIND........ MANUFACTURED BY........

FLANGE........ TREAD NUMBER........

DATE	CAR NUMBER	TRUCK NUMBER	IN	OUT	OLD OR NEW	CAUSE OF REMOVAL	MILEAGE
						AMOUNT BROUGHT FORWARD	
						TOTAL	

ARMATURE AND WHEEL RECORD FORMS SHOW SERVICE OBTAINED defect are listed on this form. At the main shop these are transferred to the form shown as "Record of Car Failures," there being one of these blanks for each car, and by reference to them all the failures made by any particular car can be seen at a glance. It also shows the lines the car was on, and the motorman and conductor running the car at the time, thus giving a chance to check up and find out whether the fault lies with the car or the crew.

From the "Daily Report of Car Failures" the form "Daily Report of Equipment Failures" is also made up. This shows at the end of the month the total number of failures and the exact number from any particular cause. On a large sheet similar information is shown for the full year.

A record is also kept showing the number of cars turned in for defects by each individual motorman, who are all listed by badge numbers. This information is also taken from the "Daily Report of Car Failures" sheet.

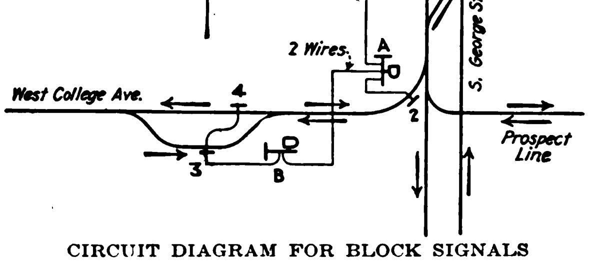
Increased Signaling on the York (Pa.) Railways

The Use of the Tracks Signaled by Other Railway Lines Necessitates a Special Layout

THE York (Pa.) Railways has recently increased its equipment of Nachod automatic signals by installing a block of two signals involving novel features required by the track layout.

Referring to the accompanying diagram, the block to be protected is on West College Avenue from South George Street to the College turnout, and is used both ways by the North York-Princess Street line with fifteen minutes headway. At College turnout the layout is standard, with signal *B* near the switch point and facing toward the turnout. Trolley contactors 3 and 4 are located on the siding as shown, 3 being ordinarily used as a signal setting contactor, and 4 as a clearing contactor, though they are both of the "directional" type and function selectively to set or clear the signals according to the direction of the car. The signal *A* at the other end of the block faces north on South George Street.

It is necessary that North York-Princess Street cars set the block *A-B* on South George Street before passing into the single track; and it is this condition that causes the special layout. Of the double track on South George the southbound is also used by two other lines that do not use the block *A-B*; these being the South George-Jackson line with fifteen-minute headway, and the Red Lion-Windsor line with hourly service increased to half-hourly morning and evening. Thus any contactor placed on the south-bound track on South George would be traversed also by the two lines just mentioned. The trolley contactor for setting the signals, located at point 1, is therefore of the "current selective" type. North York-Princess cars will use two or more points of power on the controller while passing the contactor, which will set the signals, while the other cars mentioned will drift under it and not affect the signals. Neither will these motormen observe the indications.



CIRCUIT DIAGRAM FOR BLOCK SIGNALS

The clearing contactor for signal *A* would be placed on the crossover were it not for the fact that the crossover, as well as the northbound track, is used also by the Prospect cars with 30-minute headway. It is therefore placed at the point 2 on the single track curve and connected "uni-directionally" to clear only, it being inert when traversed westward by the entering car. The arrows on the plan show the direction of cars.

MOUNTING OF SIGNALS AND JUNCTION BOX

The signals are of the permissive variety, known as type CD. When the block is taken from one end, say *B*, the signal *A* governing opposing movements goes to "Stop", signal *B* showing permissive to allow following movements through the block, while signal *A* at stop prevents opposing movements until the block is again vacant. This protection of a number of cars in the block is accomplished by a counter in the signal relay.

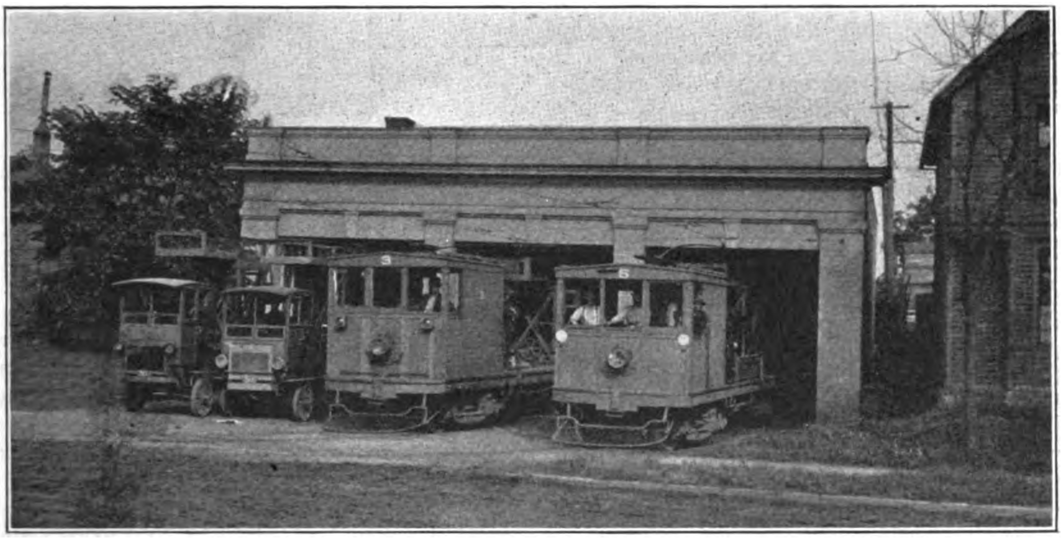
The trolley contactors in the overhead are connected as directional and uni-directional and are of the shunt type, while the current selective contactors are of the series type. All of them are without moving parts and make a soft wiping contact with the flanges of the trolley wheel. The signals (as shown in the accompanying halftone) are in cast-iron cases mounted on reversible iron brackets offset from the pole. They give indications by combined lights and disks simultaneously displayed, and have three positions. The signal relay, including magnet coils, contacts and resistances, is immersed in a tank of oil forming the lower part of the case. A junction box lower on the pole gives convenient access to the circuits for fusing, testing and for manual control. The signal itself may be lowered to the ground without disconnecting the cable. Two line wires through the block connect the signals.

The National Board of Fire Underwriters has issued for members of the National Safety Council a special edition of the list of appliances inspected for accident hazards. Copies may be secured either from the underwriters or the safety council, with offices in Chicago, Ill.

The Indianapolis Traction & Terminal Company is rebuilding its cars for pre-payment operation. One hundred and forty-nine cars had been changed up to May 1, and others will be altered as they come into the shop for overhauling. The cars are single-ended.

Tower Trucks and Cars at Minneapolis

The Twin City Company Has Built Four Auto Towers and Four Tower Cars, Which Handle All of the Emergency Work in Minneapolis and St. Paul



THIS EQUIPMENT TAKES CARE OF THE OVERHEAD ON THE MINNEAPOLIS DIVISION

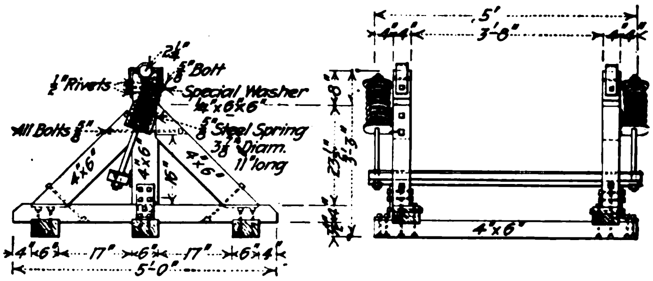
IN THE MAINTENANCE and construction of more than 450 miles of overhead system the Twin City Rapid Transit Company, Minneapolis, uses four automobile tower trucks and four tower cars, half of them in Minneapolis and half in St. Paul. Although the tower equipment used on various railway systems is similar, this equipment is of particular interest in some details because it is standard throughout and because it was all built by the company.

The four automobile tower trucks are each equipped with a 2-ton commercial chassis. Trucks 1, 2 and 3 are each equipped with 35-hp. engines while truck 4 has a 45-hp. engine and weighs about 2000 lb. more than the three other trucks. The towers are built of wood, fir being used in most parts, steel being used only as bracing in the platform and for the sliding surface of the removable section. The vertical members are 3-in. x 3-in., cross-braced by ¾-in. x 3-in. members in the lower section and by 1⅛-in. x 3-in. members in the upper section. The framework is bolted together with ⅜-in. carriage bolts. The truck body has an over-all length of 16 ft. 10 in. About 7ft. at the rear end of this is taken up by the tower. The over-all width of the truck is 6 ft. The tower when lowered stands 12 ft. 1¾ in. high from the ground and can be raised to a height of 12 ft. 7¾ in. The height lowered is limited by the low overhead clearance of some viaducts under which the trucks must pass. The tower platform measures 10 ft. x 3 ft. 7½ in. with an overhang of 5 ft. 11½ in.

MAIN FEATURES OF TOWERS

One of the main features of the towers is that they are designed for complete rotation at the base. The reason for this is the desire for greater stability than usually results with rotation of the platform only. The radius of rotation is 2 ft. 10 in. and the stationary surface is a 3-in. x 3-in. x ⅜-in. angle ring, the bearing surface of the tower corners being steel plates. The tower is revolved by hand and is held in position by cam levers. It is also raised and lowered by hand, an eight-tooth sprocket on the crank operating a forty-tooth sprocket on the drum axis by means of a No. 55 Jeffrey detachable chain. This operation is easily accomplished by one man. Details of the tower equipment are shown in the accompanying illustrations.

A supply of tools and small equipment is carried in boxes at the back of the truck while ropes, tackle, larger equipment, 500 ft. of span wire and 200 ft. of trolley wire are hung conveniently on hooks on the sides of the tower. Signals are transmitted to the driver by a gong located on the tower. The cab is entirely inclosed for cold or inclement weather, although windows on all sides can be lowered when desirable. The trucks are equipped with 4-in. single tires in front and 4-in. dual tires in the rear. These tires give an average of 10,000 miles. The trucks weigh stripped from 6500 to 7100 lb. and the crew comprises three men.



RACK WITH BRAKE FOR TROLLEY WIRE REEL ON TOWER CAR

CAR TOWERS SIMILAR TO THOSE ON TRUCKS

The towers for the cars are very similar in construction to those used on the trucks. The vertical members are the same but the cross-bracing is ⅞ in. x 3 in. in the lower section and the same in the upper section. While the auto tower measures about 4 ft. square the tower on the cars is about 4 ft. wide by 6 ft. long. This tower also is not quite as high, either lowered or raised, as is the auto tower and has a little greater overhang. The rotation feature on these towers is the same as that already described, the radius of rotation in this case, however, being 3 ft. 9 in. The arrangement for lowering and raising these towers is similar, with the exception that one tower is equipped with a three-cylinder air motor for air operation.

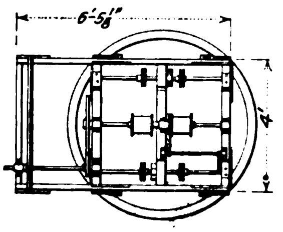
The capacity for tools on the cars is more extensive than on the trucks. On one side of the cab is a work bench with vise, etc., and on the other a series of pockets or bins containing all kinds of small supplies. The cars are also equipped with a reel of approximately 1 mile of trolley wire mounted on a rack or wench equipped with a brake.

The tower cars were built entirely by the company. The trucks are standard Twin City equipped with 4 GE-57 motors geared for a speed of 45 m.p.h. By means of a series-multiple switch the four motors can be operated on a series in the city and when stringing trolley wire giving a speed of about 4 m.p.h. on the first notch of series. The control is General Electric K-14. The floor framing is 4-in. x 6-in. yellow pine reinforced by 6-in. pine channels for the side sills. The flooring is 2-in. pine. The length over the bumper is 40 ft., the width 7 ft. 8 in., the cab is 10 ft. long and the height from top of rail to top of cab is 11 ft. 4 in.

On construction work the trolley wire is strung alive and furnishes energy to the motors of the car by a unique device as shown. The end of the reel is attached to the live overhead at the starting point. By means of a hook over the trolley wheel an auxiliary wheel is suspended and the new wire being strung passes through this wheel and over a roller on the front of the lower platform. Thus the energy for operation is furnished through the new wire being taken from the reel. Four men with this equipment can take down and reel up 1 mile of old trolley wire and string the same amount of new wire in four hours.

The auto-towers are used on emergency repair work and for small maintainance and construction, as they can be located beside the track with no interruption to traffic. The cars, however, are generally used on any work of over two spans in length and where traffic is light.

This equipment has proved of great assistance in carrying on the maintenance work of the system and its operating cost has been very low, as is shown by the following:



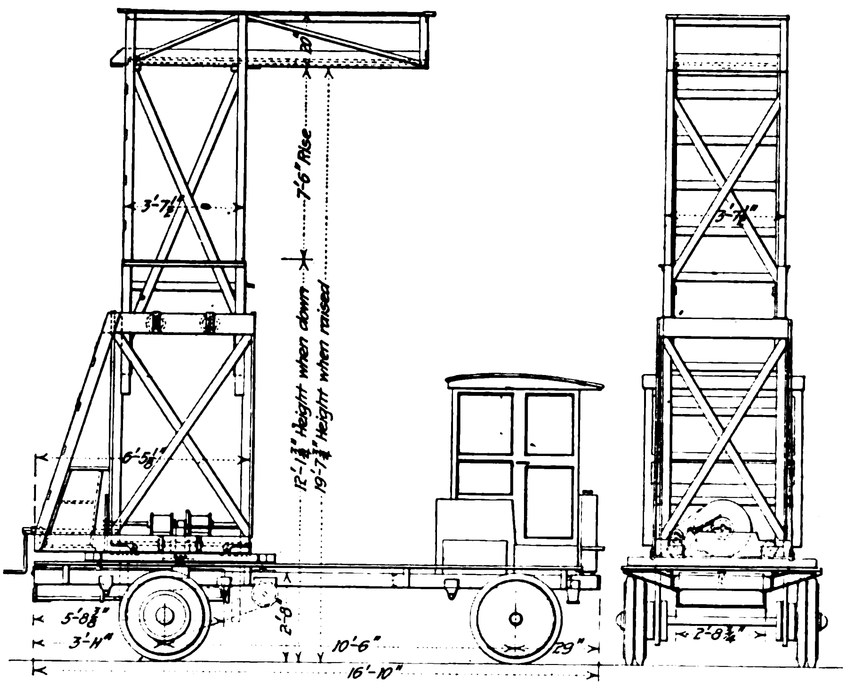
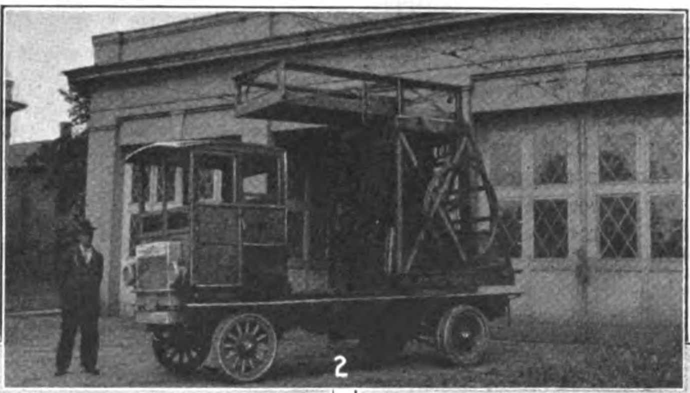
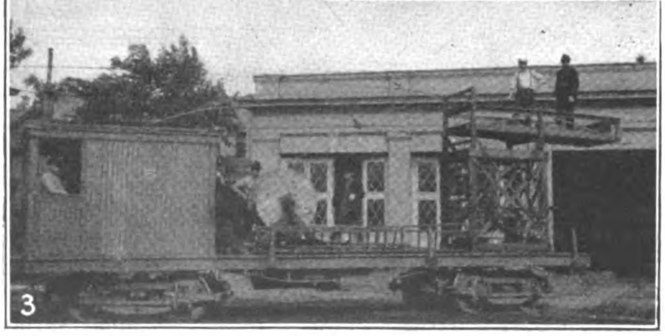
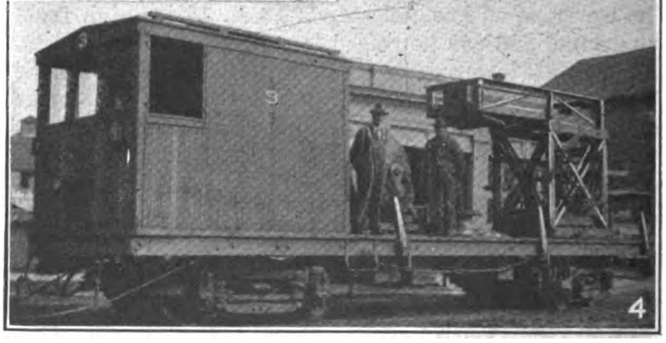


FIG. 1. DETAILS OF AUTOMOBILE TOWER TRUCK CONSTRUCTION







TYPES OF AUTO TOWERS AND TOWER CARS

Fig. 2, the Twin City auto tower truck and its equipment; Fig. 3, stringing live trolley wire from which the car is operated; Fig. 4, the Twin City tower car and its equipment

The average cost to operate the tower trucks per registered mile for the years 1917 and 1918 has been:

Truck 1	0.1413 cent per mile
Truck 2	0.1576 cent per mile
Truck 3	0.1098 cent per mile
Truck 4	0.2069 cent per mile

These figures include all expense such as gasolene, lubricating oil, tires, insurance, painting and general repairs.

Unusual Method for Moving Two 250-Hp. Boilers

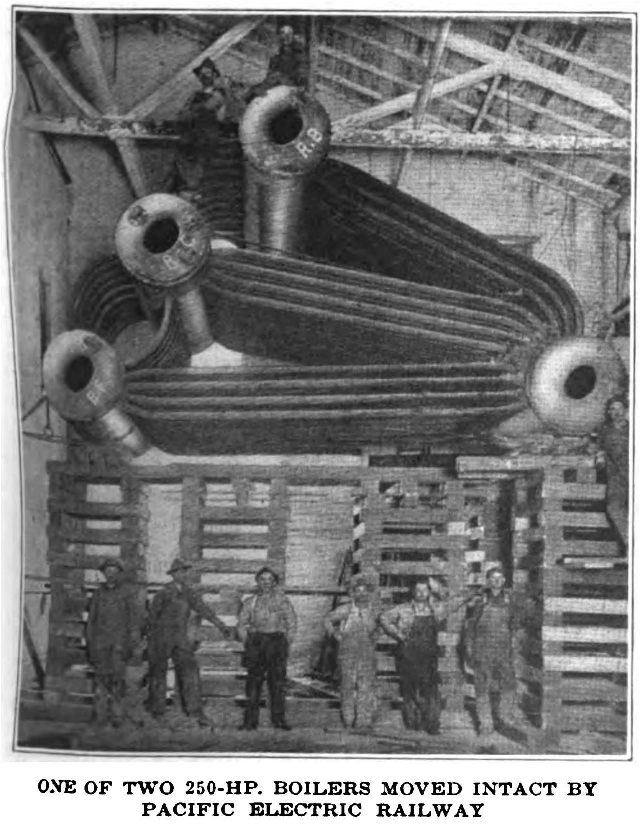
Pacific Electric Plan of Moving Two Boilers From the Vineyard Power Plant to a New Plant Located at Torrance Is Described

By Clifford A. Elliott

Cost Engineer, Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

IN AN article in the Electric Railway Journal for March 22, 1919, covering the removal and reinstallation of a power-plant smokestack, mention was made of the intended removal of two 250-hp. Stirling boilers from this company's Vineyard power plant to a new power plant at Torrance constructed to serve the car shops under erection at that point. When the occasion arose for the removal of these boilers it was at first thought to be impossible to remove each one complete, as each consists of four 24-in. drums with numerous 3-in. connecting tubes. The cutting of the tubes connecting the four drums was considered and it was estimated that it would cost approximately $3,000 to remove them and to weld them in place. A contractor however, successfully carried out this work without dismantling the boilers, with considerable saving in time and expense.

In carrying out this work each boiler was first released from its permanent position on the brick foundation, and the bolts used to hold the steel frames in place were removed. The rear end was then elevated to the same level as the front, and after cribbing had been set up the boiler was moved on rollers across the steam mains, but without touching them, and over additional cribbing to a point opposite the door. This door was in the side of a concrete wall of the power plant, and it was necessary to enlarge it to 4 ft. jamb by 10½ ft. high. A donkey engine located on a flat car outside the power plant was used to tow the boiler by means of a cable line. Planking was placed on top of the cribbing as a surface for the rollers. The maximum height of the cribbing units was 10½ ft. When the boiler had been brought to a point opposite the door it was lowered by removing the sectional units of the cribbing. It was then turned at right angles to the door, and moved on rollers and skids outside the building. Here it was again moved by means of rollers up an improvised timber incline over an 8½-ft. retaining wall onto a steel flat car which transported it to Torrance. Four flat cars were necessary to handle the two boilers and equipment. One car was used for each boiler, a third car for valves, door fronts and miscellaneous parts and the fourth for the breeching, donkey engine and hoisting equipment.



ONE OF TWO 250-HP. BOILERS MOVED INTACT BY PACIFIC ELECTRIC RAILWAY

Safety Cars and Advertising

IN A PAPER on the safety car recently delivered before the Arkansas Utilities Association, A. L. Faber, Westinghouse Electric & Manufacturing Company, said:

"The safety cars enable the railways to offer a service that will benefit the entire population of the community. The interrelation between full cars and the retail business of the city is perfectly definite. It is practically as much to the interest of the merchant to have efficient and sufficiently frequent service as to the street railway.

"Advertising of schedules and service conditions is, therefore, a very important factor, and since the interests are parallel, a booklet could be printed with representation of both the merchants and the railway in which the schedules and similar information can be given by the one and the sales message by the other. This booklet would represent the interests of the entire community and its cost would be very small to the railway company.

"With the application of the safety car, a broader advertising policy and such relief in fares as the individual properties require, the street railway interests have some hope of operating for the benefit of all concerned."

Be Wreckless — Not Reckless

The National Safety Council, electric railway section, uses the above phrase in summarizing the causes of car wrecks. The causes listed are: Insufficient headway, conversation with motormen, taking curve too fast, slick rails, not signaling at crossing, improper testing of equipment, unreported defects and misunderstood orders.

The Electric Railway Section of the National Safety Council announces the appointment of J. H. Mallon, safety engineer, Metropolitan West Side Elevated Railway, Chicago, as chairman of its bulletin committee.

Photo by Harris & Ewing, Washington, D. C.

NEW FEDERAL ELECTRIC RAILWAYS COMMISSION IN SESSION AT WASHINGTON, D. C.

Left to Right: Louis B. Wehle, representing Eugene Meyer, Jr., of the War Finance Corporation; Dr. Royal Meeker, commissioner of statistics of the Department of Labor; Edwin F. Sweet, Assistant Secretary of Commerce and vice-chairman of the commission; Charles E. Elmquist, president and general solicitor of the National Association of Railway & Utility Commissioners, who is chairman of the commission; standing, Charlton Ogburn, executive secretary of the commission; Philip H. Gadsden, chairman of the committee on readjustment of the American Electric Railway Association; Charles W. Beall, member of the firm of Harris, Forbes & Company, New York. Absent, George L. Baker, Mayor of Portland, Oregon; W. D. Mahon, president of the Amalgamated Association of Street & Electric Railway Employees of America, Detroit, Mich.

Federal Hearings Commence

President Pardee and Chairman Tripp Open the Railway Case at Washington — Extended Statistics Presented on Status of Industry — Other Witnesses Give Testimony

THE first session in Washington of the long-expected federal inquiry into the status of the electric railways of the country was held on Tuesday, July 15. One prior hearing was held in New York on June 19, when ex-President William H. Taft was the principal witness. Since that time the committee of one hundred has been organized to prepare and present the electric railway case, and this was the first meeting at which this committee was represented. The hearings were held in the large audience room on the twelfth floor of the Interstate Commerce Commission Building at Eighteenth Street and Pennsylvania Avenue, N. W., Washington.

Chairman Elmquist opened the session on Tuesday morning, shortly after 10 o'clock. The commissioners in attendance, besides himself, were Messrs. Sweet, Meeker, Wehle, Beall and Gadsden. Those absent were Commissioner Mahon and the representative of the American Cities League of Mayors, Mayor Baker of Portland, Ore. Charlton Ogburn, council of the commission was also in attendance.

The presentation of the case of the association and of the committee of one hundred was in charge of President Pardee, Chairman Tripp, Counsel Bentley W. Warren, Secretary Burritt, J. W. Welsh, and H. C. Clark. Others from the industry or the committee of one hundred in attendance at the first day's session included S. M. Curwen, W. M. Coleman, W. J. Clark, Barron G. Collier, E. J. Dickson, W. C. Ely, Van Horn Ely, F. W. Frueauff, Edwin Gruehl, W. F. Ham, G. E. Hamilton, J. H. Hanna, C. S. Kimball, J. B. Lackey, Randall Morgan, E. J. Murphy and J. H. Stephens.

ABSTRACT OF MR. PARDEE'S STATEMENT

Chairman Elmquist in opening the meeting first asked Mr. Pardee to explain the position of the electric railways. In his address Mr. Pardee said in part:

We are before your commission because a crisis has been reached in the conduct of this very important and essential enterprise. We are no longer able, under existing conditions, to continue in the performance of the functions which the electric railways are designed to perform. It is no longer a question of what return shall be allowed to the owners, it is a question as to what service, if any, shall be rendered to the public.

Owing to the complete system of control, and regulation exerted over us by the public authorities, which both prescribe our service and control our rates, we are unable to readjust ourselves to changing conditions as every other industry, not so hampered, is readjusting itself. We realize fully that your commission is without power to take peremptory action, or directly to put into effect any recommendations which you may make. You, however, bear the commission of the President of the United States; you were appointed at the joint suggestion of the Secretaries of Commerce and of Labor. Your conclusions and recommendations will have the confidence of the people and will carry with them the weight that must always be attached to the wishes and conclusions of the National Administration. Your appointment of the electric railway industry affords an opportunity of presenting to the public, whose representatives you are, a true picture of the state into which it has fallen through no fault of its own.

There are two major phases of the situation which we now face. The first is that there has never been a proper conception either on the part of the owners of these properties, nor on the part of the public, as to the factors which should govern the service to be rendered or the fares to be charged by electric railways. This situation, which existed before the war, is entirely unconnected with the changes wrought by the war, but is one of the fundamental reasons why the war has helped to bring disaster upon us.

The second phase was the direct result of the war. The government took control of our labor—it raised the wages of our employees in many cases as much as 100 per cent; it took command of our fuel supply, and fixed the prices which we were compelled to pay for coal; it fixed the price of every commodity that entered into the maintenance and operation of electric railways; in a vast number of cases it prescribed the service which we were to perform, and called upon us companies for construction involving many millions of dollars. In fact, there was not a phase of electric railway operation in which the government did not interfere, with the result that the cost of operating our roads was very greatly and materially increased. To assist us in bearing these burdens it did nothing.

We are not here to claim that this action of the government was not entirely necessary and entirely proper, or that it exclusively affected our industry. But we do say that its effect upon the railways of the country was the more pronounced and the more disastrous because, alone of all the industries affected, the public utilities were unable to apply the obvious remedy—an increase on their own volition in the price of their product to meet the increase in its cost thus forced upon them. These two phases of the situation we propose to lay before you in detail.

The association which I represent and the committee of one hundred, to which it has intrusted the presentation of its case before your commission, do not intend to impress upon you in detail their own views as to the remedies which should be applied to the cure of the situation. We do believe, however, that there are two fundamental ideas which will inevitably force themselves upon you for your consideration. The first of these is that the co-operation of the public is a *sine qua non* to the stabilizing of electric railway conditions; that there must be impressed upon the public a new conception of the relations between the communities and the public utilities which serve them; that the antagonism which has heretofore prevailed is disastrous to both interests, and that only when the public and the companies work together to secure efficiency and economy in operation can the desired service be furnished at a reasonable price.

The second is that in order to provide through the employment of private capital proper transportation facilities for cities and for rural districts the basis of compensation must be so determined as to provide an assured return and a rate of fare so flexible as readily and automatically to adjust itself to the cost of providing the service.

MR. WARREN OUTLINES CASE

At the conclusion of Mr. Pardee's address Bentley W. Warren, counsel for the committee of one hundred, outlined the case of the electric railways. He said that a very severe condition was confronting the industry and that the railways would endeavor to place before the commission statistics showing this condition and the possible remedies which might be supplied. He mentioned as an illustration of the situation that in Massachusetts, his own state, where there was an investment in electric railways of almost a quarter of a billion dollars and gross receipts last year of approximately $45,000,000, the deficit over operating expenses and fixed charges during 1918 was somewhat more than $5,000,000.

ABSTRACT OF ADDRESS OF GENERAL TRIPP

Mr. Warren was followed by General Tripp, who spoke as chairman of the committee of one hundred. General Tripp said in part:

We are here not simply to give you the views of investors who have already suffered a great loss and who are threatened with still greater loss, but also, as manufacturers, bankers and insurance men, to present this case in its very broadest aspects and as representing the business and industrial elements of the nation affected by an industry in which some $6,000,000,000 are invested, which has a revenue of $730,000,000 and which is in danger of complete collapse and dissolution. It jeopardizes more than the interests of those immediately connected with it. Its effect will be a real cause for alarm on the part of insurance companies, bankers, trust companies and other fiduciary institutions which in good faith and with then sound business judgment have invested savings intrusted to their care in the bonds and other securities of electric railways, and it certainly would be a matter of serious concern to manufacturers who find in the electric railways a customer for nearly $200,000,000 annually of their product.

The appointment of this commission is evidence that the extremely critical situation in which the industry finds itself is also a matter of concern to the federal government, and I take it the concern of the government arises not wholly nor perhaps primarily out of any particular consideration for the railways themselves, but rather that its effect upon the general business fabric of the country, to which I have briefly alluded, is the uppermost factor which led to your appointment; and, consistent with that, there are represented upon your commission the Treasury Department, the Department of Commerce and the Department of Labor.

The Treasury Department is interested because an industry, which requires each normal year new capital to the extent of some $200,000,000 and whose refunding operations require even a larger sum, cannot indefinitely remain in such a condition as the electric railways are now in without having an adverse effect upon the financial system of the country.

The Department of Labor is concerned because the question of wages and of working conditions and of employment are involved, not only as it directly affects railway companies but also as it affects the manufacturing companies which supply the materials and apparatus used by the railways.

The Department of Commerce is concerned because, to an extent seldom realized until strikes or other circumstances cause an abandonment of service, the business and commercial life of the country is closely bound up with the system of transportation afforded by electric railways.

The appointment of your commission furnishes the first opportunity for the electric railways to present their case as a national problem. The present methods of regulation and control of electric railways have failed. It needs no argument to prove that. The mere fact that a whole industry, covering the entire United States and operating under different local conditions—the mere fact that such an industry as a whole is on the verge of bankruptcy at a time when unregulated industries are at the height of prosperity speaks for itself.

PRESENT METHODS NOT SUFFICIENTLY ELASTIC

The present methods of regulation and control are entirely too inelastic to respond to the stress of changing conditions and have not permitted the adjustment of the price of the product to meet the cost of the product. Any method of regulation which does not permit the application of that simple rule will always be a failure. No doubt this is a fundamental truth which every one recognizes, but in the case of electric railways there has been introduced a psychological factor which has hindered the adjustment of the electric railway problem. The old system of contracts between communities and private companies, whereby the companies agreed for certain fixed fares to do certain fixed service, has resulted in the popular belief, which it has been hitherto impossible to eradicate, that furnishing street railway transportation through the medium of private enterprise amounts to giving away public privileges to private individuals who have realized enormous profits.

The relations between the municipality and the electric railway cannot be satisfactorily fixed upon relations of a simple contract such as might exist between two individuals. I entirely subscribe to the theory of state control and regulation of these utilities; and, that theory having been admitted, it is impossible for the parties to stand in simple contractual relations, and the idea should be entirely eradicated from the public mind and the proper conception of the functions of an electric railway be substituted. This concept I believe to be that the electric railways are acting as agents for the public in furnishing transportation to the public, and for that service they should receive an adequate and just return upon the money invested in such service on terms capable of prompt adjustment to meet changing conditions of operation and of finance.

The electric railway industry is faced at this moment with three alternatives and the issue will come immediately:

(1) Municipal ownership.

(2) Private ownership and operation resting on a sound fundamental basis of regulation and control.

(3) Absolute disappearance of the service.

In some cases the service has already disappeared and the rails have been taken up, but it is unthinkable that in the larger communities this alternative is possible except perhaps in part. Therefore the real issue comes between municipal ownership and private ownership. From the purely selfish standpoint of investors I have no doubt a great sigh of relief would go up if municipalities should purchase the electric railways at a fair valuation. But the experience of governmental operation of those utilities, the operations of which are of more or less a complex character, has not been reassuring, and I believe a great majority of the people of the country believe in private ownership and operation under proper regulations and control.

At the conclusion of General Tripp's address, Mr. Elmquist asked how long the railways would require to present their evidence. Mr. Warren replied that it would take about ten days. Chairman Elmquist then announced that the commission would sit daily from 10 a.m. to 1 p.m. and from 2 p.m. to 5 p.m., but that it would not sit on Saturdays, unless a special announcement was made to that effect.

MR. WELCH PRESENTS STATISTICS

The greater part of the sessions on Tuesday was devoted to the presentation of statistics of the electric railway industry by J. W. Welsh, statistician. A number of the charts presented by Mr. Welsh will be reproduced in the next issue of this paper.

W. J. CLARK TESTIFIES ON EARLY CONDITIONS

During the latter part of Tuesday afternoon W. J. Clark, of the General Electric Company, took the stand and described some of the early electric railway conditions. He said that in the latter part of the decade between 1880 and 1890 he became interested in a small street railway company at Derby, Conn. This road was equipped by him and his associates with the Van Depoele electric system. It was expected that the cars, motors, generators, etc., then provided would be good for service for 20 years or more. Instead, before 1896, the company had changed its car bodies three times and its motors five times and had built its third power station. This rapid obsolescence had caused large development expenses. Much of the so-called "water" in electric railway capitalization, in his opinion, represents actual cash investments of this kind. Mr. Clark believed that electric railways would survive if relief was afforded to them and that much of the traffic now lost to automobiles would come back again. He said that one reason why the Thomson-Houston Electric Company had acquired the Van Depoele electric railway patents in 1888 was that its leading officials had come to the conclusion at that time that the field for electric lighting apparatus was about saturated because most of the cities in New England had then purchased arc lighting outfits. In the same way, many manufacturers of electric railway apparatus had thought in 1896 that but little remained to be done because most of the roads at that time had purchased equipment. He cited prices to show that the early electric railway equipment, although inefficient, was costly, yet the lines thus equipped had been a great benefit to the communities served and had been the nuclii from which large systems had sprung.

GENERAL TRIPP DISCUSSES FINANCES

Testimony relative to the financial condition of the electric railway industry offered by General Tripp occupied the bulk of the time in the Wednesday proceedings. Asked to define the tendency in the electric railway world today, General Tripp said: "It is more than a tendency; it is a rapid progress toward bankruptcy."

He gave as the main cause for this condition the decreased purchasing power of the dollar and said that the railway companies were unable to meet this depreciation because of the taxes fixed by franchise regulations and the ideas of the general public relative to a fixed standard fare.

To show that overcapitalization, or "watered stock," was not the cause, he cited the case of the New York Railways, now in the hands of a receiver. The system when consolidated in 1911 was capitalized at less than its appraisal value and at that time was considered as established on an absolutely safe basis. In connection with this illustration General Tripp remarked. "We have all been living in a fool's paradise." He further said that a business which cannot increase its revenues under any conditions is not on a sound basis and that street railway credit can not be restored as long as the present relations exist between the companies and the communities they serve.

As a general proposition General Trip approved the action of the National War Labor Board in raising wages since the wage earner had little or no margin to sustain himself with under depreciated currency conditions. In answer to a question from the commission he said that as he saw it no relief could be expected from lowered wages. The financial problem would have to be solved by the public and the railways.

THERE MUST BE A NEW ORDER OF THINGS

Questioned by the commission as to possible solutions General Tripp said that a new scheme of relationship must be devised and that the solution, whatever it is, must eliminate the fixed income problem which the railways now face. This led to an extended discussion of the service-at-cost method of operation. General Tripp told the commission that it was his personal opinion that the easiest and fairest way of reaching a basis for calculating earnings was by studying the security issues of a company, determining from the history of these issues just what sum of money entered into the investment cost. He said that he felt that investment cost thus arrived at was more easily understood than a cost based on physical value, reproduction cost or other method involving the use of many technical and little understood terms. Other questions by the commission brought up the matters of paving costs, general taxes, effect of raising fares and the jitney. Relative to a reduction of taxes General Tripp said that this would help but would not solve the problem as long as the present inelasticity of income prevails. In answer to a question, General Tripp told the commission that he felt that the investigation should be directed toward a study of the fundamental difficulties common to all companies rather than the difficulties of individual company and that local illustrations of conditions might be used only where they pointed a general moral. He also expressed belief that a strong recommendation by the commission in the way of fundamental methods would do much towards assisting in the solution of the problem.

UTILITY SECURITIES ARE NOT SALABLE, SAYS INVESTMENT BANKER

Following General Tripp, H. L. Stuart, president of Halsey, Stuart & Company, investment bankers, Chicago, took the stand. Mr. Stuart said that in the past his company had done a large business in electric railway securities and that these securities had been sold to insurance companies, banks, trustees and individual investors. He said that for some time street railway bonds had been regarded with distrust by investors and that during the last two years their sale had been practically impossible. Street railway stock had ceased to be regarded as a safe investment some years previous to this. He said that the formation of public utility commissions in a number of states several years ago for a time had increased utility security sales, as it was thought the action of these commissions would be to increase the safety of utility securities.

In answer to a question by the commission Mr. Stuart said that very large amounts of utility securities are held by the ultimate investor. He cited the case of the Kansas City Railways' small bond issues stating that thousands of $100 bonds had been sold. It is Mr. Stuart's opinion that some form of cost-of-service plan is best and that the indeterminate permit is much better than the fixed period franchise. Like General Tripp, Mr. Stuart thinks that the solution lies between the railways and the public. From the investment banker's standpoint Mr. Stuart said that he felt that the commission is the court of last resort.

MR. HURLEY'S LETTER

After the completion of Mr. Stuart's testimony, Bentley W. Warren, council for the American Electric Railway Association, read into the records a letter from Edward N. Hurley, chairman of the United States Shipping Board. Mr. Hurley pointed out that the rapid development of this country had been due in large part to the construction of transportation facilities and that adequate and efficient electric railway facilities are just as essential to the proper development welfare and prosperity of our cities as the transcontinental trunk lines are to the country at large. He said that the railways should be freely accorded the right to establish such rates as are necessary to meet operating costs and yield a reasonable return on the capital invested. In referring to the need for urban transportation he said:

> With the whole world endeavoring to improve its transportation services both on land and sea and spending millions of dollars experimenting on transportation in the air, it is most important to the future prosperity and comfort of our people that the street railways be placed in a position where first-class service will be given the public at a just cost under the supervision of broad-minded, sound commissions. If state and national governments are to determine what is a fair street railway wage scale, then they should also assume the responsibility of determining and establishing what is an adequate street railway fare, and they should willingly, when the facts are presented, meet the new conditions by authorizing street railway companies to increase their fares.
>
> It is clear that every electric railway company should be freely accorded the right to establish such rates as are necessary to meet operating costs, including maintenance and depreciation and a reasonable return on the capital invested. If they are to be denied this right, it is perfectly clear that no additional capital can be safely invested in electric railway securities, that our electric railways will be unable to meet their obligations to the public and their security holders.
>
> As soon as the American public and the street railway corporations of this country are brought to a settled understanding of what constitutes fairness in their mutual relations, your problem will be solved. Capital already legitimately invested in public service will be safeguarded, the credit of our legitimate electric railway companies will be restored, new capital will be available to them as required for the development and expansion of their facilities to meet the requirements of the public, and the public will enjoy efficient, safe service.

In conclusion Mr. Hurley said: "The true value of an electric railway property is the legitimate cost incurred in establishing and developing its business and any method of valuation which disregards this principle is not fair."

SERVICE HAS BEEN IMPAIRED

That service has been impaired was the testimony of Henry G. Bradlee, of the Stone & Webster Corporation. Mr. Bradlee exhibited several charts showing the amount of capital required by several different types of industry and pointed out that the electric railways had been "living off their fat" as it were, for very little maintenance work has been done and few extensions have been built during the last few years. He stated that the street railway companies now need between $600,000,000 and $700,000,000 each year for new extensions and improvements. In addition to this, they need between $300,000,000 and $350,000,000 annually for refunding outstanding securities, thus bringing the total financial needs to something like $1,000,000,000 a year.

The question of new capital, to Mr. Bradlee's mind, was the crux of the whole railway situation. He pointed out there were only two ways to get this money, either through municipal ownership or through the establishment of some plan so that the private investor will feel reasonably safe in buying railway securities.

As illustrative of the increase in costs during recent years Mr. Bradlee presented the following interesting data pertaining to three of the Stone & Webster properties:

TABLE SHOWING PERCENT INCREASE OF EXPENDITURES
1919 OVER 1913

Item	Houston Electric Company	Northern Texas Traction Company	El Paso Electric Railway
Maintenance of Way and Structures	76	63.0	47
Maintenance of Equipment........	58	83.5	61
Conducting Transportation........	50	57.5	90
Miscellaneous.....................	32	7.4	27
Total cost of operation...........	48.4	45.0	65.3

The figures are for the years ended April 30, 1919, and April, 1913. The 1913 cost figures were arrived at by taking the 1919 items and multiplying them by the unit costs prevailing in 1913. The high cost of conducting transportation increase for the last property as compared with the others is due to the fact that fuel for the first two is still being purchased on a pre-war contract while for the last property current fuel prices are being paid.

When asked relative to the distribution of their securities, Mr. Bradlee stated that they were very widely held. He said the Stone & Webster properties were all operating under the old fashioned form of franchise. He stated that the fixed-period franchise is objectionable because the difficulty of securing new capital increases as the expiration time of the franchise approaches. When questioned by the commission as to the trend in the power situation, Mr. Bradlee said that it would be more economical to have fewer and larger plants than we now have. Just how far this can be carried is a matter difficult of determination, however.

The commission also asked Mr. Bradlee relative to the possibilities of the Ford gasoline car and the motor bus. Speaking of the first, Mr. Bradlee said that Mr. Ford as yet "had an idea, not a car," and with regard to the motor bus said that his company is operating motor buses in a number of places as feeders to their railway lines. He believes that in general the cost of transportation is greater with the buses than over the rails and sees no chance for them except in special cases where they run through sparsely settled communities.

PROGRAM OF FUTURE HEARINGS ANNOUNCED

Announcement was made at the close of Thursday's hearing by Chairman Elmquist that upon the completion of the railway testimony adjournment would be taken until Aug. 4. On that date Secretary Baker and a group of economists will begin testifying. On the completion of their testimony, another adjournment will be taken until Aug. 11 when the mayors of various large cities, including New York, San Francisco, Boston, Buffalo, New Orleans, Seattle, Detroit, Chicago, Cleveland and others, will begin testifying. Members of various commissions also will be heard with this group.

DEAN COOLEY AND OTHERS TESTIFY ON THURSDAY

With the resumption of hearings on Thursday morning W. J. Clark, of the General Electric Company, was again called to the stand to testify relative to the early history of electric railways. Counsel brought out the point that early experimental work was done at the expense of the electric railways and constitutes a part of the just investment. Mr. Clark compared American and foreign electric railways and discussed the causes of public prejudice at request of the commission. The commission at this point took a recess to permit a photograph of the commission being taken.

After the recess Dean Mortimer E. Cooley, of the University of Michigan, was called to testify as to the elements entering street railway costs. The balance of the forenoon and a considerable part of the afternoon session were occupied by Dean Cooley, who was questioned at great length by the commission on depreciation, obsolescence and maintenance costs, and what should be done to improve the electric railway situation. Dean Cooley said that it would take a generation to educate the public properly, which belief is needed now. He considered higher fares a palliative only. Every public utility needs a surplus fund, a surge tank, to take care of fluctuations. In regard to municipal ownership, Dean Cooley said he did not believe it would be a success but would be the best way of educating the public. "Municipal ownership is beautiful as an ideal but worthless as a practical thing," said he.

In answer to a question from one of the commission as to what should then be done, Dean Cooley said: "I recommend that street railways have the right to charge fares that would permit them to meet their operating expenses, keep up their service, and maintain their properties intact." He indicated that the present fares should be at least 50 per cent higher, and suggested the removal of some of the taxes now borne by street railways and exemption from the obligation to maintain the paving between the car tracks.

At the conclusion of Dean Cooley's testimony, Counsel Warren read into the record a statement from A. Merritt Taylor, president Philadelphia & Westchester Traction Company and formerly manager, division of housing and transportation, United States Shipping Board. This statement will be found below.

W. D. George, one of the receivers of the Pittsburgh Railways, was then called to testify as to the effect of zone fares and the effect of increased fares in Pittsburgh. As a real estate man by profession rather than a railway man, Mr. George was questioned by the commission at great length relative to the matter of public sentiment and interest in the electric industry as against the methods dictated by clear-cut business methods. Mr. George expressed himself as being opposed to zone fares on the ground that they are inimical to the best development of a community.

Further particulars of the sessions on Thursday and an account of the following sessions up to the press date of the issue of July 26 will be published in that issue.

The Valuation of Electric Railway Properties*

BY A. MERRITT TAYLOR
Philadelphia, Pa.

AN ELECTRIC railway company engaged in a legitimate constructive enterprise is entitled to charge rates for service which will yield a profitable return on the true cost of establishing and developing its property and business. Anything short of this means confiscation of money invested in public service.

In order that exact justice shall be accorded all parties at interest, an electric railway property must be valued at the true legitimate cost of its establishment and development up to the date when the valuation is made.

If, in the early stages of development, the net results of operation produce a return which is short of the amount required duly to compensate the owners of capital invested in the property for its use during such period, and to provide for normal depreciation and obsolescence, such shortage plus accrued interest on accumulated portion of just return withheld from investors must necessarily be considered to be a part of the cost of the development of the property and its business, and be included as an element of value.

If an electric railway property be valued (as is proposed by impractical theorists) at its cost less depreciation and obsolescence, or at what would be the cost of reproducing it less depreciation and obsolescence in instances where the net revenue has been insufficient to yield a return on the capital invested therein duly compensatory for the service performed and the risks assumed, and or where the net revenue has been insufficient to provide for depreciation and obsolescence in addition to yielding a just return upon the capital, such valuation is unjustifiable and rates based thereon are confiscatory.

An electric railway enterprise is entitled to charge such rates as are required to protect the capital legitimately invested therein and to yield to the owners of such capital a cumulative return which will adequately compensate them for its use, for the risks assumed and the service performed, and which are required properly to meet cumulative depreciation and obsolescence, to invite corporate initiative and to maintain the credit and ability of the enterprise to procure such additional capital as is required from time to time for the purpose of expanding its facilities for public service.

---

*Statement filed with Federal Electric Railways Commission and read at Washington, July 17, 1919.

Capital will not be available for electric railway requirements in states and municipalities where there be question as to whether electric railway companies will be prevented by regulatory authorities from establishing rates required to yield an inviting cumulative return on the capital invested therein. This fact must be recognized and steps must be promptly taken to remove the grounds for reasonable doubt in the premises. Nothing short of a clear and common understanding of how valuations of electric railway properties made for rate-making purposes shall be arrived at, and of what elements must be regarded in the fixation of rates, will enable the electric railway enterprises to raise the capital which is required to meet their obligations and expand their facilities as required for public service.

There is a serious and inherent risk which confronts every investor who invests in electric railway constructive enterprises, namely, the risk that such enterprise will not yield a just return on the capital invested therein at any rate which its customers would be willing to pay for the service. In such instances where the rates are so high as to invoke the law of diminishing return, the management of the enterprise will necessarily have to decrease rates to such a basis as will yield the maximum net return, and the investor, in the absence of public assistance, will necessarily have to accept a lesser return on his capital unless through development of business the shortage can be made up and paid in later years.

HOW SHALL MAXIMUM NET RETURN ON INVESTMENT BE SECURED?

Many electric railway companies which are rendering essential service are now confronted with the fact that there is no rate of fare which will enable them to continue efficient operation of their properties and which will yield to them a return sufficient to meet the new level of operating and renewal costs resultant from the war, onerous conditions and charges imposed upon them by municipal, state and government authority, and to pay a just return on the capital invested in their properties. In such instances the credit of the electric railway company is impaired; it can raise no money with which to provide the additional facilities which are required from time to time for the service of the public in a growing community, and the public must augment its net revenue in one way or another to an extent sufficient to enable it to maintain its credit and meet its just obligations, or, be deprived of essential service. There are many electric railways which will be completely abandoned with the resultant incalculable loss to the communities which they serve unless their credit be promptly restored and maintained through public co-operation.

It is quite possible that the city of Canton, China, may have greatly improved transportation facilities in the near future. The city wall is in process of being torn down and a corporation with a liberal capital has been proposed to develop an electric tramway on the improved streets which will be built after the removal of the wall.

Denver Situation Clearing

City to Re-Grant Temporary Six-Cent Fare—Strike Ended—Service-at-Cost Plan Likely to Be Basis of Settlement

DENVER'S transportation troubles which came to a climax on July 8, as was noted in last week's issue of this paper, when 1200 employees of the Denver Tramway Company went out on strike after the announcement of a wage reduction, have been temporarily settled after an interruption of service lasting nearly four days. Within that period the Mayor and City Council of Denver agreed to re-enact the 6-cent fare ordinance which they had repealed the week before, the notion of jitney buses as a means of transportation was buried beneath overwhelming popular disapproval, and arrangements were made between city and company for a permanent settlement of the street railway situation on the basis of "service-at-cost." The employees presented demands during the walk-out for a closed shop, a 60, 65 and 70-cent scale for trainmen, and proportionate increases for all other unionized employees in the company. They went back to work at the 43, 46 and 48-cent scale, waiving the closed shop demand and leaving increased wages to settlement by arbitration within the next six months.

Approximately 625 jitneys were in operation the second day of the strike. The congestion caused on downtown streets, the terrific increase in accidents, the lack of schedules and failure of the jits to operate to the outlying districts of the city, coupled with the fact that scores of drivers disregarded the 5-cent limit and charged from 10 cents to $1.50, disgusted the public with jitney buses long before the strike was ended. The "jit" is dead in Denver; whoever tries to resurrect it will meet with violent opposition from the people who ride.

The loss to the merchants of the city has not been estimated, but a thorough canvass of the retail houses discloses that 50 per cent is a conservative estimate of the loss of business during the strike. One department store lost $10,000 a day; a retail shoe store lost $800 a day and the downtown grocery and meat and drug stores had practically no business at all. The legitimate and vaudeville theaters suffered only a slight loss in their business, apparently because they drew all the tourist trade from hotels, but movies reported almost a total loss of business, especially in the afternoons. The working people of the city lost as high as one-fourth day's wages because of their inability to get to work on time.

The advertisement of the strike outside the city unquestionably did tremendous damage to Denver's tourist business; the full effect has not yet been felt.

There was no violence whatever during the strike owing to its peculiar nature, otherwise the loss to business men and workers would undoubtedly have been much greater.

The most unusual feature of the strike was the fact that the sympathies of the company were with the men, the management acknowledging that the men could not meet 1919 living expenses with 1917 wages. Advertisements for men to replace the strikers were placed in the newspapers, but only the reduced wage scale was offered and no professional strike-breakers were imported. Daily attempts were made to operate cars by company officials, who were good-naturedly but promptly pulled off the cars by the strikers. The mayor charged that the company and the strikers were in collusion because of this aspect of the strike, apparently not realizing that the importation of strike-breakers by the company would have led to an outbreak of the Winnipeg and Seattle sort.

In spite of the patent failure of the jitneys to meet the situation, the mayor issued a statement during the second day of the strike in which he declared that the tramway had been proven no longer necessary as a transportation system for Denver, and that the jitneys would supply all needs. He stated that it was "a great victory for the people" and declared the city would immediately spend $3,000,000 in equipping jitney bus lines as a permanent substitute for the street railway.

Twenty-four hours after this statement was published, the mayor and the city council had agreed to revoke every jitney bus license, kill the jitney bill then before the council, re-enact the 6-cent fare ordinance for a period of 90 days, and before the end of that period to put before the people for their approval a service-at-cost plan based upon the recommendations of the Tramway Adjustment Committee of fifty-five, appointed by former Mayor W. F. R. Mills.

SERVICE QUICKLY RESTORED

With this agreement between city and company completed, General Manager F. W. Hild went into a series of conferences with the union officials. The union men finally agreed to go back to work at the old wage scale of 43, 46 and 48 cents and submit the demand for a 22-cent increase to arbitration. This submission will be made at some indeterminate date in the future, the men allowing a maximum of six months' time so that the company and city can secure a permanent solution of the transportation problem in the meantime.

Cars reappeared on the streets of Denver in time for the evening rush hour Friday, July 11, and were the signal for a mild repetition of the jubilant scenes on the downtown streets when the world war ended.

This was the first street car strike in the history of Denver. Strikes have been threatened several times in the last two years, but in each instance General Manager Hild has succeeded in averting them. On this occasion both the company and the men went on a strike. The 5-cent fare will be in effect during the time required to pass the 6-cent fare ordinance. July 12 the tramway put out petitions for an initiated 6-cent fare ordinance, and the required signatures of 4500 qualified electors were secured in about the time that would be necessary for that number of citizens to write their names. Final passage of the ordinance will probably be made by the City Council on July 28.

The 6-cent fare will be effective for 90 days, or until the passage by the people of the permanent solution.

Conferences looking toward the drafting of a "service-at-cost" ordinance began this week. Tramway employees, as well as city and company's officials, will probably be represented at these meetings. The work should be completed within thirty days, inasmuch as the special election must be called sixty days before it is held. The city will bear the expense of the election.

SERVICE-AT-COST PLAN RESURRECTED

The foundation material upon which the various parties interested will build the permanent arrangements between city and tramway is the report of the committee of fifty-five citizens already mentioned and appointed by a number of civic, labor, commercial and improvement associations last January at the request of a former mayor. This committee took an active part in the settlement of the strike. Its report, which was filed with the city just before the present mayor took office and subsequently pigeonholed, embodies the conclusions reached after a thorough investigation of the transportation problem in Denver and other cities.

The report, after pointing out that the committee's investigation of the tramway finances leaves no doubt as to the necessity of relief, goes on to say that all manner of suggested solutions were analyzed and discussed, including the zone system, flat increases in fares, a proposal that the city be required by general tax levy to make up the deficit required for the efficient operation of the system as it would have to do if the city owned the lines, municipal ownership, the service-at-cost plan, and removal of extraordinary tax burdens and creation of new sources of revenue. In general, the service-at-cost plan is favored for the following reasons:

> The service-at-cost plan provides that the car riders of the city shall pay only the actual expenses incurred in operating and maintaining the system.
>
> It provides that the municipality, not the company, shall control the service given the public, the extensions that shall be made and the additions to service.
>
> It virtually takes control of the street railway system out of the hands of the board of directors of the company and places it in the hands of the municipality.
>
> It establishes a fair value of the property.
>
> It allows the company to earn no more than a fair return on only that value, no matter how many stocks and bonds may have been issued against the property.
>
> It provides an automatic decrease or increase in fares according to the cost of operating the system.
>
> It provides for non-political, expert management of the technical operation of the system.
>
> It encourages those in charge of operation to consider economy in purchase and efficiency in use; in some cities bonuses are allowed in this connection to stimulate extra effort.
>
> It provides for a depreciation fund sufficient to guarantee the replacement of old tracks, old cars and worn out equipment and buildings with new, modern facilities, that will render better service to the public, and places the disposition of the money for such improvements in the hands of the municipality.
>
> It provides for the purchase of the property by the city at a fair valuation at any time the public may decide to substitute municipal ownership for municipal control and supervision.
>
> The service-at-cost plan gives the city all the advantages that might come from municipal ownership; yet does not burden the taxpayers with investment of the city's money in the property at this time, and in the committee's opinion coincidentally avoids nearly all other disadvantages of municipal ownership.
>
> The committee defined "cost-of-service" as including:
>
> 1. Cost of wages and compensation to employees.
> 2. Cost of materials used in the operation of the system.
> 3. Cost of depreciation and renewals of the property as it wears out.
> 4. Cost of taxes.
> 5. Cost of money invested in the property (reasonable return upon the stipulated fair value of the system).
> 6. Cost of such incidental expenditures as are authorized under the rulings and uniform system of accounting of the Interstate Commerce Commission of the United States.

The Board of Control constitutes one of the most important features of the committee's plan, and in the eyes of tramway officials is such a radical departure from present methods that it cannot be considered favorably by the owners of the property. The wide powers of this board include control of the quality and quantity of service, of capital expenditures, of the scale of fares, of the depreciation and renewal funds, etc.

The board consists of three members, two appointed by the mayor of the city and one by the company.

As a basis for its plan, the committee adopted the evaluation of the property made by the Public Utilities Commission the previous year, which for both city and interurban lines was $23,674,100 as compared with the company's valuation of $26,772,888. The committee allowed, upon the recommendation of Professor Ketchum, L. R. Nash of Boston, and Charlton Ogburn of the National War Labor Board, a depreciation and renewal fund of $500,000 per annum, which is the amount authorized by the public utilities commission.

On the rate of return the report recommends 7 per cent with a bonus when the fare is 6 cents or less. A sliding scale of fares is provided, with a fare control fund varying between the limits of $500,000 and $100,000 which acts to determine the time of changing from one fare schedule to another.

COMMENTS OF MANAGER HILD

General Manager Hild of the tramway considers the committee's service-at-cost plan a classic in its field, even though all its provisions do not meet with his unqualified approval. He says: "From the standpoint of the tramway company there are three main objections to the plan as recommended by the Committee of Fifty-five.

"First, the valuation is too low. We still feel that we were in a better position to judge the valuation than anyone else and we believe that the valuation of the committee misses the mark by about $4,000,000.

"Second, the rate of return allowed in the plan, we feel, is rather low for attracting capital into the enterprise.

"In the third place, the board of control feature cannot possibly be acceptable to the men who have money invested in the company. It is proposed that the power of administration be given to men whose appointments come from outside the company altogether. It is not natural for the tramway investors to be satisfied with having someone who is not connected with the enterprise tell them what must be done.

"There are many admirable features to the plan, however. I believe that under the service-at-cost plan the company would be able to start out with a 6-cent fare and very soon bring it down to 5½ cents at most."

Status of Daylight Saving

President Wilson has personally come to the support of the advocates of retaining the daylight-saving legislation. He has vetoed the agricultural appropriation bill containing the repeal of this legislation, making public a statement in which he says that he foresees a great economic loss from such repeal. Following the action of the President, which was taken in Washington on July 12, the House of Representatives on July 14 refused by a vote of 247 to 135 to pass the agricultural appropriation bill over his veto. This refusal by the House resulted in taking from the Senate the opportunity to attempt to repass the bill. Notwithstanding the President's veto of the legislation and the refusal of the House of Representatives to pass it over his veto, conferences are being held in Washington between members of the House and the Senate in an attempt to pass the legislation by force, under a proposed new ruling, as new legislation or by indefinitely holding up the agricultural appropriation bill.

Some Observations and Queries on Safety Car Operation*

BY F. J. MOORE

Superintendent Ohio Electric Railway, Springfield, Ohio

WHILE all electric railway men will not agree that one-man car operation is the panacea for our ills, all will agree that revenues must be increased without a corresponding increase in expenses if we expect to continue business. City fares have generally, although not universally, been increased with a view to meeting the increased cost of operation in this way. I have in mind a city of 60,000 population where the fare was increased, first from the rate of six tickets for a quarter to a straight five-cent fare, then to a six-cent fare. The first increase produced a considerable increase in revenue, but the effect of the second was not so good. In other cities, where the fares were increased without an improvement in service by a reduction in headway, the result has been unsatisfactory. This has been due to the loss of short-haul business to a large extent. It is at this point that the one-man car is of service in furnishing the opportunity for shortening headways, thus appealing to municipal authorities and the public, and developing the riding habit. The combination of a higher fare and increased riding gives a better prospect that the electric railway will be able to stay in business.

To illustrate the possibilities with one-man car operation, I shall cite a city of 15,000 population where seven-minute service is given at an average speed of 12 m.p.h. The rolling stock consists of single-truck cars weighing from 6 to 8 tons. Some of the cars are of the rebuilt type with small platforms. There is one grade of 7½ per cent about 600 ft. long on the line, and in the last eight years there have been no accidents due to cars getting away.

In this city the cash fare is 5 cents, but thirty-three composition disks, good for one ride each, are sold for $1. No transfers are issued, but passengers are transferred from car to car at the transfer points. Approximately 2,000,000 passengers are handled per year. Service is given from 5:30 a.m. to 10:30 p.m. with an owl car on each line until 1 a.m., the fare for owl service being 10 cents. Conductors do not sell tickets, which are sold at local stores at the rate of three for 10 cents. This line is operating at a very satisfactory operating ratio, and there is a noticeable tendency to short riding. I observed that many passengers did not ride more than three or four blocks.

The importance of reducing headway is seen when the growth of the use of the automobile is considered. In Ohio, in 1913, 165,000 automobile licenses were issued; in 1917 the number was 346,262, and in 1919, up to the present time, 500,160 licenses have been issued. At the same time on checking up a number of city car schedules for properties serving populations from 25,000 to 100,000, I find that the same headway is in use in 1919 as in 1913.

In conclusion I wish to list a number of questions which are of interest in studying the one-man car situation in any locality, as follows: (1) What was the determining factor that led to the adoption of the one-man car? (2) If an advertising campaign was conducted, how long before the inauguration of service was it begun? (3) What criticisms have come from the public and the local council after operation has commenced? (4) Were any changes in schedule made on one-man car lines? (5) What provisions were made for railroad crossings? (6) How do the safety-cars handle rush-hour traffic? (7) Were any changes made in report slips or accounting methods from earlier practice to relieve operators of unnecessary duties? (8) Has it been found possible to adopt a zone system of fare collection on these cars? (9) How and when are transfers issued? (10) How have the Birney cars stood up under operation? Will this type of car be long-lived? What are the maintenance costs on these cars? (11) Is it desirable to use two trolley poles on the car so that the operator can change ends without leaving the car at terminals?

---

*Abstract of contribution to discussion of Sam W. Greeland's C. E. R. A. paper on safety-car operation. See issue of this paper for July 12.

AMERICAN ASSOCIATION NEWS

Last Week's Committee Meetings

The week ending July 12 was a busy one at the American Association headquarters in New York City. The "doings" of the committees are summarized below.

The committee on code of traffic principles of the Transportation & Traffic Association met on July 7 and put its report into final shape for presentation to the executive committee which met later in the week. H. B. Flowers, chairman, and A. Gaboury were in attendance.

The committee on joint use of tracks and terminal facilities, of the same association, met on July 8, for the same purpose. Those present were: Frank Wert, representing chairman R. T. Sullivan; H. W. Clapp, member, and W. H. Collins, sponsor.

The exhibit committee of the American Association met on July 8 and passed upon a number of applications for space and considered other details of its work.

The executive committee of the T. & T. Association met on July 9 for the purpose of finally passing upon the several committee reports which were presented by the chairmen of the several committees. Each report was considered in detail and a number of suggestions were incorporated. A tentative list of names of men to be invited to lead discussion of the various reports was also presented and approved. Those in attendance were: L. C. Bradley, president; W. H. Collins, first vice-president; L. H. Palmer, third vice-president; E. B. Burritt, secretary; W. J. Harvie, chairman of committee on collection and registration of fares; H. B. Flowers, chairman of committee on code of traffic principles; Frank Wert, representing R. T. Sullivan, chairman of committee on joint use of tracks and terminal facilities, and H. W. Clapp member of the last-named committee.

The arrangement of the formal program of the convention was discussed and the following tentative arrangements were agreed upon as covering the reports and discussion of each subject: Oct. 6, code of traffic principles; Oct. 7, one-man car operation; Oct. 8, collection and registration of fares; Oct. 9, joint use of tracks and terminal facilities and election of officers. The committee adjourned to meet again at the call of the chairman.

The committee on zone systems, met on July 15 and went over the reports submitted by the sub-committee. A tentative form of final report was agreed upon including a terminology for several different types of zone systems. Those present were W. H. Sawyer, Columbus, Ohio, chairman; Thomas Conway, Jr., Philadelphia, Pa.; R. M. Feustel, Fort Wayne, Ind.; James F. Hamilton, Rochester, N. Y.; Walter Jackson, New York City; L. H. Palmer, Baltimore, Md.; A. S. Richey, Worcester, Mass.; R. P. Stevens, Youngstown, Ohio, and C. L. S. Tingley, Philadelphia, Pa.

"Meralco" Welcomes New "G. M."

The Manila joint company section began its second half hundred meetings on May 6, with 175 members in attendance. The gathering took the form of a welcome to the new general manager of the Manila Electric Railroad & Light Company, R. W. Spofford, and no papers were presented. Mr. Spofford expressed great interest in the prosperity of the section and told of the excellent reputation which it holds in the United States. Dr. H. D. Kneedler, company surgeon, also received an ovation in recognition of his war-time service in Siberia. J. C. Rockwell, vice-president of the company, introduced as "grand-daddy," extended a welcome on behalf of the company to the new manager, reinforcing the opening address of the president of the section, C. H. Van Hoven.

LETTER TO THE EDITORS

Traffic Checks of Non-Riders

BOARD OF PUBLIC UTILITY COMMISSIONERS
NEWARK, N. J., July 16, 1919.

TO THE EDITORS:

I was much interested in reading the editorial in the issue of July 12 on the subject of taking traffic checks of non-riders.

The writer has carried out this idea in connection with several traffic surveys which have been made under his direction, and it has been surprising to find, in many instances, the number of people that are walking simply because they are not provided with service or, if service is available, it is so circuitous that they prefer walking over a more direct route. This applies particularly, but by no means exclusively, to manufacturing communities where large numbers of workers have frequently been found to be walking long distances to and from their places of employment, doubtless not for the purpose of saving the fare but rather in order to save time. Many companies appear to overlook the fact that the average traveler wishes primarily to reach his or her destination as quickly as possible and is willing to pay a reasonable fare for such transportation rather than walk.

It is not difficult to determine, or at least closely estimate, the number of walkers, the general territory where their journey originates and their approximate destination. Familiarity with the territory under consideration and the intelligent placing of observers for a few days will soon tell the story.

More attention to this matter on the part of operating officials will undoubtedly result to the mutual advantage of both the community being served and the utility furnishing the service.

H. C. EDDY,
Traffic Engineer.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

A Great Fuss Over Nothing

High-Handed Tactics of Union Official Deprive Akron of Railway Service for Day

One result of Akron's shortest and most inexcusable electric railway "walk-out" has been the suspension from office of George Trahern, the president of the local union, who ordered the walk-out at 5 a.m. on July 12, without public warning. A second result is that the employees, who walked out without even knowing what it was all about, have prepared an apology to the public of Akron for disrupting railway service in Akron.

NO INTIMATION OF TROUBLE

A. C. Blinn, manager of the Northern Ohio Traction & Light Company, was informed at 5:30 a.m. on July 12 that the men would not take out the cars. No previous intimation had been given of any difficulty. No conferences had been held. No strike vote had been taken. No consultation had been held with the Amalgamated Association officers. And most important of all no warning had been issued to the public. Mr. Blinn got in touch promptly with the president of the local union, George Trahern. That gentleman refused to discuss matters over the telephone. Mr. Blinn in a statement later declared that when he spoke in behalf of the public's right to service the local agent replied: "What do you care about the public? They voted down your 6-cent fare. The public can go to hell for all of me."

Mr. Blinn then telephoned W. D. Mahon, president of the Amalgamated, at Detroit. He in turn wired the secretary of the local divison to put the men back to work by 4 p.m. or "the laws of the association will be strictly enforced." This, of course, meant a suspension of the local charter.

Mayor Myers and President Gilletly of the Central Labor Union, who held that Mr. Trahern's order was unwarranted, set things in motion for immediate arbitration, but President Mahon's telegram settled matters temporarily.

40,000 WORKERS WALK

The 40,000 or so workers in Akron's great rubber plants either walked to work or rode in trucks.

It turned out eventually that a midnight meeting for the purpose of electing delegates to a convention in Chicago had not finished business and Mr. Trahern decided to hold another meeting at 10 a.m., the men meantime to take "a day off." Later in the day Trahern added that the company was not furnishing the men with suitable city directories, and decided to take this and one or two other minor grievances up at this meeting.

Mr. Blinn in a public statement declared that the men's action was contrary to the spirit of their contract with the company and that none of the complaints made by Mr. Trahern had any just foundation. He added that regardless of the merits of these minor questions the method taken to settle such complaints was unwarranted and without precedent in his long railroad experience.

Wage Arbitration Suggested

A committee representing the Norfolk and Portsmouth divisions of the organized conductors and motormen of the Virginia Railway & Power Company, in a letter to the company on July 7, withdrew their request for recognition of a "closed shop" union, and asked that the company go into conference or arbitrate their demand for increased wages and other questions, treating with them as members of an "open shop" union.

In reply to this the company, in a letter signed by T. Norman Jones, assistant manager, declared its willingness to confer with the men on the open shop basis, but suggested that a conference or arbitration over the matter of increased wages would be useless until the company were permitted to increase its fares. In the event of a 6-cent fare, according to Mr. Jones' letter, the company will fix a wage scale of from 41 to 45 cents. If arbitration is insisted on, the company will agree to City Manager Ashburner as a third arbitrator, as suggested by the carmen's committee.

New Jersey Agreement Signed

The two-year agreement between the Public Service Railway, Newark, N. J., and the Amalgamated Association covering wage and working conditions was signed on July 9 by President McCarter of the railway and by the union officers.

The agreement establishes a day of nine hours with pay for ten hours. Overtime, under the contract, is to be paid at a rate of time and a half for all time outside the regular day except the time consumed in completing a nine-hour run. Meetings will be held by the nine local unions in the State, at which the revised agreements will be read.

The terms of the award of the War Labor Board in the New Jersey case and the conditions of the settlement subsequently agreed to between the company and the men were reviewed in the ELECTRIC RAILWAY JOURNAL for July 5, page 37.

Mayor Signs Dispossess

Toledo Company Preparing to Comply With Measure Ordering It off Streets on Aug. 1

Mayor Cornell Schreiber on July 11 signed an ordinance which, in effect, is an order to the Toledo Railways & Light Company, Toledo, Ohio, to cease operation on July 30. The ordinance had been passed by the City Council about a week before. It was referred to in the ELECTRIC RAILWAY JOURNAL for July 12, page 87.

PREPARING TO DISMANTLE ROAD

For several days the company has been preparing to obey the order. All improvement work has been stopped, and the men engaged on it were discharged. Other preparations have been made for dismantling the road.

Frank R. Coates, president, is quoted as saying that the ordinance will be obeyed to the letter. Service, he said, will cease at midnight on July 30.

Mayor Schreiber issued a call for the support of the people in this crisis and at the same time he promised to provide transportation. Just how he would do this, he did not explain. It is expected, however, that he will resort to the use of jitneys.

Several times the company has offered the city service at rates and on conditions that were fair, but they were as often refused in an effort to establish a 3-cent service or something equally as low. For several years the road has been operated without a franchise. A year or two ago a so-called street railway commission offered a plan for turning the road over to a community company, the city to pay for it partly in cash and the remainder from surplus from operation.

Some time ago the company advanced the rate of fare from six tickets for a quarter to straight 5 cents and 1 cent for transfers. This move was attacked in the courts, but the company won its case. The court said the company had a right to fix a rate of fare, but the city might order it to cease the use of the streets. Then, when expenses had mounted high because of the war, the rate was raised to 6 cents with 2 cents for transfers.

DISORDER FOLLOWED FARE INCREASE

Since that time there has been opposition of all kinds. Workmen at one time wrecked several cars and then attempted to operate the others themselves.

Mayor Schreiber has said that a franchise will be prepared and offered to the lowest bidder.

Strike Declared on Boston Elevated

Trials of Boston Elevated Seem to Have Become More Complicated Than Ever Under Ten-Cent Fare

Despite all efforts of the trustees and officers of the company and of the public authorities to avert a walkout, the members of the carmen's union on the Boston (Mass.) Elevated Railway struck at 4 a.m. on July 17, tying up every surface and rapid transit car on the system. No attempt was made by the company to operate cars. An enormous traffic was handled during the day by the steam railroads and by automobile. On the afternoon of July 16 Samuel L. Powers of the board of trustees reached Chairman Taft by telephone at Point a Pic, Que., and Mr. Taft stated that the War Labor Board would hand down a finding by Aug. 2. Acting Mayor Ford of Boston called a meeting of union employees of the company at Tremont Temple on the evening of July 16, at which an appeal was made to the men to postpone the walkout, but without success. About 4500 car men are involved in the strike.

W. Jett Lauck, secretary of the War Labor Board, wired the union leaders at Boston to the effect that as the case was submitted to the board on June 19, the time spent in consideration had not been unreasonable. He pointed out that the award would be retroactive, fully protecting the interests of the employees, and declared that under such circumstances a strike would be unwarranted and an invasion of the rights of the public. He urged the rescinding of the strike vote pending the decision of the board.

Charles G. Wood, of the Massachusetts State Board of Conciliation and Arbitration, issued an appeal on July 16 to the union officials and membership urging them to abide by their contract and not to abuse the confidence of the public by acts in violation of their agreement.

The employees voted, on July 14, to strike at 4 a.m. on July 17 unless in the interim the War Labor Board should hand down a decision in the pending wage arbitration case.

MEN WANT 73½ CENTS AN HOUR

The men demand a wage of 73½ cents an hour and an eight-hour day. Charlton Ogburn of the War Labor Board wired the union officials at Boston on July 14 that it would be impossible to get an award on the Boston Elevated case before July 15 on account of the location of the chairmen, and suggested a settlement between the company and the men as the best solution.

The union officials claimed that the War Labor Board has had the case in hand for decision for the past three weeks.

The Boston company started a 10-cent fare on its entire system on July 10, with the result that a large amount of traffic has been at least temporarily diverted to the suburban steam railroad lines in the metropolitan district. The effect of the new fare upon the company's receipts had not been determined up to the present writing beyond a reduction in the total number of passengers carried.

It is the intention of the trustees, Mr. Jackson declared, to find out as soon as possible what can be done in the way of applying a zone system to Boston.

The company has been called upon to make heavy expenditures in subway rentals and in maintenance and highway contributions and is seeking legislative action to be relieved of these burdens so that it may devote attention to a zone system.

The trustees are firm in their conviction that just as soon as the summer is passed, and the present ill feeling begins to subside, the passengers will return to the trolleys, hastened by the advent of any bad weather.

The auditor of the road reports that under the first four days of the 10-cent fare, the revenues have made an average increase of more than 56 per cent over the same four days of last year.

STATISTICS OF GAIN

On July 10, there was a gain of 52.3 per cent over the corresponding day of last year; on July 11 a gain of 60.4 per cent; on July 12 a gain of 46.7 per cent, and on July 13 a gain of no less than 71 per cent.

The revenue for the first day of 10-cent fares, July 10, was $77,645 against $50,982 for the corresponding day of a year ago; for July 11 $80,447, against $50,168 a year ago; for July 12, $84,200, against $57,149 a year ago, and for July 13 $55,000, against $32,166.

Total passenger earnings for the first 190 days of the year, or up to July 11, were $14,178,971, against $9,830,056 for the same period last year.

For the first eleven days of the month, passenger earnings were $761,394, against $551,210, or a gain of 38.1 per cent.

However, the trustees are unwilling to draw any conclusions until after a thirty-day period has passed under the 10-cent fare, for there is much variableness, and always has been, in revenue.

All the steam roads are reporting large increases in suburban patronage.

Ask 77 Per Cent Increase

Chicago Men Threaten Strike Vote if Their Wage Demands Are Refused

Employees of the surface and elevated lines in Chicago, Ill., took action on July 11 looking to an advance of 77 per cent in their wages. Conductors and motormen of the surface lines want the maximum wage raised from 48 cents to 85 cents an hour; motormen of the elevated road from 50 cents to 87 cents; conductors of the elevated lines from 45 cents to 82 cents; all other employees, both systems, 37 cents an hour increase all effective as of June 1. The employees want also an eight-hour day, a six-day week and time and a half for overtime, and insist that 80 per cent of the runs shall be "straight," the balance to be finished in limits of ten hours.

The formal demands were presented to the management of both companies on July 12. L. A. Busby, president of the companies, said these increases would add about $14,000,000 a year to the payrolls of the surface lines and that the only way to meet them would be to raise fares to 9 or 10 cents. The fare is at present 5 cents on the surface and 6 cents on the elevated lines. The men were promised an answer in a short time, it being generally understood that the solution of the matter lay with the Public Utilities Commission of Illinois, which some months ago refused to advance surface railway fares.

The meeting where the demands were formulated was a joint session of the surface and elevated employees. The president of the union was quoted as saying:

> We don't care where the money comes from and are not interested in what the companies charge for fares. All we want is our new wages and we are going to get them. We are going to give the companies only a short time.

The Chicago Surface Lines union has more than 10,000 members and the elevated organization about 4000.

The men still have contracts with the companies which do not expire until June 1, 1920. The wage terms were changed by the War Labor Board last August to continue for the period of the war. This award raised the payroll of the surface lines $4,200,000, and the elevated company's expenses about $1,700,000. President Busby said:

> To express the matter succinctly, the surface lines cannot meet any wage increase whatever without an increase in fare to cover it. The issue is of vital interest to the public. Under the present fare of 5 cents we have barely been able to meet interest charges, but have succeeded merely because traffic has been unusually heavy for the last few months. The demands of the men will receive every consideration when formally presented, but I believe the facts will show that the men are seeking terms out of all proportion to the high cost of living here and elsewhere.

The union employees say they will take a strike vote in a short time if their demands are refused.

On July 14 the City Council of Chicago took action to avert a strike. A resolution was adopted directing the Mayor to appoint a commission of nine members, consisting of himself, four Aldermen, two representatives of the trainmen and two representatives of the surface and elevated roads, to report at once on what must be done to obtain uninterrupted transportation. The Mayor would not say when he would name the commission.

On July 15 the Board of Operation of the Chicago Surface Lines held a meeting which was followed by meetings of the directors of the underlying companies. At these sessions the directors decided to reject the demands of the men, on the ground that the companies were not in a position to grant any wage increase.

President Busby sent a letter to President William Quinlan of the trainmen's union setting forth the conclusion of the board of operation. In this he stated that for eleven months under the War Labor Board scale of wages there was a decrease in residue receipts of $2,620,705, and that the total net receipts for this period yielded a rate of return on the purchase price of 4.98 per cent.

He called attention to the friendly relations that have existed between the companies and the employees. He said there had never been a disposition to deny the employees a fair wage, but on the other hand neither the management nor the people would approve any unwarranted wage increase or unreasonable working conditions. He said the demands of the organization would increase wages more than 77 per cent and that under them additional employees would be required for operation and supervision.

While admitting that there had been a material increase in the cost of living, Mr. Busby denied that there was such an increase as that carried by the proposed new wage scale and he referred to the report of the United States Department of Labor, that the cost of living is practically identical in Chicago, Detroit and Cleveland. The eight-hour day, he said, is not practicable in train service in Chicago with the heavy traffic congestion and frequent blockades. The request for time and one-half for Sundays, holidays and overtime would impose a heavy and unnecessary burden on the public, and it would not be practicable to apply a uniform rate or percentage of increase to the wages of the employees outside the train service irrespective of their skill or value to the service.

Municipal Ownership Resolution Adopted

The General Council of Atlanta, Ga., has adopted a resolution asking the Legislature of Georgia to amend the municipal charter in order that the city may be empowered to acquire, either by negotiation or condemnation, the properties of the Georgia Railway & Power Company, and enabling the municipality to erect lighting and transportation plants for itself in case of failure to acquire the power company's property.

The action of Council is the first important official step that has been taken in Atlanta toward municipal ownership since the initial announcement of Mayor Key that he had held a conference with the officials of the Georgia Railway & Power Company, in which he was given to understand that the railway and the gas properties would be sold to the city under certain conditions.

The Mayor has given out statements from time to time, announcing his determination to bring about city ownership of the public utilities, and a message was sent to Council on July 8 by the Mayor, urging action upon the question. This message has been referred to the charter revision committee.

The measure adopted by Council, if passed by the General Assembly, will give the city of Atlanta the right to negotiate with the Georgia Railway & Power Company for the purchase of its railway lines, its power lines, and its gas lighting plants in the city, or to acquire these properties by condemnation, if necessary. Should the charter of Atlanta be amended in accordance with the resolution, the city would also have the right to erect its own lighting and power plants, and its own street railways—in case the purchase and the condemnation proceedings prove impracticable.

Fifty Cents an Hour Asked

The City Commissioners of Trenton, N. J., have refused to act as arbitrators in the dispute between the Trenton & Mercer County Traction Corporation and its employees relative to the demands for increased wages. The commissioners, however, agree to act as mediators, hearing both sides, with a view of having the wage scale amicably adjusted. Rankin Johnson, president of the company, and the employees then decided to continue the conferences.

It was at first agreed to place the matter in the hands of the War Labor Board, but that organization said it could not take up any new cases at this time. President Johnson told the men that as Trenton people would have to pay for any increase granted it was up to the Trenton authorities to settle the wage dispute.

The platform men are now receiving 42 cents an hour and the operators of the one-man cars 47 cents an hour. They want 50 cents for all employees and 75 cents an hour for all overtime. The company offered an increase of 1 cent an hour dating from July 1, and another increase of 1 cent an hour on Oct. 1. This was turned down. The company holds that the increase requested would involve more than $100,000 additional a year and that it can not meet the added payment out of present income. The remainder of the working agreement remains in effect until March 31, 1921.

The choice of arbitrators is referred to on page 137.

Strike on Shore Line

Employees of the Shore Line Electric Railway, Norwich, Conn., are seeking an advance in pay. In reply to the men's formal request for more money, R. W. Perkins, president of the company, has addressed the representatives of the men, outlining the condition of the company. In concluding his statement of the financial affairs of the company Mr. Perkins points out that in 1918 the company had a net revenue of $45,947 with which to pay taxes of $68,266 and rentals and interest amounting to $402,490, so that the actual loss for the year, without figuring dividends of any kind, was $424,809. In conclusion Mr. Perkins said in part:

> Because of this unsatisfactory condition of earnings, the management is now making a careful study of schedules and whereever the earnings are not taking care of the actual operating expenses, these schedules will be reduced, which will, of course, mean a reduction in the number of men employed, and a consequent reduction in the payroll, and every effort will be made to reduce operating expense to the point where earnings will cover it.
>
> The Shore Line is owned by the estate of Morton F. Plant, deceased, and the question raised by your request for an increase in wage has been taken up with the executors for final determination, and their conclusions are that, as executors, they are not justified, and, in fact, cannot legally put other funds of the estate into this property, but that they are willing to forego their claim for interest on the securities held by them long enough to determine whether with changed conditions resulting from the signing of the peace terms the property can be made to operate at a profit.
>
> As a consequence, the management is in a position of being absolutely unable to meet any increased operating cost, and, while fully in accord with the idea of arbitration, can see no advantage that would result from arbitration, for it would be necessary to stipulate in the beginning of the negotiations that an award for an increase of wage would result in suspension of service, for as has already been shown, wages and material are absorbing every dollar that we are able to collect from our patrons, and the only way in which the company can meet the demands for increase of wage is through more liberal support of the company by the people of the communities it serves, and this the people seem unwilling to do, with the result that if present conditions continue the communities face a very greatly reduced service, and in some instances, entire abandonment of service, for it goes without saying, operation of the present schedule can only continue for, and so long as, the people will pay the cost of producing it.
>
> Both you and the owners of the property are confronted with a condition that is most critical, and it would look as if the industry held little encouragement either for labor or capital until the people can see the tremendous commercial, social and economic value of electric railway service, and give the company its patronage, instead of giving it to the other less reliable forms of transportation service.

Count of the strike vote taken by employees of the Shore Line Electric Railway showed 98 per cent of the 500 men in favor of a strike, it was announced on July 14. A conference will be requested with the Shore Line officials, and upon the result of that will depend the time of calling the strike. The men are asking a raise from 42½ cents an hour to 60 cents an hour for an eight-hour day.

On July 16 the men put into effect their threat to strike, and it was reported that service was entirely suspended on the entire Shore Line Electric Railway system, which includes 221 miles of road.

Wage Increase in Kansas City

A wage increase, retroactive to July 1, has been put into effect by the Kansas City (Mo.) Railways. President Kealy, announcing the increase, said that it was made because of hoped-for favorable action by the Public Service Commission with reference to increased fares and would not be possible without such higher fares. Under the new scale, the minimum wages for extra men is $85 a month against the old scale of $75; other comparisons of trainmen's wages are as follows:

Present Scale

Period	Rate
First six months	35 cents
Second six months	36 cents
Second year	37 cents
Third year	38 cents
Fourth year	39 cents
Fifth year	40 cents

New Scale

Period	Rate
First three months	40 cents
Second nine months	42 cents
Second year	43 cents
Third year	44 cents
Fourth year	45 cents

Carhouse men will receive the same pay as trainmen.

Five cents more than the scale is paid to operators of one-man car. Operators of mail cars receive 4 cents more than the scale.

The company was in need of men when the wage increase was announced; within a few days it had secured more than 100, because of the better pay. A few of the former employees who had struck last year but had not taken a malicious part in the strike, returned to work.

Increased Wage Predicted for Pittsburgh

The War Labor Board does not feel that it can take into account financial difficulties of electric railways in considering the wage increase disputes, according to a Washington dispatch published July 15 in the Pittsburgh *Post.*

The story in which this statement appeared was a forecast that the board will make an award in favor of the employees of the Pittsburgh Railways, whose demand for a 12-cent increase is now under consideration. The men are asking a maximum rate of 60 cents. They will be granted a scale somewhere between 53 and 60 cents, according to the Washington correspondent of the *Post.*

A new standard and a new maximum for large cities is expected to follow an award in favor of the Pittsburgh employees. Several new conditions are under consideration by the board, this report relates, among them increased cost of living, as compared with that at the time the 48-cent scale was established, and several settlements in which arbitration by the board was not invoked, by which the workers involved are now receiving more than 48 cents. The situation in Portland, Ore., is cited in particular, the men there receiving 50 cents.

One of the objections of the receivers of the Pittsburgh Railways to a wage increase has been inability of the lines to pay more. On this matter the position of the board is understood to be that it cannot concern itself with the revenues or financial condition of a company.

The award in the Pittsburgh case is expected shortly after July 25, when Basil Manly, joint chairman with William Howard Taft, of the board will return to Washington from the Pacific coast. As has been explained before in the ELECTRIC RAILWAY JOURNAL, this award will not be final, as the United States District Court at Pittsburgh has reserved the right of passing upon it. In turn, the men have reserved the right to re-open their strike, which was brought to a close by submission of their demands to the board, if the court negatives any award in their favor.

Kansas City Employees Aid Company

The employees of the Kansas City (Mo.) Railways assisted materially in the application of the company for increased fares, before the Public Service Commission of Missouri. The employees prepared a petition, signed by several hundred of them, pointing out to the commission that part of the income from increased fares would be used to give them more wages. A significant feature of the petition was the statement that the present employees of the company do not believe in strikes; and that they are not now holding any threat over the company, the public or the commission, of going on strike if higher rates and higher fares are not granted.

This position of the men is in contrast with the attitude of the unions which formerly included a large proportion of the company's employees, the union men going so far as to threaten not only the company and the public, and inferentially the commission, but to intimate to courts that formal orders had no effect on their attitude.

The Kansas City Railways did not wait for the formal order of the commission with reference to higher rates, but increased wages, about the time the petition was presented.

The petition to the commission was presented by forty employees while the commission was holding a hearing at Kansas City on the matter of fares. Except for the preamble the petition follows in full:

In considering this petition we ask that you take into account the following facts:

1. That the present employees of the Kansas City Railways entered its service at a time when the people of Kansas City were denied transportation by the refusal of the company's former employees to work.

2. That we do not believe in strikes by employees of a public utility, but believe that we are rendering a public service, and we have every confidence that your body can and will make such adjustments as are necessary to secure for us an adequate and living wage.

3. We know that the financial affairs of the company are such that an increase in wages under present conditions is an impossibility, and that any such increase without an increase in income will only result in bankruptcy to the company, reduction of service to the public, and worse conditions than those we are now undergoing.

4. We know that the management of the company realizes the necessity for an increase in wages and have the assurance that any increase in revenue granted the company will be shared by us, and that the company is willing that the commission so order.

5. We also desire to call to your attention the fact that throughout the United States the street railway union in its negotiations with railways for higher wages recognizes the above conditions and has in many cases joined as we are doing with the company in an appeal to state authorities for relief. The union has, however, held as a club over the heads of the company, the commissions, and the public, the threat to strike and disrupt the business and social life of the communities in which these companies operate. This we do not do.

Therefore, having in mind these considerations, we respectfully petition your honorable body in its deliberations on the rate of fare in Kansas City to have in mind the service we are rendering and the fact that we address you without threat or compulsion, and grant to the Kansas City Railways, with all the restrictions and safeguards necessary for the proper protection of the public, such a rate of fare as will allow this company to pay us a wage commensurate with the rate paid for the same work in other cities, and that in so doing you incorporate in your decision the scale of wages to be paid by the Kansas City Railways.

Improvement Program Started

The city engineering department of Seattle, Wash., announces that according to all indications, the work of completing the necessary connections for the Seattle Municipal Elevated Railway will, in all probability, be completed by Aug. 1 and service started at that time.

The track work at the outer end of the elevated is completed. The northern terminus of the line will be relocated, permitting the patrons of the Lake Burien line to ride into the business section of the city of Seattle without transferring at Riverside, as heretofore planned.

Work on a number of municipal railway projects will be started at once, with J. J. Wettrick, chief engineer, in charge. The projects were recommended to the Council by Thomas F. Murphine, superintendent of public utilities, after a careful survey of the system.

The work of improvement that it is planned to carry out at this time is provided for in a bond issue of $750,000 passed recently. The proceeds from this issue will not reach the city treasury until September, but the work will be financed by loans from the city railway and general fund.

The most important work planned includes the double-tracking of Leary Avenue for use by Ballard cars; construction of a double-track line on Avalon Way; and making track connections at Third Avenue and Pine Street. The latter improvement is made for the purpose of enabling the city to operate its Division "A" or Ballard cars on Third Avenue, instead of Fourth Avenue, as at present, thus eliminating a monthly payment to the Seattle & Rainier Valley Railway for common-user rights on its Fourth Avenue tracks.

News Notes

Receiver's Name on Cars.—The name of Job E. Hedges, receiver of the New York (N. Y.) Railways, is being painted on all the cars of that company in letters 6 in. high, underneath the name, "New York Railways," and above and close to the wheels.

Toronto Strike Settled.—Service on the lines of the Toronto (Ont.) Railway was resumed on July 4 after twelve days, on the announcement that the Ontario Railway & Municipal Board had agreed to accept the interim award of the Board of Conciliation to the employees, granting them a minimum wage of 50 cents an hour and a maximum wage of 55 cents.

Kansas City Director Reappointed.—The Court of Appeals at Kansas City, Mo., has announced the reappointment of W. T. Kemper as a city director of the Kansas City Railways. His present term expires in August. Mayor Cowgill, in compliance with the franchise ordinance, submitted three names, including that of the retiring director, to the court. The other names were J. Q. Watkins and George H. Edwards.

Employees Reject Offer.—Officials of the union have informed E. F. Schneider, general manager of the Cleveland, Southwestern & Columbus Railway, that the company's offer of an increase of 6 cents an hour in the wage schedule has been rejected. They are asking a maximum of 60 cents an hour. The company's offer is 41 cents for the first three months, 44 cents for the next nine months and 48 cents thereafter.

Receiver Authorizes Payment of Accident Claims.—Authority to pay accident claims found just after investigation has been granted the receivers of the Pittsburgh (Pa.) Railways by the United States District Court. This order settles one of the difficulties the receivers have faced. Numerous suits now pending in the Common Pleas Court can be settled at a saving and much future litigation may be avoided.

Orders Tracks Removed.—The Commissioners of Stark County, Ohio, adopted a resolution, on July 9, demanding that the Northern Ohio Traction & Light Company cease operation on the Canton-Massillon line within ten days and remove its tracks within thirty days. The resolution authorizes the prosecuting attorney to start and ouster suit in the Ohio Supreme Court if the company has failed to vacate the road at the end of thirty days. This tribunal some time ago held that the franchise expired in 1917.

Barber, Cigar and Shoe Shining Privileges.—The Kansas City (Mo.) Railways is providing space at its Ninth and Brighton division headquarters, for the opening of a barber shop, cigar stand, shoe shining outfit, and other conveniences, to be operated by old employees, catering to trainmen. The company is not financing the enterprise, but is assisting the men in establishing it on a sound basis. Moderate prices will be charged. The establishment of these conveniences at headquarters will obviate the necessity for the men going several blocks for such service.

Trenton Arbitrators Chosen.—James H. Vahey, counsel for the Amalgamated Association, has been named by the employees of the Trenton & Mercer County Traction Corporation, Trenton, N. J., as their arbitrator to consider the wage differences between the men and the company. A. S. Richey, Worcester, Mass., will act as arbitrator for the company. Messrs. Taft and Manly, joint chairmen of the War Labor Board, will appoint three others to act with Messrs. Vahey and Richey. The arbitrators will not meet for several days yet.

Georgia Municipalities Favor Municipal Ownership. — The Georgia League of Municipalities in session at Atlanta, Ga., recently endorsed the principal of municipal ownership in its entirety and appointed a committee of five to appear before the present session of the Legislature of Georgia and appeal for legislation permitting municipalities to acquire or to build and operate such public utilities as they may desire. The Legislature will also be asked to guarantee to the municipality that their right to own and operate their own public utilities shall not in any way be abridged or restricted.

Wage Question Compromised. — Through an agreement reached on July 11 between the representatives of the motormen and conductors and the officers of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, the threatened strike was averted. The agreement was in the nature of a compromise. The men are to receive 42 cents for the first three months of service, 46 cents for the next nine months and 50 cents thereafter. The old scale was 38, 40 and 42 cents. The company had previously offered the men 41 cents for the first year of service, 44 cents for the second and 48 cents thereafter.

Broadway Subway Extended.—Two new stations on the Broadway subway line of the Brooklyn (N. Y.) Rapid Transit Company have been opened, thus extending the present line from Times Square, New York, to Fifty-ninth Street, at the point where the subway will turn east to connect the lines in the Borough of Manhatan with those in the Borough of Queens. The line has been in operation in Broadway as far north as Forty-second Street for many months. Its extension farther north was delayed because of the complicated construction involved in passing underneath the line of the Interborough Rapid Transit Company just north of Forty-second Street.

Municipal Ownership Committee Appointed.—President Corcoran of the Common Council of Milwaukee, Wis., has announced the membership of the committee which will inquire into the feasibility of the purchase by the city of the utilities owned by the Milwaukee Electric Railway & Light Company. A law enacted at the present session of the Legislature provides for financing the purchase of public utilities by the cities of Wisconsin with payment for any such plant by bonds issued against the value of the plant, a certain percentage of gross earnings being set aside to pay the interest and principal of the securities. Heretofore the only method of paying for public utilities purchased by cities was by general city bonds. With the constitutional debt limit of 5 per cent only a few cities had a sufficient bond issue margin to permit of purchasing public utilities.

Improvement Plan Halted.—Lack of money and the difficulty of disposing of bonds will prevent the Chicago (Ill.) Surface Lines this year from carrying out the ordinance provision which requires 23 miles of track extensions every year. This announcement was made to the transportation committee of the City Council on July 9 by John E. Wilkie, assistant to L. A. Busby, president of the company. "The market value of our securities is so low," he said, "that we cannot afford to stand the loss of placing new securities on the market which would hardly give us half the value of the paper." The Surface Lines system has been growing rapidly because of this provision of the ordinance, and while there was little or no extension last year because of government restrictions the Aldermen had hoped that the building program would be renewed. The matter was left to a sub-committee.

Service Restored in Urbana. — Twenty-minute service was given by the Urbana & Champaign Railway, Gas & Electric Company in Urbana, Ill., on July 8. Each car was accompanied by an armed guard, and no effort was made at any time to interfere with the free movement of service. No cars were run after 7 p. m. The cars were in charge of men who belonged to the "brotherhood," all union men being out on strike. There were no developments during the day, except a hint that there would possibly be a general strike of all organized labor in Champaign and Urbana in sympathy with the union street railway men. The strike was unchanged on July 14, the cars being operated under a twenty-minute schedule with guards on each car. No cars are operated after 7 p. m. The best of order prevails. The twenty-minute schedule is a source of inconvenience to the public, which is accustomed to a 10 and a 12-minute service.

Financial and Corporate

Revenues Jumped 86 Per Cent

W. B. & A. System in 1918 Again Displayed a Marvelous Expansion in Business

The calendar year 1917, with an increase of $613,923 or 64.9 per cent in gross operating revenue, had seemed to set a mark which it would be difficult to reach again in the growth of the Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md. Nevertheless the succeeding year of 1918 proved even more successful, for the gross operating revenues showed a gain of $1,341,889 or 86.0 per cent over those of 1917.

INCOME STATEMENT OF WASHINGTON, BALTIMORE & ANNAPOLIS ELECTRIC RAILROAD FOR CALENDAR YEARS 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Railway operating revenues...	$2,902,014	100.0	$1,560,125	100.0
Railway operating expenses*.......	1,740,281	59.9	738,597	47.3
Net revenue railway operations	$1,161,733	40.1	$821,528	52.7
Net revenue auxiliary operations....	127,188	4.4	25,575	1.6
Net operating revenue......	$1,288,921	44.5	$847,103	54.3
Taxes assignable to railway operations†......	523,426	18.4	129,052	8.3
Operating income.........	$765,495	26.1	$718,051	46.0
Nonoperating income......	17,953	0.6	12,893	0.8
Gross income...	$783,448	26.7	$730,944	46.8
Deductions from gross income.....	288,912	9.6	268,293	17.2
Net income‡....	$494,536	17.1	$462,651	29.6

* Includes special depreciation on account of war-work facilities.

† This item covers all taxes, including income and war taxes.

‡ Net profit for the year, after the deduction of income and war taxes and special depreciation.

The operating expenses, because of both the increased business and the higher costs, naturally showed a large increase too, but there was still left a gain of about $441,000 in net operating revenue. Of this sum $394,000 was taken up in the item covering taxes, including excess profits and war taxes. The final result for the year was an increase of $31,885 or 6 per cent in net income.

Approximately one-third of the gross revenue only was derived from Camp Meade and practically all of the profit thereon was paid to the government in excess profits taxes. Therefore, the elimination of Camp Meade, if contemporaneous with the elimination of excess profits taxes, would not in the least affect the normal earning capacity of the company. There has been, however, an official announcement that the cantonment at Meade is to be a permanent factor in the military program.

When the Washington, Baltimore & Annapolis line was originally constructed about fifteen years ago, the territory between Baltimore and Washington was very sparsely settled and almost undeveloped. It has taken this territory many years to come into its own, but with the advent of the railway and frequent electric service between Washington and Baltimore and the intervening districts, there has sprung up an interurban population and traffic, rapidly extending, now sufficient in the judgment of the company to warrant the stability of the system.

The total car miles operated in 1918 were 5,344,729, of which 5,101,507 were passenger. A total of 5,946,697 revenue passengers were carried in 1918 as compared to 3,429,966 in 1917. The earnings per car mile were the same in both years, at 58.98 cents. The total net expenditure for acquisitions and permanent improvements during 1918 was $700,424, of which $520,733 was for way and structures and $159,743 for equipment.

Reorganization Approved

The properties of the Oakland Antioch & Eastern Railway, Oakland, Cal., the Oakland & Antioch Railway and the San Ramon Valley Railroad, as planned by the committee named to reorgnize the three lines, are to be sold to a corporation to be formed for the purpose of carrying on the business of the three lines in accordance with the plans of the reoganization committee.

The California Railroad Commission, in an order issued on June 27, has consented to the transfer of the properties to the new corporation as soon as it has been formed and has authorized the new company to issue the stocks and bonds necessary to carry out the reorganization plan. Of the bonds, there are to be not exceeding $1,950,000 bearing interest at not more than 6 per cent a year; $1,330,000 of 6 per cent preferred stock and $4,000,000 of common stock.

The reorganization plan reduces the annual fixed charges of the properties from $285,000 to $117,000 a year; the bonded debt from $6,444,000 to $1,950,000 and the capital stock from $8,711,300 to at least $5,330,000. The holders of 92 per cent of the obligations of the three roads have approved the plans of the reorganization committee.

The details of the reorganization plan were reviewed in the ELECTRIC RAILWAY JOURNAL for May 17, page 981.

Receiver for Surface Lines

Brooklyn Roads Placed Under Mr. Garrison on Account of Impairment of Their Credit

Judge Julius M. Mayer, in the Federal District Court, at New York, on July 14, extended the Brooklyn Rapid Transit receivership so as to place Lindley M. Garrison, the receiver, in charge of the surface railways in Brooklyn. Previously, the receivership had covered only the Brooklyn Rapid Transit Company and the elevated and subway lines of that system.

ALL SURFACE LINES COVERED

The extension was made to cover the Brooklyn Heights Railroad, the Nassau Electric Railroad, the Brooklyn, Queens County & Suburban Railroad, and the Coney Island & Brooklyn Railroad which, through leases, virtually control all surface lines in Brooklyn.

The action was taken at the instance of the Central Union Trust Company to foreclose the first refunding 4 per cent mortgage of the Brooklyn Rapid Transit Company, and to enforce a legal and equitable lien upon the property, as well as to protect the title to the real estate and personal property of the company. The additional bond of the receiver was fixed at $100,000, and the order putting him in charge of the surface roads was made returnable before Judge Mayer on Aug. 26. Under the order the receiver will operate the surface lines as well as the elevated and subway lines.

The first refunding gold mortgage under which the Central Union Trust Company is trustee was made on July 1, 1902, to secure an issue of bonds aggregating $150,000,000 due and payable on July 1, 2002. Of these bonds, which drew interest at 4 per cent, $57,240,000 was issued. Under the mortgage $29,619,000 of the gold mortgage bonds which had been converted into capital stock have been surrendered and cancelled, leaving $27,621,000 outstanding.

CREDIT OF SURFACE LINES IMPAIRED

In the foreclosure suit it is alleged that since the appointment of Mr. Garrison as receiver for the Brooklyn Rapid Transit Company the credit of the surface railroads has become impaired, and the companies will be unable to finance their immediate and future capital requirements. It also is asserted that their available funds, receipts, and earnings are being exhausted because of the lack of credit and the necessity of making cash deposits as security for stay or other bonds which they cannot obtain.

Timothy S. Williams, formerly president of the Brooklyn Rapid Transit Company, it was announced, will remain with the receiver, having charge of the operation of the surface lines. There will be no change in the management or operation of the lines included in the surface railway system.

Notice of Default Served

The United Railways, St. Louis, Mo., has been served with notice of default by the trustees for holders of the general mortgage 4 per cent bonds, aggregating $30,000,000, it was revealed on July 10 in the hearing before Special Master Henry Lamm on Receiver Rolla Wells' application for authority to issue receivers' certificates or one-year notes to pay the government loan of $3,235,000, which is several months overdue.

The inability of the company to raise the funds to pay off this loan, which was secured by the pledging of matured Union Depot Railway bonds, threatens the foreclosure of the general mortgage. The failure to release the Union Depot bonds for cancellation constitutes the alleged default.

The default notice was served upon the United Railways by the St. Louis Union Trust Company, trustee for the United Railways' 4 per cent bonds.

Judge George H. Williams, a bondholder, and attorney for one of the bondholders, said the United Railways covenanted itself to pay off and retire the underlying bonds as they fell due and that its failure to take up the Union Depot bonds violates this agreement and constitutes a default.

No foreclosure, however, under the terms of the general mortgage, can occur, Mr. Williams said, until ninety days' notice is given.

The purpose of the hearing before Special Master Lamm is to devise some financial arrangement for paying off the War Finance Corporation loan of $3,235,000, which would release the Union Depot Railway bonds for cancellation and thus avoid foreclosure.

Charles W. Bates, attorney for the receiver, suggested to Special Master Lamm that Judge Lamm recommend to the court that it direct the receiver to issue certificates, these to be a first lien on the Union Depot Railway bonds, and that this lien be behind all of the divisional mortgages and ahead of the 4 per cent bonds.

Discontinuance of Service Threatened

Unless the communities served by the Georgetown, Rowley & Ipswich and the New Bedford, Middleboro & Brockton branches of the Eastern Massachusetts Street Railway, Boston, Mass., are willing to contribute to the support of these lines under the provisions of Section 15, Special Act of the 1918 Legislature, which allows them to do so, service will be discontinued thereon on Sept. 1.

Notice to this effect has been served upon the public officials in the territory included in these two units of the system by the public trustees of the railway, who say they do not believe either can be included fairly in any of the adjoining districts.

The trustees further declare that from figures available they are convinced that without substantial financial aid from the cities and towns involved the lines cannot be operated without a loss.

In the establishment of the "home rule" districts, the trustees feel that the complaint of many communities that they should not be made to carry the financial load of non-paying lines, with which they have nothing directly in common, is a well-founded one.

On the Georgetown, Rowley & Ipswich and the New Bedford, Middleboro & Brockton branches there are about 54 miles of rail.

The discontinuance of service on other unprofitable lines is also being considered by the trustees.

Memphis Valuation Board Appointed

Prof. Albert S. Richey of the Worcester (Mass.) Polytechnic Institute has been appointed by the Railroad & Public Utilities Commission of Tennessee to act as its representative in the appraisal of the property of the Memphis Street Railway in accordance with the order of the commission dated June 12, which is quoted in the ELECTRIC RAILWAY JOURNAL of June 21, page 1247.

Three appraisers are to be appointed to determine the value of the railway in its fight for a permanent 6-cent fare. The city of Memphis has announced that it will appoint Ross W. Harris, Madison, Wis., who represented the city in the preliminary hearing on the 6-cent fare. The third appraiser, to be appointed by the railway, has not yet been designated.

Virginia Road Reclaimed

The Richmond - Ashland Railway, Richmond, Va., organized recently, has taken over the property of the Richmond & Chesapeake Bay Railway and is actively rehabilitating the line under the plan to reclaim the road outlined briefly in the ELECTRIC RAILWAY JOURNAL for March 29, page 662. The first 8 miles of the road between Richmond and Greenwood are now in operation and during the month of July the complete line will be rehabilitated and will be in operation as far as Ashland.

The corporation has in contemplation some extensions of considerable general interest if it should be in position to carry out the proposed plans. The temporary organization of the company consists of Jonathan Bryan, Richmond, president, O. J. Sands, Richmond, treasurer, and J. A. Baird, Petersburg, Va., general manager. Upon completion and beginning of the operation of the line between Richmond and Ashland the permanent organization will then take charge of the company and the property, but it is hoped that certain of the proposed additional plans will be worked out prior to that time.

Segregation Permitted

Judge Julius M. Mayer, in the United States District Court, made an order, on July 11, separating the Eighth Avenue Railroad from the receivership of the New York Railways. The order carries with it the proviso that the contract to be made by the receiver with this line shall, in the matter of transfers, be the same as if the severance had not taken place. The order eliminates the danger of a 10-cent fare, as the old transfer system applies until the order of Public Service Commissioner Lewis Nixon, prescribing a 2-cent transfer charge, is confirmed or set aside.

Judge Mayer said he had come to the conclusion that the Eighth Avenue line was not an asset but a burden to the estate under the receivership and should be severed therefrom. He made it clear that the order, when settled, should not be in conflict in any way with the order of Commissioner Nixon. He did not decide he had any authority to fix a joint rate between any lines involved in the transfer issue.

Bronson Winthrop and Henry L. Stimson appeared for the receiver while Michael Kirtland and Morgan J. O'Brien represented the company seeking severance. Mr. Winthrop said:

> The Eighth Avenue Company is playing the part here of a company anxious to get back its lines, but without being able to show the court it can operate them. The most serious objection is that the Eighth Avenue line has no right to operate a double-track system below West Tenth Street, in West Broadway. It has only a single-track franchise. It must operate double tracks in this street if it can get anywhere where it can turn around and come back.
>
> This company has a single-track franchise down West Broadway to Vesey Street, and then up Church Street to Chambers. The Church Street line is not in operation. From Vesey to Chambers it is a dead line. It would take two or three months to electrify a cross-over at either of the points named.

Mr. Kirtland, for the applicant, said that all tracks south of Canal Street to Chambers were owned jointly by the Sixth and Eighth Avenue companies and all south of Chambers Street by the Sixth and Ninth Avenue companies. His company proposed to use the Cortlandt Street loop of the Ninth Avenue system until it could build its own crossovers.

Sharon, Mass., to Control Electric Railway

The town of Sharon, Mass., will shortly begin to operate the former Norwood, Canton & Sharon Street Railway, which was sold for wreckage purposes recently to the Dominion Iron & Wrecking Company, of Canada. The town will proceed upon authority of an act passed by the Legislature of 1918, which allows municipalities to finance the operation of electric railways by the assessment of a tax of not over $1 per $1,000 valuation. The act was passed as a war measure but remains in force upon the statute books at this time. It is planned to sell stock to the citizens at $50 a share, an allowance of 6 per cent interest being accorded as a part of the regular operating cost of the road. A stock company composed of citizens was formed recently with the following officers: President, Vernon S. Hawkins, of the Sharon Board of Selectmen; clerk, Postmaster Joseph L. McGrath; treasurer, S. G. Spear; directors, Frederick A. Prince and C. V. Reynolds. The road barely escaped being junked, the town coming to the rescue just in time to prevent dismantling.

Court Upholds Milwaukee Purchase

The State Supreme Court of Wisconsin has handed down a decision sustaining the findings of the Circuit Court of Dane County, denying a temporary injunction restraining the Railroad Commission from proceeding to determine the application of the Milwaukee Electric Railway & Light Company for leave to issue $1,600,000 of common stock in part payment for the purchase of the utility property of the Milwaukee Light, Heat & Traction Company. Deeds were executed and delivered covering this property on Feb. 11, 1919.

City Attorney Williams of Milwaukee sought an injunction before the Dane County Court to restrain the Railroad Commission from proceeding to determine the application of the company for leave to issue certain securities and make certain payments for the property of the traction company. Judge Stevens denied the temporary injunction, from which decision the city appealed.

In commenting upon the decision of the Supreme Court, S. B. Way, vice-president and general manager, said:

> The contention of the electric company in the matter of the purchase of the property of the Milwaukee Light, Heat & Traction Company has apparently finally been vindicated by the decision of the Supreme Court. In this, as in a considerable number of other cases in which the city attorney has appealed to the Supreme Court, the decision has been against the city.

$2,500,000 of Receiver's Certificates

As the result of an informal agreement between the various financial interests in the United Railways, St. Louis, Mo., involved in the litigation before Special Master Lamm, the latter indicated on July 15 that he would recommend to Federal Judge Dyer authorization of the issuance of $2,500,000 in receiver's certificates to take up the $2,400,000 defaulted balance and interest due the United States War Finance Corporation.

The receiver's certificates will be secured by a first lien on the property of the Union Depot Railway, part of the Bellefontaine, Tower Grove, Cherokee and Eighteenth Street lines of the United Railways.

By the sale of these certificates the $3,500,000 of 6 per cent Union Depot bonds now held as collateral by the War Finance Corporation will be retired. It will not be necessary to issue a new mortgage to secure the receiver's certificates. If the certificates cannot be sold at a satisfactory price, the receiver will come before Special Master Lamm with an alternate proposal. The special master made it clear that he did not favor selling the certificates at a heavy discount.

The agreement was reached after Judge Lamm had expressed his opinion on the necessity of a reorganization of the United Railways from the ground up "on a substantial foundation." The master said:

> This corporation must cut loose and make a new superstructure on a decent foundation. We haven't got it yet. We will have it in a few months (referring to the valuation of the United Railway properties now being made by the Missouri Public Service Commission).
>
> It is urgently necessary to preserve this property for the present. I am inclined to make this order (for the receiver's certificates) to the chancellor. I would like to put a limit on the discounting of the certificates, however. In an emergency such as this financiers might insist on a heavy slice. That would ultimately increase the bonded debt.

The special master finally gave Receiver Wells permission to drive the best bargain possible.

Illinois Road Sold Under Foreclosure

The property of the Southern Traction Company, in the hands of a receiver for five years, has been sold at public auction to H. D. Mepham, St. Louis, Mo., for $400,000. Mr. Mepham was one of the original builders of the road. He announced immediately after the sale that interests in the East would at once begin the operation of the road over the free bridge in East St. Louis and gradually would extend service to Belleville.

The road was sold at the terminal yards of the company, at Tweny-sixth Street and Trendley Avenue, East St. Louis, Ill., by Peter P. Schaefer, master in chancery of the Federal Court for the Eastern District of Illinois, under an order of Judge George W. English, who had decreed that $300,000 was to be the minimum price for which the property could be sold.

There were only two bidders for the property: Attorney Rowland, representing Mr. Mepham, and Attorney E. C. Kramer, representing the Southern Coal, Coke & Mining Company. Mr. Mepham presented a certified check for $30,000 on a New York bank. The next step will be the payment of the remaining $370,000 due on the purchase price. If any default arises another sale will in all probability be ordered.

The lines, according to the original plans, were to have been extended through a rich coal mining district, passing through the cities of Christopher, Duquoin, Benton and West Frankfort. Court proceedings instituted in clearing up the claims against the Southern Traction Company probably will not be disposed of for more than a year, it is said.

Financial News Notes

Sale of Jackson Property Reported.—It is reported from Jackson, Miss., that the property of the Jackson Light & Traction Company, has been purchased by M. H. Grossman, Milwaukee, Wis., whose bid was $5,000, subject to all liens, etc.

Additional Preferred Stock Issued.—The Pacific Gas & Electric Company, San Francisco, Cal., has sold $5,000,000 of its 6 per cent cumulative preferred stock to a syndicate of bankers. According to an official of the company, the sale of the stock will increase the company's cash to an amount in excess of $10,000,000.

Asks Reduction in Tax Value.—On July 9 the Cleveland (Ohio) Railway filed suit in Common Pleas Court against County Auditor John A. Zangerle and the members of the State Tax Commission, asking that the annual tax valuation of the company's property be reduced from $33,825,220 to $19,843,960. A similar suit filed a year ago has been carried to the Ohio Supreme Court.

Jersey Central Traction Company, Matawan, N. J.—The Jersey Central Traction Company has been ordered by the Board of Public Utility Commissioners to make repairs and replacements to be completed not later than Nov. 9. On the Keyport-Perth Amboy division the company has been ordered to raise the tracks to the proper level at the approaches to the bridge across the Matawan Creek.

Will Appeal Tax Decision.—Thomas W. Gregory, secretary-treasurer of the St. Louis & East St. Louis Electric Railway, East St. Louis, Ill., operating on Eads Bridge, has announced that an appeal will be taken to the United States Supreme Court from the decision of Judge Bond in the Missouri Supreme Court, affirming a judgment in the suit of the city of St. Louis against the company for taxes amounting to $8,356.

Bond Interest Payment Authorized.—Payment of $18,750 due on July 1, on the mortgage of the Pittsburgh, Canonsburg & Washington Railway, included in the system of the Pittsburgh (Pa.) Railways, was ordered recently by the federal court, under which receivers are operating the lines. Hope that payment of fixed charges may be resumed is entertained since the announcement was made of an increase in the cash fares to 10 cents to take effect on Aug. 1.

Time for Consolidation Extended.—At a meeting of the City Commission of Dayton, Ohio, on July 9, the local railway companies were granted an extension of time for consummating a consolidation. When they were granted an increase in fare, it was on condition that they make an earnest effort to effect a merger. It is understood that satisfacory progress has been made by the City Railway looking toward taking over the People's Railway.

Ohio Road May Be Junked.—C. G. Taylor, receiver of the Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio, is quoted as saying that this company's line, about 24½ miles in length, may be junked. Mr. Taylor is reported to have said that the star of the interurban line seemed to be setting. There was too much competition. According to him, the automobile has absorbed much of the passenger traffic and now came the automobile truck to take away what little freight business there was.

Interest Payment Ordered.—Job E. Hedges, receiver of the New York (N. Y.) Railways, was ordered by Judge Mayer in the Federal Court at New York on July 14 to pay the Guaranty Trust Company, New York, N. Y., interest to Oct. 7 next, on a note for $400,000. The payment will prevent the Guaranty Trust Company from selling the collateral security, consisting of $1,000,000 first real estate refunding 4 per cent bonds of the New York Railways. The Guaranty Trust Company, in 1917, lent to the New York Railways $1,200,000, which has been reduced since to the amount of the note, upon which no interest has been paid since April 2.

St. Louis Receiver Reports Earnings.—The gross earnings from passenger traffic of the United Railways, St. Louis, Mo., during the period between June 1, 1918, and April 30, 1919, were $13,310,537, a gain of 14.56 per cent over the previous year, according to a report filed on June 27 with the Missouri Public Service Commission by Rolla Wells, receiver of the railway. Of these earnings $12,808,625 were from traffic within the city of St. Louis and the balance for St. Louis County. The increase in earning on the city division over the previous year was 15.42 per cent, while the county earnings of the company showed an increase of only 1.97 per cent over the previous year. The total number of revenue passengers carried during the period covered by the report was 225,983,272.

$130,000 of Bonds Authorized.—The Public Service Commission for the Second District of New York, on July 10, passed an order authorizing the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., to issue $130,000 of 6 per cent first mortgage bonds, provided the bonds shall not be sold until the proposed sale price is approved by the commission. The proceeds of the bonds are to be applied to construction work partly completed and proposed relaying of track in Main Street, Poughkeepsie, from the carhouse to Cherry Street and in Main Street from Cherry Street to Arlington switch including paving. The completed work is principally in Wappingers Falls, including paving costs and other general track reconstruction and equipment.

Application for Receiver Refused.—Judge Guy F. Nelson of the Superior Court has denied the application of Mayor John L. Wisener for a receiver for the Muskogee (Okla.) Electric Traction Company in connection with the strike of the employees of that company. The court held, first, that the city had no standing in court, inasmuch as it has nothing at stake financially, and that no one but a stockholder or bondholder could maintain an action of this kind. Secondly, that the conditions charged by the city had been in effect for years and the city had taken no action which indicated the suit was brought in good faith. The court scored the city officials for failure to give the company police protection when it had twice made an effort to operate its cars. The judge said: "It is the duty of the city to furnish protection for all property within the city and to furnish the protection needed to carry on business."

New Bill for Receiver.—A new bill for the appointment of a receiver for the Rock Island (Ill.) Southern Traction Company, together with a motion to dismiss the old bill, has been filed in the Knox County Circuit Court at Galesburg, Ill. The old bill, on which evidence has been heard by the master in chancery, charged that the defendant company had allowed the rolling stock and property of the road to run down until there was danger that the stockholders and bondholders would lose their investments. The new bill charges that the company had defaulted for six months in the payment of interest on the bonds. The old charge of allowing the property to deteriorate is also included in the new bill. The financial affairs of the Rock Island Southern Railroad have been in court for some time and the new bill for a receiver is the final step in litigation between the Continental & Commercial Trust & Savings Bank, Chicago, Ill., representing the holders of the secured debt of the company, and the owners of the road.

Receivership Action Continued.—An attempt to throw the Galesburg & Western Railway, now under lease to the Rock Island Southern Railroad, into the hands of a receiver was blocked in the Knox County Circuit Court at Galesburg, Ill., when Judge Thompson advised the attorneys for the Continental & Commercial Trust & Savings Bank, Chicago, Ill., seeking the order, to ascertain whether the Rock Island Southern Railway is under government control. Judge Thompson questioned whether the fact that the Galesburg & Western Railway was leased to the Rock Island Southern Railroad brought the former under government control, if the Rock Island Southern connected with the Chicago, Rock Island & Pacific Railway and the Chicago, Burlington & Quincy Railway, both under government control. Judge Thompson also noted the point that interurban railways are excluded from government control.

Move to Protect New Haven's Interests.—Federal Judge Mayer in New York, on July 10, appointed Nathaniel W. Smith, who is counsel at Providence for the New York, New Haven & Hartford Railroad, as counsel for the Rhode Island Company against which receivership litigation is pending in Rhode Island State courts. A petition filed by Edward G. Buckland, president of the New York, New Haven & Hartford Railroad explained that the Rhode Island Company is indebted to the New Haven for notes aggregating about $4,000,000 and that the New Haven had special interest in the preservation of the property of the Rhode Island Company. Judge Mayer's action, granted at the request of Mr. Buckland, was concurred in by Frank M. Swacker, special counsel for the government in connection with the Sherman law dissolution suit against the New Haven, of which the Rhode Island Company is a subsidiary. Mr. Buckland told the court that bondholders' committees for the United Traction & Electric Company and the Rhode Island Suburban Railway have been in conference with directors of the New Haven, and that he was hopeful of an early settlement of the controversy in connection with the electric railway properties heretofore operated by the Rhode Island Company.

Utility Offering Preferred Oil Stock.—An issue of $6,000,000 participating 7 per cent cumulative preferred stock of Shaffer Oil & Refining Company is being offered investors by a syndicate formed by Bonbright & Company and H. M. Byllesby & Company, at 93 and interest. The preferred stock, in addition to being entitled to 7 per cent dividends, will participate in dividend disbursements with the common stock up to 10 per cent, the preferred receiving 1 per cent for each $1 paid on the common in excess of $7 in any one year, and at the rate of one-quarter of 1 per cent for each dollar paid per annum on the common stock in excess of $10. The Standard Gas & Electric Company owns the majority of the common stock of the Shaffer Company, which will continue under the operating management of C. B. Shaffer and staff. With the completion of this financing the Shaffer Oil & Refining Company will have approximately $4,000,000 in its treasury for development work to increase its 1918 net production of 1,500,000 barrels of petroleum, and to make improvements to its 6,000 barrel refinery which will nearly double the present output of gasoline. The company owns upward of 137,000 acres of oil leases in Oklahoma, Kansas and Texas, and in addition to its refinery has complete pipe line and tank car equipment and a marketing organization in nine States of the Middle West.

Traffic and Transportation

Another Increase Asked

Washington Company Again Appeals for Fare Relief, Asking Now a Seven-Cent Rate

The Washington Railway & Electric Company, Washington, D. C., has filed a petition with the Public Utilities Commission asking for establishment of an initial 7-cent cash fare for transportation within the District of Columbia on all lines owned by it, with the privilege of charging 2 cents for transfers to and from any of its subsidiary lines.

Separate petitions, asking similar financial relief, were filed by each of its subsidiary lines—the City & Suburban the Georgetown & Tenleytown and the Washington Interurban Railways.

THE PROPOSAL OUTLINED

In addition the company requests that no further through cars be run over the suburban lines, but that each line operate its own cars over its own tracks and be permitted to charge for transfers, thus making it practically a 9-cent fare for persons who do not live in the city proper.

First, the subsidiary companies, the Georgetown & Tennalytown, City & Suburban and Washington Interurban, in their own rights without reference to the system as a whole, ask the following:

1—A straight seven-cent fare.

2—Discontinuance of all transfers, free, pay or otherwise.

3—Discontinuance of all through transfer arrangements.

Second, the Washington Railway & Electric Company, the parent body, speaking for all the subsidiary lines, asks that the system be kept intact through the granting of a general straight 7-cent fare and the continuing of transfers at the present 2-cent charge.

These are the two general propositions submitted, with an alternative proposal made to the effect that the existing financial difficulties may be overcome if the commission will permit both the Capital Traction and Washington Railway & Electric companies to charge a straight 6-cent fare, and, in addition, will restore the electric light rate to 10 cents.

Refuses to Order Zone System

The Massachusetts House on July 11 refused to order the trustees of the Boston Elevated Railway to put the zone system into effect.

It is estimated by the officials of the Boston Elevated Railway that the first day of the 10-cent fare produced revenue of approximately $77,000 to $78,000. This total represents an increase of 52 per cent over the same day a year ago which was a bright sunny day with the temperature about 72 deg. Fahr.

According to present indications, although no definite figures are yet available, it is estimated that the passengers for July 10 fell off about 14 per cent compared with July 9, the last day of the 8-cent fare. As yet no clear indication of the result of the higher fare is possible.

Seven Cents in Columbia

The Columbia Railway, Gas & Electric Company, Columbia, S. C., is involved in a controversy which includes an increase in wages for its employees and an advance in fares. The employees wanted more pay. It seems that they were even prepared to strike, if necessary, to enforce their demands. This contingency was averted, however, by an agreement to submit matters to arbitration.

A board of three was accordingly appointed to inquire into the merits of the issues in dispute. After a careful audit had been made of the company's books it was found that the recent minimum loss by the company for any one month was about $10,000 and that the total loss of the company since Dec. 1, last, was more than $180,000. Accordingly, the arbitrators reported in favor of a flat 7-cent cash fare, with tickets at four for 25 cents, and a reduction in the hours of employees from ten to nine with no change in pay, making virtually an advance in the wage scale of 10 per cent.

In accordance with this award the company put the new rates of fare into effect on July 1. Meanwhile the city attorney had been inquiring into the matter and he interpreted the rights of the city not to extend authority to the Council to fix rates. Here citizens interposed and sought an injunction to restrain the company from continuing to collect the advance in fares.

The status of the opposition to the advance was fixed on July 3 when Judge Townsend refused to restrain the company from collecting the advance, holding to the opinion that any action against the company should be brought by the Attorney General, a solicitor or other public official charged with the duty of protecting the rights of the public in instances where such rights appear to have been injured. He accordingly denied the injunction. It was not plain to the court wherein the plaintiffs who were seeking to restrain the company had suffered to a degree uncommon to other users or patrons of the railway.

Interurban Rates Raised

Empire State Railroad Authorized to Charge 2.77 Cents a Mile, With Commutation Increase Also

The Public Service Commission for the Second District of New York on July 1 authorized the Empire State Railroad Corporation, Syracuse-Oswego and Oswego and Fulton city divisions, to file a new tariff, effective on July 6 and to remain in effect for one year from that date, unless otherwise ordered by the commission.

STATEMENT OF CHANGES

The changes authorized, in part, were in a proposed tariff by the railroad, applying to interurban fares on the Oswego-Syracuse division. The tariff was based on a rate of 2.77 cents a mile, but made no increase in local fares in Syracuse, Fulton, and Oswego to points between Syracuse and Baldwinsville, excluding Baldwinsville, or between Minetto and Oswego, although the one-way Minetto-Oswego rate is increased 1 cent. Commutation rates are increased from 1¼ to 1½ cents a mile, but the tariff, as filed, provided for the withdrawal of a family book. Rates for certain special tickets are not disturbed, but a charge is provided where passengers board cars where ticket offices are open. Rebate slips, however, are to be provided by the company.

COUPON TICKET BOOKS ORDERED

The commission's order approved the company's tariff and it further provides for coupon ticket books, 100 coupons of the value of 5 cents each to be sold for $3.75. The books are for the use of the purchaser and family if used within three months, not less than two coupons to be detached for any distance travelled. Commissioner Irvine, in a memorandum which he filed, says in part:

> In constructing an estimated income account under the proposed rates revenues have been assumed without any allowance for decreased travel due to increased rates. It is probable that there will be less decrease than usually occurs in such cases because, while there are two steam roads operating between Syracuse and Oswego and there is theoretical competition between most intermediate points, the passenger service has been so greatly curtailed on both roads and the service of the applicant is so frequent that the steam competition, while not negligible entirely, is so small that unless the service operated by the steam railroad is greatly improved it will not seriously affect the revenues of the applicant.
>
> EVIDENCE CONCLUSIVE
>
> Operating expenses have been largely increased in part by the cost of material, but chiefly by the increases in wages according to the award of the War Labor Board. For example, platform men were allowed 45 cents per hour and a ten-hour day, irrespective of the amount of platform time, and there was testimony to the effect that on this basis, with overtime, the average platform expense is nearly 50 cents an hour for each man. The commission has received information to the effect that very recently the wage scale for the platform men has been increased to 47 cents an hour to equalize the pay with that received on neighboring interurban lines. This will make a further increase in operating expenses, but we base our estimate on the evidence offered at the hearing.

Commission Can Raise Buffalo Fares

Court of Appeals Rules Upon Unusual Clauses of Milburn Agreement—Threatened Foreclosure May Be Averted

The Public Service Commission for the Second District of New York has authority to raise fares in Buffalo above 5 cents, according to a unanimous decision handed down by the Court of Appeals at Albany, July 15. The decision holds that the Legislature, to which under the Milburn agreement between the city of Buffalo and the International Railway power was specifically given to adjust fares under the franchise, delegated this jurisdiction to the commission when it passed the public service commissions act in 1907. As the result, the court holds that in deciding in favor of the rate-making power of the commission it is not overriding but enforcing the conditions of the franchise.

COMPLETE DECISION NOT AVAILABLE

The complete decision is not yet available, but from advance reports it is believed that the ruling does not constitute a direct reversal of the famous 1918 Quinby decision, in which it was held by the same court that whatever power the Legislature had to alter, without city agreement, fares imposed under the constitutional consent clause, such power unmistakably had not been delegated to the commission. In the Buffalo case the city authorities, in imposing a 5-cent fare, at the same time consented that the Legislature might regulate this fare, but few if any franchises in other cities are believed to be similar to the Milburn agreement in this respect.

The peculiar aspects of the Buffalo case are well brought out in Judge Cardoza's opinion, which follows in part:

On Jan. 1, 1892, the Buffalo Railway, the West Side Street Railway and the Cross Town Street Railway, covenanted with the city of Buffalo for a sufficient consideration to abolish transfer charges and established a uniform fare of 5 cents for a continuous trip upon any portion of their lines. That is the Milburn agreement which was thereafter ratified by the Legislature.

None of these roads was then subject, in the enjoyment of its franchise, to any condition imposed by the local authorities affecting rates of carriage. Some of the franchises went back to days when the consent of the local authorities was not required by the constitution. None had been coupled with any conditions in respect to rates except such conditions as had been imposed by the Legislature itself. The power to supervise and regulate has been exercised by the Legislature in the past and against these very roads. The Milburn agreement made no attempt to escape its exercise in the future.

On the contrary, there was express provision that "nothing in this contract contained shall be construed to prevent the Legislature from regulating the fares of said company or either of them." The companies signing that agreement, together with the Buffalo Traction Company, were later consolidated under the name of the International Railway. From time to time, upon the application of the consolidated company, the local authorities gave consent to extensions of the routes, and in so doing again limited fare to not more than 5 cents.

At the same time, however, they provided that "all the terms, provisions and conditions of the Milburn agreement should be deemed a part of the consent." They thus reincorporated the covenant that the fares should remain subject to regulation by the Legislature.

In December, 1916, the city of Buffalo, believing the fare to be too high, petitioned the Public Service Commission to fix a just and reasonable rate. For nearly two years that proceeding remained dormant. The war was at hand, and with it came enormous increase in the cost of maintenance and operation. The question was no longer whether rates should be lowered. The question was whether there was not need, if bankruptcy was to be averted, that rates should be increased.

SOME OF THE MOVES MADE

The Council of the city of Buffalo passed a resolution consenting to an increase, but a referendum was demanded and the resolution vetoed by the electors. The company then turned for relief to the representatives of the State at large. It answered the dormant petition on file with the commission. It said that the rates, instead of being too high, were too low, and joined in the city's prayer that they be considered and revised. The commission refused to accept the answer on the ground of want of power. The special term granted a mandamus. The proceeding was afterward changed by amendment into one of certiorari. The appellate division annulled the ruling of the commission and contended the proceeding for hearing and decision. Upon the appeal hereafter allowed to this court the following question has been certified: "Has the Public Service Commission jurisdiction and power under the facts shown in this proceeding to regulate the rate of fare to be charged by the respondent for the transportation of passengers in the city of Buffalo?"

We think the power must be upheld. This is not a case where demand is made upon the commission to abrogate a defeasance reserved by the local authorities as one of the conditions of a franchise. This is a case where the local authorities, in imposing a condition, have consented that the Legislature may change it, and have thus renounced the right of forfeiture or revocations that might otherwise be theirs.

There is nothing to show, and we have no right to assume, that the reservation of the power of the State was for the benefit of one of the parties with exclusion of the other. The power to regulate rates is the power to increase them if inadequate just as truly as it is the power to reduce them if excessive. The Public Service Commission is the delegate of the Legislature and regulation by one is regulation by the other.

RATES FIXED BY AGREEMENT PROVISIONAL

The situation then, is this: Municipality and railroad have joined in the declaration that the rate fixed by their agreement shall be not final, but provisional. It is subject, in case of need, to re-examination and readjustment by the agents of the State. The need that was foreseen as possible has arisen. In upholding the jurisdiction of the commission to deal with it, we do not override the conditions of the franchise. We heed and enforce them. There are times when the police force modifies a contract in spite of the intention of those who have contracted. Here its action is in aid of their intention. The covenant which limits rates is a condition of the consent, but only in equal measure with the covenant presented and defining the power of amendment. So far as the power of the commission is concerned, the situation is the same as if no condition had been imposed at all.

Henry W. Killeen, of counsel for the International Railway, says that application will be made at once to the commission to fix an adequate rate of fare in Buffalo. The company will request a 6 or 7-cent fare pending the final determination of what is considered a reasonable rate. The company will use the valuation fixed by the board of arbitration, $33,000,000, as its valuation in the fare case.

If the company gets a fare increase, a revival of its credit is assured and the threatened sale of stock by the bondholders will be put off. The decision, it is hoped, will act as a stay to the proceedings to foreclose and sell the collateral which has been begun by the bondholders' committee of the International Traction Company.

Kansas City Wants Ten-Cent Fare

Hearings before the Public Service Commission of Missouri on the application of the Kansas City Railway, for a continuance of increased fares—and a further increase—were concluded, at Jefferson City, on July 7. The 6-cent fare now being collected was authorized by the commission for one year, the period expiring on July 15. The railway represented to the commission in the recent hearings, that it has dropped behind $2,707,000 during the year of 6-cent fares; and that a 10-cent fare would be necessary to pay operating expenses, interest and other charges. The suggestion of the company was that a 10-cent fare be authorized, with two tickets for 15 cents. Representatives of the municipality objected to any increase in fares, but urged that in no event should an advance extend beyond 7-cents. Pending decision on further increase, the 6-cent fare will stand.

Comes to the Aid of the Trolley

The City Commission of Chehalis, Wash., recently took drastic action against jitney traffic between Chehalis and Centralia, when it considered an ordinance forbidding jitneys and "for-hire" cars to make trips over National Avenue oftener than two trips each twenty-four hours. As National Avenue is the only paved thoroughfare connecting the two cities, passage of the ordinance is expected effectually to stop competition that has threatened the discontinuance of the electric railway service between the two cities operated by the North Coast Power Company.

Back to the "Bike"

The Morris Plan Bank appears to be the latest agency to lend aid to the propaganda against the electric railway. An advertiser in a Topeka, Kan., paper says that the bank is prepared to make advances of money to prospective purchasers of bicycles lacking cash, but who see in the bicycle a means of escape from paying a 6-cent fare. The advertisement follows:

Hundreds of people in cities where street car fares have been raised have positively refused to stand the advance. In Chicago over 600 bicycles were bought during the first week of increased fares. Even in Kansas City, with all its hills, hundreds of bicycles have been bought, owing to the general conditions which have existed in connection with riding on street cars. Now that Topeka is hit by 6-cent fares, arrangements have been made by the Harding Wheel Company to take care of all who are not disposed to "whack up" their earnings with the railway company. The Harding Company has arranged with the Morris Plan Bank to handle deferred payments, allowing the purchaser to make almost his own terms. To meet the situation the Harding Company has more than 100 bicycles in stock, being the largest stock of bicycles ever carried by one house in Topeka.

Rome Increase Denied

The Public Service Commision for the Second District of New York denied the application of the New York State Railways for permission to increase its rate of fare in Rome.

Commissioner Irvine, in the memorandum accompanying the commission's order, says if the case were to be determined on the normal basis the increase would have to be granted. The evidence shows revenues in the first eleven months in 1918 of $57,490 and expenses $69,583, including depreciation of 3½ per cent and taxes of $5,561. At the very best, the commissioner says, there is a deficit between the revenue and actual out-of-pocket operating expenses.

The evidence, it was held, showed without contradiction—and it has been confirmed by examination by the commission—that the service rendered is bad. The roadbed, for the most part, is in very bad condition and the equipment, although somewhat improved since the hearing, is also bad. A great deal of the deferred maintenance has necessarily been accumulated during the war, and even now, from what the commission knows of the financial affairs of the applicant, it is not warranted in directing immediate rehabilitation of the Rome system.

The possible increase in revenue would be insufficient to provide for rehabilitation or substantial improvement in service. It would benefit the applicant but little and it would impose an undue burden on the patrons of the road in view of the service now afforded or likely to be afforded in the near future.

Until it can improve its service there, the commissioner says, it is not in position to ask an increase in rates which will substantially burden its patrons without affording it any substantial relief.

Ten Cents on New Rochelle Line

The Public Service Commission for the Second District of New York will hold a hearing, in New York, on July 21 upon a tariff filed by the Westchester Electric Railroad in which it is proposed to increase the fare from 5 to 10 cents on the New Rochelle-Subway line between points in New Rochelle and points in Mount Vernon. The company asks authority to make the fare change effective on July 31.

The commission authorized the railroad, effective on July 12, to establish a new line, known as the New Rochelle-Mount Vernon line to operate between Mechanic Street terminal in New Rochelle and the south city line of Mount Vernon at White Plains Avenue over the same tracks as its present New Rochelle-Subway line operates, and providing a 5-cent fare between any two points on the line with the same transit privileges as now afforded passengers using the New-Rochelle-Subway line.

The permission also provides that on the New Rochelle-Subway line the fare will be increased from 5 to 10 cents for passengers carried between any two points in adjoining zones. The fare on this line will be 10 cents between New Rochelle and the northern terminal of the subway on White Plains Avenue and also to points in Mount Vernon.

Economic Necessity Plays No Favorites

Ralph McLeran, chairman of the finance committee of the Board of Supervisors of San Francisco, Cal., has suggested the possibility of increasing fares on the Municipal Railway to 6 cents to offset the heavy drains on the operating revenue of the lines.

The Board voted to increase the pay of platform and track men from $4.50 to $5 a day, but declined to reduce the percentage of gross passenger revenue that is set aside for depreciation.

Supervisor A. J. Gallagher offered an amendment to the existing ordinance reducing the depreciation and replacement fund from 18 to 15 per cent. The effect of this would be that instead of setting aside 18 per cent of the gross passenger revenues to this fund, only 15 per cent would be diverted to it and the 3 per cent difference could be used to meet the increase in pay.

It was pointed out that an increase of 50 cents a day would add $118,000 to the annual pay roll, while the diversion of 3 per cent from the depreciation fund would raise only about $78,000. The difference of $40,000 would have to be met from some other source.

It was at this point that Mr. McLeran suggested the fare advance. He said that the depreciation fund had been drawn upon to pay the men when their wages were raised to $4.50 a day and that the Municipal Railway is now carrying $600,000 in water bonds, and $200,000 in Liberty bonds which will have to be converted into cash at a discount if the present conditions continue.

After Supervisor Power's motion to pay the employees $5 a day, beginning July 1, was passed, the Supervisors referred the Gallagher amendment to the finance committee, which has two weeks in which to report back.

New Jersey Zone Hearings

Witnesses at hearings before the Board of Public Utility Commissioners of New Jersey, on July 10 and 15, assailed the appraisal of the Public Service Railway properties made by Dean Mortimer L. Cooley as a basis for a proposed zoning system.

Edward W. Bemis, appraisal engineer, testified for the League of Municipalities that the proportionate value of the land included in the estimates was too high and that the Public Service property, instead of being in 89.4 per cent condition, as computed by Dean Cooley, should be considered at from 70 to 80 per cent condition.

Fare Compromise Arranged

The Railroad Commission of South Carolina held a hearing recently for the purpose of considering a petition from the Charleston Consolidated Railway & Lighting Company for an increase in rates from the city of Charleston to the Navy Yard.

On Dec. 28 of last year the Railroad Commission issued an order permitting the company to charge a 5-cent fare from the city limits to the Navy Yard. On Jan. 1 an accident occurred in the plant of the company and this prevented compliance with the conditions under which the increase was granted, so an order was issued abating the former order until such time as the Railroad Commission should again order that it go into effect.

Recently the company petitioned again for an increase in rates, and a hearing was ordered. After discussing the question the Railroad Commission agreed to a compromise, which is said to be acceptable to both sides. It provides that the company put on sale a commutation ticket which will cost 15 cents for the round-trip during the go-to-work and knock-off hours at the Navy Yard. To get the advantage of the rate, a person must hold a ticket. These tickets are to be had by everyone wishing to purchase them, whether or not they work at the Navy Yard. The commutation tickets are good only at the time when persons are going to work or returning home. At all other times the rate will be 5 cents from the city limits. If one boards a car inside the city limits it will cost 5 cents to the boundary and 5 cents from there on to the Navy Yard. The new rate went into effect July 1.

Hearing on Mail at Kansas City

It was announced that matters concerning the carrying of United States mails would be taken up at a hearing by the Interstate Commerce Commission in Kansas City on July 18. A conference on this subject was held in Kansas City on July 8, by officials of transmississippi companies. The meeting was presided over by Philip J. Kealy, president of the Kansas City Railways. The following officials were present representing their companies:

J. P. Boyle, traffic manager of the Iowa Southern Utilities Company, Centerville, Ia.

R. A. Leussler, assistant general manager of the Omaha & Council Bluffs Street Railway, Omaha, Neb.

W. G. Nicholson, secretary and auditor of the Omaha & Council Bluffs Street Railway, Omaha, Neb.

J. H. Van Brunt, vice-president and general manager of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.

J. M. Bramlette, vice-president and general manager of the Lincoln (Neb.) Traction Company.

Thomas Riley, general manager of the Missouri & Kansas Interurban Railway, Kansas City, Mo.

J. R. Harrigan, vice-president and general manager of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo.

W. A. Satterlee, general manager of the Joplin & Pittsburg Railway, Pittsburg, Kan.

R. F. Malone, of the Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.

O. H. Bernd, secretary of the Des Moines (Ia.) City Railway and the Inter-Urban Railway, Des Moines, Ia.

Transportation News Notes

Will Abandon Skip Stop.—The Cincinnati (Ohio) Traction Company will abandon the skip-stop introduced as a war measure as soon as necessary changes in schedule can be worked out.

Freeport Advance Suspended.—The Public Utilities Commission of Illinois has re-suspended to Jan. 13, 1920, the proposed advance in railway rates from 5 cents to 7 cents in the city of Freeport.

Fare Increase Approved.—The City Council of Ashtabula, Ohio, on July 8, passed an ordinance granting an increase in fare from 5 cents to 6 cents to the Ashtabula Rapid Transit Company.

Opposed to Seattle Fare Change.—By a majority vote, the utilities committee has gone on record as opposed to any change in fares on the Seattle (Wash.) Municipal Railway, except by authority of the City Council.

Six Cents in Lansing.—New rates of fare authorized by the City Council of Lansing, Mich., at a recent session were put into effect, on July 8, by the Michigan Railway. The new schedule calls for a straight 6-cent fare for a single ride. Tickets are to be sold to the patrons of the company at five for 30 cents, as a matter of convenience.

Fare Reduced to Shipyards.—The Trenton, Bristol & Philadelphia Street Railway, Bristol, Pa., has reduced the round-trip fare from Bristol to Harriman, Pa., from 27 to 21½ cents. The company is now selling tickets in strips of twelve. The reduction in rates was made to accommodate the shipworkers at the Harriman shipyards.

More One-Man Cars Authorized.—The Public Service Commission of Massachusetts, on July 10, authorized the purchase and operation of one-man cars by four additional companies, namely, the Springfield Street Railway, the Interstate Consolidated Street Railway, the Worcester Consolidated Street Railway and the Milford, Attleboro & Woonsocket Street Railway.

Business Men See Need.—An 8-cent or possibly even a 10-cent fare may be necessary to keep railway service in New Castle, Pa., up to the standard desired, it was decided at a conference of business men and Councilmen of that city recently. The majority of those in attendance favored immediate consultation with the members of the Public Service Commission for advice on the situation.

Massachusetts Lines Establish Freight Service.—The Northampton (Mass.) Street Railway, the Connecticut Valley Street Railway and the Holyoke Street Railway have united in forming a freight department and running cars for carrying freight of all kinds between Northampton and Springfield, Greenfield, Amherst, Easthampton, Florence, Millers Falls and other points.

Syracuse Transfer Case Closed.—The Public Service Commission for the Second District of New York on July 8 ordered closed, subject to reopening on application of the company, the petition of the New York State Railways for permission to charge 1 cent for transfers in Syracuse. The railroad did not press its application following negotiations over certain proposed paving in Syracuse.

Moline Tariff Suspended.—The Public Utilities Commission of Illinois has permanently suspended the rate schedule of the Moline, East Moline & Eastern Traction Company, which proposed an advance of rates for service in Moline, East Moline and Silvis, Ill., and also a schedule of the Tri-City Railway, Davenport, Ia., proposing an advance of rates for service in Rock Island, Moline, East Moline, and Milan, Ill.

A Wonderful Record.—On Jan. 1, 1907, the Portland Railway, Light & Power Company, Portland, Ore., took over the operation of the consolidated electric railway lines in Portland. From that date up to and including May 31, 1919, the company handled 1,038,922,806 passengers on its city cars. In all that time and in moving that enormous volume of traffic not a single passenger has been killed while in the custody of the company.

Fare Order Qualified.—According to an opinion by Robert Evans, assistant corporation counsel of Seattle, Wash., the order of the Public Service Commission authorizing the Seattle & Rainier Valley Railway to increase fares does not alter other franchise provisions, and the company must continue to carry policemen and firemen free of charge. It is held that the commission must specifically state that such passengers are to be charged the usual rate.

Commission Will Hear Binghamton Petition.—The Public Service Commissioner Fannell planned to hold a further hearing on July 15 on the petition of Receiver William G. Phelps, of the Binghamton (N. Y.) Railway for authority to increase fares in Binghamton and other municipalities. The commission on June 26 denied a motion to dismiss the receiver's application for lack of jurisdiction and decided to proceed with the hearing on the company's petition.

Opposed to Bus Competition.—The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has brought suit against the Inter-City Motor Express Lines claiming that the latter company is engaged in illegal operation of an express business between Aurora and Elgin and other cities served by the electric railway. The case is now before the Public Utilities Commission of Illinois. Counsel for the railway contends that the motor company is not authorized by the commission to carry passengers or freight.

Surface Cars Trains in Brooklyn.—The Brooklyn (N. Y.) Rapid Transit Company started two-car train operation on the Gates Avenue surface line on July 14. It is stated that all of the center-entrance cars on the surface lines of the company are to be equipped with couplers so that they may be operated in trains and that eventually train operation will be put into effect on the St. Johns Place line as well as the Flatbush and the Gates Avenue lines. Two-car trains in charge of one motorman and two conductors have been in successful operation on the Flatbush Avenue line in Brooklyn for more than six months.

Court Directs Higher Fare for Omaha.—The Supreme Court of the State of Nebraska on July 16 directed the State Railway Commission to grant the Omaha & Council Bluffs Street Railway increased rates, recommending a 6-cent rate, pending further investigation of the company's books to determine the present earning capacity and permanent rate. The company applied for a 7-cent rate in July, 1918. The railway commission rejected this application last November, and the company appealed. The Supreme Court decision further held that the company, on the showing already made, is entitled to increased earnings to insure it against insolvency.

Trip Ticket Privileges Modified.—The Schenectady (N. Y.) Railway has been authorized by the Public Service Commission for the Second District, to put into effect on Aug. 1 a change in rules governing the sale of fifty-four-trip commutation tickets between Schenectady and Ballston Lake, Ballston Junction, Albay and Troy. There are no changes in the present fifty-four-trip ticket rates, but the new rule provides that they are to be used by the purchaser only within thirty days from and including date of sale, trip coupons to be accepted in either direction between specified points on business days and not on Sundays or legal holidays, tickets to be forfeited if used by any person other than the one entitled to use them.

Fare Conference in Norfolk.—A conference was held in Norfolk, Va., recently of committees of the Chamber of Commerce and the city government with officers of the Virginia Railway & Power Company looking toward financial relief for the company through fare readjustments. A suggestion from the company was offered proposing zone fares, but it was explained by officers of the company that they were open to any practical suggestion that would increase the revenues of the company sufficiently to enable it to meet advancing costs. The conference adjourned subject to call without having reached a definite conclusion. Pending further conferences a postponement was secured until July 24 of the case of the company before the State Corporation Commission looking toward relief.

Personal Mention

Col. A. T. Perkins Manager

Railroad Advisor to St. Louis Union Trust Company Succeeds Mr. McCulloch With United Railways

Col. Albert T. Perkins, former director of combat railways for the American Expeditionary Forces in France, on July 8 assumed the duties of manager for the receiver of the United Railways, St. Louis, Mo., succeeding Richard McCulloch, who resigned several weeks ago.

Colonel Perkins served for twenty months in France, and at the signing of the armistice he was in command of 12,000 men. In awarding the Distinguished Service Cross to Colonel Perkins the War Department made the following citation:

COL. A. T. PERKINS

> For exceptionally distinguished and meritorious service. As deputy and later as manager of light railways, he undertook the task of organizing a light railway service for the American expeditionary forces. His long and complete railroad experience and knowledge assured the success of these lines. By his foresight in promptly gathering from the United States a generous supply of railway material, he quickly brought the light railway service to a high degree of efficiency.

Upon his return from France Colonel Perkins resumed his post of railway advisor for the St. Louis Union Trust Company, in which capacity he had charge of the trust company's interest in the St. Louis, Brownsville & Mexico Railway. He was also consulting engineer in the construction of the lines of the lines of the Southern Traction Company of Texas from Dallas to Waco and Wakahachie.

Colonel Perkins will have full control of the properties of the United Railways and will answer only to Receiver Wells. After announcing the appointment, Mr. Wells said:

> I have named Colonel Perkins to assist me in the capacity of manager for the receiver to have full charge of the operation of the properties taking the place of Richard McCulloch, I selected Colonel Perkins because I became acquainted with his ability as an engineer during my term as Mayor of St. Louis. He is a high-class man and will prove invaluable in rehabilitating the properties.

Colonel Perkins, when notified of his appointment, said:

> I feel that as a result of my experience I am fitted to give the proper and proportionate consideration to the four main interests involved—the public, the employees of the company, the municipality and the security holders. At the present time I am not familar with the conditions and affairs of the properties. As soon as I make the acquainance of the operating staff and the employees of the company I shall make a careful and extended study of the plant and the operations of the properties. Until then, it will be impossible for me to give any real advice to the receivers or any general statements as to the conditions of affairs and the policy to the public. I want to deal very frankly with the public through the press. The present railway problems in most of our large cities are serious ones and I hope to win the co-operation of the public and the press in working out service in a way that will be at least as effective as done in any other city.

Colonel Perkins was born in Brunswick, Me., fifty-four years ago. He was graduated from the Boston Latin School and from Harvard University. He began his railway career with the Chicago, Burlington & Quincy Railroad in 1887 and continued with that company in various capacities until 1907 when he was called to St. Louis as advisor to the Municipal Bridge & Terminal Commission when Rolla Wells, now the receiver of the United Railways, was Mayor of St. Louis. He served with the commission until 1909, his duties requiring him to investigate the terminal facilities of the principal American and European cities. In 1908 while still acting as advisor to the commission he was made railroad advisor and syndicate manager for the St. Louis Union Trust Company.

Maurice E. McCormick has resigned as assistant general manager of the New Burnswick Power Company, St. John, N. B., operating the St. John Railway. Mr. McCormick has been at St. John since the fall of 1917. He was formerly assistant general manager of the Bangor Railway & Electric Company, Bangor, Me., the service of which company he entered in 1896 as an apprentice in the shops.

Robert S. Warner has resigned as financial manager of the United Railways, St. Louis, Mo., but will continue as vice-president, serving without salary. In a statement which he issued Mr. Warner declared that a directorate of a utility should include representatives not only of the stockholders but also of the city, the Public Service Commission, and the employees. Mr. Warner was elected vice-president and a director of the company last October. Previous to that time he had been a member of the firm of Warner-Tucker & Company, bankers, Boston, Mass.

Harold D. Larrabee has been appointed general manager of the Eastern Connecticut Power Company and of the Shore Line Electric Railway, with headquarters at Norwich, Conn. Mr. Larrabee is well known in New England electric railway circles. For the last ten years he has been general manager of the Charles H. Tenney & Company properties at Montpelier, Vt., including the Barre & Montpelier Traction Company and the Barre & Montpelier Light & Power Company. At his new post he will have charge of about 240 miles of electric railway and of an interconnected power supply system including a new 22,000-kw. steam plant which is to furnish industrial power to southeastern Connecticut.

E. D. Merrill has been appointed assistant superintendent of transportation of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. His duties will lie chiefly with the technical division of the company's work. He will have charge of traffic surveys, bonus plans, schedules and similar matters and will assist the superintendent in other ways as directed. Mr. Merrill is a civil engineer by profession but has worked up through the electric railway organization. He began his railway career on construction work for the Union Pacific Railway, but preferring the electric railway business entered that service as a motorman with the Puget Sound Traction, Light & Power Company at Seattle. From motorman he entered the shops and then had experience in electric welding in the track department, later becoming traffic engineer in charge of traffic investigations and similar work. He became connected with the Milwaukee Electric Railway & Light Company last December, entering the statistical department on traffic survey work. Mr. Merrill will continue this line of work with headquarters in Milwaukee.

E. D. MERRILL

Francis H. Dewey, president of the Worcester (Mass.) Consolidated Street Railway, has resigned as president of the New England Investment & Security Company and is succeeded by C. V. Wood, Springfield, as noted elsewhere in this department. Mr. Dewey has been president of the New England Investment & Security Company for the last four years. His resignation from the company has no bearing whatever on his office as president of the Worcester Consolidated Street Railway, which is controlled by the New England Investment & Security Company.

Clark V. Wood, president of the Springfield (Mass.) Street Railway, has been elected to the board of trustees and to the presidency of the New England Investment & Security Company, replacing F. H. Dewey, Worcester, who has resigned as president. The New England Investment & Security Company is the holding company for the Springfield Street Railway, the Worcester Consolidated Street Railway, the Milford, Attleboro & Woonsocket Street Railroad, the Interstate Consolidated Railway and the Attleboro Branch Railroad. Mr. Wood has been connected with the properties mentioned for more than ten years. He is a former president of the New England Street Railway Club.

Ralph M. Sparks, transportation manager of the Eastern Massachusetts Street Railway, Boston, Mass., has resigned to enter business at Worcester, Mass., where he will be interested in and will manage the Worcester district of the Willys-Overland Company. Mr. Sparks is widely known in the electric railway field. He has been associated with the Bay State System, the predecessor of the Eastern Massachusetts Street Railway, as general passenger agent and later transporation manager for upwards of a decade. He has had an active hand in the development of the company's transportation organization to meet the growing needs of the system during the period of centralized operation and fare revision which has now terminated in public control and trustee administration. Mr. Sparks leaves a host of friends in the electric railway industry who will wish him success in his new work.

R. C. Cram has been appointed engineer of surface roadway of the Brooklyn (N. Y.) Rapid Transit Company, by Lindley M. Garrison, receiver. This appointment was announced recently by C. L. Crabbs, engineer of way and structure, in connection with other changes made in the departmental organization. Mr. Cram entered the employ of the Bridgeport (Conn.) Traction Company in 1900, after completing the scientific course at the Bridgeport High School in 1898. After a few months in the general store-room he was transferred to the track division as timekeeper and the following year entered the office of the engineer and assistant general manager as draftsman. When the company was merged into the Connecticut Railway & Light Company in 1902, Mr. Cram was transferred to the office of the electrical superintendent, and in 1905 became assistant superintendent of track. When the road passed to the control of the New Haven Railroad in 1906, he was appointed assistant engineer in charge of field work, construction and general maintenance under C. R. Harte, construction engineer. The following year he was transferred to New Haven to the department of E. M.T. Ryder, who had become engineer of the Connecticut Company in charge of maintenance of way. Mr. Cram continued in charge of the maintenance engineering matters on the old Connecticut Railway & Light division until 1912. In that year he joined the way and structure department of the Brooklyn Rapid Transit System as assistant engineer in charge of reconstruction of surface tracks. Later the maintenance engineering matters for the surface lines were added to his duties. The title now given to Mr. Cram more exactly indicates his present work. He continues to report to Mr. Crabbs. Mr. Cram is a member of the Connecticut Society of Civil Engineers. He was a member of the A. E. R. E. A. committee on way matters for four years, two of these as vice-chairman, and served also as a member of the committee on standards of the same association. He has been consistently interested in the work of this association.

R. C. CRAM

Obituary

Frederick Evans, long a well-known newspaper man, and later a corporation official, died recently at Charlotte, N. C., at the age of fifty-seven. In 1897, after spending many years in newspaper work, Mr. Evans became secretary to Garrett A. Hobart of New Jersey, then Vice-President of the United States, and remained in that position until Mr. Hobart's death. Later he was successively secretary of the Rapid Transit Subway Construction Company, New York, N. Y., which constructed the original rapid transit lines in that city, secretary of the Interborough Rapid Transit Company, New York, and secretary of the Public Service Corporation of New Jersey. The last few years of his life were spent by Mr. Evans in newspaper work as editor of *Hampton's Magazine* and as an editorial writer on the *Wall Street Journal.*

New Publications

Treatment of Industrial Problems by Constructive Methods

Published by the Director General, Working Conditions Service, Department of Labor, Washington, D. C.

This pamphlet, with the accompanying organization chart illustrating the functions of the Working Conditions Service as a national information center, shows how the Department of Labor is aiming to give the best possible advice on matters of industrial health, safety and labor administration.

Office Management

By Lee Galloway. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 700 pages. Flexible full leather.

This is an admirable critical study of how representative business concerns handle their departmental routine. It is neither incomprehensive nor superficial. It is a manual of concrete methods and detailed procedure, and also a careful presentation of the scientific principles underlying the control of personnel and production, the analyses of conditions, the classification of data and the standardization of operations. Commendable in contents, arrangement and illustrations, the book should rapidly become the standard for office engineering.

Cost Accounting

By J. Lee Nicholson and John F. D. Rohrbach. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 500 pages. Flexible full leather.

The extensive development in cost accounting due to speeded-up production under Washington supervision during the last few years makes this new manual a most welcome addition to accounting literature. The book not only gives a comprehensive treatment of the most approved procedure for finding, distributing and recording costs but also presents a full account of cost-plus contracts and an interpretation of the government's ideas on cost methods and depreciation rates. In supplying experience data as to the life of physical property the authors have made a large contribution to the field. It is not too much to say that this revised book of Mr. Nicholson is the authority on up-to-date cost accounting methods.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Opportunity for Manufacturers in Sweden

Program of Power Development and Railway Electrification Will Produce Extensive Markets

The great stimulus being given to waterpower development, the electrification of railroads, and the consequent greatly increased use of electricity for industrial purposes under the direction of the government and through its financial aid in Sweden, according to a recent report of the Guaranty Trust Company of New York, should create an active source of export sales for American manufacturers of various kinds of electrical equipment. The production of the heavier types of machinery required in this electrification work is an important industry in Sweden, but the drop in German imports in many allied lines has been seriously felt.

CLOSER RELATIONS WITH UNITED STATES

Heretofore, Sweden has paid heavy toll to Germany for her lack of direct shipping connections with outlying countries, but now plans are being formulated which will bring Swedish ports into direct and regular communication with this country. The new policy of her big men is predicated upon the cultivation of closer commercial and financial relations with the United States.

GERMAN ELECTRICAL EXPORTS TO SWEDEN

	1909	1910	1911	1912	1913
Electric cables	$1,023,000	$1,021,000	$752,000	$565,000	$500,000
Electric appliance for illumination, transmission of power, etc	188,000	262,000	334,000	340,000	481,000
Electric incandescent lamps	340,000	329,000	513,000	373,000	406,000
Electric meters, registers, etc	99,000	151,000	189,000	217,000	261,000

U. S. ELECTRICAL EXPORTS TO SWEDEN

	1913	1914	1915	1916	1917
Batteries	....	$569	$3,809	$537	$8,540
Dynamos or generators	48	......	......	1,168	17,359
Insulating wire and cables	....	1,253	535	1,276	29,400
Meters, other measuring instruments	....	......	2,000	1,858	1,150
Motors	5,298	1,400	6,400	711	11,000
Transformers	....	30,113	......	......	......
All other	5,500	10,700	19,000	31,500	88,500

MARKET FOR U. S. GOODS GROWING

Prior to the war the part of the United States in supplying electrical equipment to Sweden was almost nil. The accompanying figures show the importance of the trade from the German standpoint. It is only in the past two years that our share has grown appreciably, and it would appear to be entirely up to the American exporters of these commodities whether the figures rise to new heights or fall back to the old level.

In spite of the handicaps of the war period, Swedish private enterprise and the purchasing power of the people have increased, and her labor situation appears more favorable than that of her neighbors. A period of temporary depression must follow the speculation and rapid expansion of the war years, but Sweden's future for the long pull never appeared brighter than at present.

Insulating Materials Again Higher

Increasing Price of Raw Materials Forces Yarns, Tapes, Cloths and Compounds Higher

How closely insulating materials follow the market conditions for the raw products is apparent from a study of what has happened during the past week or ten days. As a natural conclusion to the almost daily advances in the cotton market have come frequent increases in the price of cotton products. Silk, too, has gone up. Varnished silk insulation has increased in price about 63 per cent since April. The last increase was a week ago.

Varnished cotton insulation is 20 per cent higher, 5 per cent of which occurred early this past week. Cotton tapes and webbings advanced 5 per cent this week. No advance has been reported on friction tape, but it is expected to come through any day.

There has been better buying of insulating compounds and materials in the past two weeks. Sales have been getting bigger in size and are covering more varied material. Inquiries, too, have been seeking more definite information. They are asking for quotations on definite amounts rather than for just prices in general. These inquiries, moreover, have been on larger amounts. Prices cannot be guaranteed as they are liable to change from day to day.

Linseed oil and varnishes have increased considerably. Linseed oil has risen 30 cents a gallon in the last two weeks, with a resultant effect on insulating material prices.

Copper Products Advancing in Price

Rail Bonds Higher—All Wires Follow Base Metals on Constantly Increasing Price Basis

At this writing copper is selling for 22½ cents a pound, delivered, and is generally expected to continue its advance. It is back to within 3½ cents of the fixed price ruling before the armistice, and predictions are rife that it will go to 25 cents by fall. Copper sales are increasing right along. The recent admission of Germany to trade with the United States merely provides another foreign outlet to American copper, and with already curtailed production it is not unreasonable to expect higher prices with the increased demand.

Rail bonds have advanced again, and over the last week-end the prices increased just over 6 per cent when discounts dropped from 20 to 15 per cent. In the last five weeks bond prices have increased 13⅓ per cent. The last drop of 5 points was sufficient to carry the interest on a rail bond investment for a year. There have recently been a few bond purchases of such size as to lead to the belief that there was to be some stocking in anticipation of still higher prices.

PRICES SUBJECT TO CHANGE

Brass and copper products have followed the base metal up about 3 cents a pound since last week. Hot rolled copper sheet is 31.50 cents, round copper rods are 28.25 cents and seamless copper tubing is 35.50 cents a pound. Copper scrap is 17 to 18 cents while brass scrap is 9 cents for light and 10 cents for heavy in New York. No change in price, however, has been reported in brass overhead line material, controller parts or commutator bars, but it is anticipated.

Copper wire at the mill is quoted 24 to 24.50 cents a pound. Rubber covered wire base is 26 cents, weatherproof base is 23.50 to 25.00 cents and bare wire base is 22.50 to 23.50 cents. These prices are liable to change almost daily.

Cotton Cord Advances

Bell cord and register cord have advanced with cotton. Depending on the grade, the increases in the past week have amounted to approximately 8 per cent. No increase in buying has been noticed. Cotton is expected to go higher still when exporting comes into its own. The crop is smaller than usual and the demand larger.

Rolling Stock

Toronto (Ont.) Railway is reported to be ordering electrical and other equipment for fifty cars to be built in its own shops.

Peoria (Ill.) Railway.—Improvements to its system and rolling stock amounting to about $100,000 are being planned by the Peoria Railway.

Levis (Que.) County Railway has bought twelve standard safety cars, specially fitted for the local climate, from the American Car Company, St. Louis, Mo.

Nova Scotia Tramways & Power Company.—The proceeds of the proposed $2,000,000 note issue are to be utilized for the purchase of additional cars and other equipment and for improvements and repairs.

Detroit (Mich.) United Railway is building bodies for 100 new street cars. These are nearly completed, but there may be some wait for the trucks, according to the officials of the company. The new cars contain the latest ventilating system, which is being used extensively in some of the other large cities. The cars will be distributed where most needed.

Franchises

Newport, Ky.—The City Commissioners of Newport have granted a franchise to the Andrews Steel Company to construct its proposed line on Licking Pike from Eleventh and Brighton Streets to Twelfth Street, west to Lowell and south to the corporation line. The road will connect with the South Covington & Cincinnati Street Railway and the ordinance provides for the interchange of transfers between the two companies. [June 14, '19.]

Track and Roadway

La Jolla, Cal.—Announcement has been made through Edgar F. Stahle, chairman of the committee on transportation of Chamber of Commerce of La Jolla, that arrangements have been made for financing the construction of 4½ miles of electric line to serve that suburb of the city of San Diego, Cal. It is planned to take over the present line of the Bay Shore Railroad, which connects with the Point Loma Electric Railroad at Ocean Beach and extends through Mission Beach, and thence to build the 4½ miles of new line, using a 60-lb. rail. The line is to be operated as an adjunct of the San Diego Electric Railway, which now operates the Point Loma line. The present plans have resulted from the abandonment of the old steam and gasoline-operated line connecting San Diego and La Jolla known as the Los Angeles & San Diego Beach Railroad.

Chicago & Joliet Electric Railway, Joliet, Ill.—The Chicago & Joliet Electric Railway will double-track its lines on West Jefferson Street between Center Street and the Wilcox Street switch.

East St. Louis & Suburban Railway, East St. Louis, Ill.—Plans are being considered by this company for the extension of its line to Scott Field, Ill. It is planned to construct the extension from the O'Fallon division.

Charles City, (Ia.) Western Railway.—Charles City Western Railway is to be extended north on Main Street to connect with the Illinois Central Railway and the Chicago, Milwaukee & St. Paul Railway at their passenger stations. Extra cars will be added to meet all trains on those lines. Spur tracks will be built to the plants of the Cedar Valley Electric Company and the Lambert Lumber Company to accommodate their freight service. Work will be begun on the extension and spurs as soon as the material is assembled. The cost will be approximately $12,000.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The State Board of Public Utility Commissioners has issued an order directing the Trenton & Mercer County Traction Corporation to improve its various divisions. The order becomes effective in August and requires the company to replace its roadbed on West State Street, Hamilton Avenue, Olden Avenue and Pennington Avenue. On West State Street new ties and 103-pound grooved rails and grouted granite block pavement on a concrete foundation will have to be laid. The utility board also ordered a double-track to take the place of the single one on Pennington Avenue. A double-track will also be laid on part of Hamilton Avenue.

NEW YORK METAL MARKET PRICES

	July 2	July 17
Copper, ingots, cents per lb	19.00	22.50
Copper wire base, cents per lb	20.50 to 21.00	24.50
Lead, cents per lb	5.40	5.50
Nickel, cents per lb	40.00	40.00
Spelter, cents per lb	7.35	8.15 to 8.25
Tin, cents per lb	70.50	70.00 to 70.50
Aluminum, 98 to 99 per cent, cents per lb	33.00	32.00 to 33.00

OLD METAL PRICES—NEW YORK

	July 2	July 17
Heavy copper, cents per lb	16.00 to 16.50	18.00 to 19.00
Light copper, cents per lb	13.00 to 13.50	15.00 to 15.50
Heavy brass, cents per lb	8.50 to 9.50	10.50 to 11.00
Zinc, cents per lb	5.25 to 5.75	5.75 to 6.00
Yellow brass, cents per lb	7.75 to 8.25	9.00 to 9.50
Lead, heavy, cents per lb	4.75 to 4.87½	5.00 to 5.12½
Steel car axles, Chicago, per net ton	$25.00 to $26.00	$25.00 to $26.00
Old carwheels, Chicago, per gross ton	$22.00 to $22.50	$22.00 to $22.50
Steel rails (scrap), Chicago, per gross ton	$19.00 to $20.00	$22.00 to $22.50
Steel rails (relaying), Chicago, gross ton	$20.00 to $21.00	$21.00 to $22.00
Machine shop turnings, Chicago, net ton	$7.75 to $8.00	$8.00 to $8.50

ELECTRIC RAILWAY MATERIAL PRICES

	July 2	July 17
Rubber-covered wire base, New York, cents per lb	23	26
Weatherproof wire (100 lb. lots), cents per lb., New York	27	28
Weatherproof wire (100 lb. lots), cents per lb., Chicago	25.75 to 26.50	27.75
T rails (A. S. C. E. standard), per gross ton	$49.00 to $51.00	49.00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47.00 to $49.00	47.00 to 49.00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45.00 to $47.00	45.00 to 47.00
T rail, high (Shanghai), cents per lb	3	3
Rails, girder (grooved), cents per lb	3	3
Wire nails, Pittsburgh, cents per lb	3.25	3.25
Railroad spikes, drive, Pittsburgh base, cents per lb	3.35	3.35
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	2.75	2.75
Tie plates (brace type), cents per lb	2.75	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb	3	3
Angle plates, cents per lb	3.90	3.90
Angle bars, cents per lb	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb	4.35	4.35
Steel bars, Pittsburgh, cents per lb	2.35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.25	5.25
Galvanized barbed wire, Pittsburgh, cents per lb	4.10	4.10
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70	3.70
Car window glass (single strength), first three brackets, A quality, New York, discount †	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	81%	81%
Waste, wool (according to grade), cents per lb	14 to 17	14 to 17
Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	8 to 12½
Asphalt, hot (150 tons minimum), per ton delivered	.....	.....
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton		
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl	$2.90	$2.90
Cement (carload lots), Chicago, per bbl.	$3.05	$3.05
Cement (carload lots), Seattle, per bbl	$3.13	$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.90	$2.20
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.92	$2.23
White lead (100 lb. keg), New York, cents per lb	13	13
Turpentine (bbl. lots), New York, cents per gal	$1.00 to $1.03	1.12½

---

† These prices are f. o. b. works, with boxing charges extra.

Portland Railway, Light & Power Company, Portland, Ore.—The Public Dock Commission of Portland, Ore., is considering the construction of an electric railway connection between the municipal terminal at St. Johns and the existing railway system, as the result of an offer from the Portland Railway, Light & Power Company to operate the line on a cost plus 15 per cent basis, if the dock commission will build the connecting track. F. I. Fuller, vice-president, states that the company is not financially able to build the line, or to make any extensions of any kind. The cost of the connection is estimated at $25,000, and the legality of the proposition will be passed upon by City Attorney La Roche.

Power Houses, Shops and Buildings

Alabama Power Company, Huntsville, Ala.—A contract has been awarded by the Alabama Power Company to the Dixie Construction Company for the erection of a power line from Gadsden to Huntsville via Albertville and Guntersville. The cost of the new line will be about $200,000.

Pacific Electric Railway, Los Angeles, Cal.—Work will be begun at once by the Pacific Electric Railway on the construction of a new substation at North Front Street, San Pedro. The structure will be 36 ft. x 70 ft. and will cost about $12,000.

West Virginia Power Company, Sistersville, W. Va.—The power plant of the West Virginia Power Company, the successor company to the Sistersville Electric Light & Power Company, which furnishes energy to the Sistersville & New Martinsville Traction Company, will be moved from Sistersville to Paden Park early next year.

Trade Notes

Drew to Move to Cleveland

The Drew Electric & Manufacturing Company of Indianapolis, manufacturer of electric railway overhead material, broke ground on July 11 for a new plant at Cleveland where the company has acquired a two-acre site at Collamer Avenue and the Nickel Plate Railroad. The new plant will cost in the neighborhood of $50,000 and will include in the structure offices, machine shop and brass foundry. A separate building is to be erected as a hot galvanizing plant. The first building, which is 80 x 200 ft., is scheduled for completion in forty-five working days from July 11. James H. Drew, president of the company, writes that the company expects to have the entire business moved to Cleveland by Sept. 1. This move is being made because Cleveland, being more nearly in the center of the company's business activities, affords better shipping and traveling facilities.

Trenle Porcelain Company, East Liverpool, Ohio, announces that it has built a large new office, double the size of the old.

No. 29656—A firm in Belgium desires to purchase or act as agent or receiver on consignment of electric railway equipment.

Carbo Steel Products Company reports that it has moved its factory and office to 2600 West 111th Street, Morgan Park, Chicago.

French-American Banking Corporation, Cedar and William Streets, New York City, has opened business in foreign banking and foreign trade of every description.

American Pattern Works Company, 1551 West Market Street, New York City, has taken over the business formerly conducted by the American Pattern Works.

Massey Concrete Products Corporation, Chicago, announces the following appointments of resident managers: Paul Kircher, New York; G. H. Redding, Chicago; H. E. Burns, Dallas, Texas.

Edward Valve & Manufacturing Company, Chicago, announces that it has opened a Pacific Coast office at 223 Rialto Building, San Francisco, with F. J. Hearty as Pacific Coast representative.

F. G. Echols, for many years general manager of the small tools department of Pratt & Whitney Company, Hartford, Conn., has been elected vice president of the Greenfield Tap & Die Corporation, Greenfield, Mass.

E. E. Brownell, Philadelphia, Pa., consulting engineer, has been made appraisor of the Grand Rapids (Mich.) Railway Company properties. J. R. Hogarth is assistant to Mr. Brownell. The appraisal is in connection with the car fare rate question.

Structural Slate Company, Penargyl, Pa., has recently opened branch offices in Boston, Pittsburgh, St. Louis and Chicago, which, in addition to New York City, Philadelphia, Washington, D. C., Cleveland, Columbus and Cincinnati makes ten branch offices in all. All of these branch offices are prepared to make estimates or furnish information on the company's products.

E. E. Maher announces the formation of the Maher Engineering Company, with offices in the Michigan Boulevard Building, Chicago, to handle the sales and installation of Erie Engine Works high-speed engines, the Sims Company feed-water heaters, the Dayton-Dowd Company centrifugal pumps, Wagener Steam Pump Company's pumps, and Pratt Engineering & Machine Company's fertilizer and sulphuric-acid machinery.

W. R. Kerschner Company, Inc., 50 Church Street, New York City, announces the election of W. B. Hoggatt as president, vice W. R. Kerschner, deceased. Mr. Hoggatt is president of the Keyes Products Company. The company will continue to handle the accounts of The Columbia Machine Works & Malleable Iron Company, Albany Car Wheel Company, The Cincinnati Car Company, National Safety Car & Equipment Company, The Keyes Products Company, and Charles I. Earll.

New Advertising Literature

Westinghouse, Church, Kerr & Company, New York City: Illustrated circular on industrial housing.

Allis-Chalmers Manufacturing Company of Milwaukee: An eighteen-page bulletin No. 1096-A, on direct-current motors and generators.

Roller Smith Company, New York City: Bulletin 110 on "Handy" pocket portable ammeters, voltmeters, and voltammeters for direct current.

Rogers Journal Packing Company, 140 South Dearborn Street, Chicago, Ill.: Bulletin No. 1 giving instructions on the use of "Stecos" journal packing.

Railway Storage Battery Car Company, 50 Broad Street, New York City: Bulletin 106 on "Edison Storage Batteries for Self-Propelled Rilway Cars."

Combustion Engineering Corporation, New York City: Bulletin S-1 on the "C E C Tube Scraping Device" for cleaning lower boiler tubes without shutting down the boilers.

Pratt & Lambert, Inc., New York City: Pamphlet in colors on "The Vitralite Railway Enamel System," showing methods of finishing steel and wood cars and other railway equipment.

The Carbo-Hydrogen Company of America, Benedum-Trees Bldg., Pittsburgh, Pa.: Twenty-seven page catalog describing, with illustrations, the use of Carbo-Hydrogen apparatus for cutting steel and wrought iron.

W. S. Barstow & Company, Inc., New York, N. Y.: The 1919 edition of data concerning properties in which Barstow & Company are interested. In a sixty-one page cloth-bound book the operators have presented all the essential facts and the necessary maps.

The British Aluminium Company, Ltd., London, England, whose Toronto address has been changed to 265 Adelaide Street, West Toronto, Can., has issued a folder on "The Casting of Aluminium," touching on aluminium alloys, their mixing, moulding and melting.

Elliott Company, Pittsburgh, Pa.: Combined catalog of its own power accessories, and those of the Liberty Manufacturing Company, Pittsburgh, Pa., and the Lagonda Manufacturing Company, Springfield, Ohio. These products comprise condensers, heaters, strainers, extractors, separators, traps, valves and boiler and condenser tube cleaners.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, July 26, 1919 *Number 4*

What the Hearings at Washington Show

IT IS a wonderful story which has been told in Washington this week—the story of the creation from small beginnings, of one of the nation's great industries. The witnesses include some of the pioneers who had faith in electric power when few or no cars were being propelled by it on city streets, operators who have taken an active part in the development of the modern electric road, bankers who have financed many of the undertakings, business men and others outside the industry who realize the necessity of adequate urban and interurban transportation, and presidents and receivers who are endeavoring to work out the problem of keeping these lines in efficient service or retrieving as much as they can from the wrecks of those which have been unable to withstand the financial pressure to which they have been subjected. It is a remarkable epitome of one of the nation's largest public services and probably unprecedented in magnitude of interests involved and is being given directly by those who took an active part in all phases of this development.

It is a story of achievement in transportation methods and inventive genius in creating means for the economical transportation of large numbers of people for comparatively short distances. It is also a story of successes and failures, of extravagant hopes and bitter disappointments and of money gained and money lost in an endeavor to serve the public.

The story thus being told in Washington has its tragic side, even its sordid side, yet as a whole it is one of which any body of men can well be proud. In the early days the struggle for the most part was against physical obstacles. Every effort was made to perfect electrical equipment and adapt the largely unknown force to the haulage of passengers. Motors, cars and track were built only to be discarded for something which seemed better adapted to the work to be performed. The issue many times was doubtful yet men courageously ventured all they had on final success. During the later days the struggle has been principally against financial conditions, and the endeavor has been to operate on a financial basis that was as much outgrown as the cars and equipment of the early nineties and should long ago have been discarded.

During all of this time the people have been carried in rapidly growing numbers, for longer distances, in constantly increasing safety and convenience and at lower charges. And now the leading men in the industry are appearing before a federal commission in an effort to determine some method by which these inestimable advantages to the public can be retained and the service of these companies to the people can be made even more useful than in the past by being placed on a permanent basis.

A New Basis Is Necessary to Relieve the Situation

THE hearings before the Federal Electric Railway Commission during this past week have already demonstrated clearly two points, namely:

(1) There is necessity for immediate relief for the great majority of electric railway companies in the country, and

(2) The fundamental or ultimate relation between the railways and the cities which they serve must be different from that under which most electric roads have worked since their inception.

For the reasons already outlined, it is probable that this change would have had to come even if the war had not occurred and suddenly changed the status of values. The old system began to be obsolete when competition ceased and the consolidated roads in a city became a monopoly and this monopoly was accepted by the State. Up to that time the management of a street railway company was largely a private affair, and its policy as regards extensions and service was determined by the owners of the roads. But when monopolies came into existence the State in self defense had to regulate them. This led to the establishment by the State of standards of service and the supervision of security issues, and the days were over when a street railway could be run with the freedom of a private commercial enterprise. The financial conditions brought on by the war have thus only hastened a crisis which was bound to have come sooner or later. But unless the worn-out features of the old arrangements are abandoned and the roads are put on a fundamentally sound basis, any relief which is extended now can be temporary only.

The future basis for agreement between the railways and the cities (or State) should include the following:

(1) A determination of the value of the property.

(2) The establishment of what would be a reasonable return on such value.

(3) A decision from a traffic standpoint as to what portions, if any, of the railway system in each community may be abandoned with resulting economy and not too great public inconvenience; in other words, the determination of the most economical and desirable layout of the system for existing conditions and future growth.

(4) The discontinuance of imposts, such as paving costs, franchise taxes and other charges which have nothing to do with transportation but increase the cost of operation and thus discriminate against the car rider.

(5) The adoption of a flexible fare system which will be remunerative and at the same time encourage riding.

The street railway itself is in no respect obsolescent, and its place cannot be taken by automobiles or any other known means of transportation, nor is there any indication that this condition will change. It must remain as the chief reliance for urban transit. But the conditions under which most of the street railways in the country are operating, and have operated since horse-car days, have become antiquated and should give place to more modern methods.

It is a plan to accomplish this which we hope the commission now conducting hearings at Washington will evolve.

Electric Railways Will Now Get the Public's Ear

THE evidence being presented at Washington is the most valuable collection of data on the condition of the electric railways and their need for relief that has ever been made. Independent, therefore, of any decision which the commission may reach as to the remedy for present conditions which may be applied, each company has at its disposal an important source of material by which it can enlighten its own public as to railway conditions. The association, recognizing that this would be the case, arranged for the publication of a daily bulletin containing the high spots in the testimony and most important data presented at the hearings, and abstracts of the proceedings are being published in this paper.

One great difficulty which electric railway companies have had in the past in explaining their problems to their own public is that the people too often assume these troubles are local only. Here is an opportunity of proving to the public that the conditions are national in their extent and so universal and serious as to warrant the appointment of a national commission. A full knowledge of the facts by the public at this juncture will be most helpful in bringing relief.

The publicity to which we are referring can be obtained in many ways, but one of the best is through car cards and leaflets in the cars. The car itself is a logical medium by which the facts of the industry can be conveyed to the patrons. Leaflets containing some of these salient points developed each day at the Washington hearing can very properly be issued daily by the different companies for distribution and thus carry their message to the public. It is, of course, very important to use this information promptly, while the hearings have their maximum "news value." It is also advisable for the active manager to be sure that the newspapers and influential people in each railway's constituency understand the significance of what is now going on in Washington.

Are Zone Fares and Safeties Mutually Exclusive?

AS THE zone fare and the modern light-weight car are two of the biggest questions before the industry to-day, it is no wonder that operators are beginning to ask: Can we or can't we work the zone fare with one-man cars?

If the car were to be used on a system running through half a dozen communities over a run of 10 to 15 miles, we dare say that there would be something to think about in inaugurating half a dozen or more differential fares, but this is unnecessary where the street railway service is adjusted to the local needs of each community. The big cars might readily be reserved for the through service, while the smaller, lighter cars would be used for the development of local short-haul traffic. Generally speaking, all but our largest cities could get along with a two or three-zone system. A two-zone system embodying a short ride for a short fare and a complete route ride, if desired, for a larger fare may be found desirable in a large number of medium-size cities.

Before really going into the new problems presented by the zone fare, the railway ought first to exhaust every means of building up traffic under a universal fare. Increased service with lighter, new cars is certain to bring an increase in traffic. This increase in traffic may parallel the increase in car-miles up to a given point, after which every car-mile added brings less revenue per mile. It is only when the safety-car operator is sure that he has reached the saturation point possible with frequency of service alone that he should look into the question of securing still more traffic through short-ride fares, commutation tickets or other stimulants.

Of course, there are situations where one might begin with the zone fare first and then install more service. However, only the most stringent shortage of new money could justify this policy, for the reason that the installation of more frequent service with lighter units not only builds up traffic but also reduces the operating expenses at the same time. From this greater advantage, it follows that it will usually be found preferable to give increased service first and then to introduce the zone system which, in any event, can be a success only when the service is frequent enough to attract short riders. We may say, then, that instead of being mutually exclusive the zone fare and the frequent-service car are close partners.

How Long Will Wages Continue to Increase?

WHEN the National War Labor Board was created as a sedative for labor troubles during war time, some persons saw in this arrangement a rainbow which was to mark the passing of stormy times between employer and employee. A much larger number, including most railway men, were hardly so sanguine as that, but they did believe that the wage scales set would be proportioned to the financial ability of the companies to meet the burden. If the higher cost of necessities had hit the employees hard, it had hit the companies equally hard or harder, and the latter were well satisfied to leave to the War Board the way of finding the money to pay any additional wages, as well as to determine what a fair rate of wages was.

The National Board, however, rejected both the idea that the financial ability of the employer was a factor in determining the wages to be paid by him and that the board had the power to raise rates as well as wages. On the former point the federal body held that the companies had to pay the market price for materials and supplies and that poverty could not be pleaded as an excuse for not paying a fair price for labor—an argument which sounds all right by itself, although it occurs to us that a contract for labor during a certain period should be just as binding as a contract for material. As to power to increase rates, it was found the board had none, so that as a result of these decisions the companies were far worse off than before yet the heavy burdens thus imposed were assumed, because acceptance was considered a patriotic duty and it was worth while to be free from the prospect of wage controversy.

Developments have shown, however, that these "settlements" did not settle. It has taken less than a year for the men in Detroit and Cleveland, for instance, to become dissatisfied with the 48-cent wage which twelve months ago was considered high and to look upon nothing less than 60 cents an hour as adequate. In Boston a still higher rate has been granted. In several other cities the men are agitating and threatening strike for a wage scale higher than that fixed by the War Labor Board on their systems "for the period of the war." They are also urging in some places an eight-hour day and a six-day week, which, because of the peculiar nature of the railway business, means more than it would in general industrial establishments.

What the men feel they are entitled to because of higher cost of living is one thing; what the companies are able to pay is another. The authorities can bring these extremes together, and the only hope for stabilizing labor conditions so that electric railways can compete with other industries for the best type of labor lies in a public appreciation of the need of more elastic revenues.

Where It Pays To Mix

THE modern electric railway manager is expected to be not only a good all-around engineer but an all-around diplomat and mixer as well. Granted that he has this remarkable combination of talents, the question arises, How can he put the latter, and now more important, quality to the best possible use?

One's first tendency would be to say that he ought to take an active part in the doings of the Board of Trade, the Gyratory Club, the Noonday and the various other organizations which, in a way so typically American, combine business, good fellowship and civic patriotism. But is this enough? Is it not a fact that most of the men who belong to these organizations are largely owners of automobiles and not habitual street car riders? What will it profit to have the sympathy of fellow business men if the 100 per cent electric railway customer is not reached in the same personal fashion?

Therefore, may we suggest that the managers who are already tried campaigners for good public relations through club contacts of this kind go a step further by getting down to the folks who have no automobiles. And we believe that one of the best ways to do this is through the use of the moving picture theater. There, and there only, will one find all strata of society from the nabob, who does not ride but is an influence in the community, to the workman who even if he has no political power can refrain from using the cars if dissatisfied with the service. The manager need not feel that he is doing something absolutely novel, for the "Four-Minute Men" paved the way for him during the recent Liberty-Loan campaigns. Furthermore, he may be certain that the general riding public would be only too glad to come into such personal touch with the man who is held responsible for so important a factor in their daily lives as electric railway service. We are inclined to believe that one or two sessions with *hoi polloi* will give the manager a truer insight into the feelings and viewpoint of the majority of car riders than a dozen banquets and song festivals in non-proletarian surroundings.

"Summer-ize" Your Cars!

NO ONE expects the return of those good old nights when father, mother and the children went out *en masse* to ride for hours and hours on gayly-lighted open cars. The electric railway is no longer enough of a novelty, and automobiles are altogether too numerous to expect such heavy summer-night riding as was common in the nineties and the decade following.

But to assume that summer-night riding is no longer worth cultivating at all is to make a costly mistake. A very large fraction of our citizens is still willing to use the trolley, for the good and sufficient reason that it cannot afford anything else. All that this goodly fraction is waiting for is an invitation. The open-bench car is by no means the only satisfactory form of invitation. If that type of car is going out, it is due to the fact that it cannot earn enough extra profit in sixty days to make up for its idleness the other 305 days. A "just-as-good," nay better, type of car for summer riding is a cross-seat car with large drop or raised sash in the sides and drop sash in the vestibule. Such a car, of course, must also be of the open bulkhead type. Whatever it lacks in seating capacity in comparison with the open-bench car, the convertible car more than counterbalances by its greater safety, freedom from air-blockading standees and immediate adaptability to changes in weather. Perhaps the most notable decision in this matter was that of the Tampa Electric Company, which actually replaced open-bench cars by Birney cars of standard type, although one would naturally expect a Florida city to hang on to the open-bench car longer than Northern communities.

To point out that there are still plenty of people who want to ride in trolley cars for the sake of keeping cool may seem like emphasizing the obvious. However, the fact is that the inspiration for these remarks came from some observations made in a large Western city and a much smaller neighbor thereof. In the large city the cars are still fitted with bulkheads. These shut off so much air that would otherwise come from the vestibule that the summer-riding value of the cars is utterly lost despite the fact that they are fitted with comfortable cross-seats. While doing some enforced riding on these cars early in July, the writer was struck by the large number of people who were sitting on the sidewalks in front of their homes instead of taking the extremely long ride available for a nickel. In distinction from this is the summer riding of the smaller town, where all the cars have open bulkheads and where the public is plainly pleased at the opportunity to use them for pleasure riding. Even in this town it is noticeable that the cross-seat cars are more popular than the longitudinal-seat cars, proving once again that the public knows what it wants when it wants it!

On the whole, it is not wise to jump to over-pessimistic conclusions. No matter how many automobiles there are, the car-riding habit grows by what it feeds on—service. Give service, which includes the right car as well as the right frequency, and "the man in the street" will more often be turned into "the man in the car."

The Zone Fare in Practice

The British Electric Traction Company

A Few Notes About Great Britain's Large Holding Company—Although Granted No Fare Increases Over Statutory Rates, the Company Has Managed to Escape the Worst Because of Large Increase in Travel—How Paper Tickets Sold at a Farthing Were Used to Stimulate Riding as Close to Destination as Possible — New Standard Cars Embody Many American Principles

BY WALTER JACKSON

THE electric railway undertakings of the British Electric Traction Company are organized in accordance with the provisions of the tramways act of 1870 or the light railways acts of 1896 and 1912. Under the tramways act franchises are limited to a life of twenty-one years, after which the local authorities have the option of purchasing the property at intervals of seven years upon six months' notice.

The light railways acts provide a different method of procedure for securing operating rights, etc. These acts were intended to promote the construction of cross country lines with grants from the government if necessary. Like the tramways act, however, they were hedged about with so many restrictions that they have proved a farce in practice. This is tacitly recognized in the new act constituting a Ministry of Ways and Communications, in which this subject receives considerable attention; but, at this writing, the future is obscured in doubt.

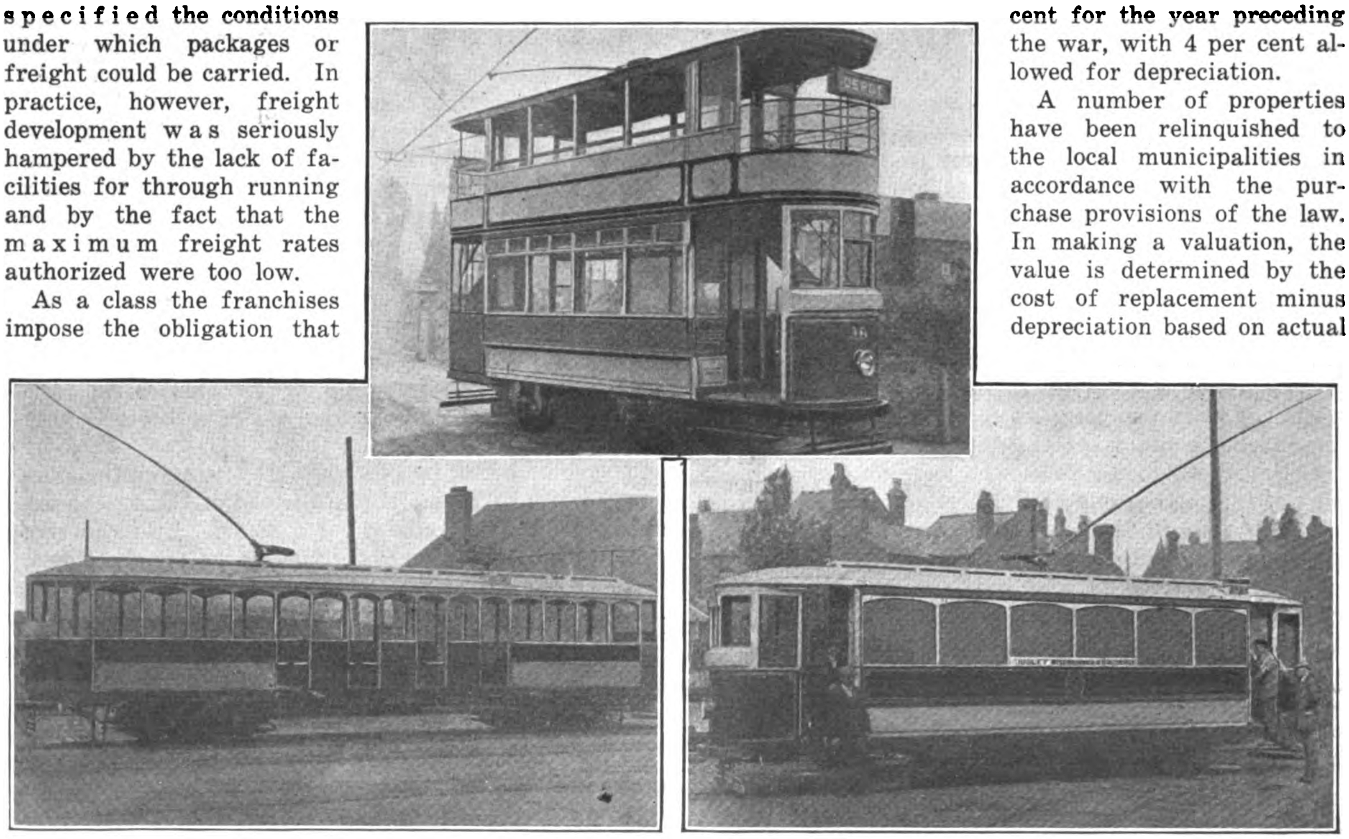
The franchises under the tramways act of 1870 also specified the conditions under which packages or freight could be carried. In practice, however, freight development was seriously hampered by the lack of facilities for through running and by the fact that the maximum freight rates authorized were too low.

As a class the franchises impose the obligation that the tramway shall be responsible for the paving between and for 18 in. on each side of the rails. In some cases lighting obligations are added. The running of specific services and the erection of waiting rooms are among other miscellaneous conditions.

Maximum fares are specified in various special acts which supplemented the tramways act of 1870. In most cases the company has the right to charge a minimum fare of 2d., and in other cases a fare of 2d. for any distance in excess of ½ mile. Yet a minimum fare of 2d. is still too high for the average Briton, and the customary minimum fare to the ordinary (non-workman) passenger is 1d. Generally not more than 1d. per mile may be charged beyond the first 2 miles.

The allowable return (if the company gets any) is not limited as a rule. How meaningless this provision has become appears from a statement by A. W. A. Chivers of the British Electric Traction Company, who says that the average return of all British tramways, whether private or public, was only 3.03 per cent for the year preceding the war, with 4 per cent allowed for depreciation.

A number of properties have been relinquished to the local municipalities in accordance with the purchase provisions of the law. In making a valuation, the value is determined by the cost of replacement minus depreciation based on actual



TYPICAL BRITISH ELECTRIC TRACTION CARS

Type 1—left—B. E. T. car with removable panels, for cross-country service, seating fifty-six; type 2—above—B. E. T. double-deck car seating forty-eight; type 3—right—B. E. T. single-deck car, seating thirty-four, available for small-town service with single operator.

physical measurements such as rail wear, efficiency ratings of generating equipment, etc. Payment in some cases is on the basis of a going concern.

"We Asked for Bread and They Gave Us a Stone"

This was the succinct summary of the situation by Emile Garcke, chairman British Electric Traction Company, when asked what relief if any had resulted from recent legislation. The measure in question, passed by Parliament in 1918, authorized tramways to seek relief by applying to the Board of Trade with proof that their net revenues had been seriously decreased during the war. Since, as Mr. Garcke pointed out, tramway returns were already at a low ebb just before the war, there was not much nourishment in being told that such unsatisfactory standards might be maintained after a weary course of claims and counterclaims before the Board of Trade arbitrators. In effect, therefore, the act is useless.

Moreover, as most of the properties are small, it would not be wise to go to the minimum fare of 2d. allowed in some cases by law. What the properties would be benefited by most largely, aside from actual subsidies, would be the reduction of heavy paving tax burdens and the granting of through running facilities with neighboring undertakings. The present conditions, Mr. Garcke stated, are anything but encouraging for tramway development, and the ways and communications act only adds to the existing uncertainty.

Encouraging Full Use of Tramway Facilities

The standard system of fare collection embodies the use of fare receipts and registering punches as described in articles on other properties. Prepayment was introduced at Gateshead in 1912 and is still in use there, the cars having been remodeled for that kind of fare collection. The work of the conductors on B. E. T. undertakings is simplified as much as possible, particularly by avoiding the use of transfers. Ready reckoners are placed inside the ticket boxes of the conductors to assist them in making out their reports.

In 1909 the British Electric Traction Company adopted a most interesting expedient to encourage riding by introducing farthing (½-cent) stages on top of the maximum penny ride. At that time, the increments of a penny or a half-penny ride made the stages of such length that the average passenger was tempted to walk up to a fare point before boarding in order to save a half-penny, or to leave the car at a stage point for the same reason. Obviously this did not produce maximum revenue to the tramway or maximum service to the public. Quite often a man who had begun to walk toward a fare point would decide to continue walking, or if he did board the car he would not buy enough transportation to carry him as far as his destination.

Losses due to this cause cannot be minimized in large cities with dense traffic beyond the attractions offered by laps of 0.5 mile or so because the conductor needs this average distance in which to collect his fares. Consequently, the best that a line with dense traffic can do is to space the stages more or less irregularly to take advantage of natural traffic-gathering points.

TRAFFIC STATISTICS FOR SOME UNDERTAKINGS OF THE BRITISH ELECTRIC TRACTION COMPANY FOR THE CALENDAR YEAR 1917

Undertaking	Route-Miles	Car-Miles per Route-Mile	Car-Miles per Car	Car-Miles per Car-Hour	Passengers per Route-Mile	Passengers per Car-Mile	Pence per Car-Mile
1	3.63	78,481	46,255	7.11	1,326,223	16.90	15.27
2	3.06	69,683	40,044	6.00	860,158	12.35	15.71
3	6.90	70,489	44,539	7.53	1,128,844	16.02	15.50
4	10.32	96,952	48,038	7.22	1,881,004	19.40	18.47
5	22.88	44,802	50,722	7.18	560,622	12.52	16.89
6	12.38	100,412	48,285	7.23	1,575,044	15.69	16.41
7	6.47	44,168	40,013	6.05	415,558	9.41	11.67
8	7.42	137,635	46,566	6.95	2,012,750	14.63	14.31
9	2.54	78,852	48,795	7.51	821,603	10.42	12.57
10	4.60	28,278	42,532	6.64	181,256	6.42	13.53
11	3.70	74,341	36,616	6.30	753,171	10.13	13.55
12	8.51	46,609	50,564	7.54	446,404	9.58	15.69
13	9.00	75,070	44,301	6.52	756,748	10.08	14.44
14	5.35	48,046	36,215	6.21	444,317	9.25	11.09
15	31.67	75,867	41,079	6.34	891,280	11.75	14.27
16	4.81	26,559	42,269	8.55	193,116	7.27	15.40
17*	2.48	26,488	19,695	5.22	302,267	11.41	10.49
18	8.17	50,231	45,262	7.33	460,906	9.17	11.65
19	17.30	66,421	49,419	7.47	887,026	13.35	16.68
20	13.00	101,386	44,958	6.48	1,089,467	10.75	13.96
21	1.75	75,072	37,812	6.64	437,857	5.83	5.22
22	4.21	62,759	37,866	7.29	674,188	10.74	17.96
23†	2.92	32,403	25,014	5.42	331,147	10.22	14.77
24	15.51	48,489	44,139	6.94	611,749	12.62	14.04
25‡	5.86	51,039	28,756	5.18	660,019	12.93	13.32
26	4.28	28,039	38,775	6.29	197,186	7.03	11.96
27	22.35	54,190	46,062	7.13	598,240	11.03	15.17

NOTE—The foregoing figures do not include two steam tramways and one foreign property.

* The figures for this undertaking are for six months only.

† This is a seaside undertaking (Weston).

‡ This is a cathedral town (Worcester). The "service hours" are below the average, and the service starts late in the morning.

This condition, of course, does not apply in the smaller towns as a rule, or on a few routes in the larger communities. Hence it is possible to work out a plan whereby, as Mr. Chivers puts it, "a passenger should be able to enter a car at any point and get the the full value for his fare." The plan as adopted in 1909 involved the use of the smallest coin of the realm, the farthing. As actual farthings were scarce, the company devised a strip ticket (see page 156), which was sold at face value and accepted in lieu of copper.

Under the "fair fare" plan, as it was designated, the minimum fare usually remained at 1d. but above the penny fare there were 1¼d., 1½d., 1¾d. fares and so on, according to the number of stages traveled. On many routes the long-distance fares were on the basis of more than four sections for 1d. As shown in Fig. 1, which compares penny end-on stages with farthing stages, a passenger traveling from stage "0" to stage "5" under the farthing plan would have to pay only 1¼d., whereas under the old system he would have to pay 2d., that is to say, if he did not get off and walk after riding a penny-worth. The passenger would also be likely to board the car in more comfort than if he had to take his chances with a crowd at a penny end-on stage.

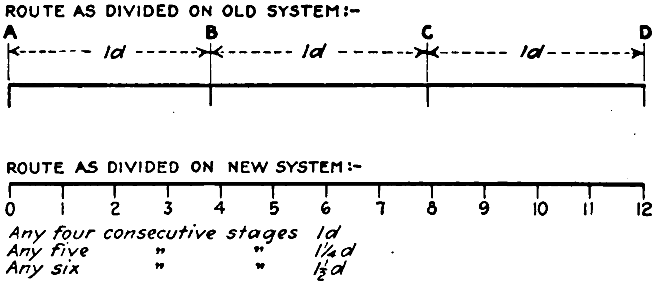

ROUTE AS DIVIDED ON OLD SYSTEM:-
A
B
C
D
1d
1d
1d
ROUTE AS DIVIDED ON NEW SYSTEM:-
0
1
2
3
4
5
6
7
8
9
10
11
12
Any four consecutive stages 1d
Any five " " 1¼d
Any six " " 1½d

FIG. 1—ZONE DIVISIONS UNDER B. E. T. "FAIR FARE" PLAN

The introduction of the shorter stages made possible by the farthing increment scheme was accompanied by the use of numbered stages. As the numbers were marked on the poles, the passenger was in no doubt as to his alighting point, since he had to watch only for the same number as that punched on his ticket. For still better identification, each section of the route was marked black or white by painting black or white bands around the poles. In addition, the sections were numbered consecutively by means of plates on the boundary poles of each section. One part of the plate bore the number of the completed section, and the other bore the number of the section just beginning. The black and white arrangement thus worked out is shown in Fig. 2.

The tickets were arranged on the same principle, as shown in the accompanying views of 1d. and 1¼d. specimens. On these tickets the adjoining sections were distinguished by one being black and one of the color chosen for the specific denomination. When a passenger paid his fare, the conductor punched the ticket opposite the number of the stage to which the passenger was entitled to travel. Thus, if he got in at stage "2" he was entitled to ride to any point in "5" for a penny (or vice versa), the fare being, say, four sections for 1d. Likewise, if he traveled from stage "2" to stage "6," he would pay 1¼d. instead of 2d.

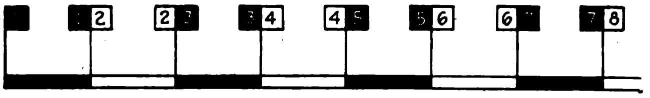


FIG. 2—DIAGRAMMATIC VIEW OF B. E. T. LINE WITH BLACK AND WHITE SECTIONS

With the coming of the war, the farthing became too microscopic in value to be used as a fare increment. But by the time it was withdrawn it had done its work of creating the habit of taking the maximum-length ride instead of walking hundreds of yards to save a penny or even a half-penny. The car-mile earnings, even on routes where one can walk from end to end within an hour, are eloquent testimony to the strength of the riding habit in B. E. T. communities. It is also a fortunate fact for the company that war wages have been a big factor in increased riding. This has been the one offset to the great increase in the expenses of operation.

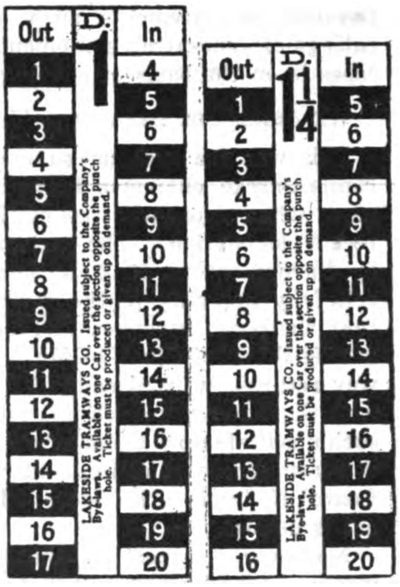
NEW STANDARD B. E. T. CARS

The company has recently developed three types of cars for use on its Black Country undertakings and on other properties to replace gradually the wide number of varieties now in service. These are illustrated on page 154.

Type 1 is a side-opening single-deck car, the openings being closed in winter by installing four doors on each side. This is a double-truck car. 44 ft. over all and 35 ft. over the body. It carries two GE-60, 35-hp. motors, which give it sufficient power to operate at fairly high speeds over country highways and right-of-way. The seating capacity is fifty-six.

Type 2 is a double-deck single-truck car 27 ft. over all and 16 ft. over the body. It has an 8-ft. 6-in. wheelbase and is equipped with two GE-249, 40-hp. self-ventilated motors. The top deck is covered, and the platforms are partly vestibuled. This car seats twenty-two below and twenty-six above. It is being used for service into Birmingham.

Type 3, the smallest, is probably the most interesting of the new cars. It is a single-deck thirty-four-seat car, 33 ft. over all and 22 ft. over the body, with a wheelbase of 8 ft. 6 in. Entrance is at the rear, as usual, but exit is on the rear side via a front door which, by means of a wire attached to the door-control handle, is operated only by the motorman. The motorman is ready to open the door as soon as the passenger operates a bell-cord inside the car or on the front platform, the idea being to have an alighting passenger waste as little time as possible.



D. 1

Out	In
1	4
2	5
3	6
4	7
5	8
6	9
7	10
8	11
9	12
10	13
11	14
12	15
13	16
14	17
15	18
16	19
17	20

LAKESIDE TRAMWAYS CO. Issued subject to the Company's By-laws. Available on one Car over the section opposite the punch hole. Ticket must be produced or given up on demand.

D. 1¼

Out	In
1	5
2	6
3	7
4	8
5	9
6	10
7	11
8	12
9	13
10	14
11	15
12	16
13	17
14	18
15	19
16	20

LAKESIDE TRAMWAYS CO. Issued subject to the Company's By-laws. Available on one Car over the section opposite the punch hole. Ticket must be produced or given up on demand.

EXAMPLES OF B. E. T. "FAIR FARE" TICKETS

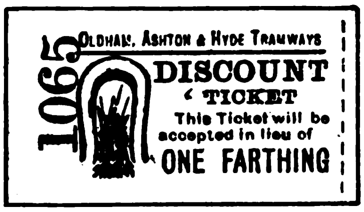
This third type of car is also remarkable in British practice for its absence of bulkheads and interior trim. At night the motorman draws a curtain behind him to prevent dazzle. The car seating is longitudinal. The car may be operated temporarily as a one-man car, and it it may also be operated as a pay-as-you enter car. The type has proved so popular at Dudley that it is earning as much per car-mile as the double-deck cars on the same route. On more interesting point is that this type of car will soon be equipped with two GE-258 self-ventilated, ball-bearing motors, probably the first British application of this well-known "safety-car" motor.

SOME CHARACTERISTIC OPERATING FEATURES

The great range of size and the large number of undertakings operated by the British Electric Traction Company do not permit many specific statements as to details of operation, but the following facts may be of some value:

A fair average for the distance between stops would be 600 ft. In some of the smaller towns a passenger will be picked up almost anywhere but set down only at certain specified places. In general, it is not held to be necessary to space the regular stops shorter than 600 ft., but nothing that could attract the short rider is overlooked. Most stops are now made on the near side.

Even in the smaller communities, short headways prevail as compared with those for towns of similar size in the United States where the big two-man car is still in use. Ten to fifteen-minute intervals are characteristic only during the off hours, much better service being given at other times. It is noted that the daylight-saving plan was of marked benefit in improving the evening shopping and pleasure travel. A like result is expected from the shorter workday, although the morning peak will be sharper with the coming of later hours for workmen.



1065

OLDHAM, ASHTON & HYDE TRAMWAYS

DISCOUNT
TICKET
This Ticket will be accepted in lieu of
ONE FARTHING

B. E. T. FARTHING TICKET TO INCREASE TRAVEL

Loading in queues is being used more and more in recent years. It may be explained that Britishers have long been accustomed to stand in line for the cheaper seats at theaters, and they got further training during the day of the food coupon. Hence they take quite readily to this means of loading cars decently and in order. Standing in cars was rare before the war, but the shortage of equipment and the need of saving fuel enlarged the number of straphangers, at least temporarily.

The schedule speeds on the different B. E. T. properties vary in accordance with the characteristics of the services anywhere from 7 to 15 m.p.h. The actual net car-miles per car-hour are shown in the accompanying table, which is representative of some of the small associated undertakings, to range from 5.18 to 8.55. It is rather interesting to observe that practically all the tramways operating in round-the-year communities average more than 40,000 miles per annum from their cars, two of them exceeding 50,000 miles. The traffic density per car-mile, even in the case of the smallest properties, is in excess of ten passengers, with a maximum of 16.9 on a short road and 19.4 on a long one—fair evidence that the service is well patronized.

BUSES PAVE THE WAY FOR THE TRAMWAY

The varied scope of the British Electric Traction Company's activities in small towns and large lends special value to its opinion on the operation of buses as derived from experience under a diversity of circumstances. The company looks upon the bus as an excellent forerunner and builder-up of a traffic which can be operated more economically with a tramway as soon as conditions warrant a car interval of ten minutes or less. The capital charges on a tramway are too high to justify construction for a less traffic density than this. With a bus it does not matter whether the service is half-hourly or hourly, because the capital expenditure is almost in direct proportion to the number of buses.

The bus services of the British Electric Traction Company are largely of this intermediate nature. The fares charged are invariably higher than the tramway fares. When the buses happen to run over a car route for part of the way the minimum fare on the bus is placed at a figure which will reserve it for the suburban long-distance rider for whom it is intended.

For any tramway a number of buses could be acquired as a wise way of determining the ultimate traffic possibilities of new districts and of supplementing pleasure-travel facilities, particularly as buses may be diverted at short notice to wherever a traffic need arises.

Probably no one man has had a wider experience in the promotion, construction and operation of British tramways and electric light and power installations than **EMILE GARCKE**, president of the British Electrical Association and for many years the managing director and now the chairman of the British Electric Traction Company. The B. E. T., as it is popularly known, controls outright or is associated with about sixty tramway, electric supply and other electrical undertakings having a subscribed share and debenture capital of about £24,000,000. The associated tramway companies operate about 430 miles of route and carry about 405,000,000 passengers per annum. In the earliest days of electricity, Mr. Garcke was active in manufacture and installation. Between 1883 and 1893 he was with the Brush Company. In 1893 he became managing director of the Electric Construction Corporation and shortly thereafter managing director of the British Electric Traction Company. Aside from his company and association activities, Mr. Garcke is known, wherever British money is invested in public utilities, through his great "Manual of Electric Undertakings," published annually since 1896.

The Psychology of Claim Adjustments*

The Author's Impressions of the Human Factor in Settling Claims With Suggestions on the Diagnosis of the Type of Case

BY J. H. HANDLON
Claim Agent, United Railroads of San Francisco

EXPERIENCE plus intuition and a broad perspective are the prime requisites of the successful claim agent, as we all know, and no fixed rules can be set for our guidance, yet there are certain features of our work that deserve more than a passing thought, and perhaps a closer adherence to the policies I am about to outline may bring our work to a more successful issue.

Speaking generally, claims may be divided into five classes: (1) the just claim; (2) the claim not based upon the facts; (3) the exaggerated claim; (4) the exorbitant claim; (5) the false claim.

Of the first classification—the just claim—there is nothing to say other than to urge the prompt adjustment of this type of claim on an equitable basis. It is important, however, that the claimant should be impressed with the courteousness of the claim agent and the honesty of his motives in the hope that the settlement may convert an enemy or strengthen a friendship.

The second classification—the claim not based upon the facts—is of greater moment. An effort should be made to ascertain whether the claimant is sincere in his belief that he has a just claim or whether he is endeavoring to bolster up his case for dishonest motives.

Having determined that there is no apparent attempt to falsify, then the claim agent should endeavor to educate the claimant to his viewpoint, if the claimant appears to be a fair-minded individual, and by means of oral and written arguments or physical proof strive to convince him that his claim is lacking in merit. Should it be determined that the claimant is attempting to strengthen a claim that could not withstand a close and impartial scrutiny, then it is good policy not to attempt to prolong negotiations but to take a firm stand and defy the claimant to proceed in the matter. In both instances however, there should be borne in mind, as in all claims, the wisdom of litigating the case and the advisability of effecting an amicable adjustment at your own figure.

Classification three—the exaggerated claim—should pass through the same formula as the preceding type of claim. Having determined whether the claimant is sincere in his belief that the claim is as serious as alleged, then the way is clear to decide upon a future policy. Should the claimant apparently labor under a mistaken idea that the injury is more serious than could be reasonably anticipated, then the claim agent should fortify himself with facts and figures to prove the unreasonableness of such an argument. Time solves many problems and is a great reconciler. Often it works to the advantage of a claim agent in convincing a stubborn claimant that his claim is of lesser importance than he thinks.

A rigid investigation starting off with the assumption that the claimant is deliberately exaggerating the extent of his claim will often reveal an attempted deception and no reasonable expense should be spared in furthering such an investigation.

---

*Abstract of paper read at annual convention of Pacific Claim Agents' Association, Oakland, Cal., July 17, 1919.

Classification four—the exorbitant claim—may not arise from any dishonest motive of the claimant but it may be his or her conception of the value of their claim. This viewpoint may be based upon the advice of attorneys, relatives, friends or neighbors or preconceived ideas that they have nurtured in their minds brought about by newspaper accounts they have read of sums sued for or recovered as a result of litigation.

Again, it is a peculiar trait of human nature for those who have adjusted their claims to exaggerate wilfully and voluntarily the amount they have collected. Through such channels as stories bandied about, witticisms, stage jokes, etc., there has arisen a popular notion that a public service corporation is legitimate prey and that a claim against such a concern has a false and exaggerated value and is not subject to the same economic laws that control other claims.

It is an axiom that the average attorney is not a successful claim agent for the reason that in analyzing or partitioning a claim, and more especially a personal injury claim, he places too much stress upon his interpretation of the law and not enough upon the general facts or the loss involved. What is more vital in coloring the average attorney's perspective is his tendency in adjusting a claim before litigation has been suggested, to say to himself, "What would a jury give in this case?" This is a very expensive attitude of mind.

Unfortunately, some claim agents have the same attitude of mind. It is this trend of thought that creates a claim agent whose offers are like bids in an auction room where $50, $100 or $1,000, or some such amount is added, regardless of the merits of the claim, but solely in the hope of adjusting it. Such a claim agent makes it difficult for the more enlightened claim agent in the same community to settle claims on an equitable footing.

In all sincerity, why should not a personal injury claim agent take the same attitude as the average, prudent business man, who, when endeavoring to dispose of a commercial transaction (and that is all a claim is when reduced to its last analysis notwithstanding the attempt often made by the claimant to collect punitive damages,) endeavors to reduce the cost of the transaction to the lowest possible figure.

The competent claim agent, always open to conviction, having determined what he considers just, strives to effect a settlement on that basis, yet he is not so parsimonious as to refuse to allow a reasonable deviation from the offer he has determined upon. The human element is so important a factor in adjusting claims that it is very difficult to proportion the constituent features of a claim.

A claimant may be inspired in presenting a claim by a mere desire to be remunerated for his losses; again he may be inspired by mercenary motives or a desire to be revenged for some fancied wrong he has harbored against the company. Some claimant's actions are prompted by a dislike for corporations in general and the corporation involved in particular, while others are of a naturally combative disposition and they welcome an occasion when they can present a claim. The intervention of advisers encourages persons to be claimants and even the discourteous actions of the company employees immediately after the accident may cause the slightly injured person to press his claim to the limit.

In general, claimant's motives are so varied and their attitude of mind may be so complex that it is very difficult to determine at times the reason or reasons that have caused the claimant to be so aggressive or litigious. To illustrate—even the nationality or length of residence in the United States of the injured party may have a bearing upon his attitude of mind and sometimes he is influenced by the treatment afforded corporations in the state or community where he formerly resided or now resides. I think we will all concede that the small town man has a more exalted opinion of his claim than the city man.

The last type of claim—the false claim—should be given no consideration other than to spare no effort or expense to expose its falsity and to fight to the limit any attempt successfully to litigate it. "Millions for defense but not one cent for tribute," were the words of an American ambassador on a momentous occasion. Let me take the liberty of stating that in my opinion these words may well be applied to the handling of the false or fictitious claim, ever bearing in mind, as Shakespeare says, "In cases of defense 'tis best to weigh the enemy more mighty than he seems."

CONFIDENCE SHOULD BE CULTIVATED

Much has been said and written about the importance of influencing the attitude of mind of the claimant so that he is in a more receptive mood to negotiate a reasonable settlement. This is a vital factor in the successful handling of a claim. Specifically speaking, an effort should be made at the outset to establish confidence and the claimant should be impressed, if possible, with the claim agent's frank and friendly attitude.

When electric railways were more or less of an innovation (and it was about at that time that the claim agent first became a necessity, for, as a veteran street railway official has wittily remarked, "In the horse-car days all the injured person expected was an apology"), it seemed to be the practice of street railway managements to appoint an ex-city detective or some other kind of an ex-peace officer as claim agent on the theory I suppose that his experience in detecting criminals better qualified him to detect attempted fraud on the part of claimants.

As a natural sequence, claimants were often looked upon with grave suspicion by that type of claim agent. The fact that a claimant had filed a claim was sufficient evidence to prove him a suspicious character, and claim agents themselves not infrequently resorted to unscrupulous tactics to further their ends.

The claim agent of today has inherited some of the prejudices against claim agents that have been created by such tactics, therefore we should strive in every way from the very inception of the claim, to overcome this prejudice.

Even the reception room of the office should be made comfortable and attractive and the reception of the claimant should be courteous. Correspondence should be polite but firm in tone. In brief, everything should be done within reason to create the proper atmosphere or as harmonious an invironment as possible.

Beneficial results can be accomplished by establishing a reputation in the community for fair, square dealing, and it is our duty as conscientious, progressive claim agents to strive to elevate the moral standards of our vocation by discountenancing unscrupulous actions on the part of a co-worker, who, blind to the future, does today what tomorrow he will be ashamed of, and who will justifiably reap the unwelcome harvest of lack of confidence and distrust and suspicion that he has sown.

Illinois Association Holds Summer Meeting

Large Attendance and Animated Discussion Add to Interest of Papers on Track Maintenance, Publicity and Safety Cars

The summer meeting and outing of the Illinois Electric Railways Association were held on Wednesday, July 16. At the invitation of President W. C. Sparks, vice-president Rockford & Interurban Railway, the meeting was held at the Rockford Country Club.

A feature which contributed to the congeniality of the occasion was the means by which some forty of the members reached the scene of activities. At the invitation of R. A. Moore, general manager Aurora, Plainfield & Joliet Railway, members from Chicago and Southern points met at Joliet the previous evening and had dinner at the Joliet Commercial Club. Afterward the party left Joliet on Mr. Moore's special car, the Louisiana, and traveling over the Aurora, Plainfield & Joliet, Aurora, Elgin & Chicago, Elgin & Belvidere and Rockford & Interurban rights-of-way, reached Rockford about 11 p. m. Refreshments were served on the car.

Wednesday morning automobiles conveyed the members from the hotel to the Country Club, where a brief welcome by President Sparks was followed by the roll-call, reading of the minutes and treasurer's report. The latter showed the assets of the association on June 30 last to have been $1,290.16. The membership committee presented the applications of nine new supply firms and these were accepted.

MONOLITHIC CONSTRUCTION NOT APPROVED

A paper on "Track Maintenance" was presented by John B. Tinnon, engineer maintenance-of-way Chicago & Joliet Electric Railway. An abstract of this paper will appear in a later issue. Deviating from his paper occasionally, Mr. Tinnon said that open-track maintenance is practically the same on interurban and steam railways, but these methods do not apply on paved city streets. He also referred to solid concrete (monolithic) construction as not reducing the maintenance to any extent and thought that it would be wiser to make a saving of, say, $5,000 per mile in the construction of the track and add this to the maintenance allowance which has always been inadequate. Mr. Tinnon stated that money has no doubt been wasted in the track department. The time has come now when more money and more work are going to be put into maintenance to prolong the life of the track rather than to put down new track when the old track is apparently worn out.

In the discussion which followed this paper, D. E. Parsons, general manager East St. Louis (Ill.) & Suburban Railway, said that when the city is to put down a new paving his company asks to be relieved from the assessment and does its own part of the paving at one-half the cost of the assessment. Mr. Parsons agreed that concrete construction is too expensive and not warranted.

W. C. Sparks said that on his property a good subsoil is available and that he uses 100-lb. 6-in. A.R.A. rail on wood ties and brought to grade on 6 in. to 8 in. of crushed stone. The only concrete used is enough to carry the brick pavement, and this is a 1:9 or 1:10, mix which is just strong enough to maintain the surface of the brick. A 1½-in. sand cushion with an asphalt filler is used.

C. J. Jones, superintendent of transportation Aurora, Elgin & Chicago Railroad, said that on his property 6 in. of ballast is used under the tie and concrete is filled in to within 6 in. of the top of the rail. A brick pavement is used on a 2-in. sand cushion. The rail is 100-lb. A.R.A. Mr. Jones said that proper drainage is a very important factor. To illustrate this he cited a case where in well-drained track 4-in. rail had been replaced by a 6-in. rail and the wood ties which had been in the track for twenty-five years were in such good condition that they were left intact. No concrete was used even to support the paving, and this is still in good condition.

A 6-in. vitrified tile is laid with open joints under all new or rebuilt track, both open and paved construction, on his property, said D. E. Parsons. With double track the tile is laid under the track, while with single-track it is laid at each side. The tile is connected with the sewers.

W. C. Sparks suggested that the railway companies seek relief from the paving burden through the American Electric Railway Association at the hearings being held in Washington. T. D. Smith, publicity agent Chicago & Interurban Traction Company, suggested that some propaganda be carried out through the Illinois Committee on Public Utility Information.

In a discussion on the maintenance of railroad crossings, several members stated that manganese crossings had proved an absolute failure and that the most important thing was good drainage and careful and constant inspection. J. B. Tinnon said that his policy was to dig a catch basin and lay lines of tile in cinders. These are covered by 2 ft. of rubble stone and then a crushed stone foundation for the track. Mr. Tinnon stated that it is poor drainage and not the speed of operation of the steam trains which tears up the crossings.

"GET THE ADVERTISING HABIT," SAID MR. MULLANEY

That the best means of winning sound public opinion is by publicity through the home town paper was the basis of the address on "Public Utility Life Insurance," by Bernard J. Mullaney, director Illinois Committee on Public Utility Information, which will be abstracted in a later issue.

In addition to the points covered in the paper, he said that public good will is the basis for increased revenues, which in turn is the basis of credit for obtaining additional capital. In speaking of the work of his committee Mr. Mullaney said that the work of sending out publicity material to every newspaper in the State had been going on since May. The committee has since June 7 had a check on about 250 papers, representing about one-third of the papers which receive the material. These papers have published data helpful to the utility business in an amount which has amazed the committee, which would have been satisfied to see one-third of it printed. The material is being accepted by the papers without question.

There are also intangible benefits, for even if the material is not printed, if the editor reads it his editorials will reflect the result. In this work the coöperation of the railways in the field is needed. The case is analogous to a commercial enterprise, wherein the salesman is necessary to follow up the advertising. In the same way the railway managers must help sell the ideas to the local publishers, by getting on good terms with them.

Mr. Mullaney also spoke of the work done by the publicity section of the committee of one hundred. One of the most important results to be obtained from the hearings he said is the news value to the local papers. The committee each day will send a digest of the testimony to every electric railway and it is up to the railway to see that the vital points find their way into the papers and to use them as publicity in other ways.

In answer to a question, the speaker said that the conversion of an unfriendly newspaper must be handled as a personal matter. It is a question whether it is advisable to buy advertising space in an unfriendly paper with the idea of combating the influence of the editorial pages.

D. E. Parsons said that his company uses advertising space in every newspaper in every city and county through which they operate and also makes news for these papers.

SAFETY CARS AGAIN PROVE A POPULAR SUBJECT FOR DISCUSSION

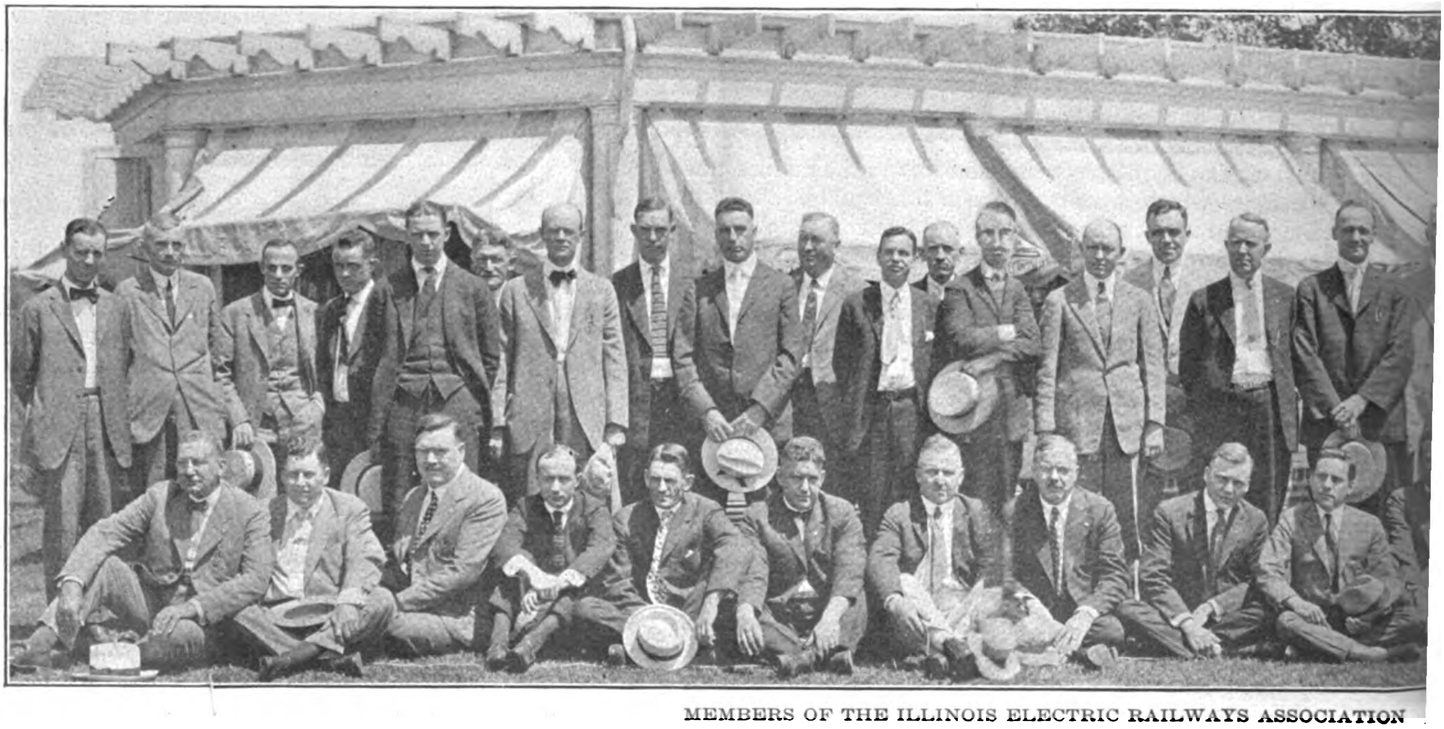
The third paper, "Safety Cars and the Results of Their Operation," was read by E. M. Walker, general manager Terre Haute Lines, Terre Haute, Indianapolis & Eastern Traction Company. As stated in the paper, operating figures were omitted because these were included in an article which was published in this paper June 28. The paper which appears elsewhere in this issue covers the general facts which are of interest to the financial man who is some day going to ask the backward operator why he was not advised of these possible economies.

A lively rain of questions followed the paper. These were largely concerned with such matters as flagging at railroad crossings, the duties of the operator in collecting fares, issuing transfers, changing his trolley and fare box, etc. Mr. Walker stated that in Terre Haute the safety cars operate over five steam-railroad crossings. Two flagmen are employed at each of these, each working nine hours per day at a salary of $70 per month. He also said that there had not been a personal injury on the safety cars in Terre Haute since they were placed in service seven and one-half months ago. The schedule speed is 11 m.p.h. When the discussion turned to the collection of fares, Mr. Walker emphatically stated that he did not believe in a fare over 5 cents. In fact he believes in fares below 5 cents and thinks that with the safety car the short-haul rider can be carried for such a low fare.

ASSOCIATION TO BE REPRESENTED AT ATLANTIC CITY

Following the papers a telegram from John H. Pardee, president American Electric Railway Association, was read urging attendance at the hearings before the federal commission at Washington and asking advice as to when the individual members would be present. It was also decided that R. V. Prather, secretary of the association, should be sent to the convention of the American Electric Railway Association as a representative of the Illinois Association. A rising vote of thanks was given to President W. C. Sparks and to R. A. Moore for their contributions to the success of the meeting. Before adjournment, H. B. Adams, safety supervisor Aurora, Elgin & Chicago Railroad, urged attendance at the electric railway sessions of the National Safety Council which will be held at Cleveland, Ohio, Sept. 29 to Oct. 1, and D. E. Parsons made a plea for increased membership in the National Safety Council.

The meeting then adjourned for luncheon, following which a golf tournament was held on the eighteen-hole



MEMBERS OF THE ILLINOIS ELECTRIC RAILWAYS ASSOCIATION course. Those who did not care to play golf were taken in private automobiles for an inspection of Camp Grant. More than sixty members attended the session and the number would have been considerably greater had it not been for serious labor situations on several large properties.

Safety Cars and the Results of Their Operation*

Author Says Increase in Revenue Keeps Parallel With Increase in Service and that a New Model of Car Each Year Might Be Desirable

BY E. M. WALKER
General Manager Terre Haute Lines, Terre Haute, Indianapolis & Eastern Traction Company

THE synonymous use of the expressions "one-man car" and "safety car" is a confusion of terms. In these days of peril to the electric railways, when every effort is being and should be made to furnish urban transportation of the highest class at a minimum of cost, it is necessary to be specific as to just what we mean when we say "safety car."

The study of one-man car operation will reveal that such method of operation is by no means a new thing. It takes us back to the earliest days of any attempt at the transportation of passengers in cities. The carrier's cart, the omnibus and all the other forerunners of the car which finally moved on tracks were managed and operated by one man. Even the first of such cars themselves, those drawn by horses and mules, were also of the one-man type. Electrification of street railways may therefore be said to mark the need of two-man operation. Naturally, in order to get back to safe operation by one man, it was necessary to introduce every device possible to promote ease of manipulation for the operator and comfort and safety to the passenger. This brings us down to the so-called "safety car."

When we speak of the safety car we refer to the specially designed, light-weight, single-truck car, equipped with light-weight motors and air compressors, with air-operated door and step, in which the safety of the passenger is always assured while the car is in motion, so far as it can possibly be assured. Of this type there are now either in actual daily operation or on order for early delivery, from 1200 to 1400 cars in about 100 representative American cities.

The success of the safety car has been so marked wherever it has been tried that its sponsors and the operators who have had experience in its use are practically unanimous in the belief that it is applicable to most of the needs of urban transportation, regardless of the size of the city and in spite of so-called local conditions, which, in most cases, are more apparent than real.

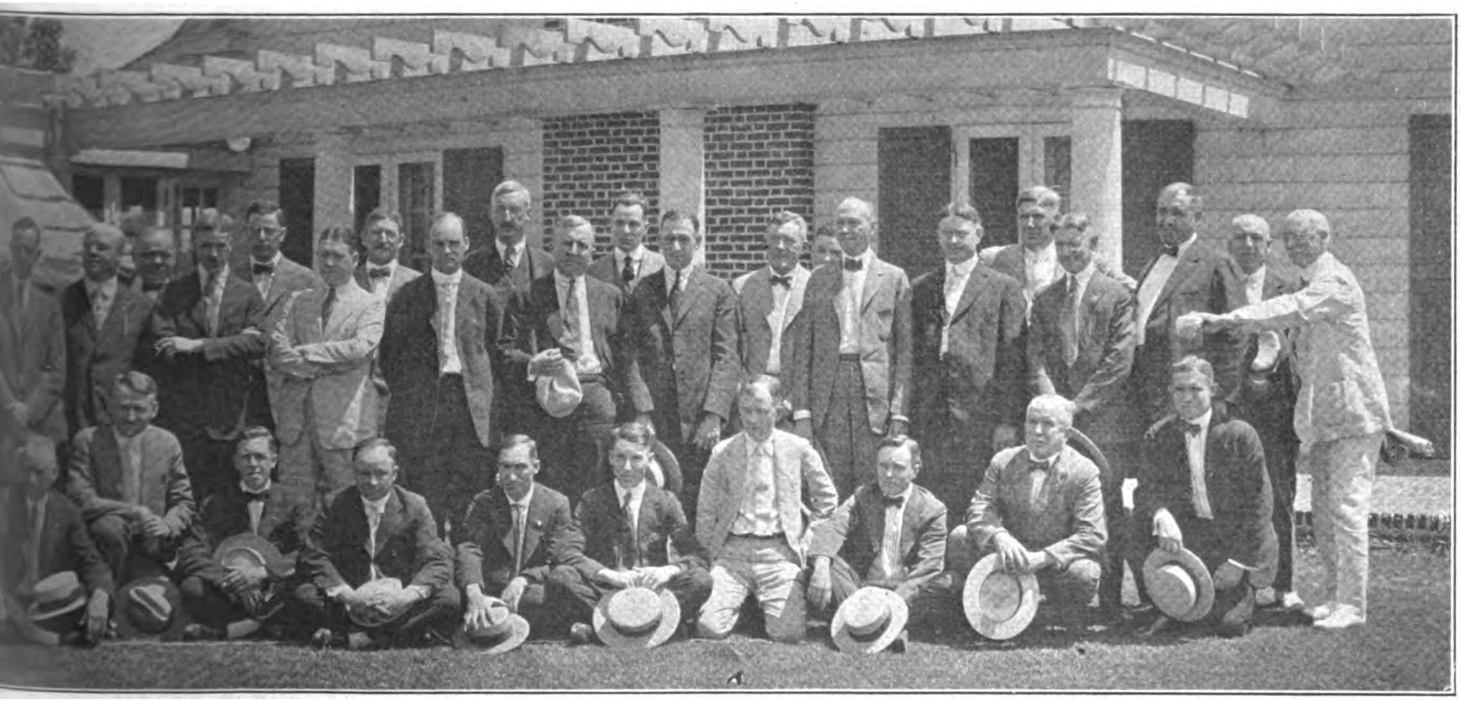
To the question as to the size of the safety car, "more cars and oftener" is the answer, and the slogan "A car in sight all the time" is an easy one to live up to with safety cars on the tracks. In some of our cities it is not an uncommon sight to see large crowds collected on the street corners melt away under the incessant attack of the jitney bus, whose average seating capacity is no more than five persons. And yet in these cities large street cars are being operated ten and fifteen minutes apart. Surely in a case like this "service" means the employment of a vehicle that will at least approach the frequency and speed of the jitney bus and that will exceed it in comfort and safety.

The writer has been called an enthusiast on the safety car. In explaining this attitude at a recent meeting of electric railway men, he had occasion to say that he was strongly in favor of the safety car, because it provides safety for the passenger, safety for the operator, safety for the company adopting it and safety for the banker behind the company.

Thirty safety cars of the standard Birney type were purchased by the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company in the latter half of 1918. They were purchased because

---

*Abstract of paper read at Rockford meeting of Illinois Electric Railways Association, July 16, 1919.



IN ANNUAL CONVENTION AT ROCKFORD, ILL., JULY 16, 1919 something had to be done radically to improve the city street car service and to enable the company to continue to carry people at a 5-cent fare. Had not this been done we could visualize the jitney buses running away with the best part of our business, and we could see ourselves losing the good will of the people by our failure to serve them adequately. On Dec. 1, 1918, we placed eight of these cars in operation on one of our city lines, and gradually and promptly increased the number, so that now we are operating twenty-six cars regularly every day out of a total of thirty owned. We expect to make sufficient increase in our equipment to provide full safety-car service on our entire city system. That we do this is the expressed wish of the city government and of the people whom we serve. So much for the salability of the safety car to the people.

By means of the safety car we have stemmed the jitney tide. We have recovered that portion of our business which we have temporarily lost to this generally reckless competitor, and we have recovered the good will of the people. By means of the safety car we have transformed a thirty-car system into a forty-two car system, and we plan eventually to make it a forty-eight-car system, with no increase in city trackage. Also we have been enabled with the light-weight safety car to deliver to the riding public 28 per cent more car-miles than last year during the corresponding seven-month period, with a 3 per cent reduction in power used. And this saving in power would be much more impressive on paper but for the local operating conditions, which include 143 interurban passenger trains in and out each day and sixteen interurban freight trains in and out; each one of these using city power for an average of four miles on each round trip.

SOME IMPORTANT BY-PRODUCTS OF THE SAFETY CAR

A general description of the operation of safety cars in Terra Haute appeared in the ELECTRIC RAILWAY JOURNAL of June 28, 1919, and it is not the intention or desire to repeat here what has been covered in that article. There are, however, by-products of safety-car operation which were not given more than passing mention in the article. For example, accidents are often caused because passengers, alighting from the rear end of a city car of conventional type and crossing the street over double track, step behind the car from which they have just alighted. On an average of two or three times a year in a city the size of ours it has happened that a car going in the opposite direction at the time has caused a serious accident from this cause. Such accidents have now been entirely eliminated; in fact, personal injuries on cars have become practically a thing of the past. Our experience in the last seven and a half months of operation of safety cars has shown us that the theoretical saving in the cost of accident on or by safety cars as compared with the ordinary type of car, on the basis of operating regularly twenty-five cars, has been at the rate of 8.6 per cent per annum on the total investment cost of thirty cars owned by the company.

Another by-product of safety car operation is the absence of complaints of discourtesy and inattention on the part of the car operators. We borrowed a leaf out of the book of a progressive psychologist and placed in each car a card bearing the operator's name. This personal touch is appreciated by operator and passenger equally, and operators are seldom referred to by number.

Earning possibilities depend very much upon local conditions, and it does not necessarily follow that a certain rate of revenue per car-mile obtained in Springfield would follow with safety cars or any other type of cars in Columbus. With us, however, revenue has gone up practically parallel with the increase in service. Safety-car operation is so flexible that it is possible by adding service gradually to find the point of service saturation.

SAFETY CARS THAT ARE WELL MAINTAINED WILL PROVE DURABLE

By way of summary it may be said that light weight promotes speedy and frequent service, and therefore weight need not and should not be allowed to interfere with quick service beyond the point where weight coördinates with safety. We are in the business to serve the public, and we must serve them with speed, safety and economy. When we do this we need not fear that the public will stint their rewards in increased patronage; the public are quickly responsive and human nature does not greatly vary with localities. The cost of carrying a superfluous ton of car weight for an entire year would have paid at least 3 per cent on the cost of the car. A light-weight safety car properly cared for will last as long as many heavier types of cars, just as a Ford with proper care will last as long as a Packard.

I look forward confidently to the time when standardization of the safety car will provide for a new model each year. This will promote minimum cost of production. Thus at a fixed time each year the next year's model will be decided upon, and from that time until the next year changes in detail will be held for incorporation in the next year's model. Thus each well-ordered company may adapt itself to the habit of purchasing each year a few of the new models, the replacements being designed to take care of retirements and the natural growth of the property. In this way the rolling stock may be kept always up to date and in good style. These are the things that appeal to the public.

Let us take it for granted that city street car transportation service is a public necessity and will remain so until its place is taken by some agency not now in sight. In this field the safety car will gradually force its way forward as the best means, in a large majority of cases, of filling the needs of the people for this class of public service.

Belgian Electrification Plans

The United States consul-general at Brussels, Hon. Henry H. Morgan, reports to the Department of Commerce that the Belgian minister of railways has approved a project for the electrification of Belgian railways and that instructions have been issued to the railway administration to submit plans by August of this year for the electrification of the line between Brussels and Antwerp and Brussels and Luxemburg, to be followed immediately with an electric line between Brussels and Ostend. Construction is to begin early in 1920. It is proposed to make the Brussels-Antwerp trip in twenty-five minutes and to run trains every fifteen minutes.

Washington Hearings Continue

A Wealth of Evidence On the Railway Status Is Presented to the Federal Electric Railway Commission by the Committee of One Hundred—This Week the Commission Began Evening Sessions—This Report Covers the Hearings from July 17 to Noon of July 23

Copyright by Harris & Ewing

CHAIRMAN ELMQUIST

HEARINGS before the Federal Electric Railway Commission still continue to occupy a most important place in the minds of railway operators and others interested in the welfare of the electric railway industry. Our last week's issue contained an account of the proceedings up to Wednesday evening, together with a telegraphic summary of those of Thursday. Some further particulars of the Thursday sessions, together with the proceedings of the subsequent sessions up to the press date for this week, are contained in this issue. The Association hoped to complete the presentation of its case on Friday of this week and in an attempt to achieve this aim night sessions have been held. The order of presentation of the testimony does not follow the plan originally outlined by the Association and published on page 80 of our issue for July 12, as it has been necessary to conform to a certain extent to the conveniences of the witnesses. In this report it has seemed best to follow the testimony in the order in which it was given.

Thursday's Sessions

Further testimony from W. J. Clark of the General Electric Company relative to the early history of the electric railways was made the first order of business in the Thursday morning session. In his direct testimony Mr. Clark gave comparisons of conditions as they exist on American and European electric railways. He pointed out that foreign street car lines have been built only where they were sure to pay a reasonable revenue and that suburban extensions designed to promote the expansion of municipal districts were not given consideration in the construction of these railways to the same extent as in America. In this connection the point was made that a large part of the expansion of American cities has been at the expense of the investor in electric railway securities rather than at the expense of the public. In response to a request from the commission Mr. Clark discussed at some length the methods of securing franchises used by the early promoters of electric railways.

Continuing his direct testimony, Mr. Clark showed that the rapid progress in the industry had resulted in a short effective life for electric railway equipment. He also made the point that the early experimental work was done at the expense of the electric railways and that this constitutes a part of the just investment in all of the older electric railway properties.

In the course of the cross-examination the commission asked a number of questions relative to zone fare systems, water-power development, cost-of-service plans, methods of regulation, and the prejudices which the public at present entertain against the electric railway companies. Mr. Clark felt that the zone-fare system deserves consideration, and, in response to a question from the commission as to whether zone fares had not caused congestion in Glasgow, replied that in Glasgow congestion existed long before the tramways were built. In the matter of water-power development as a source of power supply for electric railways, Mr. Clark pointed out that as a rule one horsepower of water power as estimated by the United States Geological Survey may actually yield from 3 hp. to 5 hp. through effective stream control and efficient plant operation.

Regarding the matter of regulation he said that local authorities cannot properly regulate utilities to-day because so many of the utilities supply service outside of city limits. For the same reason municipal ownership is practically a dead issue. Regulation by state authorities is likely to produce better results and prevent a recurrence of something similar to the franchise bargaining which existed in some municipalities in the earlier days. The causes of the existing prejudice Mr. Clark listed as follows: Certain acts of the promotors of the railways; excessive exaggeration concerning the effect of these acts, and that the street railway is the one form of utility with which the average citizen is in daily contact with the employees of the utility.

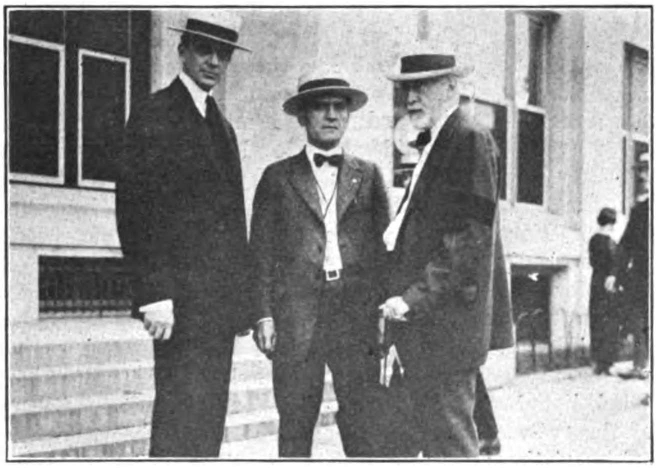
As to the cost-of-service plan, Mr. Clark agreed with General Tripp that it is an equitable system for governing charges for street railway service. He further said that the proper basis for revenue under such a plan is a valuation of the property, preferably by a state authority. Also, the operation of a cost-of-service plan should be safeguarded by a state regulative body. In the matter of rates proper attention must be given to those who ride for convenience rather than necessity, as the necessity rider has never paid any street railway dividends.

DEAN COOLEY TALKS ON COSTS

After the completion of Mr. Clark's testimony, Mortimer E. Cooley, Dean of the College of Engineering, University of Michigan, appeared before the commission to testify as to the elements which enter into the first cost of an electric railway. Dean Cooley, long well known as one of the foremost experts in the country on the matter of public utility valuation, kept the interest of his hearers at a high pitch while he discussed in a clear and lucid manner the financial troubles which beset the promotion of a public utility project. He told the commission that he had valued public utility property with an aggregate physical value ranging somewhere between $1,250,000,000 and $1,500,000,000. He stated that one of the principal troubles in valuation work is the sheer ignorance of both the public and the railways themselves relative to the fundamental facts about valuing property for rate-making purposes. He also said that education was the thing most needed, as the present attitude of the public mind is such that the public cannot be approached and is not willing to meet the companies half way.

Dean Cooley discussed the elements which enter into the cost of a property substantially as follows: The principles involved in the valuation of public utilities are the same, no matter what type of utility is involved. In all, there are from eighteen to twenty cost factors involved in the total investment cost of such an undertaking.

In the promotion of a new utility the first thing to be done is to determine the feasibility of the project. This includes a preliminary determination of the investment, public sentiment toward the undertaking, and franchise conditions. If from the promoter's standpoint the project is feasible, the next step involves the employment of a staff of engineers, who also go over the project and report as to its engineering practicability. If the engineers' report justifies of the undertaking, the next step is to secure financial assistance from bankers. This preliminary work all costs money, the amount ranging from 2 to 5 per cent of the total investment in the property. An important point relative to these costs is the fact that the public is not familiar with them, very few laymen knowing anything at all about their existence. In case the project seems feasible to the bankers, it is put upon a working basis, a construction organization is gathered together, ground is broken, and the public first takes notice of the undertaking.



O. D. YOUNG AND RANDALL MORGAN DISCUSSING THE MONDAY MORNING SESSION WITH COMMISSIONER GADSDEN*

"HIDDEN" COSTS ARE ELUSIVE BUT IMPORTANT

While the public thinks that cost begins only with the actual beginning of construction work it fails to take into account many of the costs which actually occur during the construction period. The time involved in constructing an undertaking will vary from one to four years, depending upon the type and magnitude of the physical structure. The company can build its own structures, or it can have them built under contract. In either event due allowance must be made for contingencies. Formerly it was the custom to allow 10 per cent of the estimated cost for this item. In many cases this amount is too small, and in some few cases the contingency costs have been four times the initial estimated cost. In the ordinary range of public utility undertakings they will range from 5 to 30 per cent of the total investment cost.

Other cost elements which are not commonly given just consideration by the public are the items of accident insurance, fire insurance, interest on capital during the period of construction and taxes on materials and land during the construction. These items in the aggregate may amount to a very considerable sum of money.

Among the other what might be termed "hidden" costs which enter into the total investment of a public utility undertaking, but about which the general public is decidedly ignorant, are the promoter's profit, the cost of securing money and the working capital necessary during operations. The promoter's profit is necessary, although to quote Dean Cooley's exact words, "The promoter is a stench in the nostrils of the public." Nevertheless, the promoter is a very necessary factor in the organization of any new undertaking, and if the parties organizing the undertaking do not themselves act as promoters it will be necessary for them to employ a promoter and to pay him a real salary for his work.

MONEY, LIKE STEEL RAILS, MUST BE PURCHASED

The cost of money is likewise a very real and very necessary cost, as money must be purchased in the market like any other commodity. This cost is usually included in the discount taken by bankers for selling the bonds or other securities. One of its most important elements is the expense incurred by the financial institutions in investigating the stability and general financial conditions of the undertaking.

Working capital may be defined as the money that lies idle in the bank subject to check. If a company is not permitted interest on this money, interest nevertheless will have to be paid and will be borne by the public in the end in the form of increased rates.

With the construction work all complete and working capital in the bank, a company is ready for operation. Its physical equipment may be said to be in 100 per cent condition, although its actual value, as long as it lies idle, is its value as determined by the junkman.

Questioned by the commission relative to the matter of giving stock to bond purchasers, Dean Cooley said that this stock, despite its being a gift, had a real value. Were it not for the gift of the stock the bonds would sell at a lower price. The difference between this lower price and the actual selling price of the bonds represents the real value of this stock.

In response to a question from the counsel for the association, Dean Cooley said that the items indicated above may range from 10 to 12 per cent of the total investment on small properties, while on a certain property with which he was familiar, located in New York City, the amount was 60 per cent. The average figures will range from 18 to 30 per cent.

With the completion of Dean Cooley's direct testimony, the hearing adjourned for the noon recess.

At the beginning of the afternoon session Counsel Warren read into the record a telegram from the San Diego (Cal.) Electric Railway Company in which was set forth the serious financial condition of this company owing to the high cost of labor and other costs that are affecting all other railways. Dean Cooley again resumed the chair, and was questioned at length by the commission relative to obsolescence, depreciation, methods of valuation, need of increased fares, municipal ownership, paving and franchise taxes, and the service-at-cost plan. The substance of Dean Cooley's replies to these questions is given in the following paragraphs:

---

*This and the following photographs are by Harris & Ewing, Washington, D. C.

Depreciation is possibly as little understood as any other thing connected with a utility property. Some elements of the property have a long life, others a short one. A steam engine may have a life up to thirty years, while the life of a tie ranges from six to eight years. After say fifteen years, part of a property is new, part of it worn out, the balance only partially worn out. If a property is properly maintained, it will last an indefinite length of time. The depreciation is constant after it has gone through the cycle of the longest-lived material in the physical structure of a property. Under these conditions the condition of the property will be from 85 to 90 per cent instead of the 100 per cent condition which obtains when the property is new. This condition cannot be bettered, because if attempts be made to do so some good material will be thrown away. The condition cannot be lowered without endangering operation.

For rate-making purposes 100 per cent condition should be used, however, instead of the 85 or 90 per cent condition, inasmuch as the 100 per cent condition more nearly indicates the actual cost. The difference between the 85 per cent condition and the 100 per cent condition must be taken care of by a depreciation fund. A second kind of depreciation fund is necessary to take care of renewals, as money must be put aside to do this renewal work each year. Both of these funds must be paid out of earnings. They amount to from 1½ to 2 per cent of the investment, and it is a religious duty to see that they are kept intact.

The methods of property valuation as used as a basis for rate making may be classified as historical, book, reproduction new, and reproduction new less depreciation. The latter is sometimes called the present value. Inasmuch as the past history of most public utilities is very vague and incomplete, the only fair and practical method of determining the value of a property is by the cost of reproduction methods.

Obsolescence in the electric railway and electric power utilities is a far more important item than it is in some of the other utilities, as for instance the gas utility. In many instances it has been necessary to throw away rolling stock and power generation apparatus which, while in good physical condition, has become obsolete by reason of invention or the development of newer, more convenient or more efficient equipment. Because of this obsolescence the investment in railway properties has been much greater than it otherwise would need have been.

M. O. A GREAT EDUCATOR

Practice in regard to cost of establishing a business is undergoing radical changes in the matter of accounting. No new property makes a return on the investment in the earlier years of its life. It takes time to build the business up to a revenue earning basis. Formerly this cost of establishing the business was considered a capital charge. The present trend as set by public regulative bodies is to consider it as an operating charge and to amortize it over a number of years. In some cases the operating charge from this cause alone amounts to from 25 to 30 per cent of the cost of the property.

Maintenance costs have advanced to about 50 per cent more than they were in pre-war days. Labor cost has practically doubled. The result is that to secure anything like pre-war net earnings the gross earnings today must be more than 50 per cent higher than they were before the war. This means that fares must be raised at least 50 per cent. With further reference to this point Dean Cooley said: "I firmly believe that public utilities should be allowed to earn only enough to induce capital to come in, to serve the public and satisfy investors, and, being public utilities, should not be permitted to earn more. I recommend that the street railways be given the right to charge fares that will permit them to meet their operating expenses, so that they can keep up their service and maintain their properties intact."

Asked by the commission as to his opinion of municipal ownership, Dean Cooley said that he advocated municipal ownership and that theoretically it is better in every way than any other form of management and operation. He added, however, that it is a fruitless prospect when taken from a practical point of view. Asked why he advocated it, Dean Cooley replied that he thought it the best and quickest way to convince the public that it is not desirable. "It would be a case of giving candy to a person who wants it until it gives that person the stomach-ache," he said.

THESE THREE MEN HAVE BEEN REGULAR IN THEIR ATTENDANCE AT THE HEARINGS: GEORGE WESTON, EDWIN GRUHL AND HARLOW C. CLARK

HIGHER FARES INCREASE EARNINGS IN PITTSBURGH

William D. George, one of the receivers of the Pittsburgh Railways Company, was the next witness. Mr. George said that he had been connected with the railway industry only since his appointment as a receiver last December and that before his appointment he had been engaged in the real estate business in Pittsburgh.

In his direct testimony Mr. George stated that the 5-cent-7-cent zone fare system inaugurated last summer increased the gross revenue about 15 per cent over that received from the old 5-cent flat fare. During the first five months of its operation the average fare for the zone system was 6.23 cents. It is now 6.29 cents. The increase indicates a greater riding in the outer zone. The Pittsburgh Railways Company has asked for an increase to a straight 10-cent fare to become effective August 1, because its present income is still insufficient. A ticket arrangement in connection with this 10-cent fare involves the sale of four tickets for 30 cents and eight tickets for 60 cents.

The Pittsburgh Railways Company is a combination of about sixty underlying companies and operates approximately 600 miles of track. To give proper service it should build 26 miles of new track each year. The company is at present in default of fixed charges amounting to between $2,500,000 and $3,000,000. At present franchise taxes, bridge tolls, street cleaning and other special city taxes amount to about $300,000 per annum. The receivers are endeavoring to secure the remission of these taxes. The street cleaning tax amounts to $80,000 per year and the bridge tolls, $125,000 per year.

Regarding the labor situation in Pittsburgh, Mr. George stated that the train men want a raise from 48 cents to 60 cents maximum wage, but that the War Labor Board has not as yet handed down a decision. If this increase be granted and the wages of other employees raised correspondingly, additional income to the amount of $2,000,000 per year will be necessary.

In his cross-examination by the commission Mr. George was asked a number of questions relative to the efficiency of present operating methods, the cost-of-service plan, state regulation versus city regulation, and public interest in the industry. In replying to these questions Mr. George stated that he had entered upon the receivership in a critical mood, feeling that the railways were being mismanaged. His six months' experience has convinced him that this was not true. The Public Service Commission of the State of Pennsylvania is making a valuation of the Pittsburgh Railways properties at present. This valuation is to be used as a basis for a service-at-cost plan. Mr. George said that he believed state regulation of utilities is best, stating that there are eighty boroughs or civil units in the Pittsburgh vincinity served by the Pittsburgh Railways, and that this fact alone would make local regulation a practical impossibility.

Mr. George went on record as strongly opposed to the zone fare system. Speaking as a practical real estate man, he said that no city, from the standpoint of public interest, could afford to see a zone fare system built up within its limits. He estimated that the value of the 30-ft. lot within a 5-cent zone system would be fully $1,000 greater than the value of a similar lot outside the 5-cent zone. He stated that in his opinion zone fares caused undue congestion and cited the congested housing districts in the city of Glasgow as an example of the effect of the zone system.

Relative to the abandonment of outlying lines, Mr. George said, that in the expansion of a city these lines are needed and that he would far rather increase the fare than decrease the service which is the lifeblood of a community. He stated that in his opinion the theory of increased fares cutting down service is a fallacy. In the long run the people will respond and while at first the riding may decrease, the decrease is only a temporary one. Further questioning by the commission relative to regulation brought from Counsel Warren the statement that he was authorized to say that the American Electric Railway Association was in favor of regulation and of the extension of the principle of regulation to all those states in which it does not now exist.

Friday's Sessions

In a carefully prepared statement F. H. Sisson, vice-president of the Guaranty Trust Company, New York, presented to the commission a very clear view of the present condition of street railway credit and of the present cost of capital during the forenoon session on Friday. An abstract of Mr. Sisson's statement is reproduced elsewhere in this issue.

In his direct testimony Mr. Sisson further stated that electric railway securities were more widely distributed than any other class of securities and that their failure would cause widespread ruin. He stated that there was no doubt in his mind but that higher fares would give a higher return and that the zone system would bring back the short haul passenger. In some of our large cities, New York, for instance, one can ride 30 miles for a nickel. However, when a passenger rides from Yonkers to Coney Island the ride is made at the expense of the investors in the railway property. Collection difficulties constitute a real argument against zone fares, and the authorization of 7½-cent and other intermediate coins might be of considerable value. The 5-cent fare never did cover obsolescence and depreciation and never would have been adequate if proper charges for other items had been made the earlier years of the electric railway industry.

STATE COMMISSION HELPS PORTLAND

Testifying as to the effects of increased fares on the property with which he is connected, A. H. Ford, vice-president and general manager of the Cumberland County Power & Light Company, Portland, Me., said that the results had been very satisfactory. Originally this property was operated on the old New England 5-cent fare zone method. These zones ranged from three to four miles in width. The first change in fares was made in August, 1918, when the flat 5-cent fare was changed to a flat 6-cent fare, except on three of the more important city lines of Portland where the 5-cent fare was retained. This change was accompanied by a great deal of opposition on the part of the public. The theoretical increase in gross earnings was about 18 per cent, but the actual increase was only about 4 per cent. In June, 1919, the fare was increased and a system of fare zones about one mile in width was established. There are three zones within the city proper and the minimum fare for a ride is 7 cents. The fare per zone is 2⅓ cents, making a ride through four zones cost 9⅓ cents. To facilitate fare collection tickets are sold on the basis of a five-ride ticket for 35 cents and fifteen zone tickets for 35 cents. About 95 per cent of the fares are ticket fares. For the first half of July of this year the gross earnings were 37 per cent greater than those of a year ago, whereas the theoretical increase on the basis of the increase in fares was 40 per cent.

Of particular interest in connection with this testimony was Mr. Ford's story of the co-operation of the Public Utilities Commission of Maine. When the 6-cent fare did not give sufficient revenue to place the property on a stable basis, the commission set about educating the public with respect to the difficulties of the traction company. It held a dinner at Portland to which it invited the members of the local chamber of commerce. With the business men of the city there assembled, the commission discussed the financial conditions of the company and the conditions which had led up to it. Later it followed this with a meeting of the newspaper men whom the commission asked to help in the matter of properly educating the public with respect to the local street railway situation. These efforts of the commission caused such a change in the public sentiment that whereas the increase from a 5-cent to a 6-cent fare aroused a great deal of opposition there was practically no opposition whatever when the increase to the 7-cent fare was made. Mr. Ford said that the commission had helped other Maine railways in very much the same manner, assisting them to get notable increases in fares which have given commensurate increases in gross earnings. The educational work of the commission was followed up by the company, which discussed the situation freely with its employees, and held a series of public meetings.

Mr. Ford expressed the opinion that whereas the traffic may diminish at first upon an increase in fares in time the traffic will return to normal. He also said that the zone system is the fairest method of charging for service because the people pay in proportion to the service which they get. On this particular property the ratio of securities outstanding to the physical value of the property is as 100 to 132. With the present return a 5 per cent dividend on the stock and the bond obligations of the company can easily be carried.

Increased Fares Successful on American Railways

Increased fares and their effect on riding habit and gross earnings was also discussed by C. L. S. Tingley, vice-president of the American Railways Company, Philadelphia, Pa. Mr. Tingley stated that his company had increased rates on practically all of its properties and that the result of a fare increase depends on industrial conditions. In Scranton, the effect of a 20 per cent increase in fare was to yield between 12 and 13 per cent actual increase in gross revenue. The history of the fare situation in Scranton has been a rather checkered one during the last two years. The present fare is 7 cents with a ticket arrangement of four tickets for a quarter. More passengers were carried on this fare basis in June and July of this year than with the 5-cent fare of last year.

On the Wilmington & Philadelphia line the intense industrial activity has had such an effect on the traffic that theoretical fare increases have been practically realized. In June, 1918, an increase from 5 cents to 6 cents resulted in a 20 per cent increase in gross earnings. At present the gross earnings are running about 7 per cent more than they were with the same fare last year. On this line the old-fashioned zone arrangement of zones 3 or 4 miles in length prevails. On the Altoona property of this company the first change in fares was made in April, 1917, when the 4-cent tickets for a 5-cent ride were dispensed with. In April, 1918, the fare was increased from 5 cents to 6 cents. The gross earnings now average from 30 to 35 per cent greater than before the original increase.

Questioned by the commission as to whether his company was employing one-man or safety cars on its smaller properties, Mr. Tingley said that it was not. They had not felt justified in scrapping present equipment and did not feel that one-man operation was safe enough on account of the heavy grades existing on a number of their Pennsylvania properties.

The commission asked Mr. Tingley a number of questions relative to methods of regulation and fare adjustment. His main objection to state regulation was that it takes a great deal of time to get changes made. In his opinion the cost-of-service plan as at present administered in several of our large cities does not give the company sufficient return on its investment. In conclusion Mr. Tingley said that while increase in fare may decrease the traffic in some instances, it offers the only possibility for the immediate rejuvenation of railway credit.

Several witnesses representing manufacturers of electric railway supplies fallowed Mr. Tingley. The first of these, J. G. Barry, sales manager of the railway department, General Electric Company, presented a series of charts and tables showing the increases in electric equipment costs. As presented the charts and tables showed the changes within the period beginning 1914 and ending 1919. The charts showed that there had been a slight decrease in the cost of electric railway equipment since the beginning of the current year. This decrease was caused mainly by the considerable decrease in the cost of copper which occurred about the first of the year. Owing to the fact that copper has again made a very considerable increase in price, higher prices may be expected in the near future. Abstracts from the tables are shown herewith.

COSTS OF ELECTRICAL EQUIPMENT

	Cost		
Year	1914	1918	1919
Car equipment:			
Four 25-hp. motors, type K control	$1,450	$2,900	$2825
Per cent	100	200	195
Locomotive, 50 tons	$13,700	$27,500	$27,000
Per cent	100	201	197
Rotary converter, 300-kw.	$2,350	$4,225	$4,225
Per cent	100	179	179
Steam turbo-generator, 1000-kw.	$12,700	$24,000	$23,000
Per cent	100	189	181

COMPARATIVE COST RATIOS FOR RAILWAY SUPPLY PARTS

Year	1914	1918
Gears and pinions	100	227
Malleable iron (overhead line material)	100	350
Transformers	100	178
Switchboards	100	182
Average for all supply parts	100	204

Questioned by the commission as to the electric railway supply business of this company, Mr. Barry said that in normal years his company sold about $20,000,000 worth of equipment. This dropped during the year 1917-1918 to $9,000,000, of which a considerable portion was financed by the Emergency Fleet Corporation. The volume of railway business at present is about 25 per cent of normal, while the general business of the company has been about normal for several months. He further stated that electric railway credit is very poor, and that the companies would buy if they were able to finance their purchases. The bulk of the business at present is due to the installation of one-man cars on a number of properties. This equipment is sold on a credit basis, 25 per cent cash and 75 per cent in car trust certificates maturing in from one to thirty-six months. M. B. Lambert, assistant manager of the railway department, Westinghouse Electric & Manufacturing Co., followed Mr. Barry on the stand. He read a prepared statement showing the increases in cost of equipment as well as the increase in cost of the raw material from which this equipment is made. His cost increases were very similar to those testified to by Mr. Barry. The material cost increases, expressed in per cent, are shown in the accompanying table.

INCREASE IN COST OF RAW MATERIALS IN PER CENT OF COST IN 1914

Item	Per Cent	Item	Per Cent
Pig iron	106	Coke	35
Steel plates	141	Mica	100
Copper	58	Asbestos	560
Steel castings	220	Other insulation	125
Spelter	30	Sheet steel	180

How the war has affected the cost of cars was discussed at length in a written statement by W. H. Heulings, Jr., vice-president J. G. Brill Company. Mr. Heulings stated that the elements of cost which enter into cost of car equipment for a given road are character of car, whether wood or steel, replacement of light with heavy rolling stock and obsolescence of type. Relative to the latter element he stated that in many cities rolling stock still in good operating condition has been scrapped because the public desired more up-to-date and comfortable cars. The introduction of the prepayment idea costs the industry from $600 to $800 per car converted. Very few cars indeed live out their life time in service on a given property. Mr. Heulings stated that the labor charge entering into the cost of cars increased 120 per cent between 1915 and 1919, and that the material had increased 119 per cent. He stated that about one-third of the cost of the car is chargeable to direct labor expense.

Asked by the commission how car standardization would affect the cost of cars, Mr. Heulings stated that the best evidence along this line was that whereas safety cars had advanced only 50 per cent in cost, other cars have advanced 100 per cent. The safety car as now built is practically a standard car and is used in localities ranging from Texas to Canada, and from California to Maine.

FROM LEFT TO RIGHT: C. H. BECK, HERBERT WARREN OF DULUTH AND L. D. PELLISSIER OF HOLYOKE

The balance of the Friday afternoon session was taken up in hearing the testimony of Henry L. Doherty of the Henry L. Doherty Company, New York. Asked by Counsel Warren as to the effect of increasing fares on railway traffic, Mr. Doherty said that he had not come to the hearing for the purpose of testifying and would have to discuss the matter in a purely general way, as he had no statistical information with him. He classified riding as necessity and non-necessity riding. A raise in fares will diminish, temporarily at least, the non-necessity riding. An increase in fare, however, will increase gross revenue. The counsel for the association then turned the witness over to the commission for counter examination. The commission suggested that Mr. Doherty tell them in his own way his views of the electric railway situation. He discussed the subject substantially as follows: The early 5-cent fare was fixed largely because of the convenience of the nickel. In those days the roads were rarely more than 2 miles in length, whereas now 15-mile to 20-mile rides are not at all uncommon in large city districts. In the early days labor cost 15 cents per hour; now it costs 60 cents per hour. There seems to be no possibility except to raise fares and then go to the cost-of-service basis. The industry ought to have gone to the "metered" riding basis long ago.

Under present conditions security holders are suffering. In the end, however, the public will suffer far more loss than the security holders. If the financial credit of the railways is not restored extensions cannot be built, service will have to be decreased, and the wage earner will suffer because he has no other means of transportation. State regulation is better than regulation by local authorities, and in general the industry has not been hurt by commissions but has been hurt by the delay which so ordinarily exist between a necessity and the ruling of the commission on that necessity. In the matter of regulation the public must be educated to the fact that capitalization and valuation have no relation. As a general proposition there should not be as much difference in valuations as made by different experts as now exists. As far as franchises are concerned, the less there is in the body of a franchise the better for all concerned, provided regulatory bodies act promptly. The franchises now presented by city authorities contain about one-half page of rights of the company and sixty pages of rights of the city.

Difficulties with the public have been great because little grievances have been exaggerated for political purposes for so long that the people think they have to guard their rights very closely whenever matters pertaining to public utility corporations are involved.

Monday's Sessions

At the opening of the hearing on Monday Counsel Warren said that he would like to introduce two reports on the cost of materials. The first was from A. H. Englund, vice-president and treasurer Electric Service Supplies Company, Philadelphia, giving a list of average prices for a variety of electric railway materials for 1914 and 1918 by years and for the first six months of 1919. The material thus included embraced lighting arresters, overhead line material, high-tension transmission material, copper rail bonds and car equipment specialties. Tables were presented, in most of these cases, both of the actual figures and the percentage increases. A typical table follows:

CAR EQUIPMENT SPECIALTIES

Relative selling prices during the years mentioned in percentages, prices of 1914 being taken as 100 per cent.

Item	1914	1915	1916	1917	1918	1919
Steel gear cases	100	105	126	211	238	239
Incandescent headlights	...	100	112	142	155	155
Trolley catchers	100	100	111	139	168	200
Curtain signs	100	110	165	175	200	213
Lighting fixtures	100	100	100	110	115	120
Fixture shades	100	100	104	121	132	166
Trolley poles	100	100	123	181	230	265
Trolley cordage	100	106	122	161	221	250
Fare registers	100	106	125	139	139	139
Motorgears, West. 101, solid cast steel	100	106	119	206	224	224
Motor gears, West. 101, solid forged steel	100	115	146	189	240	245
Motor pinions, 17 teeth, 5-in. face	100	116	167	244	260	267
Average percentages	100	105	127	168	194	208

The second exhibit was a statement from James S. Thompson, vice-president American Brake Shoe & Foundry Company, of the cost of steel plate, pig iron, scrap iron and coke from July, 1912. The costs were expressed in percentages as given on the chart herewith. Commenting on this chart Mr. Thompson said, in part:

"This chart shows generally that from July 1, 1912, to July, 1915, there had been slight reductions in the

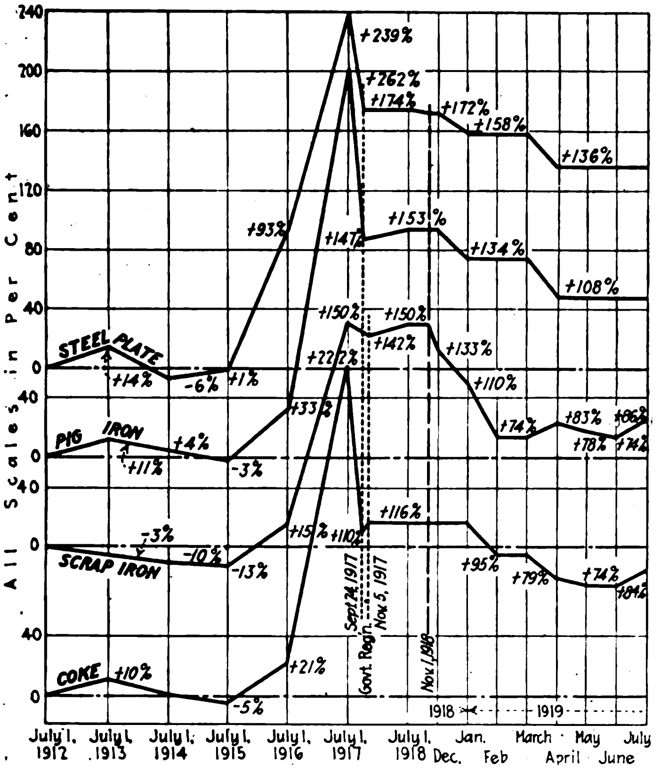


CHART SHOWING INCREASES IN COSTS OF SEVERAL RAW MATERIALS

costs of materials. From that date, however, up to and including July 1, 1917, the costs increased rapidly, and the peak of all raw material prices was reached upon that date or within a few months thereafter, when the government established maximum prices for the materials we use, and the chart therefore shows declines to the government prices. From this date until the signing of the armistice in November, 1918, the prices remained the same or increased slightly, due to additional charges for transportation and—in the instance of coke—to increase in the government price.

"After the armistice was signed, prices remained comparatively steady for a brief period, excepting for scrap iron, and then declines occurred in all materials until June, 1919, when the prices of scrap iron and coke increased, so that on July 1, 1919, there had been an increase of 12 per cent in scrap iron over the June 1 purchases and 10 per cent in coke. The chart shows that the increases in the prices of raw materials on July 1, 1919, over those of July 1, 1912, were as follows:

	Per Cent.
Steel plate	136
Pig iron	108
Scrap iron	86
Coke	84

"It may be added that since July 1, 1919, until this date—July 18—there has been further increases in the price of scrap iron, amounting to about 7 per cent, and it is expected that additional advances in steel plate, pig iron, scrap iron and coke are imminent."

Mr. Warren then introduced the following letter in regard to the extent of interests in electric railway securities of life insurance companies:

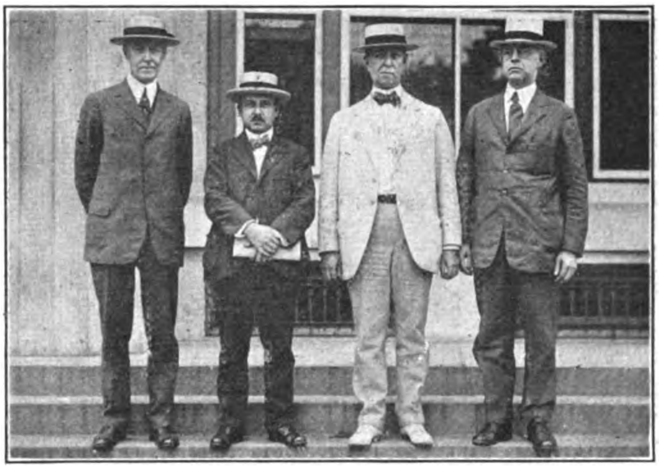
LETTER FROM GEORGE W. SMITH, ACTUARY OF ASSOCIATION OF LIFE INSURANCE COMPANIES OF NEW YORK

The investments of twenty-six life insurance companies in electric railway bonds and stocks—these twenty-six companies representing every company in this country having $500,000 or more invested in public utilities—amount in bonds to $109,624,550.77 and in stocks to $6,968,120.17. This large investment represents policyholders' money held in trust, and is the property of individual policyholders, numbering over thirty-four million, scattered all over the United States. With this in view, it would seem wise to emphasize particularly, that it is to the individual's interest to have such investment protected, as any depreciation in these funds, due to a decrease in the value of such investments, reverts at once, in a detrimental way, to the interest of each individual.

TESTIMONY OF MR. STORRS

L. S. Storrs, president Connecticut Company, was the next witness and presented two statements, one on the competition of motor vehicles and one on other reasons for the condition of the industry. Abstracts will be found elsewhere in this issue.

In answer to questions Mr. Storrs said that between October, 1917, and October, 1918, the first year during which his fare was 6 cents instead of 5 cents, the increase in revenue was about 10 per cent, but with a reversion to more normal conditions there had been further increase. He thought it doubtful if any one could predict the increase in revenue from a fare increase.



FROM LEFT TO RIGHT: COUNSEL BENTLEY W. WARREN, WALTER A. DRAPER, W. C. CULKINS AND L. R. NASH

He believed the jitney and motor truck should be subject to the same regulation as the electric railways and that public service commissions should pass on the advisability of the construction of new roads. When asked to name the fundamental needs of the electric railways he summed them up as:

1. Recognition of need for a reasonable rate of fare;
2. Relief from imposts not connected with transportation; and
3. Regulation of competition.

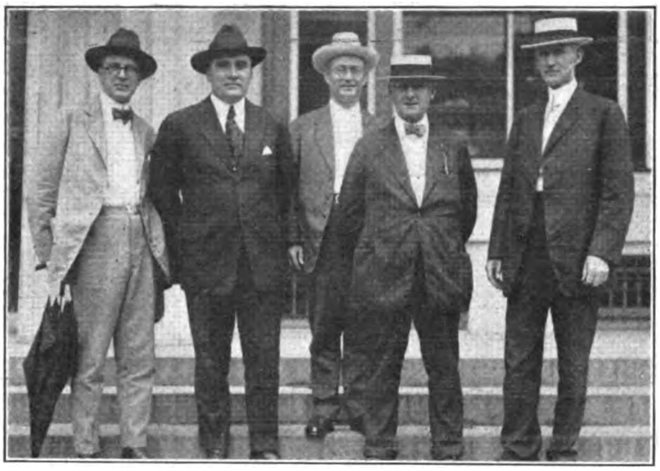
He described several sections of line abandoned by the Berkshire Street Railway. There was little opposition to this in the winter, but with warmer weather people along the line had petitioned the Massachusetts Commission to see what could be done. Undoubtedly, he said, the people were inconvenienced by these abandonments and property values suffered.

He then spoke highly of the frequent service car in operation in several cities in Connecticut. On request of the commission he agreed to compile figures on package freight business conducted by his company.

The first witness at the Monday afternoon session was L. R. Nash, Stone & Webster, who explained that the service-at-cost idea had antedated that of commission regulation in the states where it had been tried. If the state of public service regulation had been farther advanced, there would not have been the same field for service-at-cost plans. The same principle was followed in both so far as rate regulation is concerned, namely: A determination of the valuation, rate of return, provision for depreciation and reasonable allowance for expenses and taxes. The commission then fixes the fare for individual cases while the service-at-cost plan fixes it for all time with such flexibility as may be introduced. One advantage which the service-at-cost plan has is that the rate of fare changes automatically so that delays are avoided. Under the service-at-cost plan either a municipal commissioner or the state public service commission could take supervision.

In this connection he brought out the fact that in the proposed Philadelphia service-at-cost plan the commission would have been given the supervision of operation, and that in Montreal the local board is really the agent for the provincial public service commission.

Mr. Nash then outlined the various service-at-cost-plans in use, along somewhat the same lines as were contained in the article by him in the issue of this paper for Jan. 4, 1919, emphasizing particularly the features of the indeterminate term, absence of franchise taxes and need of flexibility in fare schedules.



LEFT TO RIGHT: A. S. HILLS OF WASHINGTON, JOSEPH ALEXANDER OF CLEVELAND, CHAIRMAN ELMQUIST OF THE COMMISSION, JOHN J. STANLEY OF CLEVELAND AND S. L. TONE OF PITTSBURGH

Mr. Nash then gave place to W. C. Culkins, street railroad commissioner at Cincinnati, who gave the history of the service-at-cost plan in that city. He said that the original fifty-year franchise of the company was subject to review at the end of twenty years and that it was at the time of this review that the present plan was adopted after several others had been considered. He then described the operation of the plan with whose general principles he expressed himself in favor. He thought the present loss of traffic would not be permanent. He said people had acquired the idea the nickel was the proper rate of fare, but when they understand the situation they will feel differently. In conclusion he emphasized the necessity of considering each city individually in connection with the proper rate of fare. A city with long lines, and long hauls, like Cincinnati, for instance, could not have the same fare as one with shorter hauls and high traffic density.

Walter A. Draper, vice-president Cincinnati Traction Company, then presented a statement on the need for an incentive for economical operation under service-at-cost franchises, the subject which had been especially assigned to him. This statement will be found in abstract on another page. In answer to questions he said that the plan would naturally come up again for consideration in 1931. Until that time no change could be made in it except by mutual agreement. For instance, this plan would have to be followed if expenses went so high that a uniform fare, such as is provided by the plan, would be so large as to be prohibitive. The common stock participates only if the fare goes to 6 cents, and at present there is no such participation.

When asked for any criticisms of the plan Mr. Draper said that in his opinion there should be some consideration for the company, no matter what the rate of fare is. He also mentioned the budget provision and the difficulty of determining far ahead what the expenses were to be, and also the limited term of the franchise, but said that the Ohio law would not allow a change from a limited to an indeterminate franchise.

The hearing then adjourned until Tuesday morning.

Tuesday's Sessions

L. D. Pellissier, president of the Holyoke (Mass.) Street Railway, was the first witness on Tuesday morning. He said that the Massachusetts commission has absolute power over rates. In Northampton and Holyoke the rate had been raised from 5 to 7 cents. On most of the suburban section the 5-cent rate has been retained but the zones shortened so as to be about 2 miles in length each. In Northampton the 40 per cent increase in rate had resulted in about 25 to 30 per cent increase in revenue since Jan. 1, 1919. All the stock of the company had been issued at par or at a premium. Mr. Pellissier thought that in congested territory the company had lost some short haul passengers. About 5 per cent of these had gone to the jitneys. He believed, that an increase in fare would increase revenue and that traffic will adjust itself to the new fare.

Job E. Hedges, receiver New York Railways, the next witness, said that it was taking part of the capital of that company to keep its lines in operation. It was paying no rentals to its leased lines and one subsidiary had already been severed from the system. The Public Service Commissioner had authorized a charge of 2 cents for transfers to begin Aug. 1, but the city had attacked this order. The high-water mark in traffic on the surface lines was reached in 1913, and the company was now approaching this figure and, in Mr. Hedges' opinion, would not exceed it. While some protest will naturally be raised when fares are increased the speaker did not think there would be serious objection when the people understood the necessity for the increase. He considered municipal operation would be much less efficient and was rather inclined to believe that prices in general would decrease in the future rather than remain at their present level. He said "If rates don't go up, the roads will." He believed that if the Commission should issue a statement that the present policy of terating the railways was tantamount to taking property without compensation, it would attract attention and help greatly.

VIEWS OF A NEW YORK BANKER

The next witness was S. R. Bertron, of Bertron, Griscom & Company, bankers, New York. He said that his firm had handled many street railway securities.

For a long time it was thought that selective securities of steam and street railways were choice investments, because these properties supplied a public necessity. In consequence they were sold on a low interest bearing basis and held by many insurance companies, estates, etc. When the war came it was understood that the companies were doing war service; in fact, this statement was made by the highest officials in the country, yet the street railways were the only industry which was not able to pass the burden on to its customers. The problem was said to be a local one, although it was nation-wide. Only a few local authorities responded promptly, and a still smaller number afforded sufficient relief. When the problem was put up to these local authorities the sentiment seemed to be that the company could get on somehow. It is practically impossible now to sell street railway securities to investors and no money could be raised unless credit was reestablished. Temporary relief would help, but a permanent solution is necessary. The speaker said he was not so averse to municipal ownership as some others. He did not think the management would be necessarily political, and credit would be restored promptly.

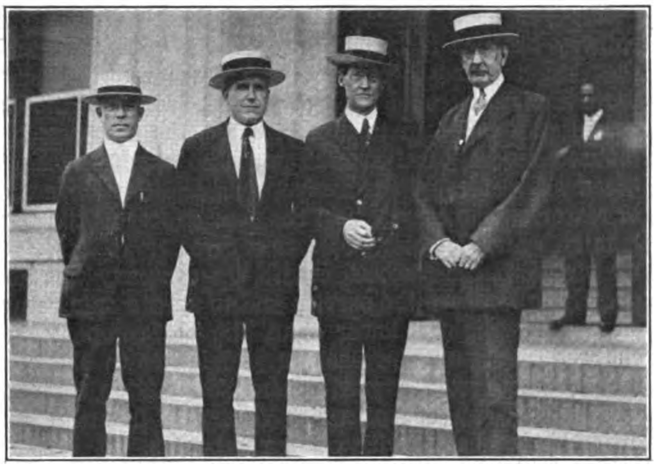
In answer to questions he said that most of the larger issues of securities have come to New York for flotation. Few cities will absorb their own securities of this kind certainly on an initial issue. The cost of handling bonds was from 2 to 5 per cent. Recently the interest has been so high that companies could not afford to finance. He thought that companies operating on a service-at-cost basis could issue securities successfully if the terms of the agreement were considered satisfactory to the lawyers passing upon them.

NEW ORLEANS BANKER URGES NEW SYSTEM

J. K. Newman, banker, New Orleans, explained that in the early days railways were considered very profitable and franchise values had been capitalized. Many companies had not included the cost of replacements and renewals in their operating expenses, though St. Louis, which had done this for a number of years, was now in the hands of receivers. In his opinion it would be necessary to set up a completely new financial arrangement. He did not consider municipal ownership imminent because politicians knew that fares would have to be raised under municipal ownership and would not like to advocate such a measure. He considered the service-at-cost plan desirable. This would permit the cities to specify the kind of service they desired, whether in seatless or luxurious cars.

At the afternoon hearing, Mr. Newman continued his testimony on renewals and replacements, desiring to emphasize the great mistake which has been made in capitalizing these expenditures rather than paying them out of operating revenues. While the industry was growing by leaps and bounds in the early days, the traffic growth caused an appreciation of the properties which, it was thought, offset the effect of capitalizing the renewal and replacement costs, but with the passing of the flowery days, this procedure has brought about an overhead charge so great that most of the companies are burdened almost beyond solvency. He looked upon this practice as one of the principal contributory causes of the present state of the industry and pointed out that the remedy lay in a complete new financing system. Mr. Newman was certain that the success of any cost-of-service or other plan of future operation must be predicated on the payment of all the depreciation charges out of operating revenue and that the public authorities could very properly have control of the determination of the rate for such charge. He was also firm in the conviction that if the public was once shown to its satisfaction that the fare charged for a ride represented the actual cost of the service plus a fair return on the legitimate investment, and that no part of it went toward dividends on watered stock, it would willingly pay whatever fare was necessary commensurate with the service given, yet he believed the public might be inclined to discredit the statement of the facts if made by the company, and that the federal commission would do a great deal toward convincing the public, if it saw fit to corroborate this as a general finding.

Another interesting point of Mr. Newman's testimony and one on which he was closely questioned by the commissioners, was that in a general financial reorganization, when it follows insolvency, a great part of the common stock must be wiped out of existence. The old securities must be cancelled and new issued to represent sound value as invested in the property. In this process, it was unfortunate, but the holders of the lower grade stocks would have to be losers, for the most part. In connection with such a plan, however, he pointed out that it was not always necessary to treat the senior securities at their full par value, since their present-worth value was often much less than that, and that it was often proper in a reorganization for holders of the junior securities to retain some equity. Questioned as to the degree of assistance which might be realized from a zone fare system or the use of one-man safety cars, Mr. Newman thought that either would be a help but not a sufficient help to allay the present march toward bankruptcy. They do not offer a solution to the present situation. He said there were several places on the properties he represented where safety cars ought to be used but that the companies were unable to finance the purchase of these cars.


FOUR MEN ACTIVE IN THE PRESENTATION OF THE RAILWAYS' CASE IN WASHINGTON: J. W. WELSH, E. B. BURRITT, L. S. STORRS AND JOSEPH K. CHOATE

Contrary to the feeling of most electric railway men, Mr. Newman preferred to continue the costs of paving, street sprinkling, snow removing, etc., as part of the obligations of the street railways. His thought was that it would complicate the issue in securing the consent of the public, to go to it for both a reduction of these burdens and an increase of fare. It would be simpler to retain these burdens and go after a fare increase ample to provide for these items of expense.

EXPERIENCE OF A SHIPBUILDER

Homer L. Ferguson, president of the United States Chamber of Commerce, president of the Newport News Shipbuilding & Dry Dock Company and a director of the electric railway system operating in that vicinity was the next witness heard. He told of the appointment of a committee of the Chamber of Commerce to investigate the electric railway situation and informed the commission that this committee would have its report ready in the very near future. Asked if the business men of the country were aware of the difficulties of the electric railways, he said they were and that they realized the condition to be critical and demanding immediate relief. He said it seemed strange that it was necessary to discuss the necessity of higher fares, since it was so obvious with everything increased in cost, that the same old fare could not continue to cover the cost of the car ride, for the electric railway men had no power of working a miracle any more than any other business men.

Mr. Ferguson became interested in his local street railway because it had lost its credit, with the result that the property became so run down that his shipyard employees could not get to and from work. The consultants called in to prescribe for the company had induced several local men to purchase enough stock to become directors of the company as an effective means of restoring the company in the good graces of the community. Mr. Ferguson became a director at this time. By virtue of the restored credit, the company was able greatly to improve the service and to earn a fair return on a fare slightly lower than the old company had charged. A great increase in population in the community has netted a good return so that his company was now in an exceptionally favorable financial condition as compared with other companies.

He cited how the Emergency Fleet Corporation had financed the building of a new line for the company and had specified a higher rate of fare than that charged elsewhere on the company's lines, thereby recognizing the necessity to take into account the higher costs of construction now involved. Incidentally, he commented that this line had been built to serve a new town of 500 homes, each provided with ground for a garden, built by the Shipping Board, and suggested that that was a most effective way of answering the arguments of bolshevism—induce every man to become a home owner.

Upon questioning by the commissioners, Mr. Ferguson gave figures to show the increase in wages in the ship yards, which by comparison made the trainmen's wages look not so bad. He also stated that he could see no indication of a downward trend in wages and if there was any trend at all, it was upward. He thought it was a matter not of months but years before any lowering of wages might be expected.

MR. STANLEY TESTIFIES

John J. Stanley, president Cleveland Railway, next took the stand. Upon request of Counsel Warren, he outlined briefly the service-at-cost franchise in operation in Cleveland. Subsequent questioning brought out that the rate of fare had been first increased in 1917 and then several times during the last year so that it has changed from an original 3-cent fare to the present rate of 5 cents and 1 cent for a transfer. He doubted if it would be possible to continue the present rate if the scale of wages should exceed the present 60 cents. The operating expenses in March, 1910, were 11.5 cents per car mile, while they were now 23.5 cents.

Asked as to the effect of the fare increases on the number of riders, Mr. Stanley said that there had probably been a falling off of about 8 or 9 per cent, although some of this might be accounted for by the general decrease in the rate of increase of the number of car riders over the country.

Mr. Stanley stated that the company was building five new extensions this year comprising 5 to 7 miles and entailing an expenditure of $50,000 to $60,000 a mile, for which new stock was sold at par. Asked how he was able to sell at par, he said that the real secret of it was coöperation between the city and company, and he quoted a statement of Mayor Baker of Cleveland in which the interests of the people and the railway were set forth as one and the same. Then he cited some of the things the city does for the railway, mentioning the use of eight city bridges without rental or assessment, the freedom from paying charges, the payment of extensions ordered by the Council from taxes assessed against the adjoining real estate, the relief from street sprinkling charges which formerly cost the company from $30,000 to $40,000 a year and instead the payment of $15,000 to $20,000 a year to the company for flushing the streets. Mr. Stanley attributed the low fare in Cleveland to the freedom from such imposts and obligations, and to the reduction of the capital at the time the Tayler grant became effective. The only suggestion he could make for improving upon the Cleveland franchise was that there should be no maximum or minimum fare specified.

R. T. SULLIVAN OF YOUNGSTOWN

The commissioners asked numerous other questions as to the extent of control and supervision vested in and exercised by the city. In this connection it was brought out that the cost of conducting the street railway commissioner's office was from $40,000 to $60,000 a year, and that a force of about twenty-five employees was maintained. This cost comes out of the railway earnings.

On Tuesday the practice of holding evening sessions was begun. The session began at 8 o'clock and Counsel Warren first read a long telegram from Paul Shoup, president Pacific Electric Railway of Los Angeles. It indicated that conditions on the Pacific slope were no better than the East and that while some companies had been able to raise fares, the increases were not adequate.

The next witness was Charles A. Fagan, receiver Pittsburgh Railways, who said that of the annual operating revenue of about $15,000,000 received by his company between 65 and 70 per cent was being spent in wages. The company is not attempting now to pay any bond interest nor rentals of leased lines, nor even any municipal charges. Of the latter there are many in Pittsburgh, including tolls over bridges which are free to other users of the highway, pole taxes, etc. Shortly after he had been appointed receiver of the company, representatives of the War and Navy departments, who were interested in securing reliable transportation for the war workers in the Pittsburgh district, conferred with the receivers and with representatives of the city's Chamber of Commerce in an effort to secure more reliable transportation. In consequence of their insistence all revenues above operating expenses were then, and still are, being put into service improvements and the rehabilitation of property rather than into the payment of the capital charges and municipal charges mentioned.

Mr. Fagan then described the original 5-cent-7-cent zone system as introduced by the company during 1918 and said that while the riding had fallen off about 14 per cent the revenue had increased about $600,000 for the year. This amount, however, is not adequate, especially as the employees are asking for increased wages and the case is now before the National War Labor Board. If granted, this will make four increases since December, 1917. Mr. Fagan then described the proposed increase in fares, demand for increased wages and other matters discussed by Mr. George, his co-receiver, and printed on page 165 of this issue. In conclusion, when asked for a suggestion for improving the electric railway status, he said that the same public body should pass on both wages and fares.

DALLAS FRANCHISES DESCRIBED

W. E. Head, vice president of the Dallas Railway, described the service-at-cost franchise adopted in that city about two years ago and patterned somewhat after the Cleveland franchise. Under a state law all cities of 5000 population or more in the state have practically all the powers of regulation which a legislature would have except for certain state regulations. As these include a paving obligation, one is contained in the company's franchise. Some of the chief differences between the Cleveland franchise and the Dallas franchise, as mentioned by Mr. Head, are as follows:

In Dallas the city does not exercise any control over the securities issued by the company except that the company is not allowed to issue bonds for more than 85 per cent of the property value. Every dollar which goes into the property is supervised and no allowance is made for the cost of obtaining money. The "property value" is made up of the original agreed valuation, plus any additional capital charges which are approved by the city.

Monthly reports are issued by the city's representative on the earnings of the company and on any changes in the property value. The rate of return permitted with a 5-cent fare is 7 per cent on the property value, but there is a sliding scale under which a higher return is permitted if the fares are lowered. Thus, 7½ per cent is allowed if six tickets are sold for 25 cents. The upper and lower limits of the surplus reserve are percentages of the property value instead of fixed sums, as in Cleveland. The greatest defect in the franchise, in the speaker's opinion is that fares have a top limit, which is 5 cents.

The lighting franchise in Dallas, owned by a separate company, has a similar limit in it, but it affects only the maximum rate, so does not seriously interfere with operation. The effect on the railway has been to limit the return earned to far less than that commonly secured in Dallas in other commercial enterprises, so that the company has not made any extensions, indeed they cannot be required by the city if the company is not making its full 7 per cent return. If financial conditions had continued as they were in 1913 and 1914 the property would be earning about 8 per cent on its property value in the writer's opinion. Other than for this point the franchises seem to work very well and had resulted in hearty coöperation between the city and the company.

One of the clauses in the contract was that jitney competition was to be stopped. This was finally done about June 1, 1918, by the exclusion of jitneys by ordinance from the central zone. This ordinance has been adjudicated and sustained. The effect of this elimination on the traffic was shown by the receipts during May, 1919, which were 48.3 per cent above those during May, 1918, May of last year being the last month during which jitneys were operated. The increase of June, 1919, over June, 1918, was about 10 per cent.

Wednesday's Sessions

Charles J. Bullock, professor of economics, Harvard University, who has recently been making a study of electric railway taxation, was the first witness called before the commission on Wednesday morning. He presented a written statement of the results of his study, an abstract of which appears elsewhere in this issue. The questioning which followed was addressed towards bringing out the injustices of the present taxation policies and establishing what ought to be paid in the way of taxation now during the emergency and in normal times.

TAXATION PROBLEMS HEARD

Taxation remission as a means of relief was believed to be too slow to supply the immediate relief needed, but Professor Bullock thought the commission ought to include in its findings a recommendation looking towards the working out of a basis of taxation equitable to the electric railways and other businesses and towards the abolishing of all taxes which cannot properly be considered as contributing to the service. As to the advisability of a total remission of taxes, the professor said that we shall probably have to come to that as a temporary measure to sustain the companies, for this is simply a question of giving a subsidy to an essential industry which faces ruin.

"In other words," Commissioner Sweet put in, "instead of fowls to be plucked, the electric railways are really to be fed, or at least given consideration, if we are to continue to have transportation." To this simile of the situation, Professor Bullock agreed. It was also brought out that the two outstanding considerations in fixing taxes are to produce the necessary funds and then properly to distribute these requirements over all sources. With this in mind it was obviously wrong to assess the electric railway company with taxes on paving which it does not aid in wearing out, for that apportions a tax on the street car riders which they should not be obliged to carry. The same argument applies to other unjustified taxes.

Professor Bullock suggested that he believed a recommendation for higher rates would have more weight if it were accompanied by a recommendation for lower taxes, particularly the abolition of those promiscuous special taxes on the transportation industry which are outside the law of equality of tax. He would have the car rider pay the full cost of the service rendered, but with the unjust taxation removed from this cost. He thought the service-at-cost plan works admirably as a means of educating the people in the real problems and conditions of the industry. The objection to a 10-cent fare in Boston had been negligible compared to what it would have been in the absence of a service-at-cost plan. In fact he knew of no better plan of presenting to the public the idea that it must pay for the cost of the service than through the operation of a franchise of that type. He could see no economic defect in the service-at-cost contract.

Questioned as to whether the 10-cent fare in Boston would return the necessary revenue, the professor replied that, taking into account the wage award which settled the recent strike, it was his guess that it would not. As to whether municipally owned railways should be taxed, he was strongly of the opinion that the same principles of taxation should be applied to such properties as to privately owned properties. He said there was an absolute limit to the amount of property that could be removed from taxation, so that if there was a general removal of the ownership of electric railways from private to municipal holders, this question would come seriously to the fore.

Asked if it would not be better to adopt the principle of taxation of net income as a permanent policy, a suggestion he had made in his written statement as a temporary policy, he replied that it would be, except that this cannot be done on real estate which is an element of street railway tax. Real estate should not be exempted from tax under any consideration.

SERVICE-AT-COST CONTRACTS EXPLAINED

L. R. Nash, of the Stone & Webster organization, was next summoned to the witness stand to continue his testimony which had been interrupted on Monday. He presented a printed pamphlet which was a reprint from the ELECTRIC RAILWAY JOURNAL for Jan. 4, 1919, of an article written by him dealing at some length with the history and working out of the various service-at-cost plans in operation over the country. The commission took particular interest in his ideas of allowances for depreciation and of the question of rate of return on the investment. It was his opinion that it was impossible to set aside a sufficient fund to provide fully for depreciation, obsolescence, supersession, etc. The expected renewals should be provided for but not the theoretical or unforeseen obsolescence and supersession. He believed that any contract should provide a minimum percentage of the gross earnings which should be set aside in a depreciation reserve or spent each year in order properly to maintain the value of a property and protect the investors. Moreover it is impossible to provide for the full depreciation because, to begin with, we do not know the life of railway property. Mr. Nash had never seen any railway plant worn out. But obsolescence has been a real factor, and no one can predict how important a factor this will be in the future. He believed that replacements should largely be paid for by the car riders who benefit directly from the improvement rather than to make present car riders pay for the improvements anticipated for the future. In other words he preferred not to amortize for the benefit of future riders, but to charge the cost of the service rendered at the time, plus the cost of amortizing for the expected renewals.

As to the rate of return on the investment which should be provided for in a service-at-cost franchise, Mr. Nash thought that there should be no maximum or minimum rate specified, nor should there be any maximum or minimum rate of fare specified. He affirmed Commissioner Gadsden's statement that the rate of return which would have to be allowed would vary and would be determined by the investors, for if they did not get a satisfactory return from electric railway securities, they would put their money elsewhere. In reply to a leading question by Commissioner Beall Mr. Nash agreed that there could never be a contract provision for a lowering of the rate of return allowed with the coming of an easier money market, for neither bonds nor stocks could ever be sold with such a possibility. A bond with a rate of interest subject to lowering had never been known, and the purchaser of stocks buys always with the expectation that the dividend will not decrease and will probably increase. Mr. Nash stated in answer to a question as to what the rate of return ought to be, that if living expenses went up 50 per cent, then the earning power of money ought to go up an equal amount.

On the question of the incentive for efficient management with the service-at-cost plan, and answering a question on this aspect of the Cincinnati plan, Mr. Nash said that the principle in the plan of that city was correct but that the figures forming the basis of the reward were such that the incentive was only fictitious—that the conditions for reward could never be reached. He said it was practically impossible to forecast what the normal rate of fare which should serve as the basis of a sliding scale reward would be. Or if a variable basis were provided for, then he knew of no way that it could be adjusted fairly to changing conditions. For this would require absolute unvarying fairness on the part of the commission which controlled the basis, and there is always a tendency to crowd such an allowance down if something is made one year. Or if the company were able to make something, having a fair commission, then someone would charge collusion between the company and commission.

The questioning brought out that the principal results of the service-at-cost plan were, first, the assurance to the investor of a fixed fair return on the investment, and second, the assurance to the public that it is having to pay only the cost of the service which is rendered.

Asked what measures he would use to deal with the Pittsburgh situation, Mr. Nash said that first he would quickly inform the public of the actual conditions so that it would know that its feeling that the company could live off the fat of earlier prosperity is a myth. Second, he would endeavor to advise the public of the justice of a higher fare, both from the standpoint of the investors and of the public, for the two interests are not conflicting but are the same in the long run. Third, he would endeavor to secure a service-at-cost franchise as the best means of restoring credit.

Mr. Nash's testimony carried over into Wednesday afternoon. He was followed by Charles L. Henry, president Indianapolis & Cincinnati Traction Company, with whose testimony next week's account of the proceedings will begin.

Formal Statements at Washington

Abstracts Are Given of Written Testimony Presented by Several Witnesses at the Hearings Before the Federal Electric Railway Commission

IN the running report of the Washington hearings before the Federal Electric Railway Commission an account is given of the informal testimony presented. A number of the witnesses read formal statements and of these several are abstracted on this and the following pages.

Reasons for Railways' Present Condition

BY L. S. STORRS

President The Connecticut Company, New Haven, Conn.

THE problem confronting the street railway to-day has risen by virtue of many causes. One of the most vital causes, which cannot fail to be readily understood by the public generally, is the increased value given to the patrons and communities served in the form of extensions of lines and improved facilities, the operation of which could not possibly be made to produce an increased revenue.

In the early days of the electric railway industry the optimism of the promoters and investors was such that it was thought an electric railway could, by operating at so much higher speed than any other form of street conveyance, show a profit hitherto unknown in the transportation field. There are few companies to-day which are not suffering as a result of that belief. Increase of speed was the excuse for extending many lines shortly after electrificaton of the horse railways and as two or three times the distance could be covered in a trolley car as by the horse car in the same space of time, many companies made extensions of lines into territory which it took no longer to cover by this improved method of transportation than it took to cover a much more restricted area by the old. Thus a fifteen-minute ride cost no more to the rider under the new system than formerly, notwithstanding the distance traveled may have been three times as great. No one would deny to-day that these unprofitable extensions were a mistaken policy from the standpoint of the railway treasury, but from the standpoint of the public at large they were a blessing to many a rural community.

ELECTRIC RAILWAYS INCREASED REAL ESTATE VALUES

For years the patrons have secured more than they paid for, and the lines could not have continued in operation without support from the short haul business of the more populous centers, the revenue from which has in recent years been materially diminished through increased use of motor vehicles and increase in cost of operation, all of which makes more precarious the continued operation of these extensions.

Not only were extensions into unprofitable territory made upon the initiative of the railways but due to the seductions of the real estate promoter who wanted but a mere quarter of a mile longer ride for his prospective purchasers, many managers felt it not only good business judgment but expedient as well to build a slight extension for this purpose, always of course without additional fare.

The value to these patrons has been for years reflected by the low cost of the ride and a decided unearned increment to the adjacent property, yet it is with reluctance that persons who have so benefited are willing to concede one iota to the company which has given more than value received ever since the extension was built. Real estate promoters even to-day advertise their wares more upon the basis of the cost of reaching the territory by trolley than by the particular attractiveness of the land itself.

The railways and real estate men are not alone to blame for many unprofitable extensions, but much of this extravagance in building in later years was due to political bodies and commissions without any or sufficient investigation of the surrounding conditions from a traffic viewpoint. It is well known that a street railway company could ill afford to incur the enmity of a political body which created the franchises, the possession of which was necessary to the life of the corporation. Irrespective of the reason why extentensions were built into unprofitable territory, we know to-day that many of these companies have failed to survive and those which were consolidated into a larger system have been carried along for years at the expense of other portions of the system.

COMPARISON WITH BRITISH CITIES

The fundamental theory upon which the electric lines in England have developed is entirely opposed to that of expansion as used in the United States, for there each extension is expected to produce sufficient income to make it a paying venture when considered alone.

The result of this basis is clearly shown by the following consideration: It has been pointed out that if the electric railway facilities of Columbus, Ohio, had been developed in no greater degree than those of Glasgow, Scotland, Columbus would have attained but 15 per cent of its present area, all of the present population being forced into the territory thus restricted. Bridgeport, Conn., would have less than one-quarter of its present street railway trackage had it no better facilities than those of Aberdeen, Scotland.

As showing the difference in the facilities afforded to American and European cities by electric railways, the following tabulation of statistics for cities in Great Britain having a total population of 965,000 and cities in New England having a total population of 1,085,000 is of interest:

Item	Great Britain	New England
Population	965,000	1,085,000
Miles of track	156	695
Population per mile of track	6,187	1,560
Revenue per mile of track	$16,767	$13,314

Perhaps the most significant item of this comparison, showing as it does the absolute lack of accommodation for that portion of the British communities living

---

[*] Abstract of statement presented at hearing of Federal Electric Railway Commission, Washington, July 21, 1919.

in the thinly settled territory, are the figures which give the population per mile of track. In England it is 6187, in New England 1560.

INAUGURATION AND EXTENSION OF THE TRANSFER SYSTEM

The value to the patrons and the communities through the inauguration and extension of the free transfer system, while generally realized, if considered at all, nevertheless is something taken for granted by the public. In the early days of the industry there were in some cities as many as ten or twenty different street railway lines each chartered to perform a public service upon certain specified routes. Each company charged its own fare, generally in excess of 5 cents. Upon the electrification the fares were gradually reduced to a nickel, but even so, each company collected its own nickel and gave no right to transfer to the lines of any other company. Later, however, traffic arrangements were entered into by the several companies for the purpose of encouraging traffic, but more often because of conditions and limitations in franchises providing that free transfers be given from one point to another in the various cities. Upon the consolidation of companies into one, which took place in practically all the cities, a general system of free transfers was either granted by or imposed upon the consolidated company, and as a result the patron has received an added value to the service received by him.

To show the extent of the benefit and value to the car rider one has only to cite the case of a man who was given a nickel by Ex-President Brush of the Boston Elevated Railway System, told to ride as far as he could on that system for the nickel, and who rode 54 miles and then gave up, not because he had completed the maximum ride possible for a single fare, but because the rider was exhausted. While this example may be somewhat uncommon, it is a fact that a person can ride, by means of a free transfer, a much greater distance than any company can afford to carry him.

IMPROVEMENT IN CHARACTER OF TRACK AND EQUIPMENT

The improvements and comforts demanded of electric railways by the public since electric cars began operating have added tremendously to the value of the service given.

The old horse car cost from $800 to $1,000, was heated by straw and "animal heat" of passengers, lighted by kerosene and propelled at a pace not much faster than a walk. It was hardly more than a good-sized box mounted on four wheels. The first electric cars cost about $4,000, some heated by stoves and some by electricity. The difference between these first cars and the modern street railway car, that costs to-day as high as $17,000, is indicative of the increased value of service given to the public from the standpoint of equipment alone. Everything in the nature of an improvement looking toward comfort, speed and convenience is demanded by the patrons, and in the past seldom refused by the railway.

With the development of equipment there has been an attendant increase in the cost of track. The original track designed to carry cars weighing but eight tons was considered amply secure if laid with rails weighing 48 lb. per yard without any preliminary preparation other than sufficient ties to hold the rails in place. Such track cost an average of $10,000 per mile of single track. The development of cars weighing as much as thirty tons and the requirement of heavy permanent pavements have necessitated the use of rail weighing from 91 lb. to 125 lb. per yard, with an accompanying requirement of heavy ballast and concrete foundation preparation. Such track costs approximately $85,000 per mile of single track at present.

In connection with this increased cost of equipment and track there came the necessity for larger carhouses, with more costly facilities for keeping the equipment in repair; iron poles to support the trolley wires where wooden ones previously had been satisfactory. Where there had been single tracks, it became necessary to lay two tracks, because of the demands of the public for speedier, more frequent, and more comfortable service. The enormous expense entailed by these improvements represents another great increase in the value of the service given to the public.

Directly related to the development of the equipment and the tracks is the demand of the public for better pavement between the rails and in the streets through which the car lines operated. In the horse car days, streets were paved with gravel, cobblestones or water-bound macadam. To-day, because of the rapid development of automobile traffic, the public demands the most costly kind of pavement, necessitating the laying of heavy concrete foundations upon which must be placed asphalt, wood block, cut-granite block or some bituminous mixture. Many times municipalities require that new pavement be laid before the rails have outlived their usefulness, so that frequently rails which still have a number of years of life must be torn up and scrapped, causing a great loss to the railways. This new pavement has directly increased the value of service to the public in several ways, but without the slightest attendant increased revenue to the railway company for the investment.

HEAVY IMPOSTS LEVIED BY COMMUNITIES

Under the present laws in most states, street railway companies are required to pay the cost of new pavements and the maintenance of same on all highways in both city and country to a width of 9 ft. for single track and 19 ft. for double track. In many instances this means frequently the pavement for one-half of the paving of the street in addition to the cost of laying expensive foundations and new and heavier rails, yet the trolley car can run satisfactorily and give service to its patrons whether a street is paved or not.

There seems to be very little accord between the various communities as to what proportion of the cost of a bridge shall be borne by the railway company but the proportion has generally increased with the increase in size and ornateness of the structure, so that in many states as high as 33⅓ per cent of the cost must be borne by the railway company.

In Connecticut there are many highway bridges crossing navigable waters, and the electric railways were originally granted the right to construct tracks over such bridges with the requirement to pay for any strengthening necessitated by reason of car operation. With the increased growth of highway travel and the greater weights of motor trucks as compared with the old drays and farm wagons, there has been a need for more substantial structures. In an attempt to reduce the cost of such reconstruction to the towns and state, a demand was made upon the Legislature to pass a portion of the burden on to the utilities, and this was done by requiring the railway to pay one-third of such cost regardless of the fact that such new structure did not in the least add to the value of the property as a public utility, nor to the convenience of the car riders who must in the ultimate analysis pay the bill. One such bridge now under construction is to cost about $1,200,000, making the assessment upon the electric railway approximately $400,000, or representing the entire appropriation of over 6,000,000 trolley fares on a line that carries a total of but 1,500,000 passengers per year.

The usual franchise tax is considered as a payment for exclusive rights to operate a profitable undertaking, or as a proper charge because of the installation of certain fixtures in the public highways. These taxes have taken many forms, sometimes a fee per year per car operated, per mile of track or per pole, or percentage of gross earnings or in some cases a lump sum. Very few of these taxes have been decreased in later years, but on the contrary, there has been an increase in many communities, especially with regard to a tax upon gross earnings. This tax is exacted even though the railway may be in receivership and fail to earn its operating expenses. Any tax or impost of this nature, while it returns a value to the community in the shape of a lower rate of taxation, can only result in a poorer grade of service to the patrons and, therefore, the resultant value is at least problematical from the standpoint of the community at large.

Where mutuality of interest is recognized, it has been possible to serve the public to the best advantage. In Cleveland the electric railway is relieved of paving construction, snow removal, bridge maintenance and similar burdens borne by railways elsewhere, and the right of the investors to a return upon their investment is recognized by the provision in the agreement between the company and the people that the return shall be considered part of the cost of giving the service.

Need for Incentive for Economical Operation Under Service-at-Cost Franchises*

By WALTER A. DRAPER

Vice-President Cincinnati (Ohio) Traction Company

ONE of the fundamentals of the service-at-cost plan is to arrive at some figure that will represent the return to the company on capital invested. This is reached by ascertaining the present value of the property or the actual cost of the property and allowing a certain rate of return on such value. The rigid application of this rule, however, pays little or no attention to the fact that a return on mere present value or historical value does not include any consideration for the risk originally undertaken or for the care, attention, labor and efficiency bestowed by the company on the development of the property.

The advocate of a fixed and rigid return will say that by the very certainty of its being earned, which is often erroneously called a guarantee, the company is sufficiently rewarded and needs no other recommenpense for its years of effort and endeavor. It is nowadays rather easily forgotten that the property was built and developed by capital that was attracted to it by the anticipated opportunity of making more than a bare legal interest on the investment. In fact, the investor himself has almost forgotten the happy days when he looked forward to the increasing value of his property with the development of the city or country it served; and as increasing costs have left an ever-decreasing margin between income and operation, it is considered the height of kindness and generosity on the part of the municipal or other government to allow a legal rate of interest on the bare bones. Ought not in all fairness an opportunity be given the investor to get a little more by efficient operation out of his money that he has risked in the development of his community than he could have gotten if he had locked it up in bonds or turned money broker?

In settlements of traction problems fixing a valuation and a return the rate is generally made as low as the lowest legal rate of interest. Six per cent is most frequently used. The original investor certainly expected more when he risked his money, and money for utilities cannot be borrowed at that rate very easily now; and if a low rate is fixed in the franchise to define the minimum return, the investors should be encouraged to careful and economical operation by an opportunity of receiving something more if they can earn it.

So much for the ethical side of the question. What of the practical? It is true that a service-at-cost franchise offering an almost certain return makes it more easy, or at least possible, to borrow money. But bankers have always taken into consideration not the question whether a concern can just live—just manage to make ends meet—but rather how much margin, how much over the bare living it can make. And this question of banking and getting new money is a vital one. Not only has the question to be solved as to how street railroads are to make their operating expenses, but how are they to pay interest on borrowed money in the shape of permanent investment or bank loans. Actual experience under the Cincinnati franchise has demonstrated that the banker begins to take more interest when he is shown that in addition to a fixed low interest rate that is practically assured, the company can do even a little better by careful and attentive management. When it comes to marketing securities, those paying a fixed return of 6 per cent will not sell so well as those that have at least some show of paying a fixed return of 6 per cent and then something more. But 6 per cent is not now a sufficiently high return. If 6 per cent must be written in the franchise then let there also be written therein that an additional 1 or 2 per cent can be earned by hard work. If the fixed return is just enough to meet the dividend or interest on a senior security, let the possible additional return go to the common stockholder, who under a service-at-cost franchise is pretty apt to be left at the dock when the boat pulls out, because there is no room for him. And don't forget that the common stockholder has played his part, if not the important part, in the development of street railroad enterprises. The senior security holder is the banker. The common stockholder is, or was, the prospector, the pioneer, the builder, the man with the vision.

Those who operate street railroads have not lost, and it is to be hoped never will lose, their ambition to operate as economically and efficiently as possible; and yet, because we are all still human, there is needed in addition to the desire to make a showing, the spur of real financial benefit. Under a rigid service-at-cost franchise the company really becomes a sort of clearing house for the money it takes in. It pays the employees, then the tax gatherers, and then the senior security holders. This takes it all. Justice and good business sense dictate that there should be at least a small commission paid for all this work. It will add zest to an otherwise flat existence. Operating under a service-at-cost franchise without some added incentive would be a good deal like asking an old gambler to play poker for fun and not for money.

---

*Abstract of statement presented at hearing of Federal Electric Railway Commission, Washington, July 21, 1919.

It has sometimes been said that a service-at-cost franchise with a purchase clause therein and complete city control has all the good features of municipal ownership and none of its bad ones. This becomes true if there is an incentive to careful management in an additional and contingent return.

The Cincinnati franchise provides that when the fare is 5 cents the surplus remaining after all requirements are met shall be divided 55 per cent to the reserve fund and 45 per cent to the company. When the fare is 5½ cents the division shall be 70 per cent to the surplus fund and 30 per cent to the company, and when the fare is 6 cents the division shall be 80 and 20 per cent respectively. When the fare is over 6 cents the company gets nothing. This plan falls short of providing a proper incentive because if the fare goes above 6 cents there is no additional return to the company beyond the fixed minimum. A more efficacious plan would be to allow some additional return at all times, larger as the operating expense is kept down, smaller as the operating expense increases. Even as it stands the company has an incentive to operate efficiently and economically, since by keeping the fares down it will receive a bonus, which can be given the company's common stockholders, who otherwise are cut off under the franchise like a disinherited child.

There is another potent argument for providing this incentive and that is the tendency of the public to feel that if the company is practically guaranteed a certain return and can get no more, it will be indifferent to how high operating costs and fares may go and will readily "pass the buck" to the city in matters of higher wages or any other element likely to affect fares on the very comfortable theory of "Why should we care? Let the men get higher wages, so long as the car rider pays."

In a recent discussion of the wage question with our employees, the main interest the public took in the matter was whether we wouldn't give in without much pressure because it would all go into the rate of fare. In fact some people declared that we were in league with our men to get the rate of fare up and hold it there through their asking for higher wages and our quickly granting the demand. When they were informed that it was to our interest to keep fares below 6 cents as we would then receive an additional allowance they saw things differently.

An added incentive such as that which has been suggested, could be provided in many ways, either by dividing a surplus over requirements as in the Cincinnati franchise, or an addition of 1 or 2 per cent to the fixed minimum return. In all cases, however, it should be made to depend upon the company, not how well it is liked or the degree of Christian fortitude with which the officials bear public criticism, but upon actual tangible results obtained in successful operation. The best test would be provided by fixing the added return inversely on the rate of fare, but allowing something no matter what the fare may be.

Street Railway Credit and Cost of Capital*

BY F. H. SISSON
Vice-President Guaranty Trust Company, New York City

THE cost of money is affected by conditions which affect all other costs. The law of supply and demand affects it primarily. The degree of safety and future promise are also instrumental in determining it. There is every reason to believe that, with the tremendous destruction of wealth which has taken place in the world, both through its physical loss and the diversion of vast numbers of men from productive industry, there will be a long period of tight money in which the demand for capital will exceed its supply. The rehabilitation of Europe, the conversion of industry, labor unrest, the re-establishment of trade and the instruments of commerce will all make large drafts upon the available capital of the world, which must inevitably be reflected in higher charges.

As long as wealth remains in private hands, subject to private disposition, it will seek the most profitable fields of investment. It cannot be coerced into situations that do not promise reasonable protection and return, and the present public attitude toward public utilities, whether inspired by political considerations or selfish ignorance, has inevitably diverted capital from such channels into others not subject to these limitations.

PUBLIC OWNERSHIP WILL NOT SOLVE THE PROBLEM

This is not a question of the bankers' attitude toward the subject, as the bankers are, for the most part, but middlemen in the handling of securities of this character. The ultimate investor fixes the conditions upon which he will purchase securities and the question of rate is simply that at which the security will pass to the buyer. It is certain that, unless there is a widespread change in the public attitude toward public utilities, the security buyer will not hazard his money in such ventures and the bankers have no choice but to follow his decision. Furthermore, it is certain that no satisfactory alternative is left in public ownership, as there is nothing in the record of public ownership on the whole to warrant the hope that this may offer a solution of the problem.

Stripped of all complications, the question seems to be whether or not the American public are willing to pay for service rendered. The alternatives are simple —either the service will not be rendered and the growth of our communities and the comfort of our people will be denied, or the cost must be met, either directly, through fares, or indirectly, through taxes. As to which of these alternatives is economically sound, I assume there can be no doubt. The open question is whether the traveling public will continue to deny to its utilities the basis of charges which it accepts in every other line of business.

CAN NOT SELL NICKEL'S WORTH OF TRANSPORTATION FOR HALF PRICE

With the average purchasing power of the dollar decreased generally about 50 per cent since 1914, it is impossible for 2½ cents to buy 5 cents' worth of transportation; that is the sum and substance of the whole situation.

The impairment of the street railway credit structure has been brought about through increased operating costs coupled with a fixed unit of fare. Prices of some of the most important material used in the maintenance of street railway property have increased 38 per cent to 126 per cent over those in 1914. Increases in wages and fuel, the largest items in the cost of operation, in some localities are as high as 100 per cent over prices prevailing in 1914. In recent testimony before the Congressional committee on appropriations, it has been estimated that the cost of labor and materials over pre-war prices was 85 per cent.

---

*Abstract of statement presented at hearing of Federal Electric Railway Commission, Washington, July 18, 1919.

In times of lower costs the profit from the short haul carried the long-haul passengers for the same fare. When the margin of profit from short-haul business was wiped out by increased cost of operation, the economic unsoundness of the traction business became critical. In many cases this condition was aggravated by local difficulties, such as cheap motor car competition, franchise litigation and excessive burdens imposed by regulating bodies. As a result net earnings of the traction companies fell off. Where relief was granted it usually did not come until the companies were already in a weakened financial condition.

FINANCIAL CONDITIONS INCREASE COST OF MONEY

Finding it difficult, if not impossible, to obtain new capital through the issue of stock, the street railways have had to resort to financing by means of fixed charge obligations. As the margin of safety over interest requirements diminished and the risks attending investments in street railway securites increased, the companies have had to offer greater and greater inducements to attract the necessary new capital. Capital had to be secured to take care of maturing obligations at interest rates, in many instances, higher than the fixed rate of return, allowed on the investment by franchises and other regulations, and with the temporary sacrifice in many cases of a large part of the equity value. Such costly financing increased the companies' burdens, resulting in still further impairment of credit.

In the following table a comparison is made of the yields on various standard street railway bonds in July, 1909, and July, 1919. This indicates roughly how much more the street railways must pay for capital to-day than they did ten years ago.

		Price July, 1909 To Yield	Price July, 1919 To Yield
Detroit United, first con. 4½s	1932	5.90	7.55
New Orleans Railway & Light, con. 4½s	1935	5.48	9.64
United Railways of St. Louis, first 4s	1934	5.01	9.98*
Chicago City Railways, 5s	1927	4.68	9.75
Metropolitan West Side Elevated, first 4s	1938	4.68	9.40
South Side Elevated, 4½s	1924	4.95	9.71
West End Railway Company, debenture 4s	1932	3.84	6.00
Philadelphia Rapid Transit, col. trust 5s	1957	4.85	5.85
Aurora, Elgin & Chicago, first 5s	1941	4.94	9.30
Chicago Railway, first 5s	1927	4.90	9.80
Duluth Street Railway, first 5s	1930	5.00	7.82
Los Angeles, first 5s	1938	4.68	6.42
Louisville Railway, con. mort. 5s	1930	4.45	5.74
Denver City Tramway, first and refunding 5s	1933	5.22	13.25
Brooklyn Rapid Transit, con. 5s	1945	4.60	8.40
Brooklyn Rapid Transit, first refunding conv. 4s	2002	4.63	8.70†
Conn. Railway and Light, first and refunding 4½s	1951	4.40	5.95
Interborough Rapid Transit, first and refunding 5s	1966	5.05	6.95

* Interest delayed. † Stock yield.

A striking contrast is afforded by a comparison of yield on a few standard industrial bonds for the same period:

American Tobacco, 4s	1951	5.15	5.30
American Tobacco, 6s	1944	5.25	5.15
Bethlehem Steel, first extension sinking fund 5s	1926	6.05	5.60
United States Steel, sinking fund 5s	1963	4.70	4.95
Virginia-Carolina Chemical, 5s	1923	5.15	5.65

Under these deplorable conditions, electric railway security owners have seen their holdings precipitately and alarmingly depreciate in value. With the opportunities offered to the investing public during the last few years to purchase the securities of industrial companies which have shown extraordinary earnings, electric railway securities have found few buyers. With the war-time demands upon capital, these securities have sold at prices which have been so low that the electric railway companies have had the utmost difficulty in obtaining, and, in some cases have been absolutely unable to arrange, long-term financing. Under the ordinary operation of economic law the electric railway companies have been compelled to pay high rates for the capital they did get and this has further reduced the return on their securities.

WAR LABOR BOARD AWARDS HAVE BEEN THE LAST STRAW

Another factor, however, which has contributed largely to the difficulties of the situation, has been the wage awards of the National War Labor Board. Yet the general chairman of this board has held that the financial condition of the companies could not affect the issue at stake. Such rulings, however, are only in keeping with the general public's attitude toward the electric railways, which has compelled these companies to operate under two distinct, and in some respects, diametrically opposed kinds of law—legal and economic. The seriousness of this handicap is apparent when it is realized that probably one-half of the gross operating expenses of a railroad consists of direct labor costs, which are constantly increasing while the abnormally low rates for the service rendered by electric railways, were, in many cases, fixed years ago by special laws or by provisions contained in ordinances or franchises. The rate of fare, in effect, was a part of the consideration for granting franchises.

FRANCHISE FARE FIXING DOES NOT MEET PRESENT-DAY CONDITIONS

But the franchise method of fixing rates is too rigid to meet present-day conditions. The franchise, while holding down the charges for the service does not hold down costs; consequently costs have rapidly been overtaking gross revenues and have reduced to the danger point the margin between the two.

The commission form of regulation was developed largely with a view to remedying the evils of the rigid franchise method, but even the commission form of regulation is losing esteem among the thinking people because of the attitude many commissions have assumed toward the public utility corporations.

Transportation cannot be rendered at less than cost without the money to make up the deficit coming either from the security holders or the taxpayers, or both. It should be obvious to all that the cost of transportation ought to be borne by the users of transportation, and that some plan should be worked out by which such provision is made.

There can be no possible justification for imposing such burdens as are being inflicted upon security holders and tax payers to-day in any attempt to give something for nothing by allowing the users of transporation lines to enjoy the conveniences provided them at less than cost. The crux of the whole problem is that fares should be fixed on an equitable basis that will assure earnings sufficient to meet operating expense and pay a fair return on invested capital.

The electric railway security holders do not seek exorbitant increases in fares; quite the contrary. They are fully cognizant of the fact that it is to their interest, as well as to that of the public, to keep rates for service as low as possible, for low fares benefit the companies through stimulating business.

In facing this situation public authorities should not forget that they are holding in their hands the credit of their cities, savings banks, life insurance companies, and other investment institutions, and a large portion of the invested wealth of the country. The problem in not merely local or political, but of nation-wide business importance, and if it is not fairly met, is capable of having a widespread and disastrous effect on business—an effect which every business interest directly or indirectly, but inevitably, must share.

Industry Needs More Than Normal Amount of Capital

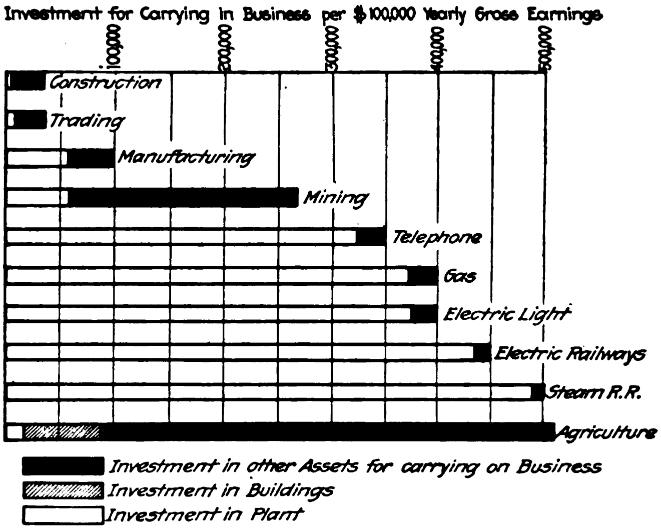
THAT the electric railway industry needs a continuous supply of new capital and that the capital turnover is slow as compared with other businesses were clearly shown by Henry G. Bradlee, of the firm of Stone & Webster in his testimony before the Federal Electric Railway Commission last week. By means of a chart from which the accompanying illustration has been reproduced, Mr. Bradlee showed that with the exception of agriculture the investment necessary for carrying on business is much greater for public utility companies than for other well-known businesses. By means of a color scheme the investment in the several businesses was divided into plant, buildings and other assets. In the illustration suitable cross-hatchings have been used to indicate these separations.

By means of another chart Mr. Bradlee showed that the new capital needed each year is about four times the yearly increase in gross earnings; the chart in question showing that a graph of the plant account accumulated since Feb. 28, 1902, for a given electric railway property closely coincides with a graph for the same property which shows four times the increase in twelve months' gross earnings over the gross earnings for the year ended in February, 1902. Similar graphs showed that this relation was true for power and lighting companies as well.

The following table shows the approximate gross earnings and approximate expenditures for construction of the Stone & Webster companies for the years 1902 to 1918, inclusive:

Year	Gross Earnings	Construction Expenditures
1902	$3,585,000.00	$2,750,000.00
1903	6,338,000.00	3,62 ,000.00
1904	8,482,000.00	2,414,000.00
1905	9,504,000.00	2,900,000.00
1906	12,212,000.00	5,000,000.00
1907	13,776,000.00	8,500,000.00
1908	16,357,000.00	6,962,000.00
1909	19,133,000.00	5,703,000.00
1910	20,747,000.00	7,286,000.00
1911	21,389,000.00	9,077,000.00
1912	23,925,000.00	5,467,000.00
1913	26,305,000.00	7,531,000.00
1914	28,881,000.00	6,840,000.00
1915	27,044,000.00	3,371,000.00
1916	29,456,000.00	3,736,000.00
1917	31,029,000.00	5,001,000.00
1918	36,322,000.00	5,691,000.00
Total	$334,485,000.00	$91,852,000.00

The figures from 1902 to 1907 cover a "considerable number of companies. In discussing this table, Mr. Bradlee explained that the cost of constructing the new railway lines and power developments of the company in the West and South within recent years, as well as all intangible costs, had not been included in the table. This is true also of the earnings of a couple of power companies which for one reason or other could not properly be included.



COMPARISON OF INVESTMENT IN ELECTRIC RAILWAY AND OTHER INDUSTRIES

The table presented below shows the annual increase in gross earnings in per cent and the annual expenditure for construction per $100 of gross earnings. As shown, the average per cent increase in gross earnings for the whole period is 10.7 per cent and the average annual expenditures for construction is $27 per $100 of gross earnings. The corresponding averages up to the year 1914 were 12.1 per cent and $37 respectively. These figures show conclusively that the amount spent for new construction has been subnormal for several years. If service is to be maintained in an adequate manner these deficiencies will have to be made good thus increasing the demand for new capital to a figure which is considerably above normal. At present the company is calling on its power plants to do more than they were intended to do and its cars and track to last longer and do more than in normal times. It is taking chances on breakdowns and service interruptions. Mr. Bradlee attributed the decreased earnings during the earlier part of the war period to poor business conditions and the ravages of the jitney bus.

Year	Percentage Increase in Gross Earnings	Amount Spent on Construction per $100 of Gross Earnings, Dollars
1902	20.0	76.00
1903	16.0	57.00
1904	10.0	28.00
1905	12.5	31.00
1906	18.0	42.00
1907	19.0	62.00
1908	5.0	43.00
1909	16.0	30.00
1910	5.0	35.00
1911	3.8	42.00
1912	10.0	23.00
1913	10.0	29.00
1914	2.1	24.00
1915	*6.3	12.00
1916	8.9	13.00
1917	13.4	11.00
1918	18.7	11.00
Average	10.7	27.00

* Decrease.

Data of the Industry

Data showing the present state of the industry were presented by J. W. Welsh, special engineer American Electric Railway Association. The information was arranged in about forty groups, each group consisting of a table, a chart drafted therefrom and a description of the data. The data in the main were derived from the census reports, with estimates for 1918 based upon replies to questionnaires sent out by the association. Representative charts and tables presented by Mr. Welsh, with descriptions, are reproduced.

Fig. 1—This chart illustrates the retardation of the growth of electric railways in recent years. The principal elements of physical property, such as the number of passenger cars and the miles of single track, are plotted as well as the number of employees. The 1918 values have been estimated by comparison with a group of 345 companies for which data were available in both the 1917 census and that for 1918.

The rate of growth is indicated by the upward slant of the lines. It is noticeable that this rate shows a decided falling-off since 1907 except for the number of employees, and in all cases since 1912.

Table I—This is based on the reports submitted to the American Electric Railway Association by 345 companies for the calendar years 1917 and 1918. These companies represent more than 80 per cent of the gross earnings of all electric railways in the United States and are therefore believed to be representative.

This is demonstrated by a comparison of the income accounts of this group of companies with the returns of the 1917 census, as the two groups of figures check very closely. For example, the operating ratio of this group is 65.14 per cent, while the operating ratio for the 1917 census is 64.8 per cent.

A most striking element in the comparison of the 1918 accounts with the 1917 is a diminution in net income amounting to more than 74 per cent. This is largely due to an increase in operating expenses of 18 per cent and an increase in taxes of more than 8 per cent, while the operating revenues have increased only about 6 per cent.

Fig. 2—The trend of net operating revenue compared with deductions from income and net income is here illustrated, and the falling off in these items in 1917 and 1918 is very striking.

The values for 1918 bring out most forcibly the critical condition of the industry as represented by a decrease in net operating revenue from approximately $229,000,000 to $193,000,000 and a decrease in net income from approximately $56,000,000 to approximately $20,000,000. Taxes, however, have continued to rise not only in amount but in rate of increase.

An interesting comparison may be made between the trend of the curve for net operating revenue, which represents railway operations, and the curve for net revenue from auxiliary operations, which includes other activities than street railways, such as inclined-plane service, ferry-boats, etc. The latter net revenues have continued to increase as contrasted with the decrease in the former.

Fig. 3—This chart shows the distribution of net income from all operating electric railways in the United States. A rapid growth is indicated until 1912, after which there has been an equally rapid decline until 1917. From this time to 1918 the slump became disastrous, the net income decreasing from $56,000,000 to $20,000,000.

The rate of return has been estimated by applying the dividends as shown by the census reports to the total capital stock. Thus it is seen that the rate of return has never approached 3 per cent even when conditions were best before 1912. Since that time it has declined and in 1918 fell below 1 per cent.

The surplus, on the other hand, was approximately constant until 1912. It declined rapidly in 1912, and in 1918 fell to a deficit of approximately $25,000,000, far in excess of any previous surplus.

The apparent anomaly of dividends and a deficit in the same year is accounted for by the fact that the deficit of those companies operating at a loss far exceeded the surplus of those companies which were able to declare some dividends.

Fig. 4—The expenses of conducting the various operating departments is shown on this chart. The most noticeable increase for 1917 over 1912 comes in the item of "conducting transportation," in which the principal element of expense is "trainmen's wages."

The increased cost of labor and material, however, is reflected in the other items with particular reference to "power," which shows the next most rapid increase. Here the cost of coal has undoubtedly been the principal factor. This is shown by the increased slope of the curve embracing the cost of power.

The tremendous increase in operating expenses in 1918 as compared with former years is the most important condition illustrated on this chart. The distribution of this expense between the different departments shows that "conducting transportation" has been the principal element in the increase, in which the item of "wages" is the controlling factor. There has also been an unusual increase in all items of expense.

Fig. 5—With 1906 as a basis, the percentage increase in trainmen's wages is shown for each year to 1919. The abnormal rise from 47½ per cent to 87½ per cent over 1906 between 1918 and 1919 is due largely to the decisions of the National War Labor Board.

This chart is based on the average hourly rates paid to employees longest in service and represents approximately sixty companies whose individual track mileage is more than 100 miles.

The following summary shows the awards affecting trainmen granted by the War Labor Board:

Maximum Rate per Hour, (Cents)	Number of Increases Awarded	Maximum Rate per Hour (Cents)	Number of Increases Awarded
40	7	46	3
42	18	46½	1
42½	1	47	3
43	4	48	13
44	1	50	5
44½	1	54	1
45	26	65	1

Total number of awards, 66. In some of these cases, several rates were made in one award.

Maximum increase, 71.4 per cent. Minimum increase, 7.5 per cent.

Fig. 6—The total amount of wages and salaries has been plotted, with the percentage of this to railway operating expenses. The approximately level line representing this percentage indicates that the cost of labor has been an almost constant factor in the increase in railway operating expenses. In other words, the total expense has gone up in almost exactly the same ratio as wages and salaries.

TABLE I—COMPARATIVE INCOME STATEMENT OF 345 ELECTRIC RAILWAYS FOR CALENDAR YEARS 1917 AND 1918

	1918	1917	Amount	Increase, Per Cent
Railway operating revenues	$590,710,837	$554,674,718	$36,036,119	6.50
Railway operating expenses	426,082,146	361,315,721	64,766,425	17 93
Net operating revenue	$164,628,691	$193,358,997	$28,730,306*	14.86*
Net revenue from auxiliary operations	16,917,673	15,563,861	1,353,812	8.70
Taxes on railway operations	38,669,011	35,750,567	2,918,444	8.16
Operating income	$142,877,353	$173,172,291	$30,294,938*	17.49*
Non-operating income	14,487,720	11,001,832	3,485,888	31.68
Gross income	$157,365,073	$184,174,123	$26,809,050*	14.56*
Deductions from gross income	146,652,347	142,373,728	4,278,619	3.01
Net income	$10,712,726	$41,800,395	$31,087,669*	74.37*
Total car mileage operated	1,654,319,023	1,722,369,093	68,050,070*	3.95*
Total passengers carried	11,969,256,764	12,187,434,043	218,177,279*	1.79*
Total miles of single track	32,570.21	32,476.64	93.57	0.29
Operating ratio (per cent)	72.13	65.14	....	......

* Decrease

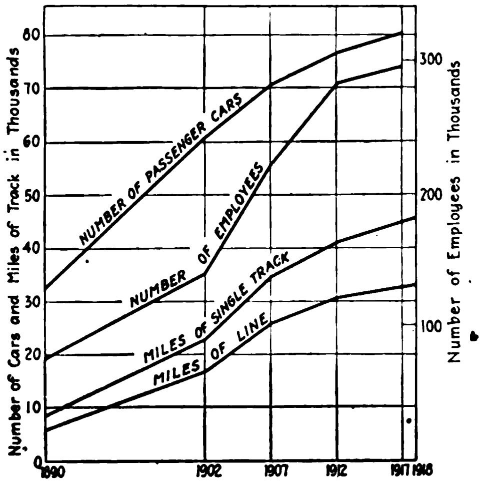


Fig. 1

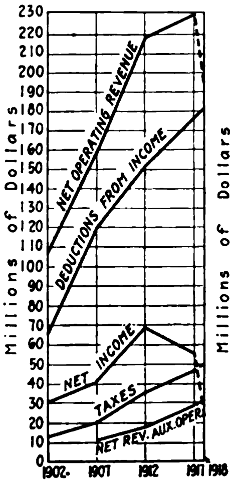


Fig. 2

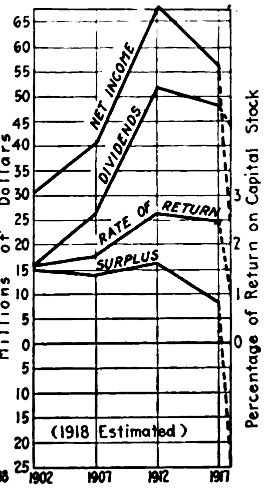


Fig. 3

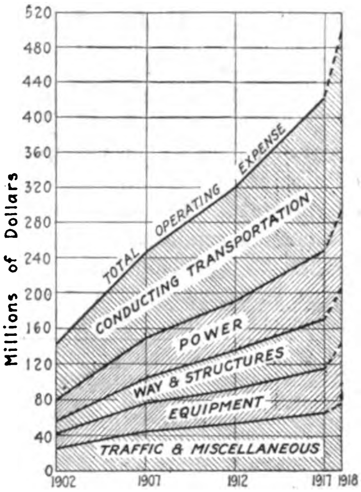


Fig. 4

Fig. 1—Retardation of growth of electric railways in recent years.

Fig. 2—Trend of net operating revenue and deductions from income and net income.

Fig. 3—Distribution of net income.

Fig. 4—Distribution of operating expense.

The sharp rise in the cost of labor for the year 1918 is also indicated very clearly on the chart. At the same time there has been a corresponding increase in the total railway operating expenses. This increase in the cost of labor is, of course, due largely to the increased rates of wages awarded by the National War Labor Board.

Fig. 7—The total taxes in dollars and in per cent of operating expenses indicate a rise both in amount and in rate of increase. The acceleration is most noticeable between 1917 and 1918. Taxes are also segregated for the census years between taxes on earnings and capitalization, etc., and taxes on real and personal property.

Fig. 8—This chart is based on a questionnaire sent out by the American Electric Railway Association to determine the amount expended annually by the electric railway companies on paving, cleaning and sprinkling the streets, transportation of municipal employees and tolls and maintenance of otherwise public bridges, etc. In addition to this the amount of direct taxes have also been plotted, and in each case the percentage of the gross earnings has been shown.

It is evident that in the period up to the beginning of the European War the paving and other indirect taxes were at the maximum, amounting to more than $21,000,000 and 3½ per cent of the gross earnings. There has been a curtailment in such expenditures as a result of the war situation. Taxes, however, have continued to increase, and they range from 6 per cent to about 6½ per cent of the gross earnings.

The total burdens of this character, including taxes, paving and other imposts, amount to approximately 10 per cent of the gross earnings. This represents in average fares paid by passengers an amount equal to one-half of a cent per passenger. In other words, if these taxes and other imposts were rescinded, the fare could be reduced by one-half of a cent.

Fig. 9—This chart illustrates in a very striking fashion the relative earning power of four classes of electric railway property, as indicated by the ratios of the operating expenses to the operating revenues.

The elevated and subway lines have the lowest operating ratio and therefore have the largest proportionate amount of net revenue available for capital charges. It is obvious, however, that this must be the case, since the investment in this class of property is much greater than in surface lines.

The larger companies, as indicated by class "A" with annual receipts of $1,000,000 or more, have the next lowest operating ratio, while class "B" ($250,000-$1,000,000) and

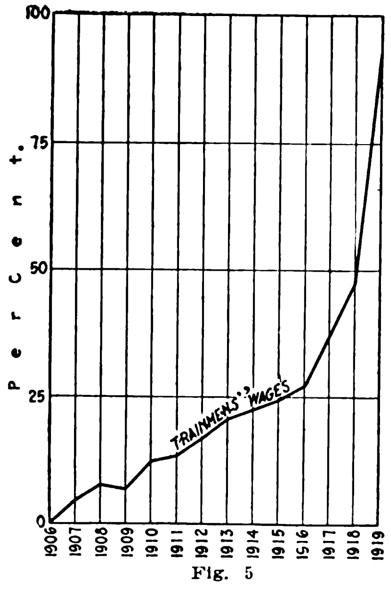


Fig. 5

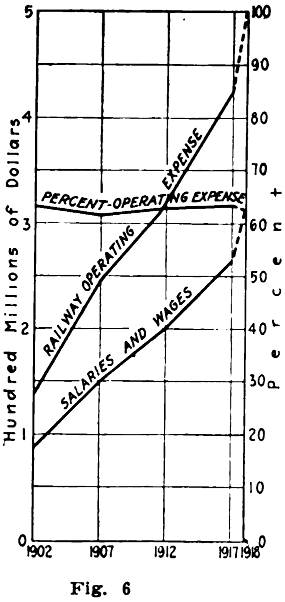


Fig. 6

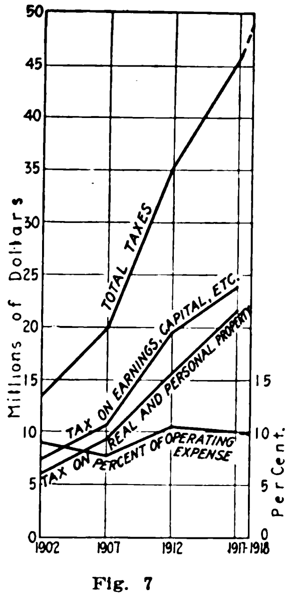


Fig. 7

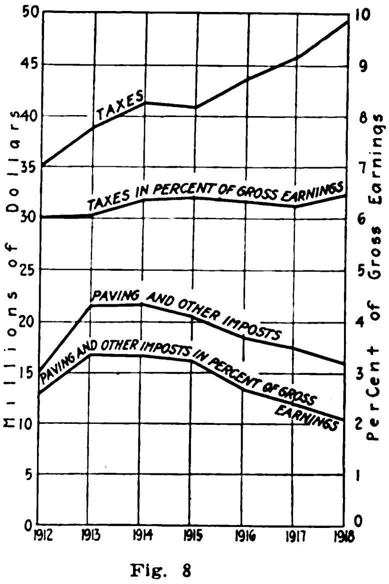


Fig. 8

Fig. 5—Per cent increase over 1906 average scale in trainmen's wages.

Fig. 6—Ratio of salaries and wages to railway operating expenses.

Fig. 7—Total taxes and ratio of these to operating expenses.

Fig. 8—Paving expense and other imposts and taxes.

TYPICAL DIAGRAMS PRESENTED AT WASHINGTON HEARING

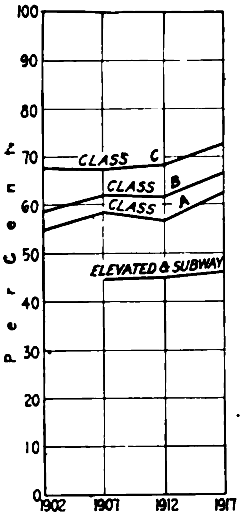


Fig. 9

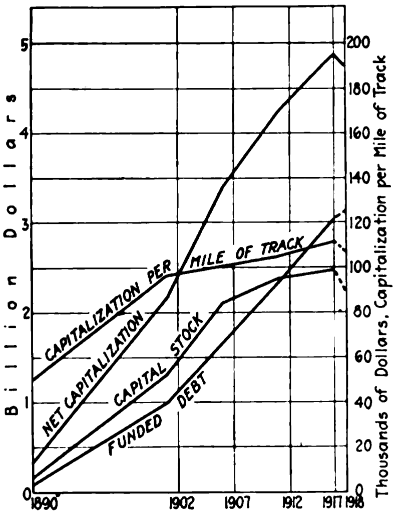


Fig. 10

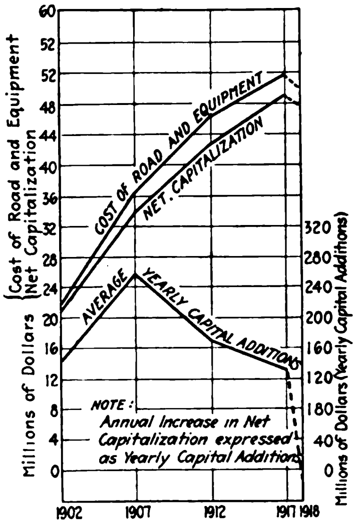


Fig. 11

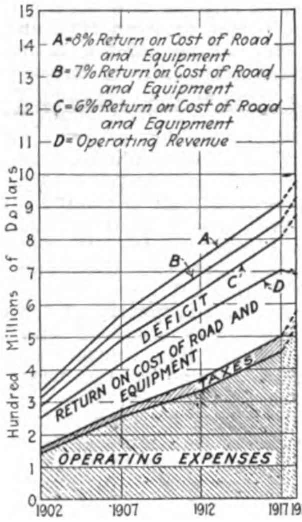


Fig. 12

Fig. 9—Ratio of operating expense to operating revenue for (A) larger companies, (B) medium, (C) smaller companies. Rapid transit lines are also shown.

Fig. 10—Net capitaliation, outstanding capital stock and funded debt.

Fig. 11—Cost of construction, equipment and real estate compared to net capitalization—decline in yearly capital additions.

Fig. 12—Total cost of service compared to operating expenses.

class "C" (under $250,000) follow in order respectively. Investment in class "A" property is undoubtedly greater in proportion than in classes "B" and "C." It is noteworthy that in all cases the operating ratio in 1917 shows an increase over that in 1912.

Fig. 10—The net capitalization, outstanding capital stock and funded debt of operating and lessor companies are shown in this chart. Net capitalization includes the outstanding capital stock and funded debt of electric railways, exclusive of any duplications such as obligations of lessor companies and stocks and bonds of other business. It therefore represents as nearly as possible the true investment in property and plant devoted to electric railways.

The changing relationship between capital stock and funded debt is clearly brought out. Funded debt has been increasing at approximately the same rate since 1902, while capital stock has been increasing at a diminishing rate. While the capital stock exceeded the funded debt until 1912, at this point they were practically equal, and in 1917 funded debt amounted in round numbers to $153,000,000 and capital stock to $123,000,000.

Fig. 11—The cost of road and equipment is the amount shown in the census reports for the total cost of construction, equipment and real estate. A comparison is also made between these values and the net capitalization.

From the increase in net capitalization of each census year over the prior year a figure is obtained from which is determined the average yearly capital additions. This is believed to be a measure of the annual requirements of electric railway companies for new capital. That it is not a true measure, however, is indicated by the decreasing amount of these capital additions from 1907 to 1917, this being due to the impossibility of securing additional funds for electric railway properties.

Fig. 12—The total cost of service is composed of operating and maintenance expenses and taxes plus a suitable return on the fair value of the property.

This results in an amount as shown for each of the census years in excess of the operating revenues, resulting therefore in a net deficit. The rate of return has been assumed as ranging from 6 per cent to 8 per cent, and in each case a deficit is shown, increasing in amount from 1902 to 1917.

This return has been figured on the cost of construction of road and equipment shown in the census reports, as representing as nearly as possible the total investment in electric railway property and plant.

Fig. 13—The traffic of electric railways is measured to a large extent by passengers carried and the car-miles operated. These quantities, plotted on the accompanying

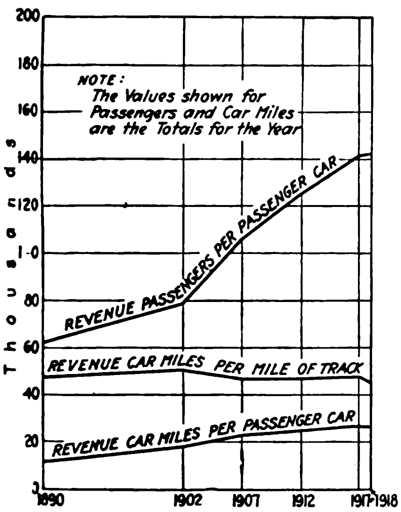


Fig. 13

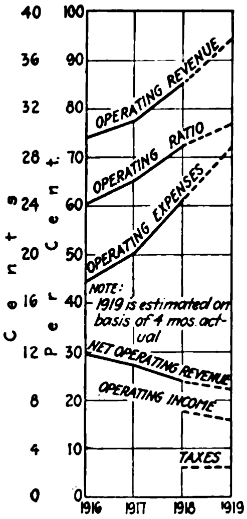


Fig 14.

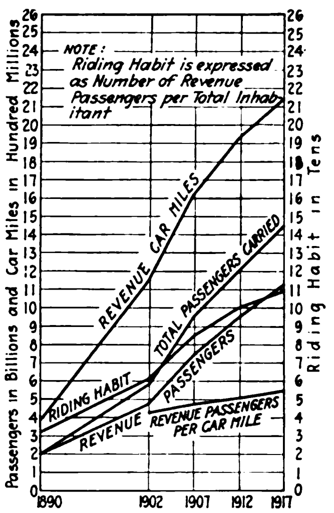


Fig. 15

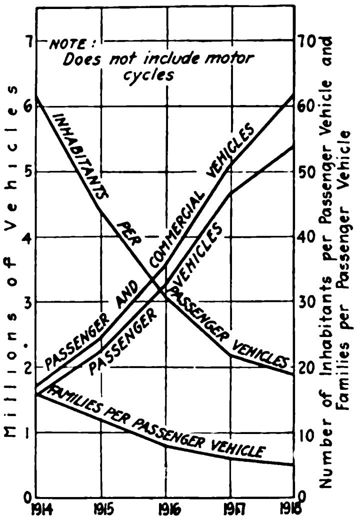


Fig. 16

Fig. 13—Extent to which railways have used their facilities.

Fig. 14—Operating expenses, operating revenue and ratio of the two—net operating revenue and income.

Fig. 15—Curves showing measure of traffic handled.

Fig. 16—Growth of the automobile industry.

TYPICAL DIAGRAMS PRESENTED AT WASHINGTON HEARING chart, also show a falling off in the rate of increase since the period between 1902 and 1907.

The riding habit is a most useful measure of growth in the electric railway business. This is determined by dividing the annual revenue passengers carried by the total population of the country and therefore represents the average number of rides per year for each inhabitant.

The chart indicates an increase in the riding habit in every case, but the rate of increase has been falling off since 1907, as indicated by the decreasing slope of the curve since that date. The increase in riding habit was twenty-four rides per inhabitant between 1902 and 1907; sixteen between 1907 and 1912; and only nine between 1912 and 1917.

A measure partly of the density of traffic and partly of the average length of haul are the revenue passengers per car-mile. This figure shows a gradual increase from one census period to the next, there being but little change from the average value of five revenue passengers per car-mile. This increase indicates either a greater density of traffic or a decrease in the length of average ride per passenger, or both. The car-mile unit, however, has also increased in size during this period so that the actual increase has been greater than shown.

Table II—In order to take account of the growth in electric railway operations, the accounts have been calculated on the car-mile basis. This is the most common measure of the extent of electric railway operations. From this it is seen that the relationship previously established on a gross-amount basis are still maintained.

TABLE II—REVENUES AND EXPENSES OF ELECTRIC RAILWAYS IN CENTS PER CAR MILE

	1902	1907	1912	1917	1918
Railway operating revenue	21.63 a	24.78 a and b	27.89 a and b	30.39 b and e	33.69 f
Railway operating expense	12.25 a and c	15.15 a and d	16.51 a and d	19.69 d and e	24.28 f
Net operating revenue	9.38 a and c	9.63 a, b, d	11.30 a, b, d	10.70 b, d, e	9.39 f
Taxes	1.20 a and b	1.22 a and b	1.82 a and b	2.14 b and e	2.41 f

NOTE—The above figures are based on the following sources:
(a) United States Census 1912, page 186, Table 5.
(b) Advance Report, Table 5.
(c) United States Census 1912, page 311, Table 162.
(d) Advance Report, Table 162.
(e) United States Census, Typed Advance Summary released April 21, 1919.
(f) Estimate of 1918 cnsus for 345 companies.

Fig. 14—This information is based on the monthly reports submitted to the American Electric Railroad Association and covers a sufficiently large group to be typical of the situation generally.

This chart shows the operating revenue, operating expenses, net operating revenue and operating ratio for a number of companies, for the calendar years 1916, 1917 and 1918, and an estimate for 1919 based on the first four months.

The 1919 values are of interest in bearing out the trend of increase for the items operating revenues, operating expenses and operation ratio. The net operating revenue continued to decline in 1919 as during the previous years.

Fig. 15—In order to show the extent to which electric railways have made use of the facilities at their disposal, there have been plotted upon this chart the principal elements of traffic statistics on a unit basis, such as the number of revenue passengers and the number of car-miles.

The unit chosen in the case of the passengers carried is the annual revenue passengers per passenger car. This interesting curve shows a decidedly upward trend, indicating a constantly increasing use of the car equipment. As this is on an annual basis it is, of course, impossible to say how much of this represents increased crowding of cars in the rush hours and how much is due to the improved load factor due to the growth of traffic during the mid-day and after-supper periods.

Of course the increased number of revenue passengers per passenger car is also in part accounted for by the increase in the size of the cars in later years, but on the average there has not been such a proportionate increase in the size of cars as to account for the increase shown by this curve.

Another factor which is undoubtedly represented by this curve is the increased use of passenger car equipment resulting from improved methods of scheduling, such as turn-back service, etc. This permits a greater use to be made of each car in service. This latter point is further illustrated in the curve entitled "revenue car-miles per passenger car." This shows an upward trend and indicates a greater service performed by each passenger car for each succeeding census year.

The revenue car-miles per mile of track are a measure of the average frequency of service and to some extent the density of traffic. With the growth that has been made since 1902, the revenue car-miles have not kept pace with the track extensions. This is partly due to the use of larger cars, which are permitting a reduced mileage for the same service and partly, no doubt, to there being no necessity for the corresponding service in outer districts where these extension have generally occured.

Fig. 16—The startling growth in the use of automobiles is well illustrated on this chart, which shows the situation from 1914 to 1918 inclusive. There is also plotted the number of inhabitants per passenger vehicle and the number of families per passenger vehicle. The tremendous growth of the automobile industry in 1918 is shown by the six millions of vehicles in use, equivalent to one automobile for about every five families or about every twenty individuals. The source of this information is the report of the National Automobile Chamber of Commerce for 1919, and it is based upon the number of licenses issued by the various states.

Competition of Motor Vehicles[*]

By L. S. Storrs
President The Connecticut Company, New Haven, Conn.

The rapid increase in the privately owned automobiles has had a most disastrous effect upon the gross revenues of the various electric railway properties. In the early years of the automobile the high first cost and uncertainty of operation limited their ownership to those fortunate individuals who before that had used horses. Now, however, the low cost of new cars and still lower cost of used cars has placed the automobile within the reach of all but the most unfortunate, and the limitation of their use seems to be solely one of the traffic possibilities in the large cities. It is a common thing nowadays to see lines of automobiles parked outside some industrial plant, all owned by the workers in that industry, each car being used to capacity by the neighbors of its owner working in the same plant. It is customary now to send the chauffeur down town on any errand that heretofore was the occasion for paying the street railway two or more fares. To obtain an even greater distribution of this relatively new type of conveyance the leaders of the automobile industry have adopted a new slogan "The World Owes You a Car," the particular advertising under the caption being intended to create dissatisfaction in the minds of those individuals not fortunate enough to possess already such a means of conveyance.

As showing the rapid increase in private cars it might be said that in Massachusetts there has been an increase in pleasure cars from 3241 to 160,486 in fifteen years. This is exclusive of motor trucks and motor cycles. The effect of this increase is reflected by the railway situation in the state. Statistics for the country, for the last four years of persons per pleasure car show a decrease from 62 in 1914 to 19 in 1918. During last year 5,352,350 pleasure cars were registered in a population of 105,253,300. This means a car for practically every five families. The popularity of this form of transportation within the cities at least is due entirely to the great increase in smooth permanent pavements, a very large proportion of which have been paid for by the electric railways.

Figures are not available giving the exact annual cost to the railways of paving alone, but this item taken together with all other imposts exclusive of taxes amounts to about $16,000,000. In the State of Connecticut the car riders have been called upon to make a contribution of $2,500,000 in the past eight years for permanent pavements to provide comfortable roadways for those more fortunate individuals who can ride in automobiles. It is of record that in Portland, Oregon, the electric railway has had to invest $2,000,000 in permanent pavements. According to the Census enumeration there has been made available for permanent pavements in the cities and improved highways throughout the country a grand total of $255,836,000, all to be furnished by the taxpayers in general for the convenience of those owning automobiles. This amount represents a per capita contribution of slightly less than $2 during 1917.

---

[*] Abstract of statement presented at hearing of Federal Electric Railway Commission, Washington, July 21, 1919.

With the great amount of smooth permanent pavements in the cities and the low price of small automobiles, there has sprung up a measure of competition with the electric railways that in certain parts of the country has had serious effects upon the revenues of the transportation utility. And as a development a large jitney bus has been developed and is gradually replacing the smaller car in a large measure.

In those states where the essential nature of transportation has been fully recognized laws have been enacted placing upon this competitor burdens similar to those imposed upon the railways, in other words, requiring the jitneys to operate over defined routes and upon regular schedules which extend over a great portion of the day, also holding them liable for accidents and requiring a tax somewhat equivalent to that paid by the electric railway. This method of regulation recognizes the requirements of the public for regulated transportation. The following are the apparent reasons for the existance of this form of service:

The weather for the greater portion of the year is such as to render this work more congenial to the average man than any form of industrial occupation and as it requires such a small investment it offers an attractive field for the operator to become his own boss. Failing to appreciate the necessity for adequately providing for depreciation, the operator seems to be earning good money, although the work requires about fourteen hours or more per day instead of eight. The excellence of the city pavements (paid for in a large measure by the transportation utilities) makes easy riding and lower upkeep charge than would otherwise be the case, and without exception jitney routes are confined to the well paved streets.

From the standpoint of the public this service appeals for various reasons (1) The ordinary workman prefers to ride in a jitney because of the sensation of riding in an automobile rather than in a street car. (2) The speed of the service is a distinct attraction. (3) The frequency of the service affords a means of transportation whenever most convenient.

In New Jersey there is no effective regulation, and the growth of this form of competition has been directly apparent upon the attempts of the electric railway to obtain an increase in revenues. With the introduction of the penny charge for a transfer and the 7-cent fare, the business of the jitney took an enormous spurt. In May, 1918, in all the cities covered by the operations of the Public Service Railway, 601 cars were licensed and reporting earnings equivalent to $1,608,167 per annum, while in April 1919, 1040 cars were reported to be in operation reporting earnings for the month at the rate of $3,255,763 per annum, an increase of 73 per cent in the number of cars and 102.4 per cent in actual earnings. The tremendous growth of the jitney under the 7-cent fare is especially significant, but of almost equal importance is the lesson of the extent to which the jitneys increased in importance under the New Jersey Law when both carriers were operating on a 5-cent basis. The five cent fare plus the provision of the State law were not sufficient to curb the jitney.

No serious attempts has been made in Connecticut to regulate the jitney, with the result that the greatest development of this form of competition in the United States is to be found in Bridgeport where the jitneys are operating in parallel service with the electric railways throughout the city. The following tabulation of the relative use of these two forms of service shows the service effect upon the utility revenues:

COMPARISON OF NUMBER OF PASSENGERS CARRIED BY STREET RAILWAYS AND JITNEYS, CLASSIFIED BY LENGTH OF RIDE.

In Both Directions	On the Railway	On the Jitney	Total	Per Cent. Taking Jitney
Riding within 1½ miles radius of center of city........	5,432,947	5,561,451	10,994,398	50.58
Riding more than 1½ miles but less than 2 miles from center of city............	4,805,761	10,620,347	15,426,108	68.85
Riding more than 2 miles but less than 2½ miles from center of city............	3,395,431	2,758,041	6,153,472	44.82
Riding more than 2½ miles but less than 3½ miles from center of city............	239,724		239,724	
Riding more than 3½ miles but less than 4½ miles from center of city............	860,048		860,048	
Total................	14,733,911	18,939,839	33,673,750	56.245

The possibility of originating severe jitney competition with any change in the rate of the fare makes any such attempts of doubtful value, especially as the radius of jitney activity is confined to the most populous portions of the communities where the most profitable (short haul) street railway service is operated. It is useless to assume that this form of conveyance can replace the established transportation utility, for the jitney cannot be forced to operate except under the most favorable conditions and only at such times as there is a profitable load offering. A stormy day will drive most of the cars off the streets and a heavy snow storm will cause a complete cessation of service.

A careful survey has been made in one of the New England cities having a population of 180,000 from which it has been determined that if the motor bus with a seating capacity of 20 passengers were to be the sole medium of the city transportation it would require the entrance to the central business area of relatively few blocks of 6½ cars per minute during the rush hours of the day to provide transportation for intending passengers, a perfectly impossible requirement with any city plan now in existence.

The advent of the motor truck has made great inroads into the revenues of the electric railways. It is a common thing to see large trucks provided with makeshift seats filled with parties of pleasure seekers bound on picnics or other forms of recreation, all business that was formerly done by the street railways.

A by-product of the street railways that has been found to be very profitable has been the transportation of goods, usually in small packages, or by express. The growth of the motor truck service has in some places entirely absorbed the business previously done by the railway and elsewhere has made serious inroads in it.

The Taxation of Electric Railways*

By CHARLES J. BULLOCK
Professor of Economics, Harvard University

IN THIS statement the taxation of electric railways will be considered under the following heads: The existing methods of taxing electric railways; the amount of the taxes and other public contributions paid by electric railways; the principles which ought to govern the taxation of electric railways; and the measures which ought to be adopted to relieve electric railways in the present crisis. Data on the first subject may be found in the U. S. Census Report on the Taxation and Revenue Systems of State and Local Governments, 1914; the Report of the U. S. Commissioner of Corporations on the Taxation of Corporations, 1909-1915; and the Report of the Special Commission on the Taxation of Corporations, of the State of Connecticut, 1913, Appendix. Statistics concerning the amount of taxes paid by electric railways may be found in the various census reports on electric railways.

EXISTING METHODS OF TAXATION

Payments which electric railways are required to make to the various governmental authorities, federal, state, and local, may be conveniently divided into two classes, taxes proper, and other public contributions. The former include property, income, business, license, franchise, and other taxes, which electric railways pay in common with other corporations and, in many cases, with individual taxpayers.

The latter include a great variety of charges such as payment for street paving and other work in or on the streets, free transportation for public employees and other similar services rendered governmental authorities, payments, frequently of a contractual character, for the privilege of using the streets, and miscellaneous minor items. Concerning these payments it is impossible to make any summary statement because they differ so widely in character.

The taxes which electric railways pay may conveniently be summarized as follows:

Property Taxes. In forty-three states and the District of Columbia, electric railways come under the general property tax. In twenty-two of these states (Alabama, Georgia, Idaho, Indiana, Kansas, Maryland, Missouri, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Tennessee, Utah, Virginia, Vermont, Oklahoma, Washington, West Virginia, Wisconsin) either all the property of such railways or all of what is known as their "operating" property is valued by some state official or board. It is possible that Wyoming should be added to this group of states, but I have been unable to determine this point and shall therefore omit Wyoming from consideration in this statement. In a few of these states, such as Wisconsin and Vermont, the taxes levied are imposed by and payable to the state government, but in most cases the valuation fixed by state authorities is certified back to the local taxing districts for taxation at the local rate.

In fifteen states (Arizona., Arkansas, Delaware, Florida, Iowa, Louisiana, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Jersey, South Carolina, South Dakota, Texas) the property of electric railways is locally assessed and taxed exactly like any other property. In five states the assessment of the electric railways is divided between state and local authorities. In Massachusetts some or all of the tangible property is subject to local taxation, while a state tax is imposed upon the franchise. Colorado has state assessment of electric railways operating in more than one county and local assessment of railways operating in only one county. Illinois has state assessment for railways incorporated under the general railroad act, while for other railways it prescribes local assessment of the tangible property and state assessment of the franchises. In Rhode Island and the District of Columbia property taxation is confined, respectively, to tangible property and real estate, while the intangible property is reached by gross receipts taxes and is not subject to taxation as property. In Rhode Island the assessment of the tangible property is made by the local assessors.

Gross Receipts Taxes. In three states (California, Connecticut and Maine) the "operating" property of electric railways is exempt from taxation, and, in lieu thereof taxes are levied by the state governments upon gross receipts. Real estate not used for "operating" purposes is subject to local taxation, like other real estate.

A considerable number of the other states (Alabama, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas, Virginia) levy taxes upon gross receipts of electric railways, usually as additional taxes or in lieu of taxes upon franchises or intangible property. In Massachusetts, however, the gross receipts tax is in lieu of other contributions which the railways were formerly required to make in connection with their right to use the streets.

Taxes on Dividends. At least two states, Massachusetts and New York, provide for taxes on dividends in excess of 8 per cent. It does not appear, however, that occasion has ever arisen for the imposition of such taxes in either state.

Taxes on Capital Stock. In addition to other taxes, at least 14 states (Arkansas, California, Georgia, Idaho, Nevada, North Carolina, Oregon, Pennsylvania, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia) impose taxes on the capital stock of electric railways. Usually these taxes are comparatively light, but in times like the present they are not a negligible factor. In Pennsylvania the capital stock tax is levied at the rate of 5 mills upon the dollar and is (except in Philadelphia and Pittsburgh) in lieu of a tax upon the operating property of electric railways. This tax is supplemented by a tax levied at the rate of 4 mills on the dollar upon corporate loans, which tax is deducted by the corporations from the interest paid to the bondholder, except in cases where companies have assumed liability for the tax.

In addition to these state taxes electric railways have been subject in recent years to a federal tax upon their capital stock.

License Taxes. A considerable number of states impose either state or local, sometimes both, license taxes which take various forms. The aggregate amount of such charges is sometimes considerable and since they are always levied in addition to other taxes they are a factor of no small importance.

Federal Income Tax. Since 1909 electric railways have been subject to a federal tax on their net income, at first an excise imposed on corporations and since

---

*Abstract of statement presented at hearing of Federal Electric Railway Commission, Washington, July 23, 1919.

1913 a part of a general income tax, which is at the present time a substantial burden. This it is entirely in the power of the federal government to remove, if it desires to co-operate with the state and local governments in rehabilitating the electric railway industry.

Federal Excess Profits Tax. The Federal Excess Profits Tax must also be mentioned even though most electric railways have shown so small a return as to exempt them from the payment of any tax under this head.

Taxes and Public Contributions Paid by the Electric Railways

In the year 1917, according to the U. S. Census, the electric railways of the United States paid taxes and other contributions amounting to $63,279,000 which may be classified as follows:

Taxes on real and personal property	$21,804,000
Taxes on earnings and capital and other bases	23,952,000
Total taxes	$45,756,000
Other public contributions	17,522,000
	$63,279,000

The total payments for taxes and other contributions amounted in this year to 8.67 per cent of the gross earnings of the electric railways. This percentage would be moderate in the case of a business where the gross receipts, or annual turnover, amounted to two or three times the capital investment; but it is exceedingly heavy in an industry where there is a capital investment amounting to several dollars for every dollar of annual gross receipts.

Although net operating revenue has actually decreased in recent years, the taxes and other public contributions of the street railways appear, at least down to the year 1918, to have increased. In 1912 the total taxes and other contributions, according to data compiled by the American Electric Railway Association from Census Reports and from replies from 214 companies, amounted to $50,086,000. In 1916 these charges had increased to $62,106,000, while in 1918 they had risen to $65,561,000. The total of these payments for 1912 amounted to 8.55 per cent of the gross earnings of the railways. In 1918, they amounted to 8.57 per cent.

The most striking commentary upon the present situation of the electric railways with reference to taxation, is the fact that in the year 1918, when the revenue remaining after defraying operating expenses decreased from $228,898,999 to $192,615,000, the taxes paid by electric railways actually increased from $45,756,000 to $49,496,000. Even more striking is the comparison of the amount paid in taxation with the net income of electric railway companies after making deduction for all charges. This net income in 1917, was $56,450,000, after the payment of taxes amounting to $45,756,000. In 1918, however, the net income fell to $20,183,000 after paying taxes amounting to $49,496,000. These statistics have been taken from the tables compiled by the American Electric Railway Association for the information of this commission. The figures for 1918 are in part estimated.

The Principles Which Ought to Govern the Taxation of Electric Railways

There are three theories which have been advanced at different times concerning the taxation of street railways and other public service corporations. The first of these is the theory that public service corporations should be subject to taxation much heavier than that imposed upon other classes of business or property because they hold and enjoy special franchises of great value. A generation ago, before our federal and state governments had undertaken to regulate effectively the service and charges of public service corporations, this theory provided a natural and logical remedy for some of the conditions which existed in the days of unregulated monopoly. Taxes upon the property or business of unregulated monopolies tend to fall upon the profits of the monopolists, and by their agency the government secures a share of the profits resulting from the possession of valuable public franchises. But the situation was radically changed when public service corporations were brought under effective regulation. Under the latter condition, regulation of rates and service must proceed upon the theory that the corporations have a right to earn a reasonable return upon their investment. Special taxes upon regulated monopolies increase the expense of providing the service and therefore increase the rates necessary to yield a reasonable return or diminish the resources available for extending and improving the service. Effective regulation of public utilities not only removes the evils which in former times led to the demand for special taxation, but also alters the incidence of such taxation. Since we are now committed to the policy of regulation of public service corporations we should re-adjust our theories of taxation to present-day facts and conditions.

Utility Taxes Should Be Governed by Rule of Equality

The second theory takes effective regulation of public utilities for granted, and holds that such regulation makes it unnecessary to consider whether the taxation of public service corporations is heavier or lighter than that imposed on other business or property. Such corporations, it is said, might even be exempted from all taxation provided that their charges were reduced or their service improved in a measure corresponding to the benefits they derive from such exemption. And, on the other hand, it is argued that taxes upon such corporations may properly be increased to any desired extent provided that rates are increased in a corresponding degree. In the former case the public will secure untaxed service and in the latter the government will employ the corporations as an agency for collecting special taxes. In neither case is the interest of the corporations affected, either favorably or adversely.

This theory upon examination will be found to ignore the effect of taxation upon the real parties at interest, namely, the taxpayers and those who use the services of public service corporations. Between these two classes of people there is no necessary identity of interest.

There remains the third theory, that the taxation of public service corporations should be governed by the general rule of equality, which should be the controlling principle in governmental affairs. By equality is not meant absolute uniformity of treatment irrespective of all differences in the nature or condition of the objects upon which taxation is imposed. Differences in the form and method of taxation are perfectly consistent with the principle of equality provided they are justified by the circumstances of the case and result in a substantial equality of burden. Under normal conditions public service corporations should be taxed neither more nor less than other classes of business concerns. If they are taxed more, consumers are burdened for the benefit of the taxpayers who would otherwise have to contribute the amount of revenue raised by special taxation of public utilities; if they are taxed less, then the consumers receive a subsidy which must be made up by additional charges exacted from taxpayers. This theory has received very general approval in recent years and may safely be accepted as our point of departure in the present case.

But this theory of equal taxation for public service corporations, like any other general theory of taxation, has its necessary qualifications. A great financial emergency would justify a government in employing such corporations as agents for collecting heavy emergency taxes from those who use these services. And, upon the other hand, exceptional circumstances may justify a reduction or total abolition of taxes of particular companies or particular classes of public service corporations. To secure the construction of a new railroad, exemption from taxation for a period of years may be properly offered as an inducement to a company willing to construct a road that is not likely to prove immediately profitable. In general it may be said that whenever special circumstances exist which justify the government's levying special taxes upon consumers or offering a bounty for some necessary public service, it is possible to justify a departure from the general principle of equal taxation.

ELECTRIC RAILWAYS PAY HEAVY SPECIAL CONTRIBUTIONS

The application of this theory of equal taxation to the case of the electric railways gives the following result:

Under ordinary conditions the property and business of such companies should be taxed like other property or business. Nothing but fiscal emergency can justify the imposition of special taxation and nothing but an emergency seriously impairing the earning powers of such railways can justify either a direct or an indirect subsidy. The only practical difficulty in applying the principle arises from the fact that the occupation of the street by railway companies seems to occasion some extra expense for upkeep which the companies should fairly be called upon to meet. This extra expense is difficult, and perhaps impossible, to estimate with even approximate accuracy. It seems to justify in normal times the payment of an extra contribution by such companies, but it has sometimes been made an excuse for imposing special taxes which considerably or even greatly exceed the figure which would be justified.

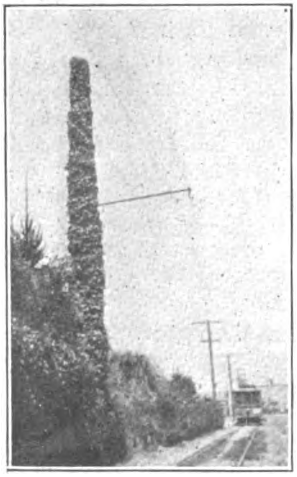
Under the federal income excess profit taxes there has been no discrimination against electric railways, and if times were normal there would be no ground of complaint. The taxes levied by the state and local governments upon the property of such railways are in principle perfectly justified and give no occasion for complaint except in cases where valuations have been placed at a higher proportion of the true value than is generally applied to the property of individual taxpayers. But the numerous additional taxes imposed upon franchises, earnings, and capital stock have frequently resulted in the imposition of a total amount of taxation considerably exceeding that which could be justified under the principle of equality. The same is true of the payments, contractual or other, which have been required as a condition of laying tracks in the streets. In 1917 electric railways of the United States, in addition to all taxes, which were undoubtedly very heavy, paid $17,522,000 in other contributions, a sum which undoubtedly exceeded the amount which they would have had to pay if the theory of equal taxation had been followed.

MEASURES TO BE ADOPTED TO RELIEVE THE ELECTRIC RAILWAYS IN THE PRESENT CRISIS

The financial crisis which at present confronts the electric railways is so evident and so urgent that argument is not needed to demonstrate that, along with other measures of relief, a substantial reduction should be made in the amount of taxes which they are required to pay. How far this reduction should go must depend in considerable degree upon the relief afforded in other directions. The following suggestions are offered for the consideration of the commission:

1. The special contributions now required for the use of the streets ought immediately to be reduced to an amount that will no more than cover the extra cost of maintenance occasioned by the presence of car tracks.
2. The other special taxes levied by state and local governments in excess of those imposed on ordinary business enterprises ought also to be reduced or abolished, as the case may require.
3. Relief from the ordinary taxes imposed upon property can be justified only upon the ground of extreme emergency, and such an emergency can not be held to exist until the companies have been relieved of taxes that violate the principle of equality and have also been permitted to increase their rates of fare as far as may be expedient and practicable.
4. If other measures fail to give adequate relief and it seems necessary to relieve the electric railways from the property tax, the best procedure would probably be to exempt them from taxation on their property for a limited term of years, and then to impose a tax upon their net income.
5. If the federal government is to recommend measures of relief, which the states are expected to adopt, it would obviously be appropriate for it to lead the way by relieving electric railways, at least for a limited term of years, from some of the federal taxation that is now imposed upon them.

Training Ivy to Cover a Pole



IVY COVERED POLE

The poles of a trolley line cannot always be made "things of beauty," but in some residential districts a little co-operation with property owners may assist in interesting them in keeping conditions more attractive. The accompanying illustration, which was taken on the lines of the Santa Cruz Electric Railway at Santa Cruz, Cal., shows how easily ivy takes to poles in that city.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Chicago Situation Clearing

Wage Compromise Now Seems Likely With Surface and Elevated Men —Increased Fares an Issue

With practically unanimous indorsement of a strike to enforce the demands of trainmen of the surface and elevated roads, Chicago spent an anxious week while awaiting developments. It was practically certain, however, at the time of going to press that there would be a compromise in the wage settlement and that an increase in rates of fare would be forthcoming from the Public Utilities Commission of Illinois.

85-CENT RATE DEMANDED

The men had asked for an 85-cent maximum wage on the surface lines and 87 cents on the elevated. The companies had replied that no increase over the War Labor Board scale would be possible without more revenues. On July 18 the members of both unions voted on the strike proposition and there were few dissenters, the time for going out being left, however, for future consideration.

The following day Mayor Thompson appointed a mediation committee composed of himself, four aldermen, and one representative from each of the companies and each of the unions. The employees did not seem impressed with the aldermanic selections, although three out of the four were former union men.

On the same day Governor Lowden directed the Public Utilities Commission to investigate all phases of the controversy and report personally to him how the State could best act to prevent a transportation tie-up. The Governor asserted that such a suspension would constitute a menace to Chicago and to the entire State. This action by the Governor tended to restore confidence at once.

INSIST UPON EIGHT-HOUR DAY

Union representatives had a long session with the utility commissioners on July 21, but the result of the conference was kept secret. After the adjournment of that meeting the union officials joined Presidents Busby and Budd at an open hearing with the Mayor's committee. The Mayor stated that the purpose of the conference was to prevent a strike and he wanted to impress on employers and employees that a settlement must be reached eventually and he hoped it could be arrived at without inconveniencing the public. At his mention of arbitration, the union representatives said there were two questions which could not be arbitrated. They would insist first on a concession of an eight-hour day and time and a half for overtime.

President Busby stated that inasmuch as the men had not yet called on him he did not think they should take too positive a stand without further discussion. The outcome of this session was to arrange for further negotiations with the companies. The following day the company officials had a private conference with the utility commissioners. It was expected that before the end of the week the commissioners would have complete information from both sides for their report to the Governor, with the possibility of an open hearing then being called to fix rates of fare. Earlier in the week the elevated roads had filed a new petition with the commission, asking for a reopening of the rate cases.

Employees of the Aurora, Elgin & Chicago and the Chicago & West Towns Railway companies are insisting on a wage scale similar to that which may be fixed for Chicago. The latter company has filed a petition with the State authorities asking for a 2-cent increase over the rate schedule allowed last November.

The Chicago City Council refused to heed the proposal of an alderman that the 55 per cent allowance to the city from the railways under the 1907 settlement be used for wage increases.

Increase in Wages in Indianapolis

A general wage increase of 3 cents an hour has been granted the motormen and conductors of the Indianapolis (Ind.) Street Railway, effective on July 15. The new schedule ranges from 37 to 42 cents an hour and replaces the schedule of 34 to 39 cents an hour which was established last fall. This wage increase was voluntary on the part of the company. A statement was issued by the board of directors of the company explaining that it was decided that an advance in wages should be made to the men on account of the continued high cost of living.

It is estimated that the increase in wages will amount to $125,000 annually. The statement of the directors intimates that it will be necessary for the company to appeal to the public authorities for an increase in fare beyond the 5-cent flat rate granted by the Public Service Commission last fall, in order to meet the added burden of increased operating expenses and wage increases just granted. It is reported that the company may petition the Public Service Commission for a 1-cent charge for transfers.

Subway Proposal to Voters

Proposal for $15,000,000 of Bonds in Cleveland May Be Submitted to Referendum This Fall

The Street Railway Commissioners of Cleveland, Ohio, will decide within a short time whether it is best to submit a bond issue of $15,000,000 to the voters this fall and secure funds sufficient for the construction of the subway units recommended by the engineers, Barclay Parsons & Klapp, or for a smaller sum that will cover the cost of the two units that are most urgently needed at the present time.

In order to eliminate the well to the short underground entrance to the Superior-Detroit bridge, the commission will probably recommend that the subway to the west side of the city be the first one undertaken; or this and the Ontario Street section or unit might be built at the same time, as the Ontario Street unit will in all probability hold second place. Euclid Avenue will come third and Superior Avenue fourth.

Should the commission be able to make an arrangement with the Union Terminals Company to handle the Ontario Street cars and bring them directly into the proposed new union station, about $1,000,000 in the cost of construction of this section would be saved. It is possible that the plans for the Ontario Street unit will depend somewhat upon the date of beginning construction of the new station.

It is believed that the authorization of only a portion of the proposed $15,000,000 bond issue at a time, as needed, might handicap the commission in case it should be found necessary to change the plans and develop some other portions with those first contemplated. If the entire issue is authorized at one time, it would then be possible to follow any course that seemed best in carrying out the construction work.

Toronto Offers to Sell

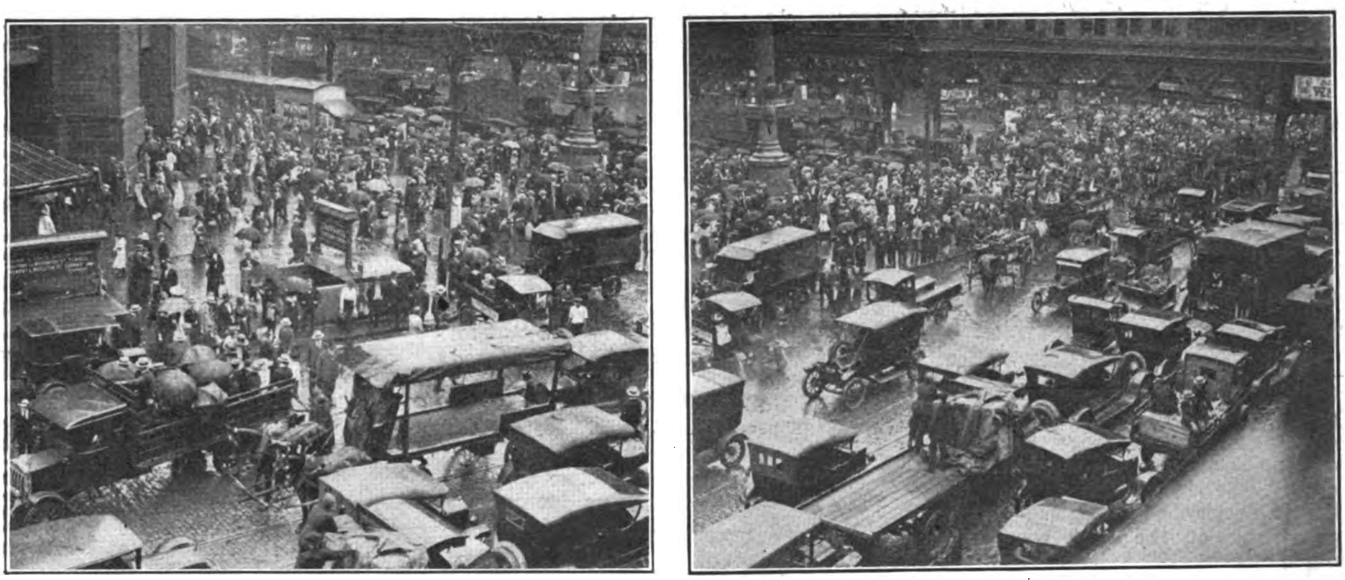
R. J. Fleming, manager of the Toronto (Ont.) Railway, in a letter to the Mayor offering to sell out to the city, says: "I have been asked if the company would be willing to sell to the city the property now upon the terms and conditions provided for sale in September, 1921. In my opinion the directors would entertain such a proposition favorably, provided the city would agree to take until September, 1921, the power required in operating the property, upon the conditions named in the contract made in 1903 between the Toronto & Niagara Power Company and the officials of the Toronto Railway."

Boston Elevated Strike Ends

Eight-Hour Day and Wage Increase Estimated at $1,500,000 a Year for Carmen Alone

Car service was resumed on all lines of the Boston (Mass.) Elevated Railway at 4 a.m. on July 21, following a total shut-down of ninety-six hours resulting from the strike of union employees declared on July 17. The men returned to work upon being awarded increases in pay, estimated at a total of $1,500,000 a year for blue uniform men, and the eight-hour day.

Henry B. Endicott, Boston, served as chairman of the arbitration board. H. Ware Barnum, counsel, represented the company, and J. H. Vahey was the union member of the board. It is estimated that the direct loss in revenue to the company caused by the strike is about $200,000, and that the loss in wages suffered by the employees is $160,000.



TYPICAL SCENES AT DUVEY SQUARE, BOSTON, DURING STRIKE OF ELEVATED EMPLOYEES

The maximum pay under the award is 62 cents an hour. The former maximum was 48 cents. The award is retroactive to May 1, 1919. The men demanded 73½ cents. It is declared that the new wage scale and eight-hour day represent the most advanced combination of compensation and working conditions thus far achieved by the employees of any electric railway in the country, from the standpoint of the men.

Public sentiment was strongly against the men because of the violation of their agreement to await the finding of the War Labor Board and their unwillingness to await a retroactive award promised not later than Aug. 2 by Chairman Taft.

The new wage scale for all the motormen and conductors of the Boston Elevated Railway is shown by the following list:

Period	Wage
Surface Line Employees:	
First three months of service	.50
Next nine months of service	.55
Thereafter	.60
Rapid Transit Lines, Motormen:	
First three months	.52
Next nine months	.57
Thereafter	.62
Rapid Transit Lines, Guards:	
First three months	.50
Next nine months	.51
Thereafter	.55.5
Rapid Transit Lines, Brakemen:	
First three months	.47
Next nine months	.50
Thereafter	.53.5

The former scale for surface line motormen and conductors was 43, 46 and 48 cents an hour; for rapid transit motormen, 45, 48 and 50 cents.

The representatives of the union and of the company agreed upon Mr. Endicott as the third member of the arbitration board on the evening of July 20, and sessions were opened at the State House on the morning of July 21. The board adjourned after about an hour to the Hotel Touraine, and Mr. Endicott announced the award to a mass meeting of employees on Boston Common late in the afternoon of that day.

In presenting the finding he stated that as soon as possible hearings will be held to determine the wages in detail of miscellaneous union employees of the company. Continuing, he expressed the following views regarding the strike for higher wages and the justice of a 10-cent fare:

> I realize that through no fault of the trustees the elevated railroad is not in a position to take on extra burdens, but they cannot expect, owing to the high cost of living, to avoid paying their help good, fair wages. Now, while I greatly regret the hasty and unjustifiable action that led to this strike, I cannot but feel that there is a lesson here which will prevent a similar occurrence. You have lost by following ill-judged advice four days' pay, as I feel sure that the award we make would have been made by any fair-minded board. . . .
>
> **Criticism of the 10-Cent Fare Unjust**
>
> The criticism of the trustees of the Bos-Elevated Railway about the 10-cent fare, in our opinion, is entirely unwarranted and unjustified, and we do not believe that the riding public has any right, with private ownership and with the increased cost of everything in the way of material and the necessary advance in wages by reason of the increased cost of living, to expect to be transported for less than the present amount of fare. It was the plain duty of the trustees under the law to advance the fare to 10 cents. They could have done nothing else, and no one has any right to criticise them for doing so.

Local transportation in the Boston district was handled during the strike by a greatly increased steam railroad service on all lines radiating from the city, by private automobiles, jitneys and horse-drawn vehicles. Although prices were considerably in excess of the Boston Elevated fare for most of the automobile service, comparatively little complaint was heard as to profiteering.

For example, a standard automobile fare of 15 cents was charged between the South Station and Harvard Square, Cambridge, the running time being about fifteen minutes as compared with ten minutes and 10-cent fare on the electric railway system. The congestion on the streets and at the steam railroad terminals, however, was extremely severe during the rush hours.

EIGHT-HOUR DAY MODIFIES SCHEDULED RUNS

The award provides that in order to construct schedules with an eight-hour platform day and to meet the requirements of the traffic without largely increasing the force and creating more irregular work in the form of details for the men, a variation in the ratio of runs to be completed within a spread of certain hours is required.

It has been ascertained that when a variation is made which permits three-fifths of scheduled runs within eleven outside hours and two-fifths between eleven and fourteen outside hours, a schedule can be constructed with an eight-hour platform day which: (1) Increases the total schedule runs; (2) increases the number of runs under eleven hours; (3) provides many runs under ten hours; and (4) decreases the irregular work to be done by the employees on details.

Terms of Toronto Strike Settlement

Review of Twelve-Day Strike During Which Provincial Railway Board Took Over the Property

The strike of the employees of the Toronto (Ont.) Railway has been settled and service has been resumed. The strike was unique in that it was the first time in history that the Ontario Railway Board took control of an electric railway on account of default being made by a company in operation.

HISTORY OF CONTROVERSY

Early in June the employees of the Toronto Railway requested an increase in wages from 37 cents to 55 cents an hour. The company replied that it was quite impossible to pay such a large increase and operate the railway, and applied at once for a Board of Conciliation under the terms of the federal act covering industrial disputes. The Minister of Labor for the Dominion agreed to the application of the company, which meantime appointed as its representative F. H. Phippen, K.C., while W. J. Hevey of the Trades & Labor Council was appointed as the representative of the men. Judge Barron was chosen as the third member and chairman.

The railway employees, however, refused to wait until the board had reached a decision and on June 21 voted almost unanimously to go on strike at once. Cars were stopped on the next day (Sunday) at 5.30 a.m. A jitney service was started by automobiles on Sunday, which was greatly augmented by Monday.

On Monday, June 23, the Board of Control for the city of Toronto applied to the Ontario Railway Board for an order directing the Toronto Railway to give a service to the citizens. The order was issued at noon directing the company to proceed forthwith to furnish a service. The police were instructed to protect, but the company did not attempt to operate the cars. Meantime the Conciliation Board began its sittings.

On Thursday, June 26, the Ontario Railway Board took control of the company's plant and equipment on the ground that the company had failed to give a service on the three previous days. The board appointed R. C. Harris, works commissioner for the city corporation and manager of the Toronto Civic Railway, as manager of the Toronto Railway under the direction of the Ontario Railway Board.

MANAGER OFFERS COMPROMISE

Manager Harris called a meeting of the employees on Friday and offered them a wage increase to 48 cents, which was refused. On the following day the Mayor asked the Board of Conciliation to make an interim report to the Minister of Labor. The strike meantime continued with about 6,000 motor cars used as jitneys together with about 100,000 private motor cars, trucks, etc.

On Monday, June 30, the Board of Conciliation adjourned the hearing in order to make an interim report covering the question of wages, and suggested 50 to 55 cents with an eight-hour day, but with an increase in fares to the citizens to a straight 5 cents. The suggestion of a 5-cent fare met with strong opposition from the citizens of Toronto.

On July 3 the railway employees accepted the report of the Board of Conciliation, but insisted upon guarantees that the increased wages would be paid.

The report of the Board of Conciliation as accepted by the men follows:

(1) The board is unable to agree as to wages under present conditions; (2) the company states that the present operating revenue is not sufficient to enable it to keep up its property, give an effective service, and pay an increase of wages to the men.

Recommendations: That there be an investigation of the company's books by Mr. Bradshaw or Mr. Clarkson, or some other selected accountant, for the purpose of ascertaining the correctness of the company's claims. If it be found that the company's operating revenue is insufficient to meet the situation, that the fare be raised to a straight 5-cent fare, except for children's tickets, which shall remain as at present, the whole of the increase to be available to pay the increase in the men's wages, and not to be subject to any percentage payment to the city, which payment is to be based on the present average fare. In the event of this being done, we jointly recommend:

That the men's wages be increased to 50 cents an hour for the first three months; to 52½ cents an hour for the succeeding nine months, and to 55 cents an hour thereafter.

An eight-hour day, straight time, to the fullest extent practicable, with a leeway of one-half hour to complete the schedule, for 66 2-3 per cent of the crews, the remainder to work ends and spares.

Time and a half for overtime, which is to commence after eight and a half hours work.

All Sunday work to be paid for at the rate of time and a quarter.

New Year's Day, Good Friday, May 24, Dominion Day, Civic Holiday, Thanksgiving Day, Labor Day and Christmas Day to be paid for at the rate of time and a half for all work.

Motor and track repair men to be paid the same rate as the trainmen.

Shed men and men who work in the compressing and fender rooms to be paid an increase of 16 cents per hour over the present rate, and extra time as above.

It is estimated that the twelve-day strike cost the Toronto Railway in loss of fares the sum of $240,000, while the employees lost in wages $72,000; the city corporation lost in its percentage of receipts from the company about $48,000, while it is estimated the citizens paid in extra fares to jitneys about $192,000, making a gross revenue to jitney owners of about $432,000.

Several days after the settlement the Ontario Railway Board, at the request of the Toronto Railway, relinquished control of the road, and the company resumed ownership and direction of the operation of the cars.

Rhode Island Service Suspended

All Lines in State Tied Up by Strike of Rhode Island Company Trainmen

The employees of the Rhode Island Company, Providence, R. I., went on strike at midnight on July 18 to enforce their demands for increased wages and better working conditions, after several attempts at a compromise had proved unsuccessful. Efforts made since the strike was declared to effect an agreement have likewise been fruitless.

10.5 PER CENT INCREASE OFFERED

According to a statement issued by the receivers of the company at the conferences with the union officers on July 18, prior to the strike, an offer was made by them granting a wage of 53 cents an hour, representing an increase of 10½ per cent, the new wage to take effect on July 21, the men to continue working under the 1917 agreement. This offer was refused by the union men, a counter proposal being made for a wage of 55 cents an hour, retroactive to June 1, the date of expiration of the 1917 agreement, conditioned absolutely on a new agreement. This proposal the receivers rejected and the strike went into effect at midnight. The receivers have made no effort to provide service.

Despite the fact that the first day of the strike witnessed a heavy downpour of rain which continued until noon, the manufacturers reported that their full complement of employees was at work. Many of the plants had arranged to transport their employees by truck while the advent of scores of "jitneys" made it possible for workers to reach their place of employment without being forced to walk. The Police Commission of Providence announced that during the emergency the regulations requiring operators of "jitneys" to take out licenses before commencing business would be suspended. The result was an outpouring of cars of every description which served most effectually to provide transportation from every section of Providence.

MEN MAKE COUNTER PROPOSAL

On July 21, the third day of the strike, the receivers sent a proposal to the union officers offering to pay the maximum wage of 55 cents an hour with a continuation of the 1917 agreement, but the settlement of the Boston car strike with the award of 62½ cents an hour interjected a new issue into the conflict, and the union men at a mass meeting rejected the receivers' offer and countered with a demand, based on the Boston award, of 60 cents an hour, retroactive to June 1 and for an eight-hour day.

The receivers in turn rejected this proposal and also refused to submit the matter to arbitration, declaring that as they were instructed by the Superior Court to fix proper wages, they felt they had no authority to delegate this power to others. The receivers declared that no schedule of fares could be put into operation which would yield the necessary revenue even with all State and municipal taxes removed.

Wage Case Reopened

On the ground that changed conditions make higher compensation necessary the conductors and motormen and other union employees of the Bay State Street Railway, Boston, Mass., will have their wage case reopened by the National War Labor Board. It was announced that examiner Charlton Ogburn, representing the board, would hold a hearing in Boston on July 26, to listen to testimony and take whatever other evidence was offered and then report to the War Labor Board.

On Dec. 3, 1918, by a retroactive decree of the War Labor Board, the maximum wage of conductors and motormen was increased as of Oct. 22, 1918, from 40 cents to 45 cents an hour, and a proportionate increase was also granted to miscellaneous union employees, whose minimum wage was established at 42½ cents an hour.

The public trustees of the company and the employees have agreed to abide by the decision of the board.

James L. Doherty, Springfield, Mass., has been agreed upon by Samuel H. Pillsbury, representing the company, and James H. Vahey, counsel for the carmen's union, as the third arbitrator in the dispute between the Eastern Massachusetts Street Railway, the successor to the Bay State Street Railway, and its employees relative to the dispute over the collection of fares on open cars.

It is anticipated that the arbitration proceedings in regard to this matter will begin immediately.

Wages Raised by Indiana Interurban

A uniform increase of 4 cents an hour in the wages of motormen and conductors of all the interurban electric railways entering Indianapolis has been made. The increase became effective on July 16 and was ordered by the companies because of the high cost of living. The increase was made without requests from the men or conferences with them.

The interurban railways entering Indianapolis are the Terre Haute, Indianapolis & Eastern Traction Company, the Union Traction Company of Indiana, the Indianapolis & Cincinnati Traction Company, and the Interstate Public Service Company. The old and new scales of wages for motormen and conductors, in cents per hour, are as follows:

	Old rate	New rate
First year	35	39
Second year	36	40
Third year	37	41
Fourth year	38	42
Fifth year	39	43
After fifth year	..	44

The Union Traction Company of Indiana, which owns the Broad Ripple line, has granted an increase to motormen and conductors on that line, the new rate being 35 cents an hour for the first year, 36 for the second, 37 for the third, 38 for the fourth, 39 for the fifth and 40 after the fifth year of service.

Other electric railways of the State also have increased wages. The Evansville & Newburg Railway announced an increase for motormen and conductors during the week ended July 26. The Fort Wayne & Northern Indiana Traction Company made an increase of 3 cents an hour on its city lines and 4 cents an hour on its interurban lines.

These companies and the interurban companies entering Indianapolis also have granted increases to some employees who are not motormen or conductors. These increases are not uniform.

Toledo's Day of Reckoning Near

The plan to substitute buses for the service furnished by the Toledo Railways & Light Company, Toledo, Ohio, on the retirement of that company from the streets on July 30 has fallen through. William Cowell, who stood as sponsor for this service, said the backers had abandoned the project because of the inability of Council to grant a franchise without first submitting it to a referendum. They wanted immediate protection of their investment. Mr. Cowell stated, however, that should the railway suspend operations on July 30, the individuals who had proposed to back the buses would be able to put from fifty to 100 buses into operation without any agreement.

Many citizens believe that some agreement will yet be reached between the city and the railway that will make unnecessary the suspension of operation. It was pointed out, though, if the company does actually stop operation in accordance with the ouster resolution adopted by Council, it may be some time before the cars can be put into operation again. Much time, it is said, will be consumed in preparing and adopting a franchise and submitting it to a referendum vote.

On July 17 members of the Council stated that the ouster resolution will not be recalled.

Extra Session on Traction Matters

Relief for the acute financial situation of Massachusetts electric railways was urged by Governor Coolidge in a special message to the Legislature on July 23. The Governor recommends the appointment of a commission of seven members to report to a special session of the Legislature planned for November.

The time has arrived, the Governor believes, for active measures of relief to be taken to sustain the service required by the public and to revive the credit of the electric roads by measures which will place them again upon a sound financial footing.

It is expected that all pending electric railway legislation will be referred to the special commission. Debate on electric railway measures under consideration ceased in the Senate on July 23.

Wheeling Wages Announced

All differences between the electric railways of Wheeling, W. Va., and the local amalgamated union were settled on July 1 when the three members of the arbitration board affixed their signatures to the wage scales. Thus has been brought to a close the disagreement which prompted the strike in the Wheeling district for one day on April 1. The agreement signed dates back to May 1 last. It affects directly several hundred men, employed by the Wheeling Traction Company, the West Virginia Traction & Electric Company and the City Railway, and all men and women employed in the various carhouses and in other similar capacities.

The wage scale agreement is for the period from May 1, 1919, to April 30, 1920. Under it the employees receive an increase which averages 18½ per cent, with better working conditions and more convenient working hours.

The differences between the companies and the men arose early last spring before the wage contract then in effect had expired.

Following a number of conferences held between the representatives of both factions no agreement could be reached and the strike was declared on the morning of April 1. That night a public meeting was held under the auspices of the Chamber of Commerce of Wheeling to attempt to adjust the differences. An agreement was reached after several hours debating, by the differences being submitted to a board of arbitrators. The companies named W. R. Powers, Huntington, manager of the Ohio Valley Electric and the Consolidated Light, Heat & Power Company, as their representative. The union selected William Roy, Bellaire, an official of the Ohio Miners' Union. Some weeks were spent before an agreement was reached under which T. Harvey Pollock, of the insurance firm of Pollock & Campbell, was named as the third member.

Considers Municipal Ownership

The City Commissioners of St. Petersburg, Fla., have sent Director of Finance Guy Shepard and City Attorney Bayard Cook to Philadelphia to confer with the owners of the St. Petersburg & Gulf Railway, to obtain from them an option on the system. In case the price is considered satisfactory the question of the city buying the lines would be presented at an election on an issue of bonds to pay for the property. The city officials are also instructed to obtain information regarding the status of the company. This information is desired before the commission acts on the ordinance, offered by the company's attorney, advancing fares to 8 cents instead of the present 5 cents. Judge Pierce, attorney for the owners, on June 29 wired to the Philadelphia men owning the company asking for definite instructions regarding operation of cars in case the city declined to grant an increase in fares. Previous instructions were to stop cars.

News Notes

Wages Adjusted in Reno.—Differences between the management and the employees of the Reno (Nev.) Traction Company over the matter of wages have been adjusted. The men formerly were paid 27 cents to start and 35 cents after two years. The new scale is 40 cents an hour for the first three months, 43 cents for the next three months, 45 cents for the next six months and 50 cents after that.

Change of Venue in Ouster Suit.—The suit to oust the Wheeling (W. Va.) Traction Company from the streets of Bridgeport, filed in Belmont County courts by Herman Schaefer, city solicitor of Bridgeport, has been transferred to the Federal Court at Columbus on request of the railway. The petition alleges the railway is maintaining tracks and wires and operating cars on Bridgeport streets without a franchise or permission by ordinance from the Council of Bridgeport.

Address Draws Editorial Comment.—Charles S. Banghart, general manager of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., recently delivered an address before the local Rotary Club on the public utility situation, which drew editorial comment from the Augusta *Herald*. Mr. Banghart declared that if a municipality desired better transit facilities, it should co-operate with rather than oppose the efforts of the public service corporation. The *Herald* advised its readers to give careful consideration to Mr. Banghart's analysis of conditions.

Municipal Ownership Bill Vetoed.—Governor Sproul of Pennsylvania has vetoed the Stadtlander bill, passed by the last Legislature, which would have granted municipalities the right to own and operate street railway systems beyond their municipal limits. In his message accompanying the veto Governor Sproul observed that the bill was bad in principle. The right to own and operate a railway outside its own boundaries would enable a municipality to exert powers within the boundaries of another municipality, clearly an injustice, and a condition that would lead to undesirable results, he pointed out.

Terms of Award in Doubt.—Employees of the Scranton (Pa.) Railway have threatened to walk out unless Charlton Ogburn, representative of the War Labor Board, personally returns to Scranton to interpret the terms of an award made by him some time ago granting the carhouse men and trackmen increased pay for overtime. The men allege that for a short time they were paid according to what they thought were the terms of the award, but that the company after a few weeks returned to the former rate. Mr. Ogburn has refused their request that he revisit Scranton.

Wage Agreement Reported Reached.—Nearly 500 employees of the Monongahela Valley Traction Company in the Clarksburg and Fairmont districts in West Virginia are to receive an increase in wages. Several meetings have been held by officials of the company and the union, and a report of the action taken and the proposition as a whole is now in the hands of the directors of railway. It is expected that an announcement will be made at a meeting to be held in Fairmont in the near future. Thirty-eight to forty-five cents an hour is the scale of wages now being paid employees. The unions are seeking an advance to 45 and 56 cents an hour.

Wider Powers for Alabama Commission.—Abolition of the present Public Service Commission of Alabama and substitution in its stead of a body to be called the Alabama Railroad & Public Utilities Commission having increased power, are proposed in a bill recently introduced in the State Legislature. The new commission would have jurisdiction over all public utility corporations operating in the State with respect to rates, facilities, practice rules and service, franchises, licenses and contracts, financing and issuance of securities; construction of new common carriers and agencies to operate public utilities. All power or authority of the city councils or other municipal governing bodies would be taken away and vested in the newly formed State commission.

Increase for San Francisco Men.—Platform men employed by the United Railroads, San Francisco, Cal., received a further increase of 4 cents an hour on July 13, the fourth voluntary raise granted since the strike of August, 1917. Under the latest wage scale, beginners will receive 46 cents an hour, advancing to 48 cents an hour after six months service, then to 50 cents an hour after employment of a year, and a further increase at the end of the second year to 52 cents an hour, the maximum pay for platform men. The former scale ranging from 42 to 48 cents an hour was granted last April. In July, 1918, the wage was fixed at a minimum of 37 cents an hour, increasing to 45 cents an hour, the maximum wage. More than 2,300 employed by the company are affected by the new conditions.

Youngstown Grant Described.—Lee, Higginson & Company, Boston, Mass., who participated in financing the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, have issued a statement descriptive of the new ordinance under which that company is now operating in Youngstown. This grant has been described previously in detail in the ELECTRIC RAILWAY JOURNAL. In connection with their statement, Lee, Higginson & Company quote an officer of the company as announcing that the company has just obtained twenty-five-year renewals of its railway franchises in the cities of East Youngstown and Struthers, Ohio, permitting the company automatically to raise or lower its fare from time to time to the same fare which is in force in the city of Youngstown at the time of change.

Franchise Renewal Discussed.—Recommendation that the agitation over the 5-cent fare issue be eliminated from negotiations for the renewal of the franchise of the East St. Louis & Suburban Railway, East St. Louis, Ill., was made in a report submitted to the Commercial Club of East St. Louis by its legislative committee recently. The question of increased fares between the Public Square, East St. Louis, and Edgemont, Ill., arose when the company applied for a renewal of its franchise. The legislative committee recommended that the railway be called upon to extend its services to Scott Field, Ill., and to other outlying points. The committee also recommended that the railway be required to pay into the city treasury of East St. Louis a stipulated per cent of the net receipts of the road.

Fares and Wages Coupled.—J. B. Wiley, business agent of the union of railway employees at Des Moines, Ia., has announced that the union men will recommend an increase in fares and will make an active campaign before the people for this increase if the demands made by the men are agreed to by the board of arbitration which will hear the case. Mr. Wiley is the arbiter chosen by the men. The Des Moines City Railway has named F. W. Sargent, a Des Moines attorney. The third man is to be named by the other two. The wage increase asked by the men is to 55. 60 and 65 cents an hour. Mr. Wiley figures that a 6-cent fare would increase the company's income $340,000 a year and that the wage demands would require $277,000 annually. As the increase will be retroactive to March 1, if allowed, this would mean an additional $135,000 to be expended by the company.

Demands Made by Omaha Men.—Officials of the union of employees of the Omaha & Council Bluffs Street Railway, Omaha, Neb., on July 21 presented to R. A. Leussler, assistant general manager of the railway, written demands, the most important of which was for a wage increase. In view of the absence of Frank T. Hamilton, president of the company, it was agreed to hold the matter open until his return to Omaha. Neither side announced the amount of the wage increase, but unofficially it was given out that the carmen want an increase from a scale of 41-45 cents an hour to one of 65-75 cents. Indications are that the railway officials will look to the city and the State Railway Commission for relief, as they contend that the prevailing 5-cent rate of fare barely covers operating expenses as they exist at present.

Financial and Corporate

$2,300,000 of Receiver's Certificates

Court Orders Liquidation of Indebtedness of United Railways, St. Louis, to War Finance Corporation

Special Master Henry Lamm in the receivership suit of the United Railways, St. Louis, Mo., entered an order in the Federal Court on July 18 recommending that the United States District Court empower Receiver Rolla Wells to issue receiver's certificates for $2,300,000 to liquidate the company's indebtedness to the War Finance Corporation, which holds the 6 per cent bonds of the Union Depot Railway, St. Louis, as collateral.

BONDHOLDERS CONFER

The step was taken by Judge Lamm after a conference with attorneys representing the various interests. Two factions of bondholders, representing between them more than the necessary 5 per cent of outstanding obligations, had indicated their intention of starting foreclosure proceedings against the United Railways, following failure of the company to pay interest. The two factions announced Oct. 6 as the date of foreclosure proceedings.

The receiver's certificates contemplated by Judge Lamm would be a first lien on the property of the Union Depot Lines and a lien on all property of the United Railways ahead of the St. Louis Transit 5 per cent bonds and the general 4's but junior to various divisional bonds.

It developed at the hearing held before Judge Lamm entered his order that the company owes the War Finance Corporation approximately $2,400,000. It is the receiver's intention to add to the certificates a sufficient sum from the reserve fund of the company to make up the amount.

MR. WARNER EXPLAINS VALUATION

In court Robert L. Warner, vice-president of the United Railways, testified as to the value of the Union Depot lines property, which is collateral for the War Finance Corporation loan. He said that the property had been appraised as low as $4,000,000 and as high as $8,000,000. He declared the property was ample security for the loan. Mr. Warner said he feared August would be a bad month in which to try to float the receiver's certificates proposed. He thought it would take at least two months to sell the certificates.

In answer to a question from Judge Lamm as to the chances of selling the certificates, Mr. Warner asserted that they would have to be sold at a high rate. He thought a rate as low as 4 per cent could be obtained if the issue was started with St. Louis bankers.

Interesting testimony as to the receipts and expenditures of the company was given by officials. C. E. Smith, chief engineer, said the reconstruction and rehabilitation of tracks would require about $750,000. Col. Albert T. Perkins, newly appointed general manager, and James Adkins, treasurer, were examined as to earnings. Mr. Adkins said the gross operating income from April 12 of this year, when the receiver took charge, to May 31 was $2,166,368. He estimated the receipts from May 31 to Dec. 31 at $8,918,997. This estimate, he explained, was based on last year's receipts, plus a 2 per cent increase. After deducting operating expenses from April 12 to May 31, Mr. Adkins fixed the net operating income at $461,638. After deducting interest on bonds, notes and fixed charges this was further reduced to $133,615.

Meeting Looking Toward Foreclosure Put Off

Creditors of the Grafton Light & Power Company and the Grafton (W. Va.) Traction Company met at the office of O. E. Wyckoff, referee in bankruptcy, on June 30. It was hoped that an agreement might be reached among the creditors of the two concerns for a sale of the properties as prayed for by Dr. T. F. Lanham, the trustee, in a petition recently filed by him in the Federal Court of the Northern District of West Virginia.

This meeting failed of its object, however, for the time being, for the following reason: It was known that Francis P. Garvin, New York, was the holder of bonds of the Grafton Light & Power Company to the extent of $300,000, to secure a loan made by the Central Trust Company, New York, to the Grafton concern in the amount of $150,000. Both Mr. Garvin and the trust company were served with notice of the meeting, but it appears that Mr. Garvin had assigned the bonds to his father-in-law, Nicholas F. Brady, New York.

Of this transfer Referee Wyckoff had no knowledge until the appearance of C. M. Thorne, representing the Brady interests, who stated that this was the first notice his client had received of the proceedings then pending. He asked for further time to look into the matter before taking any part in the proceedings. Under the circumstances the referee, upon the attorney entering a formal appearance for Mr. Brady, felt it incumbent upon him to postpone further action in the matter for the present.

M. & K. Interurban Refunding Authorized

Commission Allows Increase in Interest Rate So As To Attract Capital

The Kansas Public Utilities Commission has permitted the Missouri & Kansas Interurban Railway, the Strang Line, to refund about $650,000 of bonded and other indebtedness, raising interest from 5 per cent to 6 per cent, in order that the company may obtain about $150,000 of new money for rehabilitation and improvements.

LOW INTEREST RETURN A DETERRENT

This is perhaps the first instance in the Trans-Mississippi territory wherein the low returns on utility investments already made are recognized as a deterrent to further investment, and concessions made to such investors, to influence them towards putting more money into projects to serve the public.

The Kansas commission does not go as far as utilities might hope, in its recognition of the facts that have hampered electric railway financing. The following paragraph indicates the limitations it places, now, upon the inferences that might be drawn from its recent action:

> That while the commission should not be bound by such issue of bonds for rate-making purposes, or the interest thereon allowed in future applications for rates as fixed charges, the commission does find that the refunding of said bonds and indebtedness can probably at this time be accomplished in no other way.

The Strang Line needed additional capital so that installations might be made to care for business offered and in sight. The money could not be secured from the usual sources, which were getting only 5 per cent on their present investments. Bowersock & Fizzell, attorneys for the company, presented these facts to the commission, making it especially clear that the predicament of the electric railways was due to two factors, with others: first, the low level of returns on bonds now issued, which discouraged investors from putting any more money into the properties; second, the necessity of improving properties and increasing their usefulness for the public interest. It was made clear that the best means of again attracting the attention of the investors to utilities was to increase their revenue from bonds now held in such properties.

IMPROVEMENTS PLANNED

The Strang Line has about $650,000 outstanding in 5 per cent bonds and in notes. The commission issued an order on July 11 for the complete refunding of this indebtedness, most of which has thirteen years yet to run. An issue of $500,000 of first mortgage 6 per cent bonds was authorized, all of which will take up 5 per cent bonds. An issue of $300,000 of second mortgage bonds was authorized; part of this will take up 5 per cent bonds, part will secure the notes of the company issued for rehabilitation, and part will be for future issue. There will be held for issue later, on order of the commission, $73,500 of the second mortgage bonds.

Two immediate items of improvements will be the installation of a transmission line, probably underground, for service of farmers along the route of the interurban; and the enlargement and improvement of facilities of the freight station of the company in the south suburbs of Kansas City.

Census Figures Show Distress

Government Bureau Substantiates the Charges Made of Pending Calamity

As the United States Census reports on electric railways for the year 1917 are made public, evidence accumulates slowly but surely to show the retarded progress of this important industry. Such conditions were reflected again in the section of the report abstracted in the ELECTRIC RAILWAY JOURNAL for July 12. Therein were set forth data as to the capitalization and traffic of these utilities.

It was shown, for instance, that the total capitalization of all companies, urban and interurban, for the year 1917 was $5,525,025,923, an increase of 17.3 per cent in five years. For the previous five years the gain was 24.7 per cent, and for a similar period preceding that 63.5 per cent. Going back to the earliest period covered—1890 to 1902—the increase was 414 per cent, or at the rate of 172.5 per cent for a five-year period. While this unusual showing was to be expected for the period when electric railways were developing abnormally, the lessening increase in each succeeding period might safely be attributed to the obstacles set up to discourage investors.

Turning next to the traffic figures, we find that from 1902 to 1907 revenue passengers increased 55.9 per cent, while transfer passengers increased 87.8 per cent. From 1907 to 1912 the respective gains were 28.3 and 21.5 per cent, and from 1912 to 1917 they were 18.4 and 24.6 per cent. Free passengers increased 72.2 per cent from 1907 to 1912 and only 9.2 in the following period. Here is indicated one of the few beneficial turns in the history of electric railroading—the checking of free transportation, largely due to the enactment of public service regulations. The growth of the transfer habit, however, is too plainly evidenced.

The plan which has been adopted for presenting the case of the electric railways before the President's commission includes the introduction of census reports as indicating the present state of the industry. Unfortunately, these figures are some eighteen months old and fail to cover the most distressing period of these utilities, but the story told by the census bureau will no doubt have considerable weight.

New Haven Lines Suffer

Electric Railways Affiliated With New Haven Railroad See Expenses Eat Up Revenues

The annual report of the New York, New Haven & Hartford Railroad for the year ended Dec. 31, 1918, contains income statements for its various affiliated electric lines, as shown in detail in the accompanying statement. The time in which, under federal decree, the railroad must sell its investments in these lines has been extended until July 1, 1921.

The financial results of 1918 for the various electric lines were most unsatisfactory, it is said, owing to causes which affected all transportation lines of this character. A good idea of the heavy burden of operating costs can be secured from the fact that in three cases the operating expenses and taxes were greater than the total operating revenues. For the New York, Westchester & Boston Railway the excess of such expenses was 12.07 per cent, an increase of 6.22 per cent over 1917; for the Berkshire Street Railway it was 32.45 per cent, an increase of 36.86 per cent over 1917, and for the Westchester Street Railroad it was 24.18 per cent, a decrease of 8.36 per cent from 1917. These companies as of Dec. 31, 1918, showed the following deficits: New York, Westchester & Boston Railway, $9.919,169; Berkshire Street Railway, $1 334 019, and Westchester Street Railroad, $314,046.

OTHER LINES HAD LITTLE TO SPARE

The other three lines, though their revenues were sufficient to cover operating expenses and taxes, had in general little to spare. The operating expenses and taxes of the New York & Stamford Railway were 95.38 per cent of the revenues, an increase of 4.54 per cent over 1917, and those of the Rhode Island Company were 90.62 per cent, an increase of 4.39 per cent over 1917. The Connecticut Company made the best showing with a ratio of 87.83 per cent, an increase of 3.87 per cent over 1917. This company was the only one of the six to show a surplus for the year, and a credit to profit and loss account. This as of Dec. 31, 1918, totaled $2,770,703, while the accumulated deficits for the New York & Stamford Railway and the Rhode Island Company were $236,591 and $235.183 respectively.

The general situation is summarized in the New Haven report in the following words:

> Throughout the year the trustees and managements of the various companies have worked to obtain increases in rates to offset the increases in wages and other expenses. Considerable progress has been made, and this work is being pressed diligently. Increased rates or shorter zones of travel, or both, have been obtained and are now in effect on all lines.
>
> Steps have also been taken to adopt every reasonable economy, such as the skip stop, and to curtail service on light lines. Operation of some non-productive lines has been suspended, and in some cases communities desiring service have agreed to pay a limited sum for the continuous operation of a line.
>
> Careful study is being made of the benefits to be derived by the public and by the

INCOME STATEMENTS OF ELECTRIC RAILWAYS AFFILIATED WITH NEW YORK, NEW HAVEN & HARTFORD RAILROAD FOR YEAR ENDED DEC. 31, 1918, WITH CHANGES FROM PRECEDING YEAR

	New York, Westchester & Boston Railway		Berkshire Street Railway		Connecticut Company		New York & Stamford Railway		Rhode Island Company		Westchester Street Railroad	
	1918	Change	1918	Change	1918	Change	1918	Change	1918	Change	1918	Change
Operating revenues	$578,531	+$23,117	†$891,832	—$201,883	$9,935,750	—$87,412	$374,392	—$19,867	$6,311,285	+$310,683	$242,829	—$3,194
Operating expenses	489,536	+30,843	1,072,960	+120,876	8,150,433	+329,428	333,997	+4,174	5,115,551	+596,548	291,768	—22,293
Net operating revenue	$88,995	—$7,726	*$181,128	—$322,759	$1,785,317	—$416,840	$40,395	—$24,041	$1,195,734	—$285,865	*$48,938	+$19,099
Taxes	158,848	+29,614	61,843	+1,937	575,888	—18,621	23,112	—5,206	604,250	—50,999	9,769	—2,243
Operating income	*$69,853	—$37,340	*$242,971	—$324,696	$1,209,428	—$398,219	$17,283	—$18,835	$591,484	—$234,865	*$58,707	+$21,342
Non-operating income	3,845	—6,887	1,076	—745	242,112	+21,190	646	—19	111,334	—4,148	342	—3
Gross income	*$66,008	—$44,227	*$241,895	—$325,441	$1,451,540	—$377,029	$17,929	—$18,854	$702,818	—$239,013	*$58,365	+$21,339
Deductions from gross income	1,662,980	+53,855	(a) 319,480	+1,572	1,250,565	+41,844	(b) 96,024	+223	(c) 1,480,342	+25,660	(d) 33,187	+5,903
Net income	*$1,728,988	—$98,082	*$561,375	—$327,013	$200,975	—$418.873	*$78,095	—$19,077	*$777,524	—$264,673	*$91,552	+$15,436

*Deficit.

†Includes $35,064 of net revenue from auxiliary operations, an increase of $77 over 1917.

(a) Deductions include $211,380 of interest accruing to the New York, New Haven & Hartford Railroad but not included in the income account of that company.

(b) See above note; amount in this case is $12,428.

(c) See above note; amount in this case is $222,546.

(d) See above note; amount in this case is $28,201 companies through the introduction of the safety or one-man car. to be bought if found desirable, and if the necessary financial arrangements can be made.

The various communities served seem to appreciate more than ever before that if service is to be rendered by the trolley lines, compensation must be adequate to meet all expenses, taxes and to pay a return upon the property.

Hearing on Abandonment

The International Railway, Buffalo. N. Y., has sought permission from the Public Service Commission for the Second District to abandon its Gooding Street local line in Lockport. Evidence in the case was taken by Chairman Charles B. Hill at a hearing in Buffalo in which the company contended it would be better off financially if it did not have to operate the Gooding Street line as part of its Lockport system. In the course of the hearing the company presented evidence to show that during the year ending February 28, 1919, the total expenses of the Lockport-Olcott interurban division, including freight and passengers, were $123,869, while the total revenues were $103,257, showing a loss of $20,612. The company claimed it did not meet the interest of $40,000 on its Lockport-Olcott road bonds in the total sum of $800,000.

Comparative figures were also given of the number of passengers riding on the Lockport local cars in March, April and May last year under a 5-cent fare and for the same months this year under a 6-cent fare as follows: 1918, 232,698 passengers; 1919, 231,055 passengers. Revenues, however, have increased about $3,000, but it is pointed out by E. J. Dickson, vice-president of the company, that even with this increase in revenue, the company will operate the Lockport local lines at a loss of $748 this year without the payment of interest on bonds and without allowing for depreciation. New track and paving must be laid on the Gooding Street line. This, it is estimated, would cost about $43,000.

Sale of Collateral Set

The State Street Trust Company, Boston, Mass., trustee under the indenture securing the collateral trust mortgage 5 per cent bonds of the Paducah Traction & Light Company, Paducah, Ky., dated Nov. 1, 1915, gives notice that default having been made in certain covenants of the trust deed, it will sell at public auction at Boston, on July 25, the securities of the following companies pledged as collateral:

(a) Paducah Light & Power Company, $551,000 of 6 per cent thirty-year gold bonds, dated Nov. 1, 1905, due Nov. 1, 1935; $294,608 of interest-bearing demand notes dated Nov. 1, 1905; 4500 shares of capital stock, par $100.

(b) The Paducah Traction Company, $379,000 of 6 per cent thirty-year mortgage bonds, dated Nov. 1, 1905, due Nov. 1, 1935; $599,228 of interest-bearing demand notes; 3500 shares of capital stock, par $100.

(c) The Paducah City Railway, $87,000 of 5 per cent thirty-year mortgage bonds, dated July 10, 1902, due July 1, 1932.

(d) Paducah Realty Company, ten shares (total issue) of capital stock, par $100; $27,300 of interest-bearing demand notes.

Financial News Notes

Note Issue Approved.—The application of the Nova Scotia Tramways & Power Company, Halifax, N. S., to the Board of Public Utility Commissioners for leave to issue $1,000,000 of three-year gold coupon notes at 7 per cent has been granted.

Abandonment Authorized.—The Public Utilities Commission of Kansas has authorized the Iola (Kan.) Electric Railway to discontinue service and to junk all the property. The company has approximately 7 miles of track.

International Collateral Sold.—Adrian H. Muller & Son, New York, N. Y., sold at auction on July 16 to the noteholders' protective committee, for $300,000, the $1,634,000 of collateral trust 4 per cent bonds of the International Traction Company, Buffalo. N. Y., pledged as collateral to secure the 6 per cent serial notes dated April 1, 1916.

Increase in Spokane Receipts.—Owing to the 6-cent fare the Washington Water Power Company operated its railway lines in Spokane, Wash., at a profit during June, whereas for June, 1918, there was a deficit, according to a recent statement of D. L. Huntington, president. Receipts showed an increase of 21.6 per cent, or $13,000, over those of the same month for last year, largely due to the higher fare.

Increase in Business in St. Louis.—An increase of approximately 400,000 passengers is indicated in the report of the receiver of the United Railways of St. Louis, Mo., for the quarter ended June 30, as compared with the corresponding quarter of the previous year. During this quarter of 1919 the United Railways carried 62,618,484 city and county passengers, including half-fare passengers, as against 62,245,048 passengers during the same three months of 1918.

Ordered to Continue.—Operation of the Clairton Street Railway, a 1½-mile line of the Pittsburgh (Pa.) Railways, in Clairton, Pa., now shows a deficit of $2.530, the receivers of the Pittsburgh Railways have reported to the United States District Court. The court authorized the receivers to meet the deficit with funds at their disposal, upon their representation that they wish to continue operation to maintain a franchise that promises to be valuable in the future.

Texas City Property Sold. — The properties of the Texas City (Tex.) Company, on the mainland opposite Galveston, which is a sub-port of Galveston, have been sold at auction by J. H. W. Steele, receiver. These properties include the Texas City Street Railway, which is a subsidiary on the Texas City Company, and various other subsidiary companies. Augustus Peabody, of Peabody, Houghteling & Company, Chicago, Ill., bought in most of the properties, including the railway, on a bid of $150,000.

Receiver for Texas Property.—C. U. Culberson has been appointed receiver for the properties of the Corpus Christi Railway & Light Company, Corpus Christi, Tex., by United States District Judge Hutchinson in Houston, Tex. Mr. Culberson will take charge of the properties and will personally assume responsibility for their operation. The appointment of a receiver was made on application of the Merchants Union Trust Company, Philadelphia, Pa., trustee for the bondholders. The petition alleged that the company is in default of interest on its outstanding indebtedness. The property includes 10 miles of electric railway.

Northern Ohio Traction Bonds Offered.—Coffin & Burr, New York, N. Y., own and offer subject to sale at 80 and interest, yielding 6.15 per cent, first consolidated mortgage 4 per cent gold bonds of the Northern Ohio Traction & Light Company, Akron, Ohio, due Jan. 1, 1933. The bankers explain that through the retirement last month of an issue of divisional bonds, the first consolidated mortgage bonds are now secured in the opinion of counsel by a first mortgage on the entire electric light and power property of the company, together with the most important and profitable portions of the company's system of electric railway transportation.

Indianapolis-Louisville Link Purchased.—The Interstate Public Service Company, a subsidiary of the Middle West Utilities Company, Chicago, Ill., has bought the link in the electric railway chain extending from Louisville to Indianapolis owned by the Indianapolis & Louisville Traction Company for $325,000 and has assumed a mortgage for $846,000. The line extends from Sellersburg to Seymour, Ind., and was built at a cost of $1,500,000 in 1907. The company has $600,000 of common stock and a like amount of preferred stock. The purchasers control the links at both ends of the line from Sellersburg to Louisville and from Seymour to Indianapolis.

Outer Belt Sale Authorized.—The property of the Kansas City & Outer Belt Railway, Kansas City, Mo., which has been in receivership for the last six years, has been ordered sold at Kansas City to the highest bidder on Sept. 16. The order authorizing the sale was entered by Judge Pollock. It requires that the property shall be sold for not less than $131.000. As was explained in the ELECTRIC RAILWAY JOURNAL for Jan. 25, page 202, Judge Pollock early in January declined to agree not to sell the property of the company within a year, his leniency heretofore being due to the fact that the bondholders are largely British, with time otherwise occupied during the last few years on account of war conditions.

Traffic and Transportation

Seven Cents in Athens

Pennsylvania Commission Announced Important General Policy Governing Fare Increases

The Public Service Commission of Pennsylvania, in an opinion prepared by Chairman Ainey, has authorized the Waverly, Sayre & Athens Traction Company, Waverly, N. Y., operating in Pennsylvania and New York, to charge a 7-cent rate of fare in order to meet the increased costs of labor and material and to enable the company to render public service.

OTHER INCREASES PREVIOUSLY

The company made increases from 5 cents to 6 cents, and then to 7 cents, and against these increases complaints were filed. At the hearing held by the commission it was developed that the revenues obtained from the 7-cent fare were not sufficient to pay operating costs and provide a fund for the maintenance of the property in a good condition to render adequate public service. The stockholders have never received any dividends on their stock and the president of the company, who owns 24 per cent of the bonds, has yearly cancelled his coupons without payment and turned them into the treasury of the company because of the lack of revenues to pay them. The testimony offered by the respondent was not controverted by the complainant.

The Interstate Commerce Commission, upon the same state of affairs, has granted a 7-cent fare for interstate business on the line between Waverly, N. Y., and South Waverly, Sayre and Athens, in Pennsylvania. While the company under the New York law can charge 6-cents for purely New York business, the number of passengers and the amount of revenue derived therefrom is so small that, even if the rate for the New York service were increased to 7 cents, it would not make any material increase in gross revenue or change the conclusion in the present case.

MONTHLY REPORTS REQUESTED

In order that the commission may keep close track of the case, it directed the company to file monthly reports of its receipts and income and has granted leave after Jan. 1, 1920, to the complainant to renew the complaints if it can then be shown that the revenues have increased or the operating expenses decreased so that a lower rate of fare would meet the company's necessities.

The commission points out that the only way that the public can have electric railway service is by affording the company revenue sufficient in amount to produce it, and Chairman Ainey makes the following important statement of general policies:

> To expect public service of these carriers without permitting them sufficient revenues to produce it, is as fallacious an economic suggestion as to demand bricks without straw or to require faithful toil from the muzzled ox.
>
> It is therefore a matter of ordinary business prudence and sagacity that the public generally should come to an appreciative understanding of what that service means to the industrial and commercial life of the State and to each locality within it, and to recognize that the terms upon which it can be continued for their use and enjoyment are that it shall receive at their hands as rate payers revenues sufficient to furnish it.
>
> If the public are to be adequately served railways must be permitted to earn out of imposed rates of fare revenues large enough in amount to pay operating costs and a fair return, and provide for the maintenance of the property, provided always that the rates imposed are not unjust or unreasonable.

Employees May Advertise Free

With approval of Receiver Hedges, the August issue of the *New York Railway Employees' Magazine* will open its columns to the acceptance of advertisements, to be inserted free of charge, from all employees of any department of the New York Railways. The advertisement must not exceed twenty-five words in length. Advertisements will be accepted and inserted in the magazine under the following headings:

For Sale
For Rent
Help Wanted, Male
Help Wanted, Female
Houses to Let
Apartments to Let
Rooms to Let
Boarders Wanted
Positions Wanted, Male
Positions Wanted, Female
For Exchange
Miscellaneous

The headings are self-explanatory, for instance: Under the heading "For Exchange," if any employee wants to exchange a Victrola for a sewing machine, or a bedstead for a bureau, or any other article, all he has to do is to write it out and send it in. Advertisements will be received for one insertion only unless the employee otherwise requests.

It is understood that the advertiser is advertising for himself only or an immediate member of his family. To this end the name of the sender and the department in which he or she is employed must accompany the advertisement.

Hearing on East St. Louis Fares

Another hearing on the application of the East St. Louis & Suburban Railway, East St. Louis, Ill., for permission to continue indefinitely its charge of a 6-cent fare was held in East St. Louis on July 15 by the Public Utilities Commission of Illinois. D. E. Parsons, general manager of the railway, and Leroy Browning, city attorney, were the principal witnesses.

Court Sustains Fare

Pennsylvania Holds That Fare Clause Cannot Block Justifiable Rate Increase

A fare-fixing clause in an electric railway franchise cannot block a justifiable increase in rates, it was ruled in the Superior Court of Pennsylvania during the week ended July 19. The ruling was made in an opinion by Judge Troxler on the appeal of the borough of Wilkinsburg in its contest of the 1918 fare increase by the Pittsburgh Railways from 5 cents to 5½ and 6 cents. Wilkinsburg franchises include a 5-cent fare clause.

The appellant had argued that increase of fare in the face of the 5-cent fare clause constituted a breach of the constitutional guarantee of contracts. Judge Troxler declined to admit the truth of this.

When an electric railway increases its fare in accordance with the provisions of the public service commission law, as the Pittsburgh Railways did in this instance, Judge Troxler set forth, the police power of the State has been invoked. This power cannot be abridged, and any contract in the franchise must be considered to have been entered into by the contracting parties, with a reservation in favor of it. Therefore, a change in tariff, accomplished by virtue of the State's police power, connot be considered a breach of contract within the constitutional meaning.

It is right that the police power should cover the matter of fares, the opinion explains, because of the general public's stake in the matter. Street railways are no longer local concerns supplying only one community each, but are now competitors of steam railroads carrying freight and passengers for long distances. As such it is desirable that they be controlled by the more extensive authority of the State.

In another opinion issued the same day Judge Troxler upheld the Common Pleas Court of Allegheny County in dismissing a bill brought by the city of McKeesport, which sought to prevent violation of its 5-cent fare ordinance at the same time by injunction proceedings. The lower court had dismissed the bill upon demurrer on the ground of no jurisdiction except upon appeal from the Public Service Commission, which had not yet acted on the raise. The Superior Court did not rule on this phase of the issue, merely observing that if its other opinion were correct, the 5-cent fare clause could not stand in the way of the increase anyway, and the same result would follow, even granting the lower court had jurisdiction.

Both of these opinions were handed down as applicable to several similar suits brought by Pittsburgh and a number of the surrounding boroughs as a result of the same increase. Charles K. Robinson, chief of the Pittsburgh bureau for traction litigation, has announced that the city will appeal to the Supreme Court.

Boston Now Charging Ten Cents

Boycott and Strike Follow Change in Fare—Public Opinion Very Hostile

Boston, Mass., went to a 10-cent fare on July 10. This was the program for the Boston Elevated Railway that had been announced by the public trustees as noted at length in the ELECTRIC RAILWAY JOURNAL for July 5, page 45. There followed very shortly the strike of the employees with the burden of increased costs involved in the strike settlement, the terms of which are reviewed on page 190 in this issue.

It is now reported that the trustees have been requested by the Massachusetts Legislature to establish a 5-cent fare effective until Dec. 1. By this time, it is said, remedial legislation will probably be enacted by a special session of the Legislature.

That the trustees have feared for the results under the 10-cent fare is instanced in a statement issued on July 21 by Samuel L. Powers of the board of trustees. Mr. Powers said:

TRUSTEE POWERS PLEADS FOR PUBLIC PATRONAGE

> Unless the car-riding public is as liberal in its patronage of the elevated under the 10-cent fare the road will within thirty days be forced to find a substitute solution for a revenue to meet the $2,500,000 wage increase to the employees. During the first week we had the 10-cent fare we lost about 20 per cent of what we had had under the 5-cent fare. Under the 8-cent fare we were losing about 9 per cent of what we got out of the 5-cent fare. Now the question is, will this increased cost, assuming the riding will be 20 per cent less, give us enough revenue to meet the increased expenses? My answer is that I do not know. I do not think sufficient time has elapsed since the going into effect of the 10-cent fare to make a fair test. But I do believe that if the public were to ride as freely on the 10-cent fare as they did on the 8-cent fare, the revenue would be sufficient to cover the cost of service and provide a reasonable return. Patrons of the elevated will probably continue to use the strip tickets they purchased during the strike for use on the steam roads until these are exhausted.

Mr. Powers intimated that in case the 10-cent fare should fail eventually, it would not mean that the fare would be further increased. The trustees are considering the use of the zone system and there is some ground for the belief that this will soon be tried in Boston.

PATRONS BOYCOTT COMPANY

According to an estimate by H. L. Wilson, treasurer of the company, 76,300 fewer revenue passengers were carried on the road on July 21 than on July 14, the number on July 21 being 716,000. The 10-cent fare was in effect on both days. On July 7, when the 8-cent fare was in effect, the total number of revenue passengers was 927,812. The July 21 figures, however, are somewhat complicated by the fact that many persons did not see the Boston Sunday papers and realize the probability of the strike settlement on that day, and also by the outstanding commutation tickets purchased from the steam railroads and still in the hands of the public.

There is no question that the 10-cent fare has resulted in a widespread boycotting of the service in favor of other agencies of transportation and that walking has greatly increased. It is impossible to determine at this writing to what extent the lost patronage of the road will return. Extra suburban trains are still being run on the steam roads radiating from Boston, although there appears to be a decided falling off in the patronage of Boston & Maine suburban extras. Traffic on the Boston & Albany during the rush hours Tuesday morning was 16 per cent above normal.

The public trustees were prepared for protests against the new fare, but hardly, it is believed, expected the veritable flood of newspaper comment and criticism by men prominent in both business and public life, which followed the advance in fare.

While it is a fact that much of what has been said is denunciatory and not constructive, the clamor is so insistent as to command attention if not respect. Only in a few isolated instances is the voice of the press raised in behalf of the company. In this respect the Boston *Herald* warns that "too long has the public assumed that every proposed increase in wages was so much to the good." That paper says "it is quite immaterial whether we pay a high transportation cost, in the individual car fare, or indirectly in our general taxation."

ONLY THOSE RIDE WHO MUST RIDE

The *Post* is among the papers that cling to the opinion that "the 10-cent fare does not and will not provide the greatest number with satisfactory service." In its opinion "only those who must ride, or to whom the fare is of no consequence, will obtain the service." That paper regards it as a fact that "the successive increases in the fare from 5 cents to 7 cents and then to 8 cents brought the company sharply up against the law of diminishing returns."

Sharing this general opinion is the Boston *Record*. That paper says that "efforts to solve the traction problem by increasing fares has been unsuccessful because they ignore the central consideration, which is that this service must be provided at a cost supportable by the patrons." It holds "that it is this consideration which has 'no alternative.'" That paper says "it is elementary business common sense that increases in fares invariably and inevitably reduce patronage and diminish returns, and this should have been plain to those who ill-advisedly insisted upon increased fares."

The Lynn *News* suggests a return to the 5-cent fare. It says that the advancing fare proposition has gone far enough. That paper remarks facetiously that "if the railways are ultimately to serve only the rich and leave the average citizen with no means of conveyance it is about time to wind up their affairs and get everybody into training for walking."

The sentiment about the railway at a 10-cent fare being a luxury runs through much of the press comment. Thus the Newburyport *News* says that "we have enough unrest now without increasing it by adding to the burdens of the workers while the State spends money in the interest of the automobilists." The Boston *Herald* in later comment, however, sees "a disposition to pay a part of the bill out of the public treasuries and the rest in the old way." That paper "believes this solution to be inevitable, and in the present circumstances—temporarily at least—quite necessary." The Gloucester *Times* is another paper that has called attention to the "millions of dollars spent annually to keep the roads in condition for the rich man and his automobiles." In this connection it asks: "Is it unjust to ask that the State should do something to help pay expenses so that the poor man can ride in the cars to his destination at the old rate of 5 cents?" The Boston *American* counsels the installation of the zone system. That paper says however, that "if Massachusetts were wise she would take over all her street railways, own and operate them, so that there would be no suspicion that any private interests had any connection whatever with the management of the roads, and then reduce the fare to 5 cents, paying any loss during this period of high prices out of general taxation." The *American* professes to see "nothing revolutionary or unprecedented in such action."

The Rev. Edward A. Horton, chaplain of the State House, sees a social menace in the 10-cent fare. He says that it breeds Bolshevistic sentiments in the hearts of the working people. Mr. Horton sees "men and women aroused to riot and hatred and class hostility."

Perhaps the most startling comment of all was that by ex-Governor Eugene N. Foss of Massachusetts, a man of much wealth and wide business experience, at one time reported to be the largest holder of Brooklyn Rapid Transit stock after the Brady interests. According to the Boston *Globe* he sees a camouflaged quasi-public ownership in the road as at present operated. Mr. Foss says that he has reached the conclusion that "the only solution of the question is public ownership." He is quoted as follows:

> Every reasonable man will have to admit that in addition to the errors of private ownership of the Boston Elevated Railway, the road has been burdened by subway charges and the rise in wages and materials. It is a deplorable situation and one that must be met. Private capital cannot meet it. There's an old saying that there is nothing so timid as $1,000,000 except $2,000,000. Capital is scared. Those who are in are in deep and they want to get out. It's the public's affair, and the public must solve it. I believe that the road should be taken over by the State. Go back to the 5-cent fare, and if there is a deficiency make it up by taxing the communities served by the system, just as they are doing it now.

Transfer Charge Authorized in New York

Two Cents Allowed to Be Charged by New York Railways and Brooklyn Rapid Transit Company

Public Service Commissioner Lewis Nixon of the First District of New York, on July 18, signed an order permitting the New York Railways, which operates the so-called green car lines in Manhattan, to charge 2 cents for transfers at ninety-nine of the 113 transfer points on its system. At the same time he authorized the Brooklyn Rapid Transit Company to charge 2 cents for transfers on practically all of its surface car lines in Brooklyn. Of 1008 transfer points on the entire system where transfers are now issued free, only thirty points are exempted from the order, besides a few points where feeder lines transfer to the trunk lines. That the commissioner would probably make such an order was announced in the issue of the ELECTRIC RAILWAY JOURNAL for July 12, page 94.

Both the New York Railways and the Brooklyn Rapid Transit Company are in the hands of receivers, and both had asked to be allowed to charge 3 cents for transfers. Both orders go into effect on Aug. 1. In the case of the New York Railways, the order continues in effect until July 7, 1920, unless the commission extends the time at some future date, while in the case of the Brooklyn Rapid Transit Company the ruling is effective until July 30, 1920.

CHARGE FOR INITIAL TRANSFER

The charge in both cases will apply only to the initial transfer issued; that is, where it has been the custom to issue transfers such retransfers will be continued and no additional charge will be made for them. Both orders contain provisions that each company shall keep careful accounts of the result of the transfer charges in reference to the income of the companies.

In the case of the Brooklyn Rapid Transit a report is to be made monthly to the Public Service Commission of the results of the order. Provision is also made in the case of the New York Railways order that if the city is dissatisfied with the valuation of its property, placed in evidence at public hearings, it shall have the right, at the end of six months, to apply to have the proceedings reopened.

Commissioner Nixon, in signing the orders, made a vigorous defense of his action, and denied emphatically that the commission was in any way favoring the railroad companies. Such a charge, he said, was not only unfair and unjust, but "wickedly false and untrue." The commission, he said, was simply trying to protect the interests of the people of the city, and that they should appreciate it and not be misled by those who are attempting to deceive them. It is understood that Commissioner Nixon referred to Mayor Hylan, among others, who has stated that he never would approve the charging for transfers. Commissioner Nixon said:

> The public should have a true statement of the transit situation in this city. The New York Railways at the present time is in the hands of a receiver. That means that it is insolvent and unable to pay its debts. The New York Railways is a vast system which consists of many leased lines, such as the Eighth Avenue Railroad Company, the Ninth Avenue Railroad Company, etc. In order to obtain leases of these lines, the New York Railways is obliged to pay rent for them. If the rent is not paid these leased lines will cancel their leases. Some of these rentals may be extravagant, but they were made years ago and must be paid until they are changed.
>
> To further the public convenience, the New York Railways was required to introduce what is called a system of free transfers between its leased lines and other railroad lines in this city. For example, if a passenger on the Madison Avenue line desired to travel up or down the west side he could obtain a free transfer at Fifty-ninth Street. This enabled him to take the Fifty-ninth Street car to either Eighth or Ninth Avenue and there transfer to the line which he desired up or down town.
>
> Owing to the prevailing high prices for labor and material the New York Railways was unable to pay its debts, including its rents, and to protect the interests of the traveling public the Federal Court appointed a receiver That receiver is an officer of the Federal Court and the court is practically operating this railroad. The Federal Court informed the Public Service Commission that, unless the railroad company was granted some relief, either in the way of increased fare of 6 cents or 7 or 8 cents, or permitted to charge for transfers, the court would cancel the leases.
>
> The effect of this would be that every time a person changed from one line of cars to another he would have to pay an extra fare of 5 cents or, if he made two changes, 10 cents. What would anyone have done under the circumstances? Would they have permitted a charge of 10 or 15 cents when the same result could have been accomplished for 5 cents and a charge of 2 cents for a transfer, The charge that the commission is favoring the railroad is not only unfair and unjust, but it is also wickedly false and untrue. The commission protected the interests of the people of the city and they should appreciate it, and not be misled by those who are attempting to deceive them.
>
> If the commission favored the railroad it would have increased the rates of fare so that every person, whether he wanted a transfer or not, would have to pay 2 or 3 cents extra. Something had to be done to protect the public service. Operating a railroad requires money, and if sufficient money be not earned the roads cannot run. What would the people living in the upper part of Manhattan or in the Bronx do if the system ceased to operate and they were obliged to walk? The preservation of this system was required by the Federal Court and the commission had no other alternative outside the utter disruption of the service but to authorize a charge of 2 cents for a transfer. The commission hopes that the public will understand and appreciate the true facts and will not be misled by unfair and unjust criticism.

The conditions under which the charge for transfers will be made have been summarized by the commission as follows:

> The charge of 2 cents will apply only to the initial transfer issued. Where it has been the custom to issue transfers on transfers such retransfers will be continued and no additional charge will be made for them. The order in both cases goes into effect on Aug 1. That relating to the New York Railways system will continue in effect until July 7, 1920, and that relating to the Brooklyn Rapid Transit system until July 30, 1920, unless further extensions are made by the commission. Both orders contain provisions that each company shall keep a careful account of the results of the transfer charge in reference to the income of the two systems. In the case of the Brooklyn Rapid Transit a report is to be made monthly to the commission of the increments in income. Provision is also made in the New York Railways order that if the city of New York is dissatisfied with the valuation of the property of the New York Railways, as placed in evidence at the hearing, the city shall have the right at the end of six months to apply to have the proceedings reopened.

Carl M. Owen, counsel for Lindley M. Garrison, as receiver of the Brooklyn Rapid Transit Company, stated on July 21 that a study of the franchises of the company was being made by George D. Yeomans, chief counsel of the company, so that the application for an increased fare could be made on the basis of the Court of Appeals decision in the Buffalo railway case.

Relief from Court in Omaha

Nebraska Tribunal Holds Railway Must Have Adequate Temporary Rate Pending Appraisal

The action of the State Supreme Court of Nebraska in connection with the application of the Omaha & Council Bluffs Street Railway before the State Railway Commission for an increased rate of fare, marks a forward stride for the railway.

The company last year applied to the Railway Commission for a 6-cent rate, and then filed an amended application for a 7-cent rate. The commission denied the application, holding that the company should file more definite statements of its financial condition and apportionment of revenues. The company appealed to the Supreme Court, which, as noted briefly in the ELECTRIC RAILWAY JOURNAL for July 19, page 145, ruled that the State Railway Commission should grant a rate that will insure the company against insolvency, pending a valuation of the property to determine a permanent rate.

The court held that a fare of 6 cents "will not be improper, but the exact rate is for the Railway Commission to determine." The court further suggested ten tickets for 55 cents. The court agreed that the commission may undertake a valuation of the company's property, as a basis for a permanent rate, but held that a temporary increase should be granted in the meantime.

R. A. Leussler, vice-president, and W. A. Smith, general manager of the railway, are firm in their contention that a 7-cent rate is necessary to enable the company to maintain its standard of service, pay adequate wages, taxes, bond interest and a moderate return to stockholders. No dividends have been paid for more than a year. Salient features of the Supreme Court opinion follow:

> The fundamental inquiry in fixing rates of a public service utility always is: What rate is necessary in order to yield a reasonable average return on a fair valuation of the property for rate-making purposes—such a return as will not discourage but will attract the investment of capital in the utility.
>
> Under the constitution and laws of this

> State, the State Railway Commission has a wide discretion in these matters.
>
> A situation due to an unexpected rise in prices and wages, which makes it altogether probable that the past and present rate is insufficient to yield a revenue which will pay that fair average return which the law requires, although not constituting what might technically be dominated an "emergency," may, when shown, be sufficient for the allowance by the commission of a temporary rate.

Fairness Shall Govern

One of the conclusions of the appeal brief filed by the Omaha & Council Bluffs Street Railway, from the findings and judgment of the State Railway Commission, read:

> The commission should deal with the company with that spirit of fairness which will recognize it as a necessary public utility, and allow it to charge a rate adequate to maintain its high degree of efficiency and usefulness; a rate that will recognize the investment therein as entitled to a compensatory return; and not pursue a policy that will bring destruction to the property or compel receivership.

The book value of the company's property, as testified to by the Railway Commission's expert, Mr. Powell, was $20,948,038; total outstanding stock, $8,990,000; outstanding bonds, $9,619,000.

The company contends that it is entitled to a rate which would give it a net profit over and above cost of operation and maintenance equal to at least 7 per cent upon the value of the property. It holds that a rate which would simply permit the payment of interest upon outstanding bonds, or a rate only equal to 2½ per cent upon the value of the property, would be confiscatory and void.

Mayor Favors Fare Increase

The city of Omaha, represented by Corporation Counsel W. C. Lambert, resisted the company's application before the Railway Commission and the Supreme Court, and further resistance by the city is anticipated. Methods of valuation are disputed and other factors enter into the controversy. The city is contending that the company's financial statements for the first three months of this year indicate a "recovery," and that the company will come to the end of the year with a balance in its favor.

Mayor Edward P. Smith of Omaha on July 21 stated that he believes the 5-cent fare was inadequate and that it was time for the city officials seriously to consider the interests of the stockholders of the railway and also the employees of the company.

Fenderless Cars in Washington

Fenderless cars have been operating in Washington since June 29. Acting under authority from the Public Utilities Commission and after conferences with its officials, the Capital Traction Company removed fenders from the cars operating over one of its divisions. Not enough time has elapsed to judge whether the innovation will be an improvement over the fender cars, but authorities of the Capital Traction Company think fenderless cars will insure fewer accidents to pedestrians, motor vehicles, and also less expense to the railway. Statistics are being compiled on the relative merits of the fenderless cars, and the report will be referred to the Public Utilities Commission. It is expected the report will be filed with the commission after the new system has been tried for one month.

Opposition Organizing at Pittsburgh

Aside from the routine allegations of unreasonableness, the principal feature of the protests Pittsburgh and the surrounding smaller municipalities are filing with the Public Service Commission against the 10-cent cash and 7½-cent ticket fare the Pittsburgh Railways will institute on Aug. 1, is objection to the transfer feature.

Under the new tariff transfers, with a few exceptions, are limited to passengers boarding cars within an area of a radius of approximately 2 miles from the downtown center, and are good to points within that area only in the general direction of travel. This arrangement is characterized by the protesting municipalities as discriminatory against riders in the outside zone.

The receivers have filed their reply to the protest of the city of Pittsburgh and a hearing before the Public Service Commission is expected to be set for an early date, possibly before Aug. 1, when the new tariff is effective.

Ottumwa Company Denied Fare Injunction

A decision of the District Court of Iowa compelling the Ottumwa Railway & Light Company, Ottumwa, Ia., to return from a 6-cent to a 5-cent fare was affirmed on July 10 by a unanimous opinion of the Iowa Supreme Court. The company had applied for an injunction restraining the city of Ottumwa from repealing an ordinance of Dec. 23, 1918, permitting a charge of 6 cents required to meet increased operating costs.

The repeal of the ordinance was founded on the city's contention that the higher charge was prohibited in the franchise ordinance of 1901, which contained a clause fixing a maximum amount that might be charged for fares. The company in seeking an injunction claimed that it was compelled to carry on its business at a rate of fare which was confiscatory. The city replied that the franchise constituted a binding contract which neither party could alone modify or revoke, even though changed conditions arose.

The question to be decided by the court was whether the franchise ordinance in question was ineffective in so far as it attempted to fix rates to endure during the franchise period.

The Supreme Court decision upholds the legality of the franchise ordinance in this respect. A contract with an electric railway corporation that rates fixed shall be unchangeable during the life of the contract is permitted by the statutes as a whole, if that period is not manifestly too long, which in the present instance is denied. It is further argued that the power to fix and regulate charges carries with it the duty to do so, and therefore, that any contract that abrogates or suspends this governmental function is void unless express authority is conferred to refrain in a particular case from fixing and regulating.

The Ottumwa case was discussed in the issue of this paper for May 24, 1919, page 1026.

16,237,719 Jitney Passengers in Six Months in Newark

A report filed with Director Archibald of the Department of Revenue and Finance at Newark, N. J., by Acting City Treasurer Sugrue shows that during the first six months of this year a total of 16,237,719 passengers were carried by the jitneys, or within 882,933 of the total for the entire year of 1918, when the records show 17,120,652 persons rode in the buses. Operating receipts show a total of $811,885 for the first half of the year, as against $856,032 for all of last year.

The Kates act, under which the jitney owners were compelled to make a 5 per cent return to the city on their gross receipts, became effective in the last six months of 1916, the year of its passage, and in that period there was a total of 2,662,863 passengers and the cash receipts were $133,043. In the twelve months of 1917 the passengers numbered 8,195,591 and the receipts were $409,774.

The returns to the city have steadily increased. The totals show: Six months of 1916, $5,556; 1917, $17,332; 1918, $36,151; and six months of 1919, $33,803.

Special Master to Inquire Into Fares

W. G. Raymond, dean of the School of Engineering of the State University of Iowa at Iowa City, has been named special master to hear all the facts in the injunction case brought by the Lincoln (Neb.) Traction Company to restrain the Railroad Commission of Nebraska from enforcing rate changes which the railway claims would be confiscatory.

Federal Judges Walter I. Smith, M. J. Wade and J. W. Woodrough, instructed Dean Raymond to report upon his findings on the following questions: the income of the company for the year 1919 from fares; the expenditures during 1919 for service; the net income for the year 1919; the reasonable price that should be charged for the electricity sold by the company; the reasonable price for service furnished during 1919 by the heating plant controlled by the company; fares which should be charged by the company upon its railway lines to insure an income of not less than 7 per cent or more than 8 per cent. The report of the special master will be advisory to the federal judges only as an aid to determine the issues involved in the case.

Transportation News Notes

One-Man Cars for Lincoln.—The State Railway Commission of Nebraska has approved the application of the Lincoln Traction Company to install fifteen safety cars on its lines.

Wants Seven Cents in Muscatine.—The Clinton, Davenport & Muscatine Railway, a subsidiary of the United Light & Railways Company, which operates the local railway in Muscatine, petitioned the City Council of Muscatine for a 7-cent fare.

Collision on New York Elevated.—A rear-end collision on the Third Avenue elevated line of the Interborough Rapid Transit Company, New York City, on July 19, resulted in the death of the motorman of one of the trains and in injury to a number of passengers. All the injured were in the first car of the second train, which telescoped the last car of the first train.

St. Louis Installs Safety Zones.—A system of safety zones where passengers can stand while waiting for cars has been placed in operation at two of the busiest corners in St. Louis, Mo. The zones, which consist of a space 6 ft. wide by 48 ft. long running parallel with the tracks, are marked by posts. If the plan works successfully at these points it will be extended to other parts of the city.

Seven Cents in Urbana and Champaign.—The Public Utilities Commission of Illinois has granted the Urbana & Champaign Railway, Gas & Electric Company, included in the Illinois Traction System, an increase in fares from 5 cents to 7 cents for city railway service, applicable in Urbana and Champaign beginning on Aug. 1. Four tickets will be sold for 25 cents. The company petitioned for an increase to a 10-cent fare.

Opposition Disappears.—Ordinances introduced in the City Council of Kansas City, Mo., which would interfere with and perhaps eliminate the use of one-man street cars, have been permanently tabled. The safety cars have not had a step accident since being put into service. These cars carried 271,000 passengers in May, and 290,000 in June. The franchise of the company requires two-man operation but places the final decision on the matter with the board of control. The board of control ordered the use of one-man cars.

Fare Order Modified.—The Public Service Commission for the Second District of New York at its regular session on July 10 passed an order revoking and cancelling part of the order to the Empire State Railroad Corporation on July 1 under its petition for authority to increase passenger fares in and between Syracuse and Oswego and intervening points. The part of the order revoked and cancelled called for the sale of coupon ticket books of 100 coupons, each of the value of 5 cents, at $3.75 a book, the books good for use of purchaser and family within three months.

Trenton Will Not Participate.—The City Commission of Trenton, N. J., has decided not to participate with the League of New Jersey Municipalities in opposing the zone fare system as proposed by the Public Service Railway. This decision was reached when it was announced at a conference with Mayor Donnelly that Trenton's assessment as a participant in connection with the case would be $11,000. It is expected that the League of New Jersey Municipalities, composed of mayors of the various towns, will spend $100,000 in connection with the presentation of its case.

Hearing Scheduled on Maynard Fares.—The Public Service Commission of Massachusetts will begin hearings soon on a new schedule of fares which the Concord, Maynard & Hudson Street Railway, Maynard, proposes to put into effect on Aug. 15. The present fare of 6 cents for a ride in any two continuous zones with charge of 3 cents for each additional zone, is raised to 5 cents within any fare zone, with a charge of 5 cents for each additional zone. The present fourteen fare zones on the main line will be lengthened and reduced to ten, while the four on the Acton branch are reduced to three.

Considering Fare Increase.—A committee made up of representatives of the Chamber of Commerce of East Liverpool, Ohio, the Trades and Labor Council and the City Council is considering a proposal to recommend a fare increase on the East Liverpool lines of the Steubenville, East Liverpool & Beaver Valley Traction Company. This committee recently recommended a 5-cent fare with a 1-cent transfer charge within city limits. The Trades and Labor Council, however, declined to approve this recommendation and suggested instead a straight 7-cent fare. The latter suggestion is now under consideration by the various interested parties.

Flat Fare Payment for Postmen.—The Kansas City (Mo.) Railways has made a new contract with the post office department, providing for a flat payment by the department of about $5 per month for each postman, the mail carriers to ride without paying fare. The former contract, at $3 per month per carrier, expired on March 1. Since that time, the carriers have been paying fare at 6 cents. It is understood that the delay in securing a contract was due to the lack of authority of the local post office officials to enter into an agreement involving an increased payment. The higher charge was authorized by the Washingtion officials.

Fare Revision on Stamford Line.—A new zone plan, intended to increase the earning power of the New York & Stamford Railway, Port Chester, N. Y., went into effect on July 11. The company's line extends from New Rochelle to Stamford, Conn. Under the new plan the city, town and village boundaries will hereafter mark the 5-cent fare limits. It formerly cost 25 cents to ride from New Rochelle to Stamford. The new fare is 30 cents. Transfers from the main line to the local lines in Port Chester, which formerly were free, cost 3 cents, and transfers to the Sound Beach, Conn., line have been eliminated. Transfers to Stamford city lines cost 1 cent. Formerly these transfers were issued free.

Philadelphia Looking Before It Leaps.—In reply to the many rumors as to the company's intention in the matter of increased fares, T. E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, stated that no application to the Public Service Commission had been made or was contemplated in the near future. President Mitten states that it will be necessary to secure greater revenue to meet the constantly increasing cost of wages and material. In order that intelligent action may be taken when the emergency in Philadelphia arises, a careful record is being made of the results secured from the various experiments conducted by electric railways in other cities.

Fares in Colorado Springs Remain Unchanged.—Colorado Springs is a "home rule" city and under the recent decision of the Supreme Court of Colorado jurisdiction over its electric railway is lodged with the municipal authorities. Officials of the Colorado Springs & Interurban Railway say that while it would be possible for the Council of Colorado Springs to take action similar to that of the City Council of Denver they do not anticipate any such move. There is no opposition to the present 6-cent fare, which was granted three weeks ago by the Public Utilities Commission, with the approval of the city officials. Both of the daily newspapers in Colorado Springs have advised the people of the justice of a further increase if such is proved to be necessary.

Extends Six-Cent Fare Order.—Pending consolidation of the Washington Water Power Company and the Spokane & Inland Empire Railroad, Spokane, Wash., the Public Service Commission of the State of Washington on June 30 extended for a period of ninety days its order of April 9 last granting the companies a 6-cent fare. The receivership of the Inland Company has delayed the merger of the two traction systems since, as matters now stand, no one can bind the Inland. Before definite action can be taken final disposition will have to be made of the Inland's property. A return to a 5-cent fare for a given period has been proposed to enable the commission to obtain data on comparative earnings under the two plans.

Personal Mention

Changes in Eastern Massachusetts Personnel

Brief Biographies of Members of the New Organization Announced by the Public Trustees

The trustees of the Eastern Massachusetts Street Railway, the successor to the Bay State Street Railway, Boston, Mass., have announced the following new organization:

GENERAL OFFICERS

Vice-president and general manager, R. B. Stearns.

Assistant general manager, Howard F. Fritch.

General auditor, Caleb S. Jackson.

Assistant treasurer, Louis W. Wellman.

Attorney, Philip G. Carleton.

DEPARTMENT HEADS

Rolling stock, Frank D. Ward.

Power and lines, J. H. Libbey.

Tracks and buildings, Frank B. Walker.

Purchasing and stores, Walter C. Bolt.

Public relations, Fred A. Cummings.

The public trustees appointed by the Governor will have general charge of the property without a president. Among those who terminate their service with the company are President P. F. Sullivan, Vice-President Robert S. Goff and Treasurer C. R. Rockwell.

ROBERT B. STEARNS, vice-president and general manager of the company, was graduated from Purdue University in the class of 1889. After serving as civil engineer with the Columbian Exposition at Chicago in 1893 and in the United States Engineers service, he was engaged from their inception in the construction of the Northwestern Elevated Railroad, the Union Loop and the extension of the Lake Street Elevated Railway, Chicago (now the Chicago Elevated Railways), as assistant chief engineer of construction and later superintendent in charge of operation. From August, 1911, to Sept. 1, 1917, he was vice-president and general manager of the Milwaukee Electric Railway & Light Company. Under his management practically all of the Milwaukee cars were rebuilt and standardized maintenance adopted, two new car stations were designed and finished, many miles of new track laid and other improvements of service made. He inaugurated the Employees' Mutual Benefit Association and the Employees' Mutual Building and Loan Association.

Mr. Stearns was one of the pioneers in advocacy of the zone system, which has been in operation for some years in Milwaukee and vicinity. He also introduced the zone system on the Bay State lines and the idea has been strongly indorsed by the Massachusetts Public Service Commission in its printed reports. At the convention of the American Electric Railway Association in Atlantic City, in 1914, he made an address, "A Zone System of Fares in Practice." While with the railway at Milwaukee, the membership of the Employees' Mutual Benefit Association, of which Mr. Stearns was a director, increased from 1629 to 2994, and on his departure for the East the directors presented him with an embossed expression of their good wishes signed by every man on the board. Mr. Stearns also encouraged saving and building-loan associations, and brought about profit-sharing plans which made him very popular with the men.

HOWARD F. FRITCH, assistant general manager, was born on Sept. 24, 1888. He was graduated from the Worcester Polytechnic Institute, Electrical Engineering, class of 1910. In June, 1910, he entered the employ of the Boston & Northern Street Railway, the predecessor of the Bay State and of the Eastern Massachusetts. He started work with the company in the timetable department, which was then being organized. The duties of the department were enlarged to include traffic studies and statistical work in connection with labor matters and fare cases. For several years Mr. Fritch was assistant in active charge of the department, and in 1916 was placed in charge of the department as superintendent of the traffic department.

CALEB S. JACKSON, general auditor, is a native of Pennsylvania. He was graduated from Yale in 1894 with the degree of bachelor of arts. For several years he was connected with the United Electric Light & Power Company, New York, as purchasing agent and assistant treasurer. For ten years he was connected with the United Gas Improvement Company, Philadelphia. His experience has also embraced terms of service with several manufacturing enterprises. In addition he has devoted considerable time to public accounting.

LOUIS W. WELLMAN, assistant treasurer, was graduated from the Athol High School in 1893, and from the Burdett Business College in 1894. He was cashier of the Massachusetts Electric Companies from 1899 to 1917, and assistant treasurer Bay State Street Railway from Nov. 1, 1917, to the date of the reorganization under the order of the trustees of the Eastern Massachusetts Street Railway.

FRANK D. WARD, in charge of rolling stock, joined the Grand Avenue Railway, Kansas City, Mo., in 1884, with John Henry. He was connected with the Lake Street and the Northwestern Elevated companies in Chicago from 1897 to 1903 as master mechanic of the two lines and superintendent of the Lake Street property. He left Chicago for London to become identified with the Underground Electric Railways. He designed and equipped the cars for the system in London. He then worked a number of years for the American Car & Foundry Company in England and Italy. In 1911 he became superintendent of rolling stock for the Bay State Street Railway, and held that position up to the reorganization, under trustees, of the Eastern Massachusetts Street Railway.

JOSEPH H. LIBBEY, in charge of power and lines, was born on March 21, 1877, at Billerica, Mass. He was graduated from the Newton High School and the Lawrence Scientific School, Harvard University, matriculating from the latter in 1898 with the degree of S.B. In 1899 Mr. Libbey entered the employ of the Bethlehem Steel Company, engineering department. In 1900-1901 he was with Westinghouse, Church, Kerr & Company, New York. From 1903 to 1905 he was mechanical engineer on power station work for the Boston & Northern and the Old Colony Street Railway. In 1905 and 1906 he was assistant electrical engineer of the New York, New Haven & Hartford Railroad at New Haven. From 1907 to 1913 he was with the Stone & Webster Engineering Corporation on central station work, transmission lines and investigations. In 1913 he entered the service of the Bay State Street Railway as assistant electrical engineer on line construction and underground conduit work. On June 1, 1917, he was appointed electrical engineer of the Bay State Street Railway. He has since that time been in the company's employ.

FRANK B. WALKER, in charge of tracks and buildings, was graduated from the University of Minnesota in 1897 as a civil engineer. He then did special work with the class of 1901 at the Massachusetts Institute of Technology. He has been in the engineering departments of the Minneapolis & St. Louis and the Minneapolis, St. Paul & Sault Ste. Marie Railroads on construction; chemist and engineer for the Cleveland Cliffs Iron Company, Gladstone, Mich., and for about fifteen years was assistant engineer and resident engineer for the Great Northern Railroad. He had charge of construction of double-track railroad tunnel under the city of Seattle, and was in charge of design and construction of many of the larger docks and railroad terminals on the Great Northern Railroad. Mr. Walker entered the employ of the Bay State Street Railway in the roadway department in 1914, and has been with the system continuously until the present time with the exception of nine months, when he was with Fay, Spofford & Thorndike, consulting engineers, Boston Army Supply Base. He became superintendent of way and structures of the Bay State Street Railway in April, 1919.

Walter C. Bolt, in charge of purchasing and stores, was graduated from the University of Michigan in the electrical engineering course with the class of 1911. He was assistant to rolling stock repair shop foreman of the Milwaukee Electric Railway & Light Company, and assistant to the superintendent of rolling stock of the Milwaukee company from June, 1912, to September, 1917. He has been investigating engineer of the Bay State Street Railway from September, 1917, up to the time of his recent appointment as purchasing agent.

A. Jay Boardman, the new manager at Fall River, succeeds Herbert H. Read, who continues in the employ of the company in the auditing department in Fall River. Mr. Boardman has been with the Indianapolis Traction & Terminal Company and division superintendent of the Terre Haute, Indianapolis & Eastern Traction Company. He is thirty-three years of age and was graduated from Cornell University. He enlisted in the engineers corps and returned from France as captain of ordnance. He had charge of artillery repairs for all material in the Second American Army in Toul, France, when the armistice was signed last November.

Frank I. Hardy, the new manager at Salem, succeeds Timothy A. Donahue. Mr. Hardy has been in the electric railway business since 1900. He has been connected with the Union Traction Company of Indiana and the Fort Wayne & Northern Indiana Traction Company, and was general manager of the Chicago, South Bend & Northern Indiana Railway and of the Southern Michigan Railway, succeeding with those companies Charles G. Emmons, now president United Railways & Electric Company, Baltimore, Md. Mr. Hardy was also general superintendent of railways of the Northern Ohio Traction & Light Company, Akron, Ohio.

James G. Nellis, the new manager at Quincy, succeeds Acting Manager Joseph A. Phelan. Mr. Nellis for ten years was superintendent of the Amsterdam Division of the Fonda, Johnstown & Gloversville Railway, Fonda, N. Y. He started in the electric railway business in 1893 with the Cayadutta Electric Railway. Prior to going to Amsterdam he was superintendent of the Mountain Lake line of the Fonda, Johnstown & Gloversville Railway.

Joseph A. Phelan, the new manager at Gloucester, was transferred from Quincy. He succeeds John L. Niles, who continues in the employ of the company in another capacity. Mr. Phelan was graduated from the ranks in Lynn, where he was starter prior to his Quincy appointment.

C. D. Emmons Elected President of Baltimore Company

Charles D. Emmons, general manager Boston (Mass.) Elevated Railway, was elected president of the United Railways & Electric Company, Baltimore, Md., at a meeting of the board of directors July 23. Mr. Emmons succeeds Thomas A. Cross, who becomes chairman of the board. After the meeting the board issued a statement relative to the expansion of its organization so as better to meet the problem of supplying service to the community during the present period of growth, as far as permitted by available and potential revenue applicable to increased facilities.

Mr. Emmons has been general manager of the Boston company since November, 1918, prior to that having been general manager of the Boston & Worcester Street Railway and an executive in interurban railway service in the Central West. To a representative of the Electric Railway Journal, Mr. Emmons expressed his regret at leaving Boston, but said that he anticipated much interest in his new work in Baltimore. He has not yet decided when he will take up the duties of his new post.

R. K. Brown has been appointed superintendent and chief engineer of the Salt Lake & Utah Railroad, Salt Lake City, Utah, vice J. R. Ellis, resigned.

Harold D. Larrabee, whose appointment to the Eastern Connecticut Power Company and the Shore Line Electric Railway, with headquarters at Norwich, Conn., was reported in the Electric Railway Journal for July 19, on Aug. 1 assumes the position of general manager of the Eastern Connecticut Power Company, which is closely allied with the Shore Line Electric Railway, but entirely distinct from it, R. W. Perkins being president of both companies. Mr. Larrabee's time will be devoted to the management of the power stations, a steam plant on the Thames River near New London of 20,000 kw., and a hydraulic plant on the Quinnebaug River of 2500-kw. capacity and the development of a power business in eastern Connecticut. M. G. Stratton is general manager of the Shore Line Electric Railway properties, which position he has held for the last two years.

Patrick F. Sullivan, president of the Bay State Street Railway, Boston, Mass., retired from the management of that property following the organization of the Eastern Massachusetts Street Railway as the successor company and the passing of the property to the board of public trustees. Mr. Sullivan has many private interests to which it is announced he will give all his time in the future. As president of the Bay State Street Railway Mr. Sullivan headed the largest single electric railway system in the United States for a longer period than any other chief executive of an electric railway. In 1888 he was engaged by the directors of the Lowell & Dracut line and the Lowell Horse Railroad. After three years he was promoted to be general manager for these companies. He remained as general manager up to 1899 when, after several weak and independent companies had in the meantime been merged, there being two groups, Old Colony Street Railway and Boston Northern Street Railway, he was called to go to Boston and be chief executive officer of the merged lines. He thus continued in this capacity up to the present time.

Clarence Renshaw, general engineer of the railway department of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has resigned his position with this company to accept one with the National Metal Moulding Company, also of Pittsburgh, Pa. Mr. Renshaw's resignation became effective on July 15. As a member of the Westinghouse staff of railway experts Mr. Renshaw has become very well known to the railway fraternity. He was graduated from the Massachusetts Institute of Technology and has been connected with the Westinghouse company in its railway department for more than twenty years. During the period of the war he served as a railway expert with the United States Fuel Administration for four months and with the Housing Bureau for two months. While with the Fuel Administration Mr. Renshaw made a very valuable study of the skip-stop plan of operation. He has contributed largely to the technical press on matters of railway equipment and operating methods.

Obituary

Edgar S. Fassett, at one time general manager of the United Traction Company, Albany, N. Y., died on July 20, at Lake George, N. Y. A native of Albany, Mr. Fassett joined the traction system, then known as the Albany Railway, in 1885 as an inspector. He was subsequently advanced to assistant division superintendent, to division superintendent, and in 1893, to superintendent of the company. When the United Traction Company was formed in 1900 Mr. Fassett was made general manager. In 1906 when control of the system passed to the Delaware & Hudson Railroad, Mr. Fassett was appointed general manager of the new company. He resigned in 1912 and since that time has represented the New York Switch & Crossing Company and has been engaged in other business in New York City. Mr. Fassett was long an active member of the Street Railway Association of the State of New York, and was president of that body in 1908.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Consumers Urged to Stock Coal

Better Grades of Bituminous Contracted For—Anthracite in Better Shape—Car Shortage Felt

Bituminous coal of the better grades is difficult to procure and operators are no longer entering into contracts for deliveries in the future. They feel that an increased demand is sure to come, with advances in price, and at present they are cleaning up their old orders.

There is still available some soft coal of grades not so good as the best, but this is rapidly being absorbed by contract, and consumers are being urged to lay in their stocks as soon and as fully as possible to combat the anticipated shortage.

CAR SHORTAGE ALREADY FELT

Production of bituminous coal this year in the United States through the week ended July 12 is 230,522,000 tons, which is 77,601,000 less than that produced through that date last year.

There is now no free bituminous coal in the market. Already there is beginning to be felt a car shortage which is expected to become more serious as the year goes on. Inability to release cars from service for needed repairs has caused breakdowns in transit and longer hold-outs when they do go to shop. This has resulted in thousands of cars out for repairs and still other thousands scrapped. Besides, many cars ordered by the Railroad Administration have been refused by the railroads, because of the high price demanded for them. The necessity for moving grain will soon be an added factor to the seriousness of the car shortage.

Labor is scarce with little outlook toward bettering. Where the better grades of coal are mined, labor is refusing to work more than four days in a week.

HARD COAL SITUATION BETTER

The anthracite field, however, holds out better hope to the power plant operator who may not have contracted for all the coal necessary to carry over till next season. There is still some free steam-size coal available, but it is not expected to last long. Contracts can be made for this grade of coal, but no information is available as to the length of time this condition will continue. Full schedule prices are being somewhat shaded although in general they are holding pretty well. There is still a tendency to hold off on contracts, which is liable to be reflected in the coal pile this coming winter.

Production of anthracite coal this year through the week ended July 12 was 42,078,000 tons, while through the same period last year it was higher by 10,870,000 tons.

Steel Pole and Tower Market Better

Domestic and Foreign Fields Expanding—Galvanized Work Higher—Shipments Lengthening

Business in the steel pole market is becoming better and is showing much improvement over the volume of buying done in the spring. Combination trolley and lighting poles are in better demand in the domestic market. Orders are well scattered throughout the country, and are in better volume per order. Foreign orders are coming in in a more favorable manner and the character of the inquiries is becoming better. Several countries in Europe, the East Indies, South America and Mexico are at present in the market for steel poles.

ALL SHIPMENTS LENGTHENING

Prices on the rolled steel poles have been reported steady on account of contracts now held; steel pipe has advanced in price, so it is expected that when these contracts run out the price on the poles will advance. Pipe factories are working to capacity with the heavy ordering for the oil fields, and shipments on hollow steel poles are consequently lengthened. The shipments run from four to twelve weeks depending on how close to the time of rolling an order comes in.

Fabricated and expanded poles are on a shorter shipment schedule at this time, more in the neighborhood of two to four weeks. Increased buying of structural steel, however, is expected to lengthen time of shipments. There has been no price advance reported for this class of pole.

Steel tower business is 10 to 20 per cent of normal, according to manufacturers. The domestic orders are showing more activity as regards number of orders, but the size of the orders is still small. Companies which would normally order 2000 towers are ordering only 200. Activity is shown on the Pacific Coast, the Central States and in the East where the larger holding companies are putting through extensions to transmission lines. Orders and inquiries for foreign consumption are on the increase and much improvement is expected in that direction. Hardly a European country but has plans under way for large extensions and developments of hydro-electric properties and transmission.

Prices on these fabricated towers have increased 10 to 15 per cent with increases in the price of spelter for galvanizing and the condition of the labor market. Shipments are reasonable at this time, but are expected to become larger with the steadily increasing demand for structural steel.

Miscellaneous Material Price Advances

Wire, Bonds, Segments and Coils Are Higher—Non-Metallic Conduit Also Rises

With copper for July delivery quoted at 23.50 cents a pound, 1 cent higher than last week, there have been increases in several copper products widely used by electric railways.

Wire at the mill is up 1 cent to 25.50 cents. Rubber covered base is up 2 cents to 28 cents, and late reports predict a further advance. Weatherproof wire is being quoted on 26 to 27 cent base, a rise of 2 cents, and bare wire on 25.50 to 26 cents. This latter advance is 2½ to 3 cents.

Rail bonds have responded with another change of 5 points in the discount, the discount dropping from 20 to 15 per cent. This represents an increase in price of nearly 6 per cent.

Commutator segments, field coils and armature coils for railway motors have advanced 10 per cent in price, in keeping with the advance anticipated during the past few weeks. Controller segments and fingers have not been changed, according to latest advices, but their advance is expected soon.

LINE BRASS PRICES CONSTANT

Certain brass and copper manufactured products have gone up 1 cent since last week. Hot rolled copper sheet is quoted 32.50 cents, round copper rods are 29.25 cents and seamless copper tubing is 36.50 cents. High brass sheet and wire is 26.75 cents. Overhead line brass and copper material has not advanced to date, but some manufacturers' representatives expect these advances almost daily. Flexible armored conductor has advanced in price $5 per 1000 ft., and further upward changes have been predicted. Flexible non-metallic conduit has gone up about 14 per cent. Price advances on friction tape have been spotty. A report has been received giving a 5 cent per pound increase on certain brands. Some prominent manufacturers, however, have advised no increase in price, and one of these does not expect to do so during 1919 because of sufficient stocks of raw material on hand.

Japanese Wire and Cable Competition

As an instance of the competition being offered by Japanese cable in foreign markets comes a report in the London *Electrician* that at a recent meeting of manufacturers the government was urged to make a declaration of its economic policy with respect to unfair foreign competition. It was pointed out that the English cable makers, which employed some 33,000 people, had before the war exported products everywhere, including Japan. During the war, however, this was impossible, and as a result, it was stated, the Japanese built large factories and have been able to make considerable inroads upon the British trade in India and in the colonies and are today even serving the British home trade. The competition, it was held, was not fair. The labels on Japanese cables had been printed in imitation of the British CMA labels, using almost the identical words excepting with a very small "not" which might very easily have been overlooked by quick or careless buyers. It was pointed out that the British cable makers pay labor from $9 to $15 for a forty-seven-hour week and do not think it is fair to be placed in competition with Japanese cables manufactured by labor receiving a few cents an hour.

New Trade Mark Law in Honduras

Information has been received that a new trade-mark law has been enacted in Honduras and will be in force from Aug. 1, 1919. Under the new law there will be a registration fee of $50 gold for each mark, but this increased fee will not apply to applications filed before Aug. 1.

Rolling Stock

Sioux Falls (S. D.) Traction System, announces that it is considering the advisability of purchasing from three to five light-weight safety cars to replace heavier equipment.

San Francisco, Napa & Calistoga Railway, Napa, Cal., announces the purchase of a steel interurban motor coach from the Visalia Electric Railway, Exeter, Cal. This was built by the Moran Shipbuilding Company, in Seattle, Wash.

Eastern Wisconsin Electric Company, Sheboygan, Wis., announces that the fifteen new Birney safety cars for its Oshkosh division, ordered on April 10, are expected for operation the last week in July. They will replace converted one-man cars now in operation.

The Vincennes Traction Company, Vincennes, Ind., is to receive some new rolling stock. Edward C. Theobold, recently appointed receiver for the Mercantile Trust Company of St. Louis, which holds the first mortgage bonds, announced that $50,000 would be spent for new cars and other improvements providing the Federal Court would approve of the expenditure.

Track and Roadway

Chicago (Ill.) City Railway.—The Chicago City Railway is planning an extension of its Twelfth Street surface line to cost approximately $1,000,000. The expense of constructing a subway under the Illinois Central tracks will be borne by the railroad, the South Park Commission, and the city.

New Orleans Railway & Light Company, New Orleans, La.—An extension will be built by the New Orleans Railway & Light Company to the Henry Clay-Coliseum line from Henry Clay Avenue up Magazine Street to the entrance of Audubon Park.

Salisbury, Md.—It is reported that plans are being made by maunfacturers on the Eastern Shore of Maryland for the construction of a fast electric railway from Salisbury to Tolchester Beach, about 75 miles. It is aimed to make closer passenger and freight connections between the Eastern Shore and Baltimore than now exist. The route suggested for the line is from Salisbury via Sharpstown, Federalsburg, Denton, Ridgely, Price, Church Hill and Chestertown. H. H. Messenger of Federalsburg, Md., is interested.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Trenton & Mercer County Traction Corporation has begun the work of building the extension from the Bridge Street line to the Municipal dock along the Delaware River.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Board of Public Utility Commissioners of New Jersey has approved of the sale of 37½ acres of land in Hamilton Township by the Trenton & Mercer County Traction Corporation, Trenton, N. J., to the Pennsylvania & Newark Railroad Company. The consideration was $15,000. The latter company desires the land for the continuation of the proposed freight line across the Delaware river below Trenton to connect with the line near Raritan Bay.

North Carolina Public Service Company, Greensboro, N. C.—Improvements amounting to approximately $50,000 will be made by the North Carolina Public Service Company in the congested section of Elm Street. All of the electric light and street car poles will be replaced by iron posts. The plan also includes the laying of double tracks from the courthouse square to a point just below the intersection of North Elm, Bellemeade Avenue and Church Street.

Cape Breton Electric Company, Ltd., Sydney, N. S.—The construction of an extension from Glasgow to New Waterford is under consideration by the Cape Breton Electric Company.

Brooklyn (N. Y.) Rapid Transit Company.—Notice has been served by Transit Construction Commissioner John H. Delaney upon officials of the New York Municipal Railway Corporation (B. R. T.) that they must undertake at once to secure the necesary legal authority to permit the erection of the connecting link between the city-constructed end of the Culver line at Sheepshead Bay Road and the company's Coney Island terminal at Surf Avenue. Commissioner Delaney has instructed counsel to prepare the necessary legal papers to have the city acquire the land by condemnation if the receiver of the B. R. T. system fails to act within a brief period. In that event the city itself will undertake the construction of the 900-foot link. Until this link is in operation it has been held that the 5-cent fare to Coney Island cannot go into effect.

Power Houses, Shops and Buildings

Interstate Public Service Company, Indianapolis, Ind.—A new passenger and freight station will be built by the Interstate Public Service Railway at Franklin.

Union Traction Company of Indiana, Anderson, Ind.—The Public Service Commission of Indiana has ordered the Union Traction Company of Indiana to rehabilitate its power plant at Anderson so that adequate and regular service can be given to the cities along the line. The commission ordered the completion of repairs to the plant already undertaken at the earliest possible date and also ordered the installation of further equipment which the engineering department of the commission believed was needed.

Public Service Railway, Newark, N. J.—The Public Service Railway has purchased from the Trenton Banking Company the big marble institution situated at 16 South Warren Street, Trenton, N. J., and will turn the same into a terminal. Some time ago the City Commission of Trenton ordered the Public Service Company and the New Jersey & Pennsylvania Traction Corporation not to allow cars to stand in the streets while waiting to make the return trip. Both companies at that time said they could not purchase the necessary property for the erection of terminals. The Public Service Railway has a waiting room at 12 South Warren Street and is negotiating to buy two other adjoining properties. This would give the company a large tract in the center of the city for the erection of the terminal, where the cars on the Newark and Camden divisions could be kept and a modern waiting room established.

Cincinnati (Ohio) Traction Company.—Work will be begun at once by the Cincinnati Traction Company on the erection of a high-tension power line from the Pendleton station on Eastern Avenue to the Hyde Park carhouse for the purpose of supplying sufficient power for the operation of the Madisonville street cars.

Trade Notes

Chicago Pneumatic Tool Company, Chicago, Ill., has moved its Minneapolis office from the Metropolitan Bank Building to Fifth Avenue and Fifth Street, South.

Ford Mica Company, which is now occupying the entire building at 14 Christopher Street, New York City, announces that it has negotiations under way for the establishment of direct sales offices in London and Switzerland.

Indiana Mill & Lumber Company, 1405 Fisher Building, Chicago, has announced that it is handling a line of Southern white cedar poles in addition to its line of hardwood and pine railroad ties, piling, pine and oak timbers.

E. C. Ryan has been appointed manager of the Chicago branch of the Electric Controller & Manufacturing Company, with offices in the Monadnock Building, Chicago. Mr. Ryan was formerly connected with the New York office.

Lapp Insulator Company, Inc., Le Roy, N. Y., announces the appointment of the following representatives: Wetmore-Savage Company, Boston, for New England; and Shield Electric Company, 149 Broadway, New York, for New York City.

Independent Lamp & Wire Company, 1733 Broadway, New York City, with works at Weehawken, N. J., has acquired property on Runyon Street, Newark, N. J., 260 ft. x 580 ft., for a new four-story plant designed to give employment to about 500 persons.

Ohmer Fare Register Company, Dayton, Ohio, devotes the June 25 issue of its employers' periodical, the *Ohmer Fare Register*, to an illustrated description of the work done by the company in carrying out its war contracts for naval gun mounts and sights.

Frank C. Van Etten has resumed his position in the enginering department of the Delta-Star Electric Company, Chicago, Ill., after an absence of eighteen months in France, where he has been connected with some of the largest installations in the A. E. F. as captain in the Ordnance Department.

Holden & White, Inc., Chicago, announce that they have received an order from the Terre Haute Traction & Light Company, Terre Haute, Ind., for complete equipment with Anderson slack adjusters for installation on safety cars. They also announce the receipt of an order for safety car slack adjusters for the new cars purchased by the Kansas City Railways.

Blaw-Knox Company, Pittsburgh, Pa., announces the opening of an office in the Little Building, Boylston and Tremont Streets, Boston, Mass., and in the Owen Building, Detroit, Mich. A. W. Ransome, formerly of the New York office, assumes the duties of New England manager. H. J. Desson has been transferred from the Pittsburgh office to Detroit to assume the duties of manager of the Michigan district.

Dunbar Brothers Company, Bristol, Conn., manufacturer of springs, reports it is tearing down all the old buildings connected with its plant and replacing them with a large brick extension, which will be equipped with the latest appliances for the prevention of fire. The floor space will be materially increased when these additions are completed, and the necessary machinery installed, which it is contemplated will be in about four months' time.

American Steel Foundries has issued $9,000,000 of 7 per cent cumulative preferred stock for use in the purchase of control of the Griffin Wheel Company. The former company operates nine plants for the production of steel castings which are used principally in new construction; the latter company operates eight plants for the production of iron car wheels, and 85 per cent of its business is renewal work. The present managers will remain in control.

Cleveland Switchboard Company is now housed in its new factory building at 2925 East Seventy-ninth Street, Cleveland. The building is much larger than the former one. The present officers of the company are F. C. Hafemeister, president; F. F. Hafemeister, secretary; E. C. Leaming, treasurer; A. N. Rogers, sales manager and E. F. Blair, assistant manager. The company has opened a branch sales office at 1938 Dime Savings Bank Building, Detroit, Mich., with J. D. Nelson in charge.

The Central Steel Company, Massillon, Ohio, has opened up new offices in Detroit, Mich., in the Book Building. Arthur Schaeffer, former assistant director of sales at the home office, Massillon, Ohio, has been appointed district manager of sales, with Frank Gibbons as his assistant. Mr. Gibbons, who has just joined the organization, has been associated with the Carbon Steel Company for five or six years where for the last several months he has been district sales manager of their Detroit office.

C. D. M'Clary, who has been with the Western Electric Company since February, 1910, has been made sales manager of the Pittsburgh office, effective July 1, 1919. Mr. M'Clary was first connected with the Philadelphia office and transferred to Pittsburgh in the later part of 1910. In April, 1916, he joined the sales force, and in April, 1918, was promoted to assistant sales manager. He has held that position until his present promotion.

Charles G. Du Bois has been elected president of the Western Electric Company to succeed H. B. Thayer, who has resigned after thirty-eight years of service to assume the presidency of the American Telephone & Telegraph Company. Mr. Thayer was elected chairman of the board. Mr. Du Bois was born in 1870. After his graduation from Dartmouth College in 1891, he joined the Western Electric Company in New York, as a clerk in the accounting department. In 1898 he was elected secretary of the company. Shortly afterward, he was also made supervisor of branch houses. This carried with it the opening of a large number of distributing houses, which are now a part of the company's organization. In 1907 Mr. Du Bois was tranferred to the American Telephone and Telegraph Company as its comptroller, On Oct. 1, 1918, he rejoined the Western Electric Company as vice-president.

New Advertising Literature

Spray Engineering Company, Boston, Mass.: Bulletin No. 257 on "Spraco Air Washing and Cooling Equipment."

Ohmer Fare Register Company, Dayton, Ohio: Circular showing the application of larger type Ohmer fare registers to one-man safety cars.

Electric Service Supplies Company, Philadelphia, Pa.: "One Hundred Per Cent. Lightning Protection" is the title of Booklet No. 137.

Packard Electric Company, Warren, Ohio: Bulletin 201 on Transformers. A section containing technical data on the operation of the transformers is included.

Metal & Thermit Corporation, New York, N. Y.: Current issue of *Reactions* devoted to welding of large masses of metal and to repairs in railroad shops.

Westinghouse Electric & Manufacturing Company: A publication covering the process of electric arc welding and the necessary apparatus required for this process. This publication compares the different processes of welding.

Wellman-Seaver-Morgan Company, Cleveland, Ohio: Bulletin No. 22 on "Charts Giving the Relations in Any Shaft Between Power, Shaft Diameter, Torsional Stress and Speed." The data were prepared by one of the company's engineers for distribution on request to all engineers and draftsmen.

Massey Concrete Products Corporation, Chicago: Illustrated pamphlet describing the wide variety of reinforced concrete products included in the company's line. More detailed information for ordering purposes is being included in a series of supplements to this catalog. The first two on railway culvert pipe and on pipe for highway culverts and sewers will be ready for distribution in the near future. Another will relate to hollow reinforced concrete poles, and another to piling.

McGraw-Hill Book Company, Inc., New York: Illustrated booklet entitled "Ten Years," issued in commemoration of the completion of the first decade in the career of this organization. It contains portraits of the officers and heads of departments and of the editors of some of the important series and handbooks. The company published on the average slightly more than one book per week during its entire career, increased its sales from about 73.000 to nearly 655,000 volumes per annum, and increased the royalty payments to authors in the ratio of 1 to 13½.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, August 2, 1919 *Number* 5

"The Safety of the State Is the Highest Law"

THIS ancient maxim of Roman law can well be applied in Chicago. In the days when it was expected that any increase in wages would be absorbed by the railway company without any increase in fare the public believed that it could afford to be largely indifferent to disputes as to wages between an electric railway company and its employees. Now that it is recognized that the final bill for such an increase must be met by the public in higher fares, each community must take steps to protect itself against extortion.

Our present system of settling the wages on a public utility places too much power in the hands of the employees. By refusing in a body to work they can paralyze the life of an entire community. The demands of the Chicago employees are for 85 cents an hour on the surface lines and 87 cents an hour on the elevated, with an eight-hour day and time and a half for overtime, and they indignantly rejected an offer of 65 cents on the surface lines and 67 cents on the elevated with an eight-hour day.

But disregarding for the moment the question as to whether the demands of the employees are justified by the prevalent working conditions and wages in Chicago, and we do not believe they are, the same tactics to increase wages could just as easily be used for enforcing a wage of $1 an hour with a six or five-hour day and a five-day week. Chicago can afford to pay its railway operators liberally but it cannot afford to have wages extorted under a threat. The policy which has been followed by the Chicago employees savors too much of a conspiracy against the life of the state. For its own protection the city must not permit these tactics to prevail. The Canadian arbitration law points one way out. Though not perfect it should help. Some legislation along those or similar lines ought to be put on our statute books.

The Public Takes More Interest Now in Wage Increases

THE controversy over wages and working conditions for trainmen in Chicago during the past few weeks has proved an excellent illustration of the public's changed attitude toward such disputes. When similar discussions were going on in the same city in 1915 the public's only expressed concern was whether the companies would go far enough in a wage offer to prevent a transportation tie-up. This time, owing to the many months of debate over the limitations of a 5-cent fare, the people knew that the companies could not meet even a small part of the demands of the platform men without additional revenue. The statements of the surface and elevated roads to this effect were apparently not disputed either by the car riders or by the employees. Everyone looked to the State utilities commission as the only possible savior of the situation. Unfortunately the employees have been stampeded by the radical element among them and, failing to listen to reason have tied up the whole local transportation system.

It developed during the conference between the utilities, the unions and the commissioners that there were three important questions—namely,—what minimum the men would accept, what maximum the companies should pay, and above all what size burden the car riders should be required to carry. The original demands of the workers would have added about $19,000,000 to the payrolls, according to estimates by the management of both roads, and this would have meant a 9-cent or 10-cent fare. No one apparently took these demands at their face value.

The companies, in our opinion, took a proper attitude when they insisted that the wages recently established in Detroit, Cleveland and Boston should be considered a reasonable standard for the rates in Chicago. The War Labor Board in 1918 found the cost of living to be practically identical in these four cities, and if the platform men employed in three of those cities were pleased with a 60-cent maximum to meet increased costs it would appear quite unfair to insist on a higher rate for Chicago. As one of the local newspapers said editorially: "If the 85-cent demand is maintained, it will sound in the ears of Chicago much like the demand of the hold-up man who, with pointed revolver, cries 'Stand and deliver.' "

The eight-hour day having been so much discussed during the past year it was to be expected that electric railway employees would endeavor to have this limitation written into new contracts. The Boston employees gained this point after a strike, but they secured it with restrictions that did not appeal to their Chicago brothers. The latter wanted a "straight" eight-hour day for 80 per cent of the runs, the remainder not to exceed a ten-hour "spread," whereas we understand the Boston agreement calls for no "straight" runs and the men are satisfied to get a premium only when the "spread" exceeds eleven hours.

Now that the Chicago people have come to realize how closely their interests are bound with those of the traction companies and their employees, we are encouraged to look for a settlement which will be fair to all alike. The Chicago ordinance is not a service-at-cost measure, strictly speaking, but in the present financial condition of both companies the effect is practically the same as it would be in Boston or Cleveland. The people know that any addition to the transportation payroll must come out of their pockets, and they are not likely to stand for a settlement between the two other parties which hits too hard. When the public realizes that it must foot the bill, it will want to be shown that the price is not too high.

How Shall "Fair Value" Be Determined?

JUDGING from the questions asked during the recent Washington hearing, the Federal Electric Railway Commission is very much interested in the cost-of-service plan of railway operation. Inasmuch as the initiation of such a plan calls first for the determination of the value of the investment upon which a return is to be allowed, the report of the American Electric Railway Association's committee on valuation, published elsewhere in this issue, is of especial interest at this time.

The report, which treats of principles rather than of details, refers briefly to the original investment plan but speaks of the reproduction cost method of appraisal as being the most practical method, the one in almost universal use and the one to be recommended. In connection with its discussion of this method the report puts much stress on the matters of unit costs and overhead items which should be added to the inventory value of the physical property in order to secure that value which should be used for rate-making purposes.

One of the points insisted upon by the committee, and we think properly, is that the unit prices taken as a basis for such a valuation should be those of to-day. It has been the custom in some appraisals, in the past, to use as unit costs, figures representing the average cost through a period of years. Where this practice has been followed it has been justified on the theory that the unit costs so arrived at would be a fairer index of general current and future values than costs that might obtain at the time the appraisal is actually being made. But if it is true that a distinctly different price level has been reached than existed five years ago, the use of average prices for five years back would defeat the very aim that their original use was supposed to assist in attaining.

There are many other reasons which can be urged for this course. One is that inventory costs arrived at in this way are more nearly in accord with the present prices of material and wages of labor, as well with those of other commodities and the purchasing power of a dollar. It may also be urged that discrimination would result if the prices of to-day are not used. To illustrate this let it be assumed that a property built ten years ago is appraised at $1,000,000 and that for an exactly similar property just completed the costs, as shown by actual book records, is $2,000,000. If one of these properties is valued at former prices and the other at present prices we would have the anomaly of two exactly similar properties one charging for return on an investment only one-half that upon which the charges of the other are based.

Again, in the matter of sale, what merchant would sell his stock or what farmer would sell his farm for half its value simply because the half price of to-day was the full price of ten years ago! The committee seems to feel that a utility has the same right as any other industry to enjoy the appreciation of its property or, rather, that it should not be singled out for being penalized because through the change in the standard of values that of money has depreciated. If we are to have an appraisal, it should be an appraisal, not history.

The committee also properly emphasizes the point that while a property should be maintained in good operating condition it is both impractical and uneconomical to maintain it in 100 per cent physical condition since to do so would mean the scrapping of new equipment as soon as its use begins. Nevertheless, although a property has depreciated say 10 per cent its value, its efficiency as an operating property is just as high as it was the moment operation started and no capital has been amortized. Hence, the full investment in the property remains, and there should be no reduction for accrued depreciation unless there is marked evidence of deferred maintenance. Modern accounting recognizes depreciation as an operating expense and not as a capital charge. It follows from this that any reduction made in an appraisal for rate making purposes either for accrued depreciation or for unamortized superseded property is in effect a confiscation of the investor's capital. This point is emphasized very strongly in the committee's report.

We unite with the committee in the hope which it expresses in its report that its work will result in the evolution of a method of valuation which, based on sound economic principles, will be acceptable alike to investors and regulative commissions. The committee is to be highly commended for its earnest work.

Outside Devices Can Speed Up One-Man Cars

ONE of the valuable by-products of modern one-man car operation is that it enhances the value of any device that will aid these cars to equal, or better still, to exceed the safe schedule speed made by their larger predecessors. The railway manager realizes that the operator of such a car ought to be relieved of all manual effort and that this relief must go beyond or outside the car itself if the savings and increased service which it makes possible are to be fully utilized.

Attention to this aspect of the problem was directed by S. W. Greenland in his Central Electric Railway Association paper of June 30 on "One-Man Car Operation" with particular reference to the matter of signals and automatic track switches. When the cars are operated with two men, a management might hold off on the elimination of the hand-throw signal and the hand-throw switch because one man was always left in charge of the car. Furthermore, the loss of standing time was less since the conductor got off and on the car before it had fully stopped and started as the case might be. With one-man operation, on the contrary, the absence of any official caretaker introduces a hazard slight though that may be; gives an opportunity for the unauthorized boarding of the car; increases the standing time because the operator can board and leave the car only while it is at a standstill, and, finally, subjects the passengers to gusts of rain or icy drafts according to the season of the year.

The obvious way to avoid such unsatisfactory conditions is to install trolley contact signals and electric track switches of automatic type. These will do more than save time and relieve the operator—they will enhance the safety of the passenger. That this will be the case is demonstrated by the experiences of companies which have already done what Mr. Greenland suggests. One notable example is the Tampa Electric Company which has gone a step further in arranging to have a man turn trolley poles to save the time and energy of the car operators! A little by-product of automatic signals and track switches which deserves mention is the reduction of stops, for as already noted this wipes out non-revenue standing time. Stops cost money, annoy the riders and are hardly excusable if any means can be found for avoiding them.

In this connection, the suggestion has been made that the crossing of unprotected steam railroad track could be accomplished with perfect safety by a semi-automatic device such as a flexible cord plugged in on a low-speed step of the control. In this way, the operator, although off of the car itself, could lead his vehicle across the track much as a cowherd would lead a cow. If this can be done with a telpher, why not with a car? There's always a way, where there's a will!

Don't Let the Power Plant Run Down

THE supply of electric power is the life blood of the electric railway, and no amount of attention to time-tables, public relations, traffic development, etc., will avail if the line voltage is not "there" with ample power behind it. Low voltage is bad in every way; reducing schedule speed, and overloading motors, overhead, transmission line and generators. Moreover, the effect is cumulative because low voltage causes more current to be drawn by the cars and this in turn produces more drop, and so on *ad infinitum*. When low voltage is accompanied by uncertainty of supply, as it is apt to be, the case is still worse. Thus neglect of the power plant is a blow in the solar plexus of the railway organism.

The power plant has been hard hit by the war, and railway managers have had to take more than pre-war interest in the power department during the past two or three years. Fuel shortage and expensiveness have complicated the power supply problem, and combined with this has been the reduction of boiler capacity due to poor quality of fuel. Lack of repair parts and of good labor to keep up the plants have also made difficult the work of the power engineer. It is remarkable that he has been able to keep power on the line to the extent that he has kept it.

This note is not one of discouragement by any means. We realize that the power plant naturally suffers with other parts of the system when money and help are scarce and costs are high. But the power plant is out of sight, "behind the scenes" as it were, and as long as it can keep going is apt to be considered passable. Once badly run down, however, it is subject to collapse, with disastrous effects generally. As soon as incomes begin to expand, therefore, the power department ought to have some money to spend.

Pull Together or Hang Separately

IN THESE DAYS of stress and trial there is greater need of a prompt exchange of information on events of importance in the electric railway field than ever before. If one company adopts a fare system or some operating practice which proves popular with the traveling public and results in a larger net return, or if it secures a favorable ruling from commission or court, or if new ideas or a new treatment of old ideas are developed that assist in a publicity campaign, all railway companies are vitally interested.

A prominent electric railway manager, in commenting on this situation, recently said to us that this paper was now of more value to him even than when the industry was prosperous, because of the more perplexing nature of the problems involved, their common character, and the necessity for prompt application of such remedies as are available. He expressed a hope that the JOURNAL would continue to give promptly the news of important events and the views of those who were attempting to solve the problems of the industry and that they, in turn, would regard the paper as a sort of clearing house in which constructive ideas on these matters could be brought to the attention of all.

We take pleasure in accepting this assignment. It is not possible for the industry to hold a weekly convention and exchange views and obtain suggestions from each other every seven days, but it is possible for the printed page to reach each company as often as that. It is out of the question by personal correspondence for every company to know the efforts made to improve conditions on different properties throught the country, but through contributed articles, this result can be reached more nearly than in any other way. We pledge ourselves toward even greater efforts than in the past to give the news which is of most vital interest to the industry in this critical period of its existence, and we urge those who have remedies to suggest to make frequent use of these columns.

The Industry Is Convalescent —Now for a Speedy Recovery

ALTHOUGH financially the electric railway situation is critical, this is no reason why operating officials should lose enthusiasm in their work. In fact, they should increase their efforts to give the public proper service. Whatever may happen to the security holder the cars must run and there must be superintendents and managers to operate the properties. This means that these officials must keep up with the times.

No improvement of an engineering nature has done so much to help the industry during the past five years as the safety car. Yet, considering the voluminous amount of data which has been published on the subject in the ELECTRIC RAILWAY JOURNAL and elsewhere in the past it is amazing to find how many operators of electric railways there are who apparently do not yet understand the first principles of this safety car. Every time a paper on this subject is presented at an association meeting, and practically every convention during the year has included such a paper on its program, it is a notable fact that the same questions are brought forth to be answered. This seems to indicate that some operators have not been as attentive to the progress in the art as they should. To speak plainly some operators during the past year have been asleep at the switch. By this we do not mean that the safety car will work a miracle, but it is the best hope in an engineering way that the industry has.

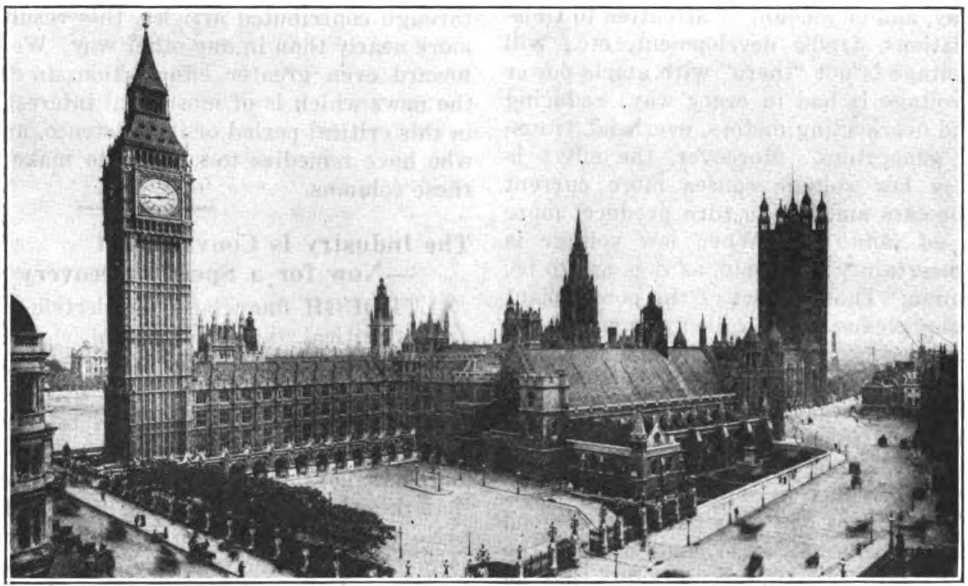
For the benefit of those who do not yet understand about the safety car, we shall say here that this car is applicable to the small and the large city alike; to the long and to the short run; to the residence and to the business district; to the lines with railroad crossings and to those without; in fact, to any location where faster and better service is desirable. As was well said by E. M. Walker at the recent Illinois meeting, "a car in sight all the time" is the slogan. There is no other single thing in the industry which will give such a healthy return on the investment. Some day the banker will inquire of the operator who has been slow to grasp the opportunity, why he was not advised of the economy of the safety car. Every operator is paid to know all there is to be known about such advances in the industry, and if he should not put himself in a position where he cannot answer this question satisfactorily.

The Zone Fare in Practice—

London County Council—Part I

In the Face of Large Handicaps the London Surface Lines Have Gone Ahead Enlarging Their Service and Usefulness—Car-in-Sight Operation Nearly All Day—Number of Lines Are Earning 40 Cents per Car-Mile

BY WALTER JACKSON



HOUSES OF PARLIAMENT IN LONDON

FEW large electric railway systems have been developed under greater difficulties than that of the London County Council Tramways. Shut out by physical limitations from the most profitable traffic throughfares of London's central district, hampered by the encirclement of tramways in other political subdivisions, subjected to the competition of underground, bus and steam suburban lines and saddled with abnormal fixed charges because of much conduit construction—the system indeed faced discouraging handicaps. Yet the L. C. C. has gone ahead undismayed from year to year in enlarging the usefulness of its service.

Now that the war is over plans have been drawn for further extensions, for the linking up of dead ends by means of motor buses, either temporarily or permanently, and for deeper penetration into the business districts. While the actual enlargement of the present system would be only from 141.67 to 146.2 route-miles, the new sections would be of vital importance because they would greatly improve the value of existing facilities. For instance, three dead-ends would be closed up by building but 1 mile of route between Blackfriars Bridge, Farringdon Road and Gray's Inn Road, as shown on the accompanying map by initial key letters in the upper right-hand corner. Furthermore, the Theobald Road extension would avoid blocking the Kingsway subway cars, for although the map indicates an uninterrupted line at this point, it is actually a stub. If it were extended but ⅛ mile, this part of the L. C. C. system would be brought much closer to the Oxford Street shopping district.

While parliamentary powers are now being sought for the foregoing changes and other alterations, authorization was obtained several years ago for two links on the southern part of the system. For one of these, Eltham Road between Lee Green and Well Hall Roads, material was in hand at the outbreak of the war. The other authorized extension is marked East Hill.

WHAT SERVICE DOES THE L. C. C. GIVE?

Corresponding to the geographical conditions, the L. C. C. lines are divided into two systems, one north and one south of the Thames. As already hinted, one of the present routing troubles is the large number of dead-ends. The only really worth while through connection is via Westminster Bridge to and along the Victoria Embankment and thence through the ⅗-mile Kingsway tunnel into the Holborn and Islington districts. The enormously productive commercial district centering at the Bank of England still remains to be served. The southern side of the Thames is less handicapped for through running from east to west. Through running between the northern and southern systems is out of the question under existing conditions.

Regardless of many physical limitations, the operating schedule speeds of the L. C. C. system are very satisfactory. They vary with the time of day as follows: Morning, 9.05 m.p.h., mid-day, 8.92 m.p.h. and evening 8.75 m.p.h. Some lines, of course, are faster than others for speeds (free-running) up to 16 m.p.h. are permitted in the more open districts. The usual Board of Trade regulations, such as 150-ft. spacing between following cars and a rate of 6 m.p.h. over curves and intersections, apply in the L. C. C. area.

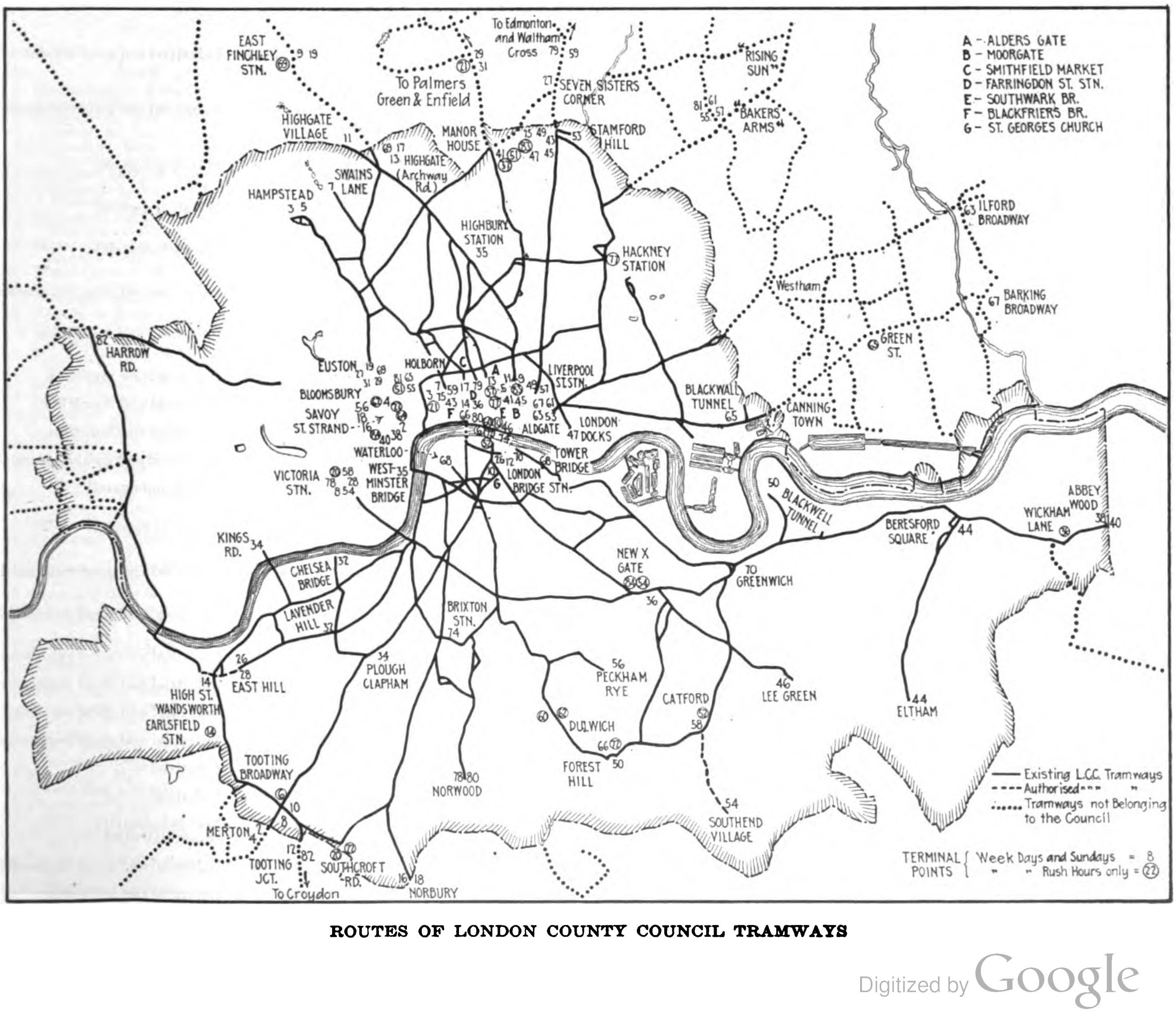
Stops are usually on the near side. They are spaced 660 ft. or eight to the mile. It is rather interesting that this distance should be considered short enough by an electric railway which has every incentive to meet the desires of the public owing to its use of the graduated fare and to the prevalence of bus competition. Yet this is the very spacing objected to as too great in a number of American cities! Furthermore, the L. C. C. stops do not include a large and embarrassing number of fire stops. The compulsory stops are those at important fare stage divisions, some schools and the safety stops, specified by the Board of Trade, at comparatively few locations.

The electric railway service in London covers a longer period of the day than does the service of the motorbus companies. Several of the London County Council Tramways lines even go so far as to give an all-night service—an unusual feature in the United Kingdom. On the other hand, the buses do not appear until the early workmen traffic has been disposed of on the tramways at less-than-cost fares.

A peculiarity of some of the L. C. C. lines is that no mid-day service is operated over them if passengers can be offered an alternative service between the same points. The reason is that the great bulk of the traffic on these lines consists of people riding to and from work with little or no opportunity for mid-day business. For example, during the middle of the day, ordinary passengers between Southcroft Road and Victoria Embankment may have to take a second car at Brixton or Kennington on which they pay a second fare instead of getting a transfer or through ticket.

The operation of heavy-hour and special holiday routings is not to be confused with short-line or turnback service. It is customary on the London County Council Tramways to run cars through from terminal to terminal because the density of traffic is much nearer uniformity than on systems which run far out into open country. The only demand for short-line cars comes from intermediate riders who want seats. Under the L. C. C. conditions short-line cars actually have been found to earn less than through cars.

Single-car operation is the rule except for rush-hour service on certain Embankment routes and between London Bridge and Greenwich. Skeptics about zone fare collection may gasp upon learning that the standard double-deck car carries seventy-eight seated passengers, thirty-two below and forty-six above, while trailers seat forty-four and the few single-deck cars, thirty-two. In pre-war days no standing was permitted, but standees are now allowed on the lower deck to the extent of not more than one-third as many passengers as are seated on the same level. The platforms are wide enough for passengers to enter and leave at the same time. At heavy terminals the passengers are regulated to enter at the rear and leave at the front. Queues are not


A - ALDERS GATE
B - MOORGATE
C - SMITHFIELD MARKET
D - FARRINGDON ST. STN.
E - SOUTHWARK BR.
F - BLACKFRIERS BR.
G - ST. GEORGES CHURCH
EAST FINCHLEY STN.
To Edmonton and Waltham Cross
To Palmers Green & Enfield
SEVEN SISTERS CORNER
RISING SUN
BAKERS ARMS
STAMFORD HILL
HIGHGATE VILLAGE
MANOR HOUSE
HIGHGATE (Archway Rd.)
SWAINS LANE
HAMPSTEAD
HIGHBURY STATION
HACKNEY STATION
ILFORD BROADWAY
Westham
BARKING BROADWAY
GREEN ST.
HARROW RD.
EUSTON
HOLBORN
BLOOMSBURY
SAVOY ST. STRAND
LIVERPOOL ST. STN.
ALDGATE
LONDON 47 DOCKS
BLACKWALL TUNNEL
CANNING TOWN
WATERLOO
VICTORIA STN.
WESTMINSTER BRIDGE
TOWER BRIDGE
LONDON BRIDGE STN.
BLACKWELL TUNNEL
ABBEY WOOD
WICKHAM LANE
BERESFORD SQUARE
KINGS RD.
CHELSEA BRIDGE
LAVENDER HILL
NEW X GATE
TO GREENWICH
BRIXTON STN.
HIGH ST. WANDSWORTH
EAST HILL
PLOUGH CLAPHAM
PECKHAM RYE
CATFORD
LEE GREEN
ELTHAM
EARLSFIELD STN.
DULWICH
TOOTING BROADWAY
NORWOOD
FOREST HILL
SOUTHEND VILLAGE
MERTON
TOOTING JCT.
To Croydon
SOUTHCROFT RD.
NORBURY
Existing L.C.C. Tramways
Authorised " "
Tramways not Belonging to the Council
TERMINAL POINTS { Week Days and Sundays = 8
" " Rush Hours only = (22)

ROUTES OF LONDON COUNTY COUNCIL TRAMWAYS always practicable where several routes come in over the same track, for there is no assurance that the cars will arrive in scheduled order.

Other points about car loading are the use of "Car Full" signs, which are not altogether successful because the motorman may keep up the sign long after seats are available; and the recent effort by means of newspaper advertisements to accustom lower-deck passengers to board on the left (bulkhead) side and upper-deck passengers to board on the right (dasher) side of the dividing stanchion on the rear platform.

Without questioning the exceptional value of the motor bus in the busy and tortuous streets of London, one experience of the London County Council Tramways illustrates how important is the feature of line capacity. This was in handling traffic to and from Woolwich Arsenal at a time when more than 100,000 people were employed there. Although hundreds of buses were generally in use, their absence during the bus strike of Aug. 18-22, 1918, is declared to have been hardly felt owing to the far greater carrying capacity of the cars. A rather significant point about the general traffic problem at Woolwich is that when the maximum number of people were employed it was easier to transport them than now, because by special arrangement the peak load was spread over three hours as compared to one to-day. Aside from this case, there are not many opportunities for staggering hours of opening and closing since the relative location of factories and workshops along the different routes achieves much the same effect as an actual difference in opening and closing hours. In any event, the shorter workday rapidly coming apace has left the whole matter of staggered hours in a state of uncertainty.

In spite of all the disadvantages enumerated earlier in the article, and particularly the competition of the motor bus, the average number of passengers per car-mile during the year ended April 1, 1918, was 13.18. This is a fair indication of what the zone fare does in promoting riding, despite the encroachment of the buses on the short rider and the rapid-transit lines on the long rider. Even after due allowance is made

TABLE I—SERVICE OF LONDON COUNTY COUNCIL TRAMWAYS—SOUTHERN SYSTEM

No.	Route	Route Miles	Headway in Minutes	Character of District Served
2	Merton to Savoy Street via Westminster	7.34	4–6	Industrial and good residential
4	Merton to Savoy Street via Blackfriars	7.77	4–6	Industrial and good residential
6	Tooting Broadway to Southwark Bridge (via Clapham)	6.56	6	Industrial and good residential
8	Merton to Victoria (via Clapham)	6.22	6	Industrial and good residential
10	Tooting Broadway to Southwark Bridge (via Streatham)	8.01	4–6	Industrial and good residential
12	Tooting Junction to Hop Exchange (via Vauxhall and Southwark Bridge Road)	9.30	5½–6	Largely industrial
14	Earlsfield Station to Hop Exchange (via Vauxhall and Westminster Bridge)	8.36	5½–6	Largely industrial
16	Norbury to Savoy Street (via Westminster)	7.39	5	Industrial and good residential
18	Norbury to Savoy Street (via Blackfriars)	7.82	5	Industrial and good residential
20	Southcroft Road, Mitcham Lane to Victoria (via Streatham and Vauxhall Bridge)	6.46	6–6½	Industrial and good residential
22	Southcroft Road, Mitcham Lane to Savoy Street (via Kennington and Westminster Bridge)	7.36	6	Industrial and good residential
26	East Hill to Hop Exchange (via Wandsworth Road and Blackfriars Bridge Road)	6.95	6	Mainly industrial
28	East Hill to Victoria (via Wandsworth Road and Vauxhall Bridge)	4.61	6	Mainly industrial
32	Lavender Hill to Chelsea Bridge (via Queen's Road, Battersea)	1.23	2½–6	Mainly industrial
34	King's Road, Chelsea, to "Plough," Clapham (via Cedars Road)	3.36	5	Industrial and good residential
36	Woolwich and Plumstead to New Bridge Street (via Old Kent Road)	12.23	4–6	Industrial and munition
38	Abbey Wood to Savoy Street (via Old Kent Road and Westminster Bridge)	12.79	4–6	Industrial and munition
40	Abbey Wood to Savoy Street (via Kennington)	13.55	4–6	Industrial and munition
44	Beresford Square, Woolwich to Eltham	3.03	2½–3½	Industrial and munition
46	Lee Green to Southwark Bridge (via Old Kent Road)	6.29	6	Industrial and good residential
50	Forest Hill to Blackwall Tunnel (via South Street)	5.96	5–7	Mainly industrial
52	Catford to Southwark Bridge (via New Cross and Old Kent Road)	6.51	8	Mainly industrial
54	Bromley and South End Village to Victoria (via Catford and New Cross)	9.39	3–4	Industrial and good residential
56	Peckham Rye to Savoy Street (via Denmark Hill and Westminster Bridge)	5.89	5–6	Industrial and good residential
58	Catford to Victoria (via Forest Hill and Camberwell Green)	7.80	5	Industrial and good residential
60	Dulwich Library to Southwark Bridge	4.84	8	Industrial and good residential
62	Dulwich Library to Savoy Street	6.90	8	Industrial and good residential
66	Forest Hill to New Bridge Street	8.41	5	Industrial and good residential
68	Tower Bridge to Waterloo Station	2.03	4½–5	Industrial
70	Greenwich Church to Tooley Street	4.19	3–4	Industrial
74	Brixton Road to Southwark Bridge	3.90	5	Mainly industrial
78	Norwood to Victoria	5.39	5–6	Good residential
80	Norwood to New Bridge Street	5.99	6	Industrial and good residential
82	Harlesden (Harrow Road) to Tooting Junction	9.52	3	Industrial and munition
84	New Cross to Savoy Street	4.16	5	Industrial and good residential

Since 1903 the great system of the London County Council Tramways has been under the guidance of Aubrey Llewellyn Coventry Fell, the general manager. There was plenty of horse traction when he came and, still worse, no entrance for the tramways into any business or shopping section of the vastly important district along the north shore of the Thames. From the latter condition resulted the famous "Battle of the Bridges" with Mr. Fell as commander-in-chief of the L. C. C. forces. Finally, parliamentary sanction to cross the Westminster and Blackfriars Bridges was obtained, thereby removing one of the great handicaps to the usefulness of the London County Council system. Much still remains to be done to secure full value from the L. C. C. tramways, and Mr. Fell is still at the task as detailed in the article.

Mr. Fell was born in Llangollen, North Wales, in 1869. He studied at Christ Church College, Finchley, and the School of Electrical Engineering, Hanover Square, London, and then he served an apprenticeship with Laing, Wharton & Down, electrical engineers, the predecessors of the British Thomson-Houston Company. He left the British Thomson-Houston Company in 1897, after acquiring much practical experience in the installation of railway, power and lighting equipment, to become electrical engineer of the Sheffield Corporation Tramways. Three years later, having installed complete electrical equipment for the tramways, he became general manager. In 1903 he entered his present position.

Under Mr. Fell's direction the electrification of the London County Council Tramways was completed; the London, Deptford & Greenwich, the London, Camberwell & Dulwich, the Woolwich & Southeast London, the North Metropolitan and the London Southern Tramway Companies were acquired, and the great power station at Greenwich and the central repair depot at Charlton were constructed. Today the staff of the London County Council Tramways under the direction of Mr. Fell numbers about 11,000 persons. That he has retained his early interest in engineering appears from the fact that he is a member of the leading societies in that field, such as the Institutes of Civil Engineers, Electrical Engineers and Mechanical Engineers. He is a past president of the Municipal Tramways Association and a member of the Council of the Tramways and Light Railways Association and other associations.

for the shorter mileage per pasenger in contrast with the larger American cities, it is still apparent that the cars are loaded to better advantage than in the United States.

Perhaps the accompanying traffic characteristics graph, which is based upon the number of cars run during the different hours of the day, will help to substantiate the foregoing assertion. This graph shows little of the frightful variations found in American cities. Maximum car service, including trailers, is given for five to six hours of the day, and the mid-day service does not show a severe drop, although luncheon travel in the world's biggest city is not so great a factor as in other British communities. With frequent service nearly all day long, the short rider is attracted. Furthermore, there is a lessened tendency for women shoppers and others to start and return during the periods of maximum traffic as they so often do in the United States.

Table I and Table II, show the headways, length of lines and character of travel.

Even without recourse to the map, it is obvious that the services are arranged to catch the short rider. The greater part of many lines is served by two or more routes, thus giving "car-in-sight" operation for nearly all of the day.

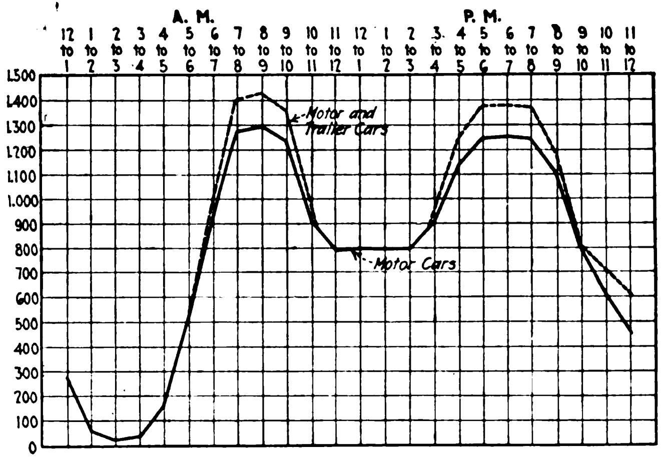
It should be noted that the above-stated service intervals include cars run by other undertakings. But, as is the case with the routes of both the northern and the southern parts of the system, the headways shown do not do justice to the actual service owing to the extent of overlapping. Recent analyses of the L. C. C. lines show that a number of them are now carrying seventeen passengers and earning 20d. (40 cents) per car-mile.

TABLE II—SERVICE LONDON COUNTY COUNCIL TRAMWAYS NORTHERN SYSTEM

No.	Route	Route Miles	Headway in Minutes	Character of District Served
3	Hampstead to Holborn	3.81	6–8	Good residential
5	Hampstead to Moorgate	4.97	4–5	Industrial and good residential
7	Parliament Hill Fields to Holborn	3.61	5–8	Good residential
9	Tally-Ho Corner, North Finchley, to Moorgate	11.51	8	Industrial and good residential
11	Highgate Village to Moorgate	4.83	4	Industrial and good residential
13	Highgate, Archway Road to Aldersgate	3.84	5–6	Industrial
17	Highgate, Archway Road to Farringdon Street Station	3.95	5–6	Industrial
19	North Finchley, Tally-Ho to Euston Road	10.19	8–8½	Industrial and good residential
21	Wood Green to Holborn	6.20	6	Industrial and good residential
27	Seven Sisters Corner to Euston Road	5.37	8	Industrial and good residential
29	Enfield to Euston Road	10.63	8	Industrial and munition
31	Palmers Green to Euston Road	7.46	8	Industrial and good residential
35	Highbury Station to Scotland Yard	3.58	2½–3	Mainly industrial
37	Manor House to Aldersgate	4.14	6	Industrial and good residential
41	Manor House to Moorgate	3.91	4–5	Industrial and good residential
43	Stamford Hill to Holborn (via Kingsland Road)	4.91	3–6	Industrial and good residential
45	Stamford Hill to Moorgate (via Kingsland Road)	4.01	6	Industrial and good residential
47	Stamford Hill to London Docks	4.49	5–6	Industrial and good residential
49	Stamford Hill to Liverpool Street Station	3.77	5–6	Industrial and good residential
51	Manor House to Bloomsbury	4.49	8	Industrial and good residential
53	Thapham Common to Aldgate	5.38	3	Mainly industrial
55	Leyton "Bakers Arms" to Bloomsbury	8.87	6	Mainly industrial
57	Leyton "Bakers Arms" to Liverpool Street Station	7.42	5–6	Mainly industrial
59	Edmonton Town Hall to Holborn	8.42	6	Industrial and munition
61	Leyton "Bakers Arms" to Aldgate	7.77	3–4	Industrial
63	Ilford Broadway to Aldgate	6.94	3–4	Industrial
65	Green Street, Barking Road to Bloomsbury	7.83	3–4	Industrial
67	Barking Broadway to Aldgate	7.22	3–4	Industrial
69	East Finchley Station to Euston Road	5.08	8	Good residential and industrial
75	Stamford Hill to Holborn (via Essex Road)	4.81	6	Industrial
77	Hackney Station to Aldersgate	3.59	6	Industrial
79	Waltham Cross to Smithfield Market	13.23	6	Industrial and munition
81	Leyton "Bakers Arms" to Bloomsbury (via Essex Road)	8.68	4–5	Mainly industrial
83	Stamford Hill to Moorgate (via Southgate Road)	4.35	6	Industrial and good residential

THE TRANSPORTATION STAFF

The services of the London County Council Tramways are handled by a staff which includes thirteen district superintendents, eighteen district inspectors, 153 ticket inspectors, three assistant ticket inspectors, four motormen's instructors, two motor demonstrators, 136 traffic regulators, thirty acting traffic regulators (at motormen's wages), eighty-two assistant traffic regulators, fifteen night inspectors, eighty-four assistant night inspectors (who also act as depot cashiers), nine women depot inspectors, 2560 motormen, 1677 male conductors and 1429 female conductors for a total of 1244 motor cars and 114 trail cars in actual operation.

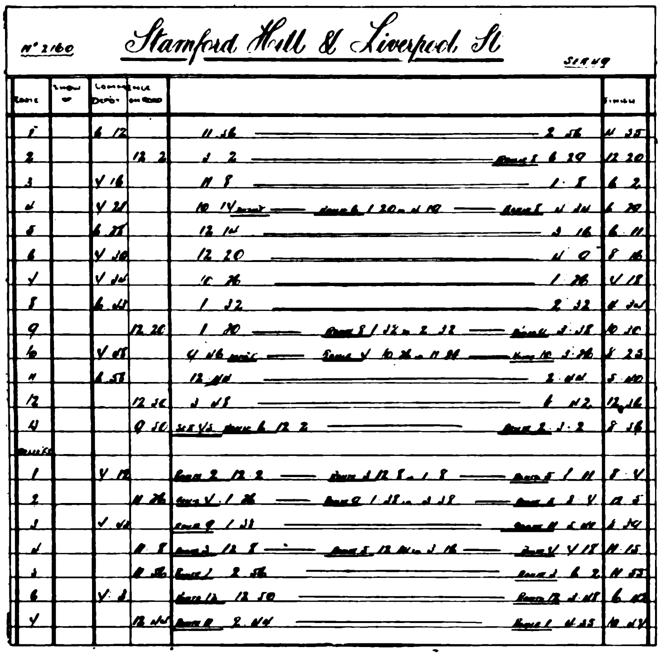


TRAFFIC CHARACTERISTICS GRAPH BASED ON L. C. C. CARS IN SERVICE THROUGHOUT THE DAY

The following are the rates of pay formerly applying to a fifty-four-hour week, but now under the agreement of March 20, 1919, to a week of forty-eight hours, including signing-on and signing-off time:

District superintendents	60 to 90s. weekly
District inspectors	52s. 6d. weekly
Ticket inspectors	42 to 45s. weekly
Ticket inspectors	42 to 45s. weekly
Traffic regulators	42 to 45s. weekly
Assistant traffic regulators	30s. weekly
Night inspectors in charge	45 to 50s. weekly according to number of cars in service
Assistant night inspectors	40 to 45s. weekly
Depot inspectors	40 to 45s. weekly
All of the foregoing grades are paid a war bonus of 30s. weekly.	
Motormen and conductors	5s., 5/3d., 5/9d. and 6/6d. a day during successive six-months periods
War bonus to motormen and male conductors	5s. a day
War bonus to female condutors	20s. weekly on entering service; 3/7d. a day after three months service; 3/11½d. a day after nine month's service, and 5s. a day after twelve months' service

The men classified in the foregoing table as inspectors and traffic regulators are worked in duties of nine hours as follows: Early turn, 6 a.m. to 11 a.m., and 2 p.m. to 6 p.m.; late turn, 11 a.m. to 2 p.m., and 6 p.m. to 12 midnight. The night inspectors have both transportation and fiduciary duties. They keep the time of motormen and conductors, give out conductors' ticket boxes, enter items for the payroll, keep records of lost car mileage and of wheel mileage, make weekly returns of late and sick men, and prepare monthly returns of the



Nº 2160 Stamford Hill & Liverpool St

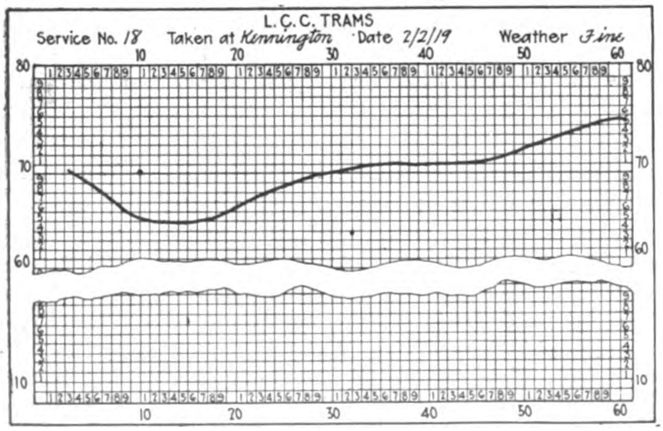
SPECIMEN L. C. C. DUTY SHEET—MOTORMEN'S RUNS ROTATE DOWNWARD AND CONDUCTORS' UPWARD

days on which each man worked. In general, they are responsible for local supervision and discipline. Except at the smallest depots, these men have assistants to handle cash and attend to miscellaneous duties.

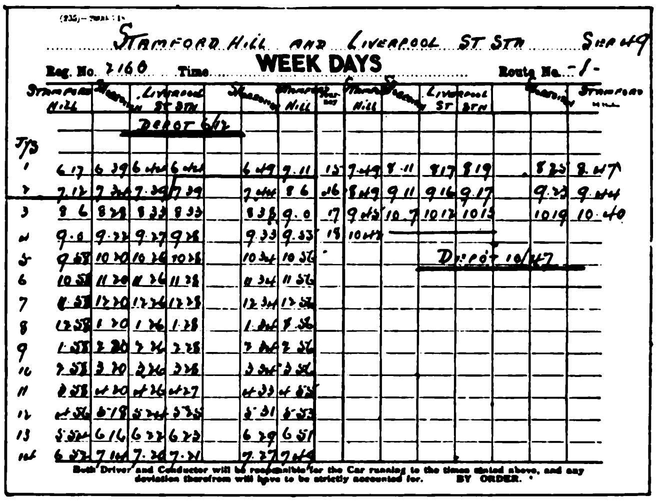
The duties of the traffic regulators include the time-point checking of the men en route, the giving of correct time to the men, etc. As on other British systems, the ticket inspectors also supervise traffic conditions along the line, whereas the traffic regulators are usually assigned to fixed posts. Inspectors, traffic regulators, and car crews are provided with pegs to permit communication with headquarters through the telephone boxes located on feeder pillars every ½ mile.

In addition to the operating staff, eight traffic inspectors are employed by the traffic development department to check car loading, irregularity of service, etc. To facilitate the work of these men, a cross-hatched report form of the style shown is used. The checker does not have to make more than a dot to indicate the number of passengers on each car passing a given point within sixty minutes. From these dots it is a simple matter to prepare the traffic curve.

In a preceding paragraph were presented the wage and war-bonus scales of L. C. C. platform employees.



GRAPH FROM L. C. C. TRAFFIC INSPECTOR'S REPORT ON CAR LOADING



Stamford Hill and Liverpool St Stn Shed 49

Reg. No. 2160 Time WEEK DAYS Route No. -1-

Depot 6.42

Depot 10.47

Both Driver and Conductor will be responsible for the Car running to the times stated above, and any deviation therefrom will have to be strictly accounted for. BY ORDER.

TIME-POINT CARD USED ON L. C. C. CAR

(The dividing line marks the end of the period during which workmen's fare may be accepted.)

The actual working time and average spreadover of motormen and conductors on motor cars are as follows:

	Average Spreadover (Hours and Minutes)		Average Actual Work (Hours and Minutes)	
Weekdays	11:51		8:25	
Saturdays	11:23		8:33	
Sundays	7:43		7:15	
Average per day for one week	——	11:23	——	8:19
(For conductors of trailers only)				
Weekdays	13:6		6:38	
Saturdays	9:36		7:27	
Average per day for one week	——	12:31	——	6:47

From the foregoing it will be seen that the fifty-four-hour week was the basis, but in practice the number of hours worked was actually less. Under the new agreement, forty-eight hours' pay (at the old fifty-four-hour rate) is guaranteed to men reporting six days a week, but they must be willing to do non-platform work if requested. Arrangements are included for six days' annual vacation with pay. Employees who do not get at least twenty-four hours' notice that they will be required on their rest day are entitled to the differing overtime rates for service on such occasions.

Duty sheets, or assignments of runs, are posted at the several carhouses in the form reproduced. The duties are rotated from week to week in the order of posting so that the men can see what their runs will be for weeks ahead. Relief men always step directly into the duties of the men they replace.

A time-point card is also placed in each car every day by its first motorman. Besides showing the work of the car for the day, the card makes a division between the time-points within and following the time when fares at the workmen's rate may be accepted at a given point. In the case of the car card reproduced this time is 7.39 a.m.

POWER-SAVING CAMPAIGN ALREADY SHOWS PROMISING RESULTS

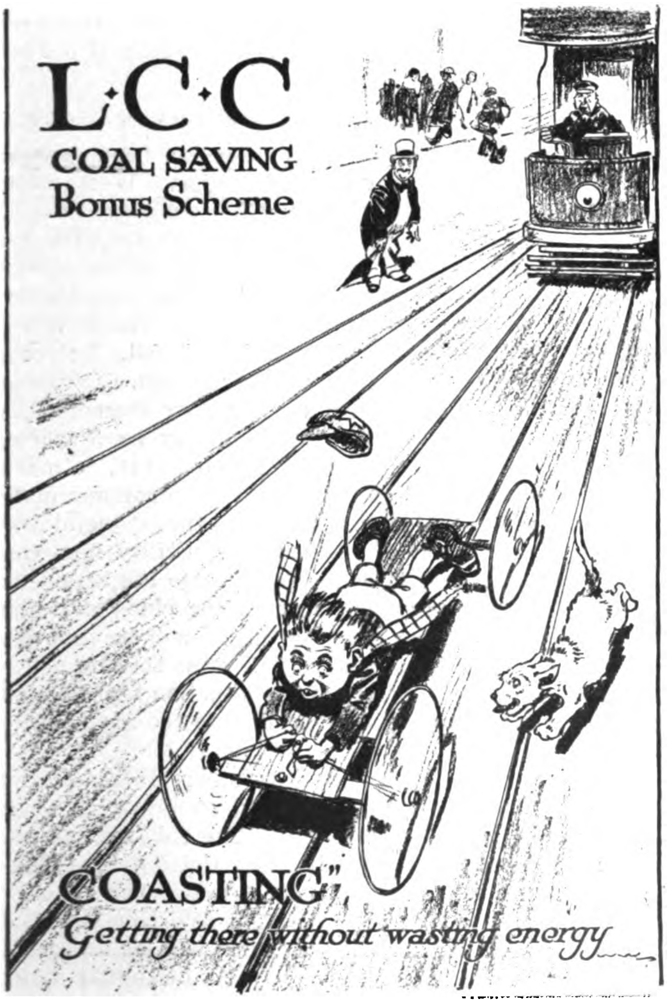
The London County Council Tramways cars are not equipped with car-checking instruments. Nevertheless, an endeavor was made to interest the men in more economical operation by dividing among all platform employees (in proportion to the actual number of days worked by each employee during the quarter ended Dec. 31, 1918) one-half of any saving in coal. Six motor inspectors were put on to assist the motormen to raise their efficiency in controller handling, and the management put out various publications, including the accompanying amusing poster entitled: "Coasting-Getting there without wasting energy." The saving over the preceding quarter was 3 per cent, equivalent to about $10,000, of which one-half went to the platform employees in accordance with the plan. In all 351,392 days were worked during the quarter, making the amount paid 1.47 cents a day. The results were set before the employees as follows:

COAL SAVING BONUS TO DRIVERS AND CONDUCTORS

Car-miles run between Sept. 26 and Dec. 25, 1918		11,831,457
Based on 1917-1918 figure of 2.27 direct current units (kw.-hr.) per car-mile, the consumption of units would have been	26,857,407	
The actual units consumed from Sept. 26 to Dec. 25, 1918, were	26,026,065	
Showing a saving in units (kilowatt-hours) of		831,342
The average price paid for fuel was 37s. 10d. per ton, and the cost of fuel per direct current unit was equal to	0.622d.	
The total saving, therefore, was 831,342 units at 0.622d. or a total of		£2,154 11s. 3d.
Half this sum will be distributed in accordance with the scheme approved by the Council on June 25, 1918. This will amount to		£1,077 5s. 7d.

This notice was issued Jan. 20, 1919, and the awards were paid during the same week. The notice pointed out that a much greater saving than 3 per cent and consequently a greater bonus could be obtained by further perseverance and care.

Part II of this article, describing why and how fares were increased and what the results were, will be published in the next issue.



FUEL-CONSERVATION POSTER USED IN L. C. C. POWER-SAVING CAMPAIGN

Railways and Tramways in Holland

Conditions During War and Future Trade Opportunities Described by a Dutch Electric Railway Manager

H. F. Adams, recently general manager of the Haarlem Electric Railway in Holland, is now in this country, as mentioned in a personal note in the issue of July 5. When interviewed by a representative of this paper, he had an interesting story to tell of the difficulties of maintaining electric railway service during the war in a country which was neutral but very close both to the scene of hostilities and to Germany. Many of the effects of the war on tramway operation experienced in this country were duplicated in Holland but on a much larger scale. One reason for this is that Holland in the past has manufactured little or no electric railway equipment and so has had to depend for its supply on imports. Thus, most of the railway motors in the past have come from Germany. Some electric railway equipment has been imported from England and the United States.

Mr. Adams' own company, which has a high-speed line connecting Haarlem, Amsterdam and Zandoort, was originally controlled in America, being owned by the Netherlands Tramway Corporation of New York. Later it passed under Dutch control. After the war was declared the company appealed to the British firms for electrical equipment, but the reluctance of the Ministry of Munitions and of the War Trade Department to issue the necessary priority certificates and export licenses made it almost impossible for the company to get anything. Not until the armistice was signed were the British firms able to take the matter up, and even then could accept only small orders for motors and none for rails and rolling stock.

Mr. Adams then took the matter up formally with the President of the Board of Trade last December, pointing out that in spite of the unsettled internal political conditions the German manufacturers of electrical and other apparatus had begun an aggressive sales campaign and were endeavoring to recapture the market in Holland and other small neutral countries. In this they were assisted by the government, which had adopted a scale of priorities just the reverse of that ruling in Great Britain; that is to say, exports to neutral countries were placed by Germany at the top instead of at the bottom of the list.

FARES INCREASED DURING WAR

As to operating conditions during the war, Mr. Adams says that fares were raised from 80 to 100 per cent. It was fairly easy to do this because most of the tramway lines in the country are owned by the municipalities. In fact, the only cities in which this is not the case are Rotterdam, Haarlem and The Hague. The municipal lines having put up their fares, the private lines were able to increase their fares also. There is a strong tendency in Holland at present, according to Mr. Adams toward municipal operation everywhere, as soon as the franchises have expired.

Mr. Adams believes that Holland and its colonies afford an excellent market for American goods, provided that Americans make an effort to cultivate it. According to him, the Germans in the past have always understood how to make their propositions as attractive as possible in meeting the special demands of their clients, whereas the British and American manufacturers stick to their standard types in every branch of machinery they manufacture. This is the chief reason for the success of the German manufacturer in the past.

As regards the demand for electric railway apparatus, Mr. Adams considers there will be some electrification of steam railroads in Holland as well as elsewhere in Europe as soon as prices are reduced to, say 30 per cent above pre-war prices. He believes, however, that the electrification of steam railroads in some of the Dutch colonies, especially in the highly cultivated island of Java, is more likely to come first, as in many places plenty of water power is there available. The colonial government authorities have been studying the possibility of such electrification for a long time, and at present seem to be in favor of carrying out their plans in the near future.

Mr. Adams is not planning to return to Holland but will engage in business here.

Getting the Right Kind of Publicity*

The Newspaper Is the Medium Which Is Most Influential and Which Will Coöperate With the Utility in Getting Real News to the Public

BY BERNARD J. MULLANEY

Director Illinois Committee on Public Utility Information, Chicago, Ill.

IN THE larger aspect of their respective lines of business all utility men and the interests they represent and the properties they manage are in the same boat. All are, or have been, subject to public ownership agitation of which not so much needs to be said now, thanks to the experience with government management of rails and wires and to the publicity given the results.

But all the utilities are still subject to regulations as to rates and service. All have to live on the rates they are permitted to charge for their service. All have to borrow money for extensions of plant and for new undertakings. Therefore, it is to the interest of everybody in the utilities industry that the essential, fundamental facts of controlling influence should be understood by the public. The one sure way of getting into the good graces of the public is summed up in the word "Publicity." This word I dislike greatly because of its misuse, but no other that fits has yet been coined.

Opportunities for publicity are all around us, but the best of all is the newspaper. That "everybody reads the newspapers" is almost literally true, hence the newspaper is the main channel to successful, result-getting publicity. Other agencies can be made to feed and supplement it; they cannot take its place.

How to get newspaper publicity is the crux of the problem. If one could offer a guaranteed, sure-fire method of obtaining desired results he could collect fees that would make Rockefeller jealous of his income. But one can point out some things to be done and some things not to be done. As for results they must be waited for as the farmer waits for his crop.

In summoning "publicity's artful aid," let it be artful, if you please, in the sense of being skillful and ingenious, but not artful in the sense of "tricky, crafty, cunning or artificial." The first requisite of publicity effort that is to be more than temporary is that it shall "come clean;" it must be honest, open and above board; it must be presented without false pretenses, without specious argument and without special pleading. If electric railways or other utilities haven't a case good enough to stand on its merits, publicity should be shunned as a pestilence.

As for publicity matter, the only good publicity matter is that which is printed. Publicity matter that the utility men think is exactly the kind of stuff that ought to be printed, is usually the worst kind; it is almost sure to be so one-sided. Publicity matter should be prepared with an eye to what will be printed and believed. Relatively slow and perhaps unconscious absorption of facts, which tend to produce a favorable opinion, is more to be desired than quick conversion, for the favorable opinion thus built up will last longer.

Publicity effort for the electric railways should start in the home-town newspaper, by using the advertising columns to boost business. The manager may be a superman in the business; he may give his customers the best possible service at the lowest possible price, but the service will never be appreciated unless the customers are told about it. It is human nature to take things for granted; to regard the thing close at hand as commonplace unless its uncommon character is pointed out.

The newspaper publisher is, of course, a customer of the railway; he has to be. If the railway is not a customer of his it ought to be. The service should be advertised. Being a customer of the home-town newspaper publisher is a long step towards becoming a friend of that publisher. But using advertising space will not buy the publisher's unqualified support. He gives full value received in the advertising space he sells, if proper use is made of it.

RAILWAY UTILITY SHOULD BE A SOURCE OF NEWS

Another step is to make news for the home paper. When the company or one of its officials is starting something the home paper should be told about it. If the business is honestly conducted, as, of course, it is, no risk is run in talking about it.

The railway men should be part of the community life of the town; of the chamber of commerce or other business men's association, both in it and of it. Interest should be taken in the affairs of other men. Common cause should be made with other utility men in the town for the good of the utility industry as a whole. It is up to the utility men, by pulling together, to make other men understand the essential and important place which the utility industry occupies in the financial and industrial enterprises of the country. Utility men can bring the fundamentals of the industry to the attention of all other business men through the clubs and the chambers of commerce in a way that cannot be ignored. At the same time more news will be made for the newspaper publisher. The facts of the situation will become more and more familiar, day by day, to the newspaper-reading public.

To summarize: This and every other branch of the public utility industry needs sound public opinion on its side to make its business safe. The only way to get that public opinion is by publicity. Getting that publicity lies primarily with the home town paper of each of you. Let each man cultivate that field honestly and intelligently and the entire country will be covered. Then the "public utility question" will disappear from controversy and the business will be as sound and as solid and as immune to attack as the public schools.

---

*Abstract of paper read before Illinois Electric Railways Association in convention at Rockford, Ill., July 16, 1919.

Mechanical Aids in Handling Fares

Detroit United Railway Uses Labor-Saving Devices Which Permit Sorting and Counting of Day's Receipts With 25 Per Cent of Force Required for Hand Operation

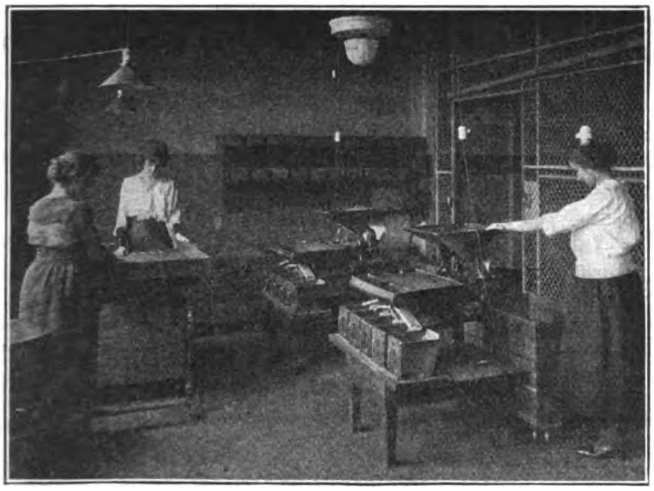
THE daily manual labor of handling fares on large city lines is obviously an item of considerable importance. Any equipment eliminating one or more handlings of the money or permitting it to be handled with greater speed, ease and accuracy is valuable in that the railway is thereby able to handle the day's receipts with a greatly reduced force. Such a saving is especially important in this day of restricted income, and the success of the Detroit lines in effecting it should be helpful to other companies.

The Detroit United Railway has 1000 cars equipped with Cleveland fare boxes. These represent approximately 85 per cent of the city service, and they operate on twenty lines out of twelve car houses, divided six on the East Side of the city and six on the West Side. The fare box is made with a cash box or, as referred to hereafter, a vault which when withdrawn from the fare box automatically becomes locked. Thus the money or tickets deposited by the passenger drop directly to the vault when released from the inspection plate by the conductor and never pass through the conductor's hands.

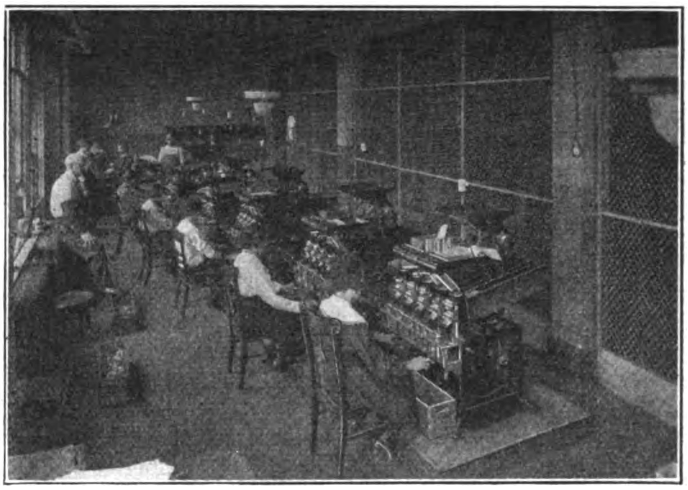
VAULTS ARE CHANGED BY SPECIAL RECEIVER AT CAR HOUSES

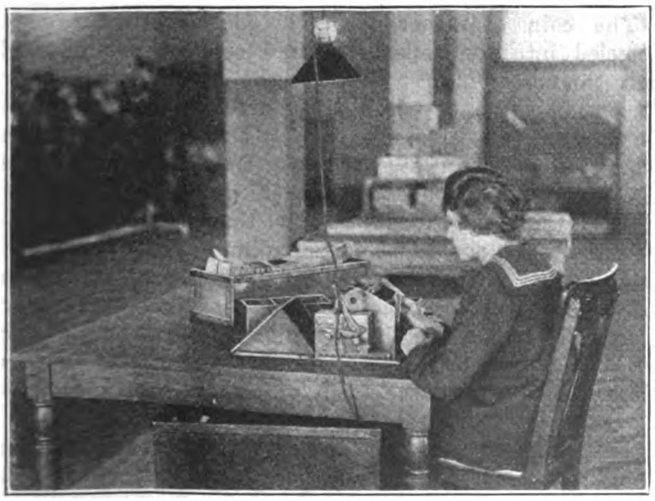
The vaults, which are interchangeable, are "pulled" from the cars by a special box receiver at the car house at the end of the day's run, or at any time when a car has to be laid off for repair. In cases where the ladder track passes the office door of the car house, the vaults are changed directly from the office. Here they are stored in specially constructed truck-conveyor racks holding sixty vaults under lock and key. In some cases a small building has been erected beside the ladder track, and the vaults are stored here until the truck conveyor is loaded. This is then locked up and wheeled to the office.

INSPECTION TABLE AND SMALL PRELIMINARY SORTING MACHINES

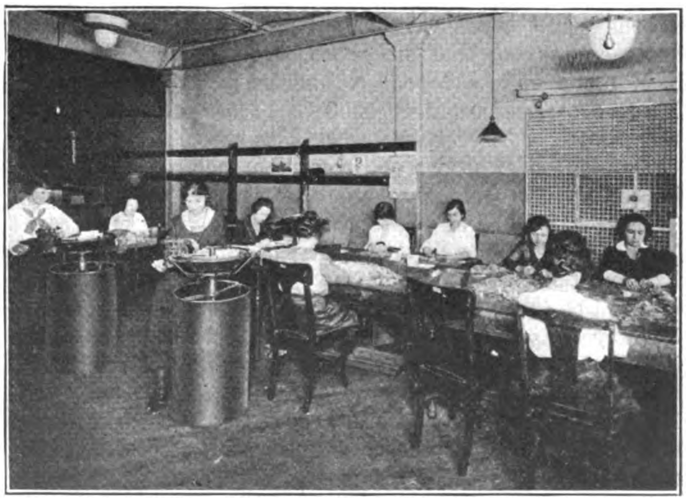


SORTING, COUNTING AND WRAPPING COINS AT THE RATE OF 200,000 AN HOUR





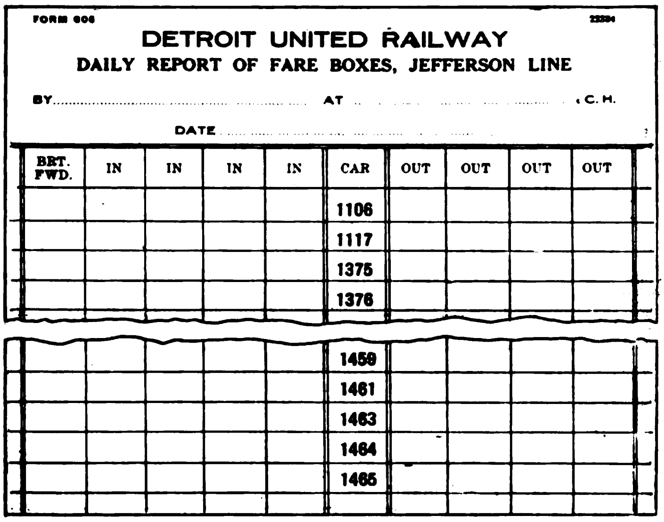
COUNTING 60,000 TRANSFERS AN HOUR IN DETROIT



SORTING AND WEIGHING TICKETS AND COUNTING BY TICKOMETER

At one yard, where lines of heavy traffic terminate and where the cars returning for the night enter the yard at the end opposite the office, a single-truck car has been especially rebuilt to accommodate the truck conveyors. This car, manned by a box receiver and a recorder, is stationed on a short spur beside the ladder track. During the period immediately following the rush hours in the evening, vaults are removed on an average of every thirty seconds. About nine o'clock in the evening the car makes a trip to the car house office and exchanges its load of full vaults for empty ones.

A record form such as is shown in the accompanying illustration is used by the recorder. Down the center of the page appear the car numbers. As a car or train approaches, the recorder locates the number on the sheet and on the "in" side writes the number of the vault which the receiver says is ready for installation. On the "out" side the recorder inserts the number of the vault withdrawn from the car. Space is reserved for four changes of vaults per day, although one change is customary and more than two are exceptional. At the beginning of the day's work the recorder notes at the extreme left of the form the number of the vault last installed. If that should not be the number of the vault next withdrawn, it would immediately become apparent that either an error in recording had been made or the fare box had been tampered with. There are approximately 1300 to 1400 vaults to "pull" each day.



FORM 606 [illegible]

DETROIT UNITED RAILWAY

DAILY REPORT OF FARE BOXES, JEFFERSON LINE

BY .... AT .... C. H.

DATE ....

BRT. FWD.	IN	IN	IN	IN	CAR	OUT	OUT	OUT	OUT
					1106				
					1117				
					1375				
					1376				
					1459				
					1461				
					1463				
					1464				
					1465				

FORM FOR RECORDING VAULTS DRAWN FROM AND INSTALLED IN FARE BOXES

Two collection crews of three men each are employed to collect the money from the twelve car houses. Collection is done at night, the crews starting out from the downtown office at midnight with street cars rebuilt for this purpose. They carry keys to unlock the fare-box vaults (each line using a different lock), but during the day these keys are kept under a combination lock in the accounting department. Each crew carries a sufficient number of steel money boxes, 14 in. square by 15 in. deep, for the receipts from each line to be kept separate. They also carry numbered pad locks with which to secure these boxes, the keys for these being retained by the accounting department.

One of the crew remains at all times with the car as watchman, while the other two open the vaults in the presence of the station master and empty the contents into the money boxes. An identification slip is dropped into the box, giving the name of the line and the date, and the box is then locked with one of the padlocks mentioned above. Every vault has to be emptied and the contents locked up in the presence of all three men. If one should be called away for any reason, the work must stop. When the work is finished, each man must sign a statement that the work was done in his presence. The collection crews make the rounds of the twelve car houses in from six and one-half to seven hours.

The money boxes turned over to the accounting department contain nickels, dimes, pennies, quarters, half dollars, Canadian pennies, Canadian nickels, about fifteen different classes of tickets, and even a few counterfeit coins. The first step is to separate the coins from the tickets, to accomplish which by hand would require the services of ten girls. For this work a special separator has been designed and built by the company under the direction of Sylvester Potter, master mechanic. The money box containing the day's receipts from one line is placed on the hand-operated elevator, as shown on the next page. This machine operates by a double gear with a brake release for lowering the platform and has a capacity of 800 lb. The platform is raised to the top of the separator, a handle is attached to the box and it is swung over the hopper by a trolley chain tackle.

The contents of the box pass from the hopper onto a horizontal screen with holes of sufficient size to pass a quarter or any coin of smaller size. One end of this screen, operated by belt from a 5-hp. motor, maintains a vertical shaking motion which causes the coins to drop through the screen and keeps the tickets loose and in motion. The tickets are caught by a draft coming up through the screen from a fan located at the shaking end and are blown through a chute into a wire basket. The fan has a horizontal shaft, 20 in. long, and is equipped with four horizontal blades arranged on a 15-in. diameter. It is driven by the same 5-hp. motor. The coins drop into a chute from which they pass into a box 20 in. x 22 in. x 18 in. deep. It will be noticed that this box is equipped with wheels for convenient handling.

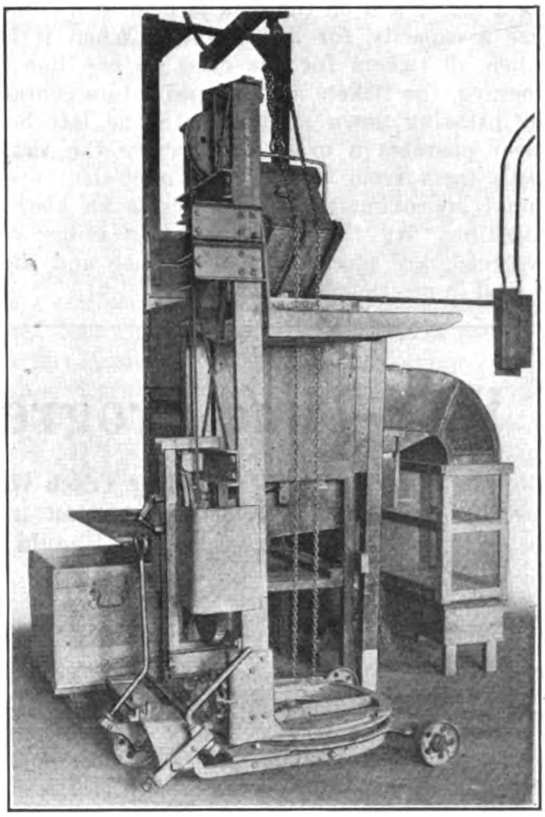
ALL COINS ARE SORTED, COUNTED AND WRAPPED MECHANICALLY

The coin container with its identification tag is wheeled into the separating and counting room, and here the money is first placed in the hopper of a Sattley sorting machine, of which there are two in use. From the hopper the coins pass onto a series of five screen plates tilted at a slight angle from the horizontal and maintaining a horizontal shaking motion. The top plate retains only coins larger than a quarter, the second retains quarters and Canadian pennies, the third nickels, the fourth pennies and the last dimes. Canadian dimes pass through the last plate onto a stationary plate. Owing to the shaking motion and the angle at which the plates are maintained, the coins on the various plates work toward the front of the machine and pass through chutes into separate boxes.

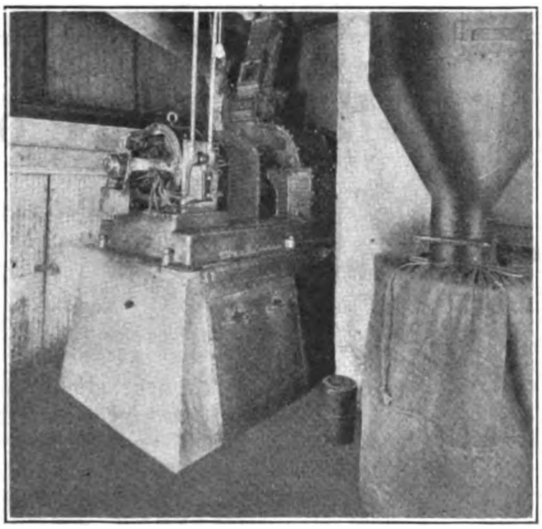
The main purpose of these two sorting machines is to eliminate all coins of larger denomination than a dime and larger size than a nickel. Such coins are put into separate boxes for counting at the end of the run in the total for the respective lines. The dimes, nickels and pennies are emptied together on a sorting table, where three girls sort them over rapidly and pick out any counterfeit or multilated coins or foreign pieces. The good coins drop through a series of holes at one end of the table into the rolling coin boxes.

The coins are now placed in the hopper of a large Sattley sorting and counting machine. Each of the five machines in use has a capacity for handling 40,000 coins an hour. They separate the coins as did the first machines, but in this case there is individual passage from the hopper to the three top plates, all of which retain the nickel. As before, the fourth plate retains pennies and the fifth dimes. From the shaker the coins drop into a vertical tube, at the bottom of which is a paper tube coin wrapper open only at the top.

These wrappers are automatically fed into position from racks at the back of the machine to a revolving disk which has provision for four wrappers. Each coin that drops into the wrapper is registered on a meter and when a wrapper has received forty nickels, fifty dimes or fifty pennies, as the case may be, the disk revolves a quarter of a turn, an empty wrapper takes the place of the full one, the full one is automatically crimped on the open end and a new wrapper drops into position. With the next quarter revolution the crimped wrapper drops into a box below and the same process is repeated.



AT RIGHT, SEPARATOR FOR TICKETS AND COINS, AND ELEVATOR FOR HANDLING MONEY BOXES



BELOW, DEVICES FOR PULVERIZING TICKETS AND TRANSFERS INTO SALABLE PULP

The counting meter is similar to the meter on an automobile in that the coins for the run of one line are registered on what would correspond to the trip dial on an automobile, and the total number of coins handled by the machine for the day is registered on a separate dial.

Each girl operating these machines fills out a form recording the number of coins of each denomination counted for each line. At the end of the day she totals this report, indicating the money value of each denomination counted for the day and the total cash counted. This cash report goes to the cashier's department.

Coins Are Sacked and Some Weighed as Double Check

The boxes of wrapped coins are taken from the counting and wrapping machines to the sacking table, where the rolls are placed vertically in boxes of the proper size to hold fifty rolls of dimes, nickels or pennies. These boxes are emptied into canvas sacks which are tied up, tagged and sealed. A white tag is placed on a sack of dimes, a white tag of different shape on the nickels, a blue tag on the pennies and a red tag on the odd money at the end of the day. In any case the sacker places her initials upon the tag to signify that the amount is correct, as it would be obvious to her if a roll was missing, if a roll of the wrong coins was included or if any of the rolls were not properly filled.

The number of nickels is greatly in the majority, and as a double check on the sacks of nickels these are weighed. The weighing is done by the man who lifts the coin boxes around and does other heavy work, and should the weight be incorrect the seal is broken and the contents examined or if necessary counted. Otherwise the tag is stamped with date and again initialed as O. K.

These sacks are placed in a large rolling box which holds approximately eighty-four sacks of nickels. When the box is full of sacks containing coins of various denominations, the cover is locked in place and the box is taken by elevator to the cashier's department. The only sack opened by this department is the one labeled with a red tag, indicating that it contains the odd money ending the day's run. Some of the sacks are sent to the car houses for change and others are sold to the banks, who without opening them, resell them to customers.

The tickets were last left in the wire basket at the separating machine. Those for each line are then emptied into an individual box. There are fifteen different classes of tickets, each made distinctive by a different color or a special marking. The boxes are emptied one at a time on a sorting table, where several girls separate the tickets into the various classes. The coin-counting machine operators generally complete their run about the middle of the afternoon, and for the remainder of the day they assist in the ticket sorting.

Some classes of tickets, such as the workingmen's ticket, the reduced rate tickets, etc., are used more extensively than others. Ten of the fifteen different classes fall in this group, and each of these classes for each line is weighed on a sensitive scale. The weight in pounds and ounces gives a very accurate record of the number of tickets, and this is recorded. The other five classes are each wrapped separately for each line and are counted on the tickometer shown in the accompanying illustration. There are two of these machines in use.

The tickets are placed in the feeder of the magazine and by the turning of a crank are conveyed by small rubber wheels from the feeder to the rim of the revolving disk top of the machine. Each ticket is counted on a meter and on the disk is held in a clip. The rim has a capacity for 200 tickets. When it is filled or when all tickets for one class on one line have been counted, the tickets are dropped into a container below by pressing down a lever with the left hand. This lever operates a brass strip above the tickets which pulls them from the clips. An efficient operator can count approximately 15,000 tickets an hour with this machine. All tickets, after being either counted or weighed, are placed in a steel case and the cover is locked in position.

A machine of a similar principle to the tickometer is used to count the transfers, which come to the department with the conductors' trip sheets. This machine is, however, operated by electricity and will count 60,000 transfers an hour. The transfers are placed in the feeding device with one hand, and a lever operated with the other sets the rubber wheels in motion. The machine has a recording dial for both the individual run and for the day's total operation. The operation of a small lever between successive runs sets the run meter back to zero. The transfers pass into a large box below the table.

Each night the tickets, cancelled transfers and unused transfer pads are emptied into a chute and pass down five floors to the basement and into the hopper of a swing hammer pulverizer. Here the material is beaten into pulp. This machine is driven by a 25-hp. motor. The pulp is drawn from the pulverizer through an 8-in. pipe by suction created by a fan driven by a 5-hp. motor and passes into a large sack.

It will be noted from the illustration that the lower part of the sack is canvas to prevent the pulp from being blown through the sack, while the upper part is gunny sack to permit the escape of air. The average amount of pulp resulting from a day's run of tickets and transfers is from 1200 to 1600 lb., and it is sold for an amount which more than pays for the disposal of the waste material.

War-Time Progress in Maintenance of Way*

Better Track Will Result If Less Money Is Spent On Construction and More on Maintenance—Paving Burden Should Be Assumed by Public Authorities

By JOHN B. TINNON
Engineer Maintenance of Way Chicago & Joliet Electric Railway

THE principal trouble confronting the maintenance-of-way engineers on electric railways for the last year or so has been how to maintain roadbeds without money. In the past the maintenance-of-way department has only in isolated cases had sufficient money allotted to it properly to maintain the property. Whereas our electric railways have in most cases been constructed in accordance with the highest standards, our standard of maintenance has always been low. On account of the pressure of increased prices and inadequate receipts during the war period, even this standard has not been adhered to, and on most properties the maintenance-of-way department has been forced to devise all kinds of contrivances to make worn-out tracks serviceable for operation long after their life had gone. Incidentally, this has developed some very excellent devices and has been a very good education for the maintenance-of-way engineers.

On most electric railways, even to a great extent on the largest properties, maintenance work and construction work have been carried on by practically the same supervising forces. It is only natural, therefore, that the larger amount of the engineering department's time has been devoted to construction and reconstruction work rather than maintenance. Only during the last two years or so, when practically no construction work was done, and it was necessary for the engineering department to spend considerable thought and energy on repairs, has the industry made any marked development in maintenance-of-way work.

For years past the larger part of our electric railway standards and methods have been based on steam railroad standards and methods, partly because most engineers on electric railways had their original schooling in steam railroad methods and partly because of the feeling among the electric railway men that the steam roads had worked out many of these problems and what had proved satisfactory to them should also be satisfactory for electric railway practice. And indeed the work on interurban lines and open tracks is about the same as on steam roads with maintenance of distribution systems added. Up to two or three years ago we had no books of authority on electric railway track maintenance, and, in fact, we have now no complete and adequate books on this subject which can be turned over to the newcomer for his guidance. Each man has therefore been forced to work out his own problems to a considerable extent, which has led to a great diversity of practice without the establishment of any particular standards.

Many electric railway engineers have in the past felt that the way to solve the maintenance problem was in the original construction. In our larger cities very heavy, expensive types of construction were adopted and the smaller companies followed the larger cities without giving any consideration as to whether they could afford the expenditure or whether the types adopted met their conditions. We have spent our money in new construction only to find that the type of construction adopted did not bring about the results that we expected and that we now have very expensive maintenance work to keep up the tracks so constructed. I believe that we are rapidly coming to the point where, with the adoption of lighter equipment, we will develop a more economical track construction that will be just as serviceable as many of the heavy types in use during the past ten years.

---

*Abstract of paper presented at summer meeting of Illinois Electric Railways Association, Rockford, Ill., July 16, 1919.

At present prices, the types of track construction commonly used by electric railways in city streets cost not less than $40,000 a mile. Let us assume that by the adoption of cheaper construction we can build a serviceable track for $35,000 a mile, saving $5,000 on the original cost. The interest charge on this $5,000 will amount to at least $300 per year. Most properties figure their track depreciation at from 4 per cent to 5 per cent. The saving therefore in depreciation would amount to $200 or $250 per year, or by the saving of $5,000 in the original cost of construction approximately $500 per year would be saved in operating charges. Now, if even 75 per cent of this $500 is given to the maintenance-of-way department in addition to the usual allotment, it would amount to an addition of $375 per year, or $7,500 over a period of twenty years, which is about the life of track in city streets.

During the past two or three years we have developed methods of repairing defects in track work that we never thought of a few years before. Welders and grinders of various types have come into common use. We are learning to repair special work parts instead of buying new ones when failures occur. We have learned that battered joints and broken rails can be welded and repaired at no unreasonable expense. We have learned that we cannot build a track that does not have to be maintained and that repairs on tracks recently constructed is no great criticism of the construction but a wise precaution, and we are, therefore, willing to accept a less expensive type of construction and spend a little more money keeping it up after it is built.

A SUCCESSFUL REPAIR JOB AT JOLIET

The question of track maintenance in city streets, paving not considered, is mainly a question of maintenance of joints and special work. Ties in paved streets are seldom renewed, nor indeed is renewal often necessary even with the cheaper grade of ties until the track is rebuilt. The principal cause of so much trouble with joints in paved streets is that the paving prevents the tightening of bolts and other precautions that are used on open track. But even if the joints do become battered and the rail ends broken there are many ways in which very satisfactory repairs can be made at a comparatively small expense. For example, on the Joliet property we had a piece of track about a half-mile long which had reached such a point that a few years ago we would have almost recommended its reconstruction. Without the purchase of any new material except bolts and bonds the joints were repaired at a labor cost of about $3 a joint. This track is now in fairly good condition, and reconstruction has been postponed some five or six years.

The rail section was 6-in. Lorain 263 and the joints were 24-in. fishplates. The rails had become battered at the ends and broken, and it appeared like a hopeless task to do anything except relay the rail. We had in our yard a quantity of old 36-in. continuous joints that had been removed from a piece of track that had been relayed. The ends of the rails were cut off about 4½ in. back from each end and a piece of second-hand rail about 9 in. long was inserted. The old continuous joints were heated in the center and drawn up to fit tightly against the insert. The rail was then drilled to fit the new joints, one hole being placed in each end of the insert piece, and the joints were bolted up. The surface of the rail was then ground smooth with a track grinder.

There are many methods such as this that can be used for the repair of track joints. After all, the joint problem is not so serious as we have been accustomed to believe, as a good blacksmith can repair old joints for such use, when satisfactory smiths can be found, and even new joints can be purchased or the insert piece can be welded by the use of an old pair of fishplates. Track special work can be repaired in many similar ways. Broken switches and frogs can be readily welded and made almost as serviceable as new ones. I am not an advocate of trying to build up new wearing surfaces for permanent wear, as this is very seldom done in such a manner as to make it more than a temporary repair. New centers can be purchased, however, and inserted in old pieces at a very great saving over the cost of an entire new part and this method makes a permanent repair, whereas the building up of wearing parts generally destroys the entire part sooner or later with no permanent result.

THE PAVING PROBLEM IS ALWAYS WITH US

One of the greatest sources of expense to the maintenance department having city tracks is the maintenance of paving. The type of vehicular traffic on our city streets has changed very much in recent years so that the type of pavement that was found satisfactory a few years ago is wholly unsatisfactory for the fast moving, heavy traffic that we have to-day. Paving requires more maintenance now than ever before, due partly to the additional wear and tear which we now find the heavier loads and high speed traffic cause, and partly to the necessity of having a smoother pavement on account of the increased speed of traffic. The granite block was formerly considered the best pavement to be used on heavy traffic streets and brick on streets with lighter traffic. We now find that the impact, suction and vibration caused by the heavy automobiles passing over pavement of these types cause them to deteriorate very rapidly. If we are to expect our pavement to give satisfactory service, we must adopt something that is much smoother than either brick or granite block. Where a few years ago many engineers considered creosoted block, asphalt and concrete unsatisfactory for pavement around car tracks now a large number advocate such types.

The cost of relaying old pavement is very high and where the track is not worn out and the paving has become rough it may be possible that satisfactory results can be obtained by pouring over this pavement a coat of asphalt or other similar material. We expect to try about a half-mile of this in Joliet this season, at a cost of about $500 or $600.

Determining "Fair Value"*

American Electric Railway Association Committee Outlines the Fundamental Principles Which Should Underlie Valuation Procedure

THIS report is predicated upon the assumption that public utilities in the future will be regulated by national, state and municipal authorities to the extent necessary to insure good service to the public and to provide a sufficient income to cover the costs of the service, including fair wages to labor and a fair return upon the investment. The rate of investment return should be such as will attract investors and the security of the investment should be placed beyond question so that the companies may obtain, at minimum rates, the capital required for the extensions, betterments and improvements necessary to keep pace with population growth and future transportation requirements. It is further anticipated that public service commissions and other interested governing bodies will recognize the opportunity that the present emergency affords them to perform a good and useful public duty by safeguarding the integrity of utility investments and by establishing methods that will insure good service to the public. They should be as liberal in their dealings with the companies as the urgency and gravity of the present general situation demand, and a proper consideration of the public interest and general economic stability will permit. On the other hand the companies should only ask for such treatment as a fair analysis of the conditions warrants, and that they can with propriety and reasonable assurance defend.

HOW SHALL "FAIR VALUE" BE DETERMINED?

Two very important items involved in determining the proper rates of fare that any company may charge to produce an adequate gross income are the "fair value" and "rate of return" to be allowed upon such value.

In view of the great importance of the item of "fair value" in rate making negotiations, the association requested the valuation committee to prepare, at the earliest possible date, a report setting forth its recommendations as to the proper procedure to follow in determining "fair value." It was the hope that through the work of this committee, representing practically all of the street railway companies in the United States, there could be evolved a method of valuation based upon safe economic principles, and acceptable to investors, public utility commissions and other public rate making bodies. In attacking this problem your committee realizes the many conflicting opinions that have prevailed and the many mistakes that have been incorporated in public utility valuations in the past. However, it is the unanimous opinion of the committee that it is the earnest desire of all interested parties, the courts, public utility commissions, municipalities and other governing bodies, as well as the companies, to evolve a method of arriving at the fair amount of capital upon which to base a return and that this can be accomplished by the application to the problem of common sense business methods.

There can be no question but that the investor in any public utility serving the public is entitled to a fair return upon his investment until it has been returned to him. Accepting this principle as an "axiom" every dollar spent in creating the property including the individual efforts (the equivalent of money) of the promoters, organizers and builders of the property, and including the superseded property unamortized out of the earnings of the road, should be included in the "fair value," also, an investor in a company is entitled to a reasonable return upon his actual original investment, plus the appreciation of the property, including its value as a "going concern," as compensation for his "initial risk" or "hazard" and his skill in successfully operating the property. In other words, an increase in capital value is the same as an increase of new capital.

GENERAL PRINCIPLES OF VALUATION STATED

With these general premises in mind the committee makes the following statement of general principles involved:

1. Where "original investment" is used as a basis of "fair value" and complete "original cost" data, covering all expenditures including promotion, organization, cost of financing, contingencies, etc., are available, there should be added to these original cost figures any appreciation, including a fair value for going concern, and there should be no deduction for unamortized superseded property or for accrued physical depreciation in a well maintained property.

2. Where full and complete original cost data are not available, the "cost to reproduce new" method should be used. An inventory of the existing property should be made using prices as of the date of the inventory. This date should coincide with the time the valuation is being made, the prices being expressed herein as "prices of to-day." To this "bare bones" inventory and unit price summation should be added the proper "overhead" percentages, "going value" and other development costs to complete a full "fair value" for "rate making purposes," and there should be no deduction for accrued physical depreciation in a well maintained property.

It is seldom that the older properties have a complete, reliable record of total actual expenditures and therefore it has become the almost universal practice to inventory the existing property and apply unit prices to the different items of construction.

In some cases, valuations have been made upon several different bases: (1) Original cost data. (2) Reproduction cost with prices as of dates of construction. (3) Reproduction cost with price as of to-day. (4) Reproduction cost with prices averaged over several years.

In all cases the proper overhead charges and development costs should be added to determine a fair value for rate making purposes.

---

*Abstract of the report prepared by the American Electric Railway Association's committee on valuation for presentation at the Atlantic City convention this fall. The committee consists of Philip J. Kealy, chairman, George Weston, Martin Schreiber, W. J. Harvie, B. E. Tilton, J. N. Shannahan, W. H. Sawyer and Charles E. Bailey. Owing to the importance of the subject at present this report is being made public now by the executive committee.

Items to be considered in estimating fair value for "rate making."

(a) Promotion expense
(b) Organization expense
(c) Brokerage
(d) Construction costs (Based upon actual property inventory at prices as of the day and date of inventory.)
(e) Overhead direct charges not included in (d)
  Engineering and superintendence.
  Storeroom expenses, cost of handling materials, clerks, general office help, contingencies.
  Contractors' profit.
  Carrying charges during construction.
  Taxes during construction.
  Insurance during construction.
(f) Going concern
  (1) Cost of consolidation
  (2) Superseded property
  (3) Created value
  (4) Development costs.
(g) Working capital

DEFINITION OF TERMS

Promotion Expense.—The initial work necessary to start a public utility enterprise requires the time, effort and work of capable men to plan the proposed service, to show its public necessity, to estimate the possible business and prepare construction costs, gross receipts and operation expense statements, and the preliminary work necessary to procure franchises, etc. This work is a service of value to the public and represents a money value properly chargeable to capital account.

Organization Expense.—An efficient organization must be carried during the formation and construction period consisting of legal, financial and business experience and ability to arrange for and carry on the details of company organization and the creation and construction of the property. This expenditure is a proper charge to capital account.

Brokerage.—The money necessary to create the properties must be arranged for through sales of stock and bonds, and bankers or brokers are generally engaged to place the securities and collect the money as required. This means: The payment of commissions, preparation of mortgage, service of registrar (corporate and individual), service of trustees, cost of certification, revenue stamps, cost of recording mortgage, public service commission costs for approval, advertising, and other expenses, and this brokerage cost should be included in any investment estimate for rate making.

Construction Costs.—A detailed inventory and classification of the existing physical property forms the basis of all "cost-to-reproduce-new" valuations, to which should be applied unit prices and costs or values as of the date of inventory. The value based upon present day prices is then in accord with the current rates of wages, the current cost of material and the current value of a dollar and is economically sound. To the "bare bones" inventory at unit prices must be added the direct and indirect overhead charges not included in the unit prices for rails, other construction materials, labor costs, etc., all as enumerated.

Overhead Charges.—The items of direct overhead charges enumerated above should require no further explanation. The purchasing of the materials, their transportation, sub-delivery, accounting, inspection, etc., require supervision and direction and the effort of large forces of storeroom and general office help, inspectors and checkers, the cost of which is not included in unit prices.

The general and detail design of all parts of the property requires the work of engineers and architects and their assistants to prepare drawings, bills of material, working specifications and purchase contracts, take the general direction of the work in the field, make estimates of cost, progress estimates and partial payment estimates for all contracts and generally supervise the progress of all parts of the construction, the cost of which could not be included in unit prices.

During the progress of the work, cash must be provided to pay the current labor, material costs and partial payment contract estimates, and interest must be paid upon this capital as it is invested during the period of construction and before the property can earn a return. The same is true of taxes, and insurance, both fire and accident. Interest, taxes and insurance during the construction period are a part of construction costs and should be a capital charge.

In the building and erection of a large property many contracts are entered into for specific kinds of materials in quantities, special machinery, track work, buildings, etc., and the item of contractors' profit is one of the construction costs that must be included in "fair value" for rate making.

The item of contingencies is an important one in any cost estimate whether it is to furnish advance information to financiers and promoters, or in connection with any large public improvement, or our own problem "the establishment of a reasonable and just investment value." This item covers the uncertainties, commissions, additions and extras attendant upon any construction job, large or small, and among many other things, includes the following unforeseen but ever-present items of delay: Removal of obstructions, the appearance of conglomerate, hard pan, or solid rock in excavations where earth had been estimated, slides in open cuts, the removal and restoration of water pipes, gas pipes, electric wires and other underground improvements, under-pinning of buildings, etc. The item of the removal of underground obstruction alone often equals 25 per cent of the total construction costs in subway work. To quote from the paper on "Overhead Charges" presented by Philip J. Kealy in the 1916 report of this committee, the following statement appears under the heading "Incidentals or Contingencies."

> During a recent hearing before the Valuation Committee of the Interstate Commerce Commission, Mr. Holbrook, Chief Engineer of the Union Pacific Railroad, stated that after the completion of the Lucin cutoff across Great Salt Lake, he had his engineering staff estimate the cost of the work already completed and the highest estimate was 40 per cent under the actual cost.

This item of contingencies is a real item of cost in every job and ranges from 10 to 50 per cent of the total cost and in some hazardous undertakings such as under-water tunnel or foundation work the actual cost is sometimes many times greater than the "bare bones" bill of material contract-specifications estimate of costs.

Going Concern.—(Health of the Property). This represents the value that exists in a completed, matured, successfully operated property and embraces the items of "readiness to serve," a "built up successful business," etc., as compared with a new property in the course of construction, or the immature condition usually prevalent at the beginning of its operation. Other development costs, including an amount equal to the deficiency of net earnings below a fair return upon the fair investment due solely to the time and expenditure reasonably necessary and proper to the development of the business and property to its present stage and not comprised in the valuation of the physical property are also involved in this cost.

Cost of Consolidation.—In the past competing companies were granted franchises in the same community and duplication of operating organizations and other expenses resulted together in less efficient and more expensive service to the public. Under one management the public has benefited by a lower average fare, the more direct routing of cars and an extension of service for a single fare. Much time, effort and expense are usually involved in bringing about a consolidation. This development expense is of value to the public, and its cost is a proper charge to capital account.

Superseded Property.—A public utility company is entitled to repayment for all of its property consumed in the service of the public. The ordinary replacement or renewal of property actually worn out in the service is charged to operating expense and is therefore amortized out of earnings. It is only when large replacements of property are made necesary by extraordinary changes of motive power such as from horse car to cable or electricity or both, or by wreckage due to violent storms, earthquakes or other unusually destructive calamities, or when because of improvements in the art, the general type of car or other property in service is replaced in large quantities that it becomes impracticable to amortize immediately out of earnings and new capital must be used. This new capital should be included in "fair value" upon which to base a return until such time as it has been amortized.

Created Value.—This item covers an important element of value that properly may be a part of "going concern value." It represents the value due to the utility having been brought into existence and becoming alive and a vital part of the community. Having pioneered the growth of the city or community and enhanced the value of both private and public property, the utility itself should be justly credited with part at least of the value it so created.

Working Capital.—Every business should have a "cash reserve" or "working capital" to "cushion" the rise and fall between income and expenditure, to carry the materials and supplies account, and especially to fortify it against any reasonable financial emergency that may arise. An adequate allowance for this item should be included in capitalization.

Bond discount.—This item has been set up as one of the problems to be considered in "rate making." A new public utility seldom sells its securities at par, but bond interest is paid upon par value and must be included in the rate of return. The question of "bond discount" has been considered in many public service rate cases and has been allowed as capital in some instances. In the majority of cases, however, it has been considered as representing prepaid interest and therefore a matter to be included in rate of return rather than to be capitalized.

ACCRUED DEPRECIATION

The prevailing practice in making valuations for rate making adopted by public service commissions and other public utility supervising bodies in the past has been the "cost-to-reproduce-new-less-depreciation" method. There has been little argument between the companies and those representing the public about correctness of inventories. More differences of opinion have arisen with respect to unit prices, overhead and "going value" percentages, and the method of determining the amount of depreciation to be deducted.

Depreciation has been classed by all students of the subject as an operating charge and not a capital account item. The only provision that can be made to take care of depreciation is by making proper repairs and proper renewals when necessary and these expenditures should be charged as an operating expense, that is, in the case of renewals the original cost of the thing replaced should be charged to renewals and any excess or betterment is a proper charge against capital. The integrity of the capital investment is thereby maintained against depreciation to the extent practicable or economically possible. An exact standard of percentage physically good to apply to any well maintained electric railway property is difficult to establish because this percentage will vary in different properties and is influenced by different types of property and equipment, the physical characteristics of soil and other local conditions, and usage. A property consisting of a large percentage of elevated or subway construction will show a much higher percentage of the total investment physically good than a surface electric railway property, Every public utility property should be maintained at 100% operating condition, but it is both impractical and uneconomical to maintain any property approximately 100% physically good. This is true for the reason that the physical per cent good of any property will vary from approximately 100% in the case of a new property, to 80% or less, in an older property, depending upon the age, the different stages of renewal cycles through which the property has passed, and the amount of additions and betterments.

There is a certain amount of total accrued depreciation that never can be taken care of in any operating, growing property. In other words, as stated above, the only practicable, economical expenditure that can be made to offset depreciation is to make repairs, and renewals when physically necessary. There is no fairness or logic in an attempt to penalize a company because it has not done the impossible. The full original investment remains in the property and the investor is entitled to a return upon every dollar until the investment is repaid to him. Where a property has not been kept in good physical condition and there is unmistakable evidence of "deferred maintenance" the subject should receive special consideration and if the property being valued has been a prosperous one in the past and the fact is in evidence that the money that should have been expended for renewals and repairs has been diverted to other uses of benefit to the company, the company should be required to make good this deferred maintenance, the cost to be charged to its individual account and not to operating expense.

If, on the other hand, it can be shown that a company carrying deferred maintenance has been well managed but that the income has not been sufficient to pay the increased costs of operation, franchise obligations and interest and, in addition, properly maintain the property, then provision should be made in the rate adjustment to permit the company to earn the amount necessary to put the property in good operating condition.

Your committee wishes to emphasize its conclusions with respect to the subject of accrued depreciation in the strongest manner possible, as follows:

> Where a property has been maintained in good operating condition and an appraisal is being made to determine investment value for "rate making" or for sale to municipality, state or government, no deduction should be made for accrued depreciation.

No attempt has been made in this paper to specify the percentage to apply for overhead charges or the other items of auxiliary expenditures, going value, etc., because they will vary in different properties, and therefore must be separately determined for each particular property.

This committee recommends to the constituent member companies of the American Electric Railway Association, state public utility commissions, the Interstate Commerce Commission and other national, state and municipal governing, supervising and regulating bodies, that the fundamentals and procedure contained in this report be used as a basis for determining the "fair value" of public utility properties for "rate making purposes" or for sale to a municipality, state or government.

Electrification Work to Be Pushed Forward In Sweden

Marked Activity in Water Power Development Aided by Government Loans Will Hasten Broad Application of Electric Drive to Railways as Great Economy

THE Guarantee Trust Company of New York reports that probably in no other country in the world, with the possible exception of the neighboring state of Norway, is there more intensive development in progress in the utilization of electrical energy than in Sweden.

There is in Sweden a remarkable tendency to apply the use of such power to every phase of the economic life of the country—to industry, to public utilities, to state and privately-owned railroads, to agriculture and to home life in remote districts as well as in the cities. The importance of the development is out of all proportion to population. Sweden's population is less than that of New York City, and is widely scattered over an area of 173,000 square miles, broken by mountains, heavily forested, and extending well within the Arctic Circle.

Sweden possesses some coal, but it is not of the highest quality, and the supply is inadequate for domestic needs. Her immense forests are her greatest present source of national income, but the day has passed when wood fuel can be broadly and economically employed. War markets afforded great incentive to the expansion of old and new industries, yet the difficulty and cost of importing raw materials, especially coal, created a handicap which would have been insurmountable but for the driving power at hand in the Swedish lakes and streams. The value of existing and future development of this tremendous national asset has been emphasized by bitter experience.

WATER POWER DEVELOPMENT

Great strides were made during the war, and greater developments are planned. Sweden has seen a new vision of industrial and commercial greatness, but the past four years' experience has brought home to her the weakness of her position so long as she is dependent upon imported fuel. The solution lies in a full utilization of her mangificent "white coal" resources, the development of which is proceeding on a remarkabie scale. There is no desire to repeat the war experience of running her railroads on wood, 40,000,000 cubic meters of which was consumed in 1917, or upon imported coal at 175 crowns ($46.90) per ton, the price in October, 1918. Power, comparatively cheap, abundant, and available with little regard to conditions abroad, will assist immensely in realizing the industrial and commercial possibilities of her future.

The amount of water power normally available in Sweden may be conservatively set at 5,000,000 hp. Such a figure places her above any other country in Europe in this respect, with the exception of Norway. Water power has been used in her industries for centuries, and before the outbreak of war produced more than one-half of the mechanical power in the country, the total consumption exceeding 1,000,000 hp.

DEMAND FOR ELECTRICAL ENERGY

The demand for electrical energy has not been confined to any particular branch of industry. The call has been universal from the great iron mines of Norrland, within the Arctic Circle, to the extreme South, where power is already being transferred to Denmark by cable and still greater export is planned. The electrification of the railroads has already commenced and it is to be pushed as rapidly as possible. It is felt that trains must be made more rapid and the locomotives more powerful, to attain higher average speed rather than a greater maximum speed. In many cases of long hauls, as for instance, Stockholm to Kiruna, it is believed electric operation will cut the running time in half.

RAILWAY ELECTRIFICATION

In 1915 the government requested the railway department to make a thorough investigation and report on the question of electrification. The report, only recently completed, states that in view of the desirability of extending the existing system, the abnormal cost of fuel, and the greater efficiency and economy possible, the introduction of electric service is essential. It is estimated that the work will require ten years and it is proposed that separate conduits be established for lighting along the railways and for the distribution of power to agriculturists. It is felt that electrification would be profitable even were water power not available, since coal can be utilized in a steam power station with far greater efficiency than in the locomotive. Peat and inferior coal could also be used if necessary.

It has been estimated that the saving in fuel alone during the last four years, if the system had been electrified at the outbreak of war, would have equalled the entire cost of installation. Railroad coal which cost $20 per ton in 1917, had risen to $46.90 per ton in October, 1918. The fuel item alone in the latter year amounted to nearly 70 per cent of the entire cost of running the state lines in 1917, and largely accounted for the net deficit resulting from gross revenues never before approached in Swedish history.

SWEDEN'S RAILWAYS

The Swedish railway net includes approximately 9500 miles of lines, a greater mileage per 1000 of population than is possessed by any other country of Europe. Development in this respect is the greatest economic achievement in recent Swedish history, and is largely due to the enterprise and initiative of private capital. In 1917 only 34.4 per cent of the total mileage belonged to the state, the proportion being higher in North Sweden, 81.8 per cent, and lower elsewhere. This included, however, the majority of the main trunk lines. The balance of the mileage is split up among many private corporations, the number having been placed as high as fifty, though some reduction has probably taken place through the amalgamations of recent years.

With full realization of the part played by private interests in the past in the growth of the system, it is felt that systematic development of the means of communication in the future will be hindered by the division of the railways between the state and a great number of private companies. This is but a reflection of the general tendency throughout Europe toward centralized control by the state, but the situation has undoubtedly been affected by the demand for a comprehensive scheme of electrification. The Crown has charged a special committee to investigate the situation fully.

ORE TRAFFIC

Electrification has already been applied with a high degree of success. The first attempt on a large scale, aside from the electric street railways of such cities as Malmo, Göteborg, and Stockholm, was on the Kiruna-Riksgränsen line in Norrland, well within the Arctic Circle. This line is 93 miles long and carries annually a heavy tonnage of iron ore. Single phase current at 80,000 volts is sent from the government power stations at Porjus to four transformer stations along the line, of which the first is 87 miles and the last 160 miles distant. The voltage is stepped down to 15,000, at which tension power is supplied through the overhead contact device.

The freight locomotives in this case weigh about 100 tons and the passenger locomotives about 70 tons. A normal freight train includes two electric locomotives and forty-one cars of 46 tons each, a total weight of 2,000 to 2,100 tons. Normal speed for freight is 18½ m.p.h. and the maximum 31 m.p.h. Maximum speed for operation the road transported 1,104,000 tons of ore. passenger trains is 62½ m.p.h. In the first year of barely one-third of its normal capacity. In spite of this low traffic, a distinct saving over steam operation was scored.

The continuation of the Kiruna-Riksgränsen line to Svarton on the Baltic coast has been decided upon at an estimated cost of $7,800,000 for the extension of 143 miles. It is said that with an annual ore traffic of 3,000,000 tons, electric traction can compare favorably with steam traction even when coal is as low as $6.70 per ton. Current for the whole road will be supplied from Porjus.

Another project calling for electrification in connection with ore movement is the proposed construction of six and a half miles of line from Hultebo Station to the Riddarhyttan mine district on the Dagarn-Hultebo division of the State railroad.

An important matter now under serious discussion is the building of a new electric express route between Stockholm and Göteborg. Such a line would care for the transit traffic between England, Finland and Russia, to which Sweden is looking forward in the near future with high hopes.

For the electrification of railways seven main sources of power are available. These contemplate a total ultimate output of over 1,000,000 hp., including the sites now developed and those under active proposed development. It is also proposed to link up several of these sources of power to permit a more complete utilization of all power generated. New power stations completed during 1917 comprised about 65,000 hp., while work begun in 1918 calls for 90,000 hp. Other new plants begun this year call for about 50,000 hp.

EXPORTING SURPLUS POWER

Present facilities are said barely to meet domestic requirements during the dry seasons, even in the most favored regions, though there is a considerable surplus of power available at other times. Some of this surplus is already being exported to the northern sections of Denmark by a single cable, but the street railways of Copenhagen and Frederiksberg expect to employ large amounts of Swedish power as soon as further cables can be laid.

The Water Power Commission, granted $2,200,000 in 1918, asked an additional $268,000 for the purchase of further sites, etc., the same amount for the current year, and $690,000 for 1920, to be used in the construction of new power stations and the improvement of existing plants.

To foster such development as has been outlined above the Swedish Government has recently created the State Water Power Loan Fund and the State Power Transmission Loan Fund, with yearly grants of about $650,000 and $325,000, respectively. The stated purpose of the first fund is to permit loans up to two-thirds of the cost of harnessing waterfalls belonging either to the state or to private individuals and for the regulation of water levels; the last is for loans to co-operative associations for the building of distribution systems and power-transmission lines. It was found, however, that the appropriations were insufficient, since applications under the Transmission Loan Fund soon reached $2,000,000. The Board of Trade and the Board of Agriculture, in a joint memorandum have asked that the sums available be doubled during 1919 and 1920 in order to permit greater assistance in the electrification of the country districts.

The production of the heavier types of machinery required is an important industry in Sweden, but the drop in her German imports in many allied lines has been seriously felt.

Heretofore, Sweden has paid heavy toll to Germany for her lack of direct shipping connections with outlying countries. Plans now being formulated will bring Swedish ports into direct and regular communication with this country and the new policy of her big men is predicated upon the cultivation of closer commercial and financial relations with the United States.

Prior to the war our part in supplying electrical equipment to Sweden was almost nil. Heretofore a very large part of the buying in this line has been done in Germany. It is only in the past two years that our share has grown appreciably and it would appear to be entirely up to the American exporter of these commodities whether the figures rise to new heights or fall back to their old level.

Status of Swiss Electrification

THE director of the Swiss official information bureau in New York is authority for the statement that a number of sections of the Swiss Federal Railways are to be electrified soon, and that the work on others now under way is to be pushed rapidly. Among the latter is the Gothard Railway, whose 68-mile Erstfeld-Bellinzona section will be completed this fall, while the Bellinzona-Chiasso and the Erstfeld-Lucerne lines will be completed in 1921. The cost of the electrification of the Erstfeld-Bellinzona line is estimated at $8,000,000, while the cost of electrifying the entire government-owned system of 1800 miles is estimated at $200,000,000.

In 1918 the electrification of the following steam railroads was decided upon, and work on them was commenced: the sections of the Federal railroads Sion-Brigue and Berne-Thun; the section Hasle-Langnau of the Emmenthal railroad and the section Bevers-Filisur of the Rhaetian railroads. The lines first mentioned are part of the Berne-Lötschberg-Simplon railway, which was inaugurated in 1913.

The new locomotives which are being used by the Swiss Federal Railroads on the section Berne-Thun, besides those of the Berne-Lötschberg-Simplon line, are each equipped with four single-phase alternating current motors, each of 450 hp. The electric parts were furnished by Brown-Boveri & Company, Baden, and the mechanical parts by the Swiss Locomotive & Machine Company of Winterthur.

The electrification work on the Bevers-Filisur line was completed by the middle of last April and from April 16 steam engines have been duly replaced by electric motors, the current being supplied by the power station of Bevers, which furnishes the necessary energy for the Engadine lines electrified in 1913. The progress of electrification in Switzerland has been very much accelerated by the acute shortage and high price of coal during the last few years. Recent estimates show that only 887,000 hp. out of a potential waterpower of 2,173,000 hp. has been utilized so far, and that further development of waterpower will go far toward taking care of railway power requirements.

The Coming Washington Hearings

Aug. 4 Hearings Postponed—Labor to Have Hearings—Many Mayors to Appear, Governors and Other Prominent Men—Plans of Federal Commission

CHARLTON OGBURN, executive secretary, Federal Electric Railway Commission, Washington, has advised the ELECTRICAL RAILWAY JOURNAL that there will be no hearings during the week of Aug. 4. This change in plans was made because so few answered the invitations to appear. The commission will now try to hear both the economists and the mayors during the week of Aug. 11, beginning at 10 o'clock Monday morning.

Those who had replied to invitations to appear before the commission next week, and who presumably will now appear during the week of Aug. 11, include the Secretary of War, Newton D. Baker; Prof. Irving Fisher; Milo R. Maltbie and Delos F. Wilcox. W. R. Wilcox, Prof. E. R. A. Seligman, and Otto Kahn of Kuhn, Loeb & Co., will probably be present.

Some of the mayors who have answered the invitation to appear before the commission are: Andrew J. Peters, Boston; William Hale Thompson, Chicago; Alexander T. Cronnel, Scranton, Pa.; E. P. Smith, Omaha, Neb.; James Couzens, Detroit, Mich. and Alfred L. Roper, Norfolk, Va. Others who have expressed their intention to appear include a representative of the governor of Rhode Island, a representative of the governor of Massachusetts; Richard T. Higgins, chairman of the Connecticut Public Utilities Commission; C. Murphy Candler, chairman of the Railroad Commission of Georgia and Francis J. W. Ford.

It is understood that in the absence of the regular counsel for the electric railway side, Mr. Ogburn will act informally to occupy the position taken by Bentley W. Warren in the former hearings.

LABOR QUESTION ALSO TO BE CONSIDERED BY THE COMMISSION

Discussing the future plans of the commission with the Washington representative of ELECTRIC RAILWAY JOURNAL, Chairman Elmquist of the Federal Commission said that he did not know how long the hearings would last each week, but that they would continue until "they got through." He said that the Amalgamated Association had expressed its desire to be represented and present its side of the case, and that probably a week, after the week of the 11th, would be given over to the labor question.

Chairman Elmquist also said that a comprehensive questionnaire is now being drafted, which will be sent to the mayors of the various cities, public utility associations and commissions, etc. In drafting this questionnaire, the knowledge and efforts of some of the best economists of the country are being employed.

The commission will complete its work of investigation by Oct. 1, at which time it will proceed to prepare its report to President Wilson. Mr. Elmquist was reluctant to indicate any definite course of action of the commission with regard to the disposition of the report, or as to what probable use might be made of it. It is possible that it may be submitted to the National Association of Public Utility Commissioners, if completed in time for the fall meeting of that association.

Electric Railway Hearings Before Federal Commission Completed

Railway Officials, Bankers, Economists and Engineers Endeavor Fully to Inform the Commissioners of All Phases of the Present Situation — Many Prominent Men Give Their Opinions on the Causes and Solution of the Difficulties

THE ELECTRIC RAILWAYS have completed the presentation of their case to the Federal Electric Railway Commission. So great was the volume of evidence and so thorough the manner in which the commissioners questioned the witnesses that one would imagine the commissioners must have in their minds a most comprehensive picture of the history, engineering development, operation, financing, the economics, the public relations aspects and the legal aspects of the industry, and of all the conglomerate difficulties which have conspired to bring about the necessity for this hearing.

The final hearing on Friday afternoon, July 25, was completed at 6 o'clock, at which time the commission adjourned until Aug. 4.

The report of the hearings presented in last week's issue of ELECTRIC RAILWAY JOURNAL carried through the Wednesday morning (July 23) sitting. The following matter continues the running narrative of the hearing from Wednesday noon on.

The testimony of L. R. Nash of Stone & Webster, though covered last week, continued over into the Wednesday afternoon sitting. He was followed by Charles L. Henry, president Indianapolis & Cincinnati Traction Company, who was given opportunity to present the case of the interurban railways. Counselor Warren, in presenting him to the commission, said that he was sometimes called the "father of the interurbans," to which Mr. Henry with his usual ready reply answered that such reference was made by those who had no respect for his age.

The witness first reviewed the development of the interurban railways and told how the class of service rendered had changed from its limited beginning to its present broad scope. He read extracts from several letters by business men which served to emphasize the value of the service being rendered by the interurbans to the merchants and to the public. The president of the Merchants' Association of Indianapolis, Ind., wrote that no other factor had done so much to increase the down town merchants' business and that Indianapolis had a larger out-of-town trade than any other city, due to the large interurban mileage entering the city. The merchants' credit files showed that there were thousands of persons all over the state, the majority within a 100-mile radius, who maintained regular accounts with the Indianapolis merchants. A letter from the Detroit Board of Commerce stated that 70 per cent of the shipments of the wholesalers there went out over the electric lines.

Mr. Henry also read a letter from a livestock shipper to show the value of this class of service being rendered to the community by the interurbans, in which the shipper stated that because of the better, quicker service afforded by the electric lines, he had been able to save practically all the transportation charges through the elimination of shrinkage. As the result of this also, he had been able to pay the farmers a few cents a pound more for their stock. Mr. Henry figured from this that the electric lines of that community had put $7,100 more money into the farmers' pockets than they would have received, had the shipments been made via steam routes.

The witness also brought out the long distances over which this freight service was supplied, citing one haul regularly of 125 miles, another of 262 miles and another of 171. He said the volume of this class of traffic available seemed to be limited only by the company's ability to provide facilities. During 1918 the freight hauled out of Indianapolis alone was 151,654 tons, and there was 12,673 tons of express. Attention was also called to the service supplied by the interurban companies in the way of light and power to numerous towns which would otherwise be without electricity.

TROUBLES OF THE INTERURBANS

As to the trouble faced by the interurbans, Mr. Henry said there was no such crisis as the urban companies are feeling, but that it consisted of an accumulation of a number of difficulties which are preventing the lines from making any money or developing the full use of existing facilities. Among these difficulties he pointed out the limitations upon hauling freight cars through city streets, various franchise limitations, necessity to pay for street paving in many towns and villages, loss of express business formerly carried due to the policy of the American Railway Express Company of routing all express business exclusively over steam lines, unfair competition of trucks, etc.

He said there was a movement in connection with the building of new highways to force the traction companies to eliminate grade crossings to an extent beyond their ability to pay. Further this served as an assistance (along with the tax upon the company, part of which is devoted to the road construction work) to the principal competitor of the interurban lines—the motor truck. He said he had no fear of the competition of the trucks if they were put on equal footing with the electric lines, and he did not ask that they be done away with. But what he did want was that they be required to file schedules and to live up to them and give a regular service; in other words, that there should be no "wildcatting." He quoted from a United States Bulletin a statement by the general manager of a large motor truck company being organized in the Northwest, in which this gentleman also expressed his concern that "wildcatting" competition would be very disastrous for he proposed to file schedules and give a regulated service. Mr. Henry stated that the Pacific Electric Company was losing $1,400 a day, $500,000 a year, from "interurban jitneys"—jitneys doing country business. Then he reiterated that the electric lines were not afraid of this form of competition if it were made subject to the same regulations.

Mr. Henry told how the rulings of the War Labor Board had indirectly required the interurban roads to meet the same scale of wages for track laborers as paid by the Railroad Administration. He also pointed out how the latter's fixing of prices had resulted in what in effect were combinations which made it necessary for the electric lines to pay the same high prices. The maintenance of the ridiculously low commutation rates for suburban service on the steam lines was also working a very great hardship on the electric lines and the steam lines are losing money on it too. These rates he showed were as low as 0.4 cent per mile, and were increased only 10 per cent at the time the 3-cent fare was inaugurated. This of course makes competition by the electric lines almost impossible.

How the rate of fare in the Central Electric Railway Association territory had been increased from 1½ cents a mile to the present 2¾-cent rate was mentioned by Mr. Henry. He did not believe that a 3-cent rate in that territory would result in greater revenue. There had been practically no public remonstrance against the fare increases. On his own property, he had called a meeting in every town served and told them the situation frankly, and in every case he had secured an indorsement of his petition to the state commission for an increase. He stated that the commissions have generally shown a disposition to grant increases but that there had been some disastrous delay in getting decisions due to the uncertainty about the 2-cent fare statutes.

Asked about the condition of the street car companies in the small cities, Mr. Henry said it was even worse than in the large cities. Not one was paying dividends of any kind. The jitney competition was more virulent, and the companies were loaded down with taxes. There was no reason now nor never was any why any charge should be made against any line except as it entered into the production of transportation. With this phase of the problem cleared up, it would greatly improve the outlook for the small properties.

From the Laboratory of Thomas A. Edison, Orange, N. J., July 22, 1919

Federal Electric Railway Commission,
Washington, D. C.

Gentlemen:

I have been very much interested in the progress made by the electric railways since I first built one at Menlo Park, N. J., in 1880.

The systems operated and the apparatus have now reached great perfection. Some of the greatest engineers in the country have given almost the whole of their lives to attain this end. The end is not yet reached. The great trunk lines will in time be added to the electric domain. It is to the greatest advantage to the public that every encouragement be given to those who have and will still further act as pioneers in the further perfection of this flexible and highly economical system of power distribution, whereby our natural fuels are conserved to a greater extent and all the power of water falls utilized.

At the present time the electric railway industry has reached a serious stage. Everything has stopped advancing. Countless millions of securities based on this industry are held by conservative investors, families, etc., who are possessed of a dread for the future. No more capital can be obtained except in special cases.

The iron-clad contracts between the roads and cities made in the pioneering days under normal conditions have no protective clauses against the greatest change that has taken place in centuries, due to the world war. The municipalities can exact their pound of flesh if they so desire, with the ultimate bankruptcy of these organizations, but the spirit that is now abroad in the world is against this. We are now all trying to play fair. If suffer we must, let us suffer alike. If prosperity comes, all should participate in a like manner.

I hope the commission will succeed in placing this industry on its feet again. This in its turn will stop stagnation; give the roads stability to raise plenty of capital; new extensions will go on; new things will be perfected and introduced. The restless Americans who work all day and far into the night are forever pushing higher and higher that great line of the thirty degree angle, illustrating the rise of the American nation in wealth and power.

Thos A Edison

Questioned as to the effect of the fare increases on the number of riders, Mr. Henry said that there had been little loss up to the present 2¾-cent fare, but he thought there would be a greater loss with a 3-cent fare. On his own property, the last 10 per cent increase had been accompanied by a 20 per cent increase in passengers over the same period the year before. This was still less than the number of passengers which the traction lines carried two years before, however. He believed that a reasonable increase of interurban fare does permanently increase the revenue obtained.

In reply to a query from one of the commissioners, Mr. Henry gave the opinion that the city companies would be able to realize some revenue, an additional source of revenue, from carrying express packages over their lines. He said the amount of such revenue would be greater, the less compact the city's population, and vice versa.

As another source of relief for the interurbans, none of which are paying dividends he said, Mr. Henry advocated the application of the principle that an electric railway has no value for taxation except its earning power. On this basis the assessed value of his road would be $700,000 less than it now is.

Charles W. Kellogg of the Stone & Webster Company, Boston, and chairman of the committee of the A. E. R. T. & T. Association which is now making a study of the safety car, was the next witness. He was called to the stand just before the close of the Wednesday afternoon sitting and continued his testimony at the evening hearing. He reviewed briefly the history and operating features of the safety car and then presented a few figures gathered by the Traffic Association committee through a questionnaire sent to some fifty member companies. As the report of this committee is not yet completed, it is expected that the figures given will be amplified and made more representative and accurate, so that the data will be more valuable when the report is later presented to the association.

In its questioning of Mr. Kellogg, the commission evidently sought to satisfy itself that the safety car is not a remedy of sufficient magnitude to give relief from the present ailments and also that its use to a greatly increased extent should be recommended.

Frank J. Sprague, the well-known inventor of many important electric railway devices, a member of the Naval Consulting Board and the builder of the first electric street railway, in Richmond, Va., was the next witness. He reviewed some of the conditions and difficulties of the very first electric railway installations and pointed out how not a vestige of these early equipments could now be found, so complete had been the obsolescence and replacement. Questioning by the commissioners brought forth his opinion that the development of the art, so far as the electrical equipment is concerned has reached such a state of perfection that the factor of obsolescence will be very much less important in the future and the industry may therefore be considered to be upon a more stable basis. Factors contributing to this opinion were the high perfection of the turbo-generators and motors reached and the settlement of some of the old controversies of the engineers as to the relative merits of different systems of electrification, etc.

Asked for his opinion on the future of the electric railway industry, he said that it was absolutely a permanent institution, though having before it a steadily increasing competition. He said the automobiles, aircraft, etc., will to a certain extent create a traffic of their own in addition to the street car traffic. He believed that the electric railway has a field of its own and that provided it is well managed, well maintained, and good service rendered, that it will continue to have sufficient passengers to make the business profitable.

"Automobiles have taught the people not to walk, so they ride the street cars when the autos are not available." RICHARD SCHADDELEE.

As to what the remedies were for the present crisis, he said that first it was necessary to gain the confidence of the people, for if they would believe the real facts when they are put before them, they could not help but approve increased fares. For they want good service; they do not want to go backward in this respect. He believed it to be a matter of securing an appreciation on the part of the leading men in the communities of the real situation in order to establish a basis of fair dealing. Second, it was necessary to set up a system of regulation which would assure a fare representing the actual cost of the service, no more and no less. A more equitable system of fares is probably desirable, he remarked, suggesting the possible use of a zone system, but a general increase of revenue is certainly necessary, whatever plan is followed.

MR. MORTIMER TESTIFIES

J. D. Mortimer, president of the North American Company, was the first witness heard by the Federal Electric Railway Commission at its sitting on Thursday morning, July 24. He reviewed at some length the history of the entire situation in Milwaukee, discussing the operating conditions and the rulings of the Wisconsin Railroad Commission during the past two or three years, endeavoring to show by his testimony information which would tend to offset some of the statements that had been made before the commission to the effect that the companies do not make public the facts and that it perhaps would be better if they would fight back. Asked his opinion of the commission system of regulation, he said he was a believer in the public utilities commission, that it offered a means of solution of the many complex problems that arise between the public and the company, but he was very strongly of the belief that the law should be revised or so established as to avoid the shifting bases employed by succeeding members of the same commission in arriving at decisions.

Speaking of municipal authorities—"The breathing of self-manufactured incense is one of our best outdoor sports. The headlines destroy more men than the obituary notices." JOB HEDGES.

To illustrate what he meant by shifting bases, he said that in the matter of physical valuation of a property, the personnel of the commission at one time would have one idea while a succeeding personnel would have an entirely different one, and each would hand down decisions according to its own views so that the company could not count upon any set policy in connection with its expenditures or financing. Another example cited was the fact that the Wisconsin commission had at one time granted a depreciation allowance of 4.46 per cent, and later with a different personnel had granted only a 2.82 per cent allowance—a difference of 1.64 per cent which, figured against gross receipts of a million and a half dollars, represented a considerable difference for the year. He cited other examples to illustrate the unstability of the commission's attitude.

Mr. Mortimer pointed out that the Wisconsin public utilities act contemplated a service-at-cost plan, but that it had not worked out that way. The commission had at one time established 7½ per cent as the reasonable return which would be allowed on the value of the property as determined upon a physical evaluation. However, at no time during the last two years has this rate of return been earned and more recently the commission issued a statement that it had never said that the utility companies were to secure this reasonable return in good times and bad times. He said that the administration of the public utility law in Wisconsin had brought about a situation so bad that, as a result of his experience, he could not conscientiously recommend the placing of any more money in the electric railway business in that state.

"The present principles of taxation are based on the theory of plucking the most feathers with the least squawk." PROF. CHARLES J. BULLOCK.

In summing up why the service-at-cost plan in Wisconsin has not worked out, he said the first reason was the shifting bases of opinion, and second, the long period involved before the commission rendered a decision. There can be any number of reasons for delay if the commission desires delay. There is no guarantee of the integrity of the capital invested in the property.

The cost of capital is continually changing, but there is no provision for determining in due time the proper return which will be allowed on the new capital required. There is further no assurance that a company will be able to collect sufficient revenue to pay the fixed returns allowed. The costs of operation are increasing so fast that there is no certainty that enough revenue will be collected to keep the property going.

"What would you think of a doctor who took a year to find out whether you were sick when you applied to him for relief?"
CHARLES L. HENRY.

Mr. Mortimer then told the Federal Commission of the circumstances which had developed a new kind of contract at Kenosha, Wis. He said that one-man safety cars had been installed in the town and had made a very bad impression upon the public, principally because the town has twenty-five railroad crossings, so that the principal function of the conductor in the past has been to act as a flagman. Subsequently the men asked for an increase in wages and the company replied to the petition of the employees that it did not have the heart to deny the increase but could not pay it. They went on strike and for five weeks the city did not have any street car service. Finally the railroad commission ordered the jitneys off the street and because of the complete change of public opinion, the company resumed service with a five-cent fare and using the small cars. This company is now paying the best of any of the North American properties.

But the citizens of Kenosha wanted extensions built which the company reported it was unable to finance under existing regulations. The city then talked about buying the property and Mr. Mortimer said that he had offered no objections to this. When he was called by the city to find out if he would sell, he first informed the city representatives that he had no objections. Then he began trying to sell the property to them. The harder he tried to sell it, the less they wanted it. They then asked him what plan of agreement he would have to have in order to be able to finance the improvements which they desired. He then outlined the necessity for a municipal guarantee of a fixed small return on the capital invested in utility properties. This rate he set at 6 per cent plus fixed charges. The plan also included the provision that any earnings in excess of 6 per cent should be divided, 40 per cent to the municipality, 10 per cent to the employees, and 50 per cent to the company. He also specified that the fixing of fares should be left entirely to the company.

"The American people never do an injustice unless influenced by politicians who indulge in too much vocal exercise and not enough physical."
RICHARD SCHADDELEE.

Later the fundamental terms of the plan he had outlined were adopted, and the legislature was induced to enact bills which made the plan operative, not only in Kenosha but in all other cities of the state except Milwaukee and Superior.

Upon questioning by the commissioners, Mr. Mortimer stated that there had been two noticeable influences working to increase the cost of carrying passengers. The first of these was the very great wage increases, and the second was the fact that the companies have been quite generally forced to extend their lines into unprofitable territory, thus adding unremunerative car-hours, car-miles, labor, etc. This has resulted in Milwaukee in an increase in the average length of haul in the last five years of about one-half mile per passenger, it having formerly been about 2.6 miles and is now about 3.1 miles. In this comparison, he referred to the length of haul within the single fare area of the city only. The present situation clearly shows that the revenue is too low or the operating expenses too high, and these may be due either to too low a fare or to hauling too great a distance. He said that Kenosha was now showing a larger depreciation fund available than Milwaukee, due principally to the comparatively short distance it was necessary to haul passengers. He pointed out that during the last ten years there had been an incessant demand on the part of the public for increased service, irrespective of the amount of traffic. This demand has been so pronounced, that in Wisconsin the commission finally ordered a ten-minute minimum service on any line. In some cases this ruling has not worked altogether to the injury of the company, for it has brought about some slight increase in the number of riders.

Speaking of public service commissioners—
"The proposition is to find a mind and a spine that will synchronize."
JOB HEDGES.

None of the North American companies has ever asked for an increase in fares above 5 cents for they were very desirous of retaining the short-haul riders. Mr. Mortimer commented that the rates on some of the suburban lines around Milwaukee have been increased, but that this has not affected the growth of the territory. This had been done in attempting to carry out the policy of making the end of the line profitable, but he had found that this could not be done.

The most pressing problem aside from the matter of revenue, Mr. Mortimer said, was the labor trouble. He believes that fundamentally and individually, the workmen are desirous of being put on an individual basis of payment. He had experimented with the gain-sharing plan of emolument which includes a certain wage, with a reward for good conduct and efficiency. The employees have an intense curiosity as to what their share is going to be for that month in the earnings of the company and this tends to keep them interested. The plan also makes it possible to disclose to the employees the most intimate results of their acts and to give them a thorough appreciation of the company's problems and its work.

At the present time the board of directors of the Milwaukee Electric Railway & Light Company includes a director who represents the employees of the company. This director was elected by the Employees' Mutual Benefit Association through a primary nomination and secondary election, the employees' association comprising all of the employees of the company. The first director so elected was one of the watch engineers of one of the company's power stations. In order to meet the requirements of the law, the company placed one share of stock to his name. He has the same power on the board of directors as any other member and he sits in on all of the board meetings, and is gladly heard on any question to which he desires to contribute discussion. The plan for representation on the board in the Milwaukee company originated with the employees, but was willing acceded to by the company. In fact, Mr. Mortimer said that he would be willing to have a larger representation of the employees if they so desired.

At this point Mr. Mortimer's testimony was interrupted to give way to Ex-Governor Foss of Massachusetts who had, upon his request, been assigned that particular hour for a hearing. Mr. Foss's testimony appears a few paragraphs below.

Continuing his testimony at the Thursday afternoon session, Mr. Mortimer pointed out that there was no uniform remedy which the commission might hope to recommend for application to the entire industry. In order to determine what would be best to do would require a study and approximately two years experimental period upon each property. While he fully believes this two-year experimental period to be highly desirable in working out what is best for the industry, he emphasized very strongly that in the meantime relief has got to be supplied in the way of immediate flat-fare increases, in order that the industry may be saved from bankruptcy and in order that credit shall be restored so that the companies will be able to attract new capital at the end of the two-year experimental period when it will doubtless be needed to install whatever proves to be the necessary changes in operation of the roads. Any business of shrinking nature is not attractive to private investors. But the flat-fare increase has in every case in which it has been applied brought about in time an increase in revenue, although this increase was not in the same ratio as the fare increase. Hence the flat-fare increase as a temporary expedient may serve the end of re-attracting capital.

> **"Governor Foss thinks he is radical. If we had Lenine and Trotsky, we would not only have municipal ownership of the utilities but of the Governor's factory and his nine autos too."**
>
> **RICHARD SCHADDELEE.**

Speaking of the number of passengers which might be expected, Mr. Mortimer remarked that in all the industrial centers where the population is increasing, it would be expected that the number of street car passengers would also increase. This, however, is somewhat influenced by the higher fare, which induces more people to walk, particularly those who would be classed as the short-haul riders. From this Mr. Mortimer continued that the principal competition of the street railway is the walking which takes place. The number of cars which a company should have on the street at any time should really be determined by the number of people walking, rather than the number of people on the cars.

Turning to a discussion of depreciation and obsolescence allowances in reply to questioning from the commissioners, Mr. Mortimer stated that the purpose of accumulating such allowances was to insure the future replacement of the elements of the property at the end of their physical life. These are not so much to provide for the wearing out of the physical property as for its replacement in order to operate the property in perpetuity. He said that the public would never allow a rate of fare which would amortize a property to its scrap value within a fixed franchised period, the average term of which is twenty to twenty-five years. The depreciation allowance creates a liability more than is used in any one year, but this is necessary if the balance sheet of the company is to show the true assets and liabilities. This records the liability of the corporation to the utility to preserve the property.

MUNICIPAL OWNERSHIP THE REMEDY, SAYS FOSS

E. N. Foss, for three terms governor of Massachusetts, was given audience before the Federal Commission at 12 o'clock on Thursday, July 26. He said that he appeared in private capacity and as a large holder of street railway stocks, and as a former director in many electric railway companies in Massachusetts and New York. The ex-governor quickly unveiled his mission by saying that he had "come to the conclusion, though reluctantly, that public ownership was the only solution of the electric railway problem. Private ownership with public regulation has fallen down and is out of the question." The very principle of this is wrong, he said, for one could scarcely imagine that any man owning a piece of property would get along with some one else who tried to tell him how it should be run or what should be done with it. The utilities must be operated by their owners, and owned by their operators.

The witness said that he was primarily interested in public ownership of electric railways because it means better democracy, for he believes that our transportation systems and then our factories must be democratized or the country will be in the same condition that the nations are in Europe.

Referring to the general unpopularity of the government operation of the steam railroads, the governor remarked that we have not had public ownership of railroads, that they had simply been leased under stress because they had fallen down under private operation. This lease had been made at the enormous rental of $150,000,000 a year, which was much more than should have been paid. The deficit of $200,000,000 in 1918 from the operation of the railroads by the government was not chargeable to the railroads or to the government, for practically the same people had operated the roads after the government took them over. This deficit was simply chargeable to the war. He said it would take five years to work out and effect the economies which were certainly possible under government operation. He would not admit for a moment that it is impossible to get as good efficiency under government ownership as it is under private. He was not willing to admit that the post office department was not efficiently operated.

Questioned upon some of the financial aspects of the transition to public ownership, Ex-Governor Foss turned his remarks to another phase of private ownership. "Banker management has got to cease," he said, "because the temptation to wreck the roads and reorganize them about every ten years is too great." He believed that the bankers had had absolute control of the operation of the public utilities in general and that the boards of directors had been practically ignored. The management of the utility goes direct to the banker over the heads of the directors when any great policy is at issue, and the banker's decision is the one which controls. He said Mr. Mellen of the New York, New Haven & Hartford did not know some of his directors when he met them on the street.

Asked about the ability of the various communities to raise the necessary funds to take over the electric railways, Mr. Foss answered by saying that it would not be necessary to raise the $6,000,000,000 which represents the outstanding securities of these utilities, but that the securities would be cashed at their fair worth and that the railway holders would be willing to accept that value. In another part of his talk, he remarked that the state should stand morally responsible for the money which people have risked in the utilities in order to supply the services to the people in general. The value at which the property should be taken over should be determined by a state tribunal, although the property should be taken over at once and the valuation determined thereafter. In other words, nothing should be allowed to stand in the way of the immediate carrying out of the public ownership program.

Instead of the usual remarks made about the utilities, that they must cease being political footballs, Mr. Foss made the statement that they must cease being speculative footballs. Also, he said that the quasi-public corporations must be taken over by the government in order to keep them out of politics, accusing these corporations of maintaining the greatest lobby in the country. He cited one instance of a man representing the utilities, to whom he referred as the "king of lobbyists," who had received a salary of $25,000 a year for his work. Legislatures and legislators have been made and unmade by the utilities. The public cannot get a square deal from private ownership with public regulation, so that municipal ownership is simply inevitable.

SERVICE-AT-COST PLAN A MAKESHIFT

Directing his remarks to the service-at-cost franchise, the witness said that the people of Massachusetts had become all worked up about it. As a result of this plan, the Boston property has been steadily increasing fares until it has finally reached 10 cents. This has resulted in carrying 25 per cent less people and a loss in revenue of $4000 a day. "The act is abortive and a makeshift and is doomed to failure." He thought that "the 5-cent unit fare has got to stand" within the strictly city area.

Asked by the commissioners how he would make up the deficit in operating expenses with such a low fare, he said that it should be made up from general taxation. Every one is taxed to make the highways smooth and safe for the automobile. Why should not every one be taxed to make the people's automobile—the street car—safe and comfortable and of greatest service. The street railway is a necessary part of the social and industrial life of any community. The government must take the industry in hand and make the fare as low as possible as one step toward better democracy. There will be a campaign in Massachusetts this fall for the purpose of determining this issue. Governor Coolidge has asked and received permission of the legislature to appoint a special committee to investigate the street railways of the State. Then he expects to call a special session of the Legislature to consider the question of public ownership and that alone.

THE COMMISSIONERS ASK PERTINENT QUESTIONS

Commissioner Sweet asked Mr. Foss if he had any data or figures or statistics which he used as a basis for his opinion. The governor replied that he had not, but was relying entirely upon his own experience. Further, he would apply the same reasoning to all public utilities, the steam railways, gas and electric light plants, electric railways, telephone and telegraph industries.

Asked further if it would not be a menace to have such a tremendous number of employees under government control, he replied that this did not need to be a factor for when there is a change of administration the same employees carry on, and there is no particular change in the conduct of the work. When it was suggested by the commissioners that government employees were very poorly paid and that it was, therefore, impossible to secure as efficient or competent men as it is with private ownership, he replied that government employes were, as a general thing, underpaid, but that he had never had any difficulty in getting very able men to do the state work in Massachusetts, and he believed that there would always be plenty of public-spirited men entirely competent who would be glad to serve in the employ of the state. Further, if the people were told the whole truth, he had confidence that they would be willing to provide higher salaries. The trouble has been that the people have been told only half the truth.

"The period of recovery and the restoration of the purchasing power of the dollar depend upon the courage of intellectual men to discuss things as they are." JOB HEDGES.

Speaking of paving charges and various other taxes and imposts which have been assessed against the street railway industry, Mr. Foss said that the electric railways have been attempting to give too much, and that public ownership would adjust all of this. He said that it ought to be adjusted under private ownership, but this could not be done, for it had been tried for years and had proved a failure. The public service commissions do not have courage enough to increase the fares promptly, because the railroads have been wrecked so many times by the bankers that the commissioners know the public will not tolerate the higher fares.

The commissioners asked Mr. Foss numerous questions in regard to how he would overcome the difficulties in the way of public ownership, such as the financing of the project, the constitutional limitations existing in many instances, etc. The only remedy Mr. Foss had to offer was government ownership, and in reply to the statement of the commissioners that this would necessarily involve great delay, his only reply was, "Go to it now." Later, however, he agreed that pending the working out of the plan and as a temporary expedient that it might be wise to grant a flat-fare increase generally, but that public ownership was the only permanent plan.

The setback to government ownership which has resulted from the government operation of the railroads during the war was referred to by the commissioners in their cross-questioning. Mr. Foss vigorously replied that that was due to propaganda spread from Wall Street and the railroad owners. "The people's minds have got to be disabused of the idea that they have had an example of government ownership."

In reply to a question as to whether he thought that the Federal Commission should recommend a general application of public ownership, he replied that it should by all means, and if it would do so "it would be the greatest recommendation in my memory."

COMMISSION REGULATION SERIOUSLY AT FAULT

James L. Quackenbush, counsel for the New York Railways and the Interborough Rapid Transit Co. for the past 15 years, expressed the opinion that decided changes were necessary in order to make the public utility laws more effective. Fundamentally, the law in New York is satisfactory, but its administration has been decidedly defective. Mr. Quackenbush referred to the recent order of Commissioner Nixon of New York approving a 2-cent charge for transfers as the only commission decision in his recollection which has been in the slightest way a benefit to the railways. Instead of carrying out the spirit of the authors of the law that the commission should act as a fair and impartial tribunal between the industry and the public, in which it had absolutely failed, it had concerned itself only with the control of the expenditures of the company and with continual orders for increased service. Apparently the commission had never concerned itself with how the company was to get the necessary money to give the service demanded.

Seeing smooth sailing ahead, these four live Mid-West executives smile for the world despite the gloom pervading the hearings. They are B. J. Denman, Richard Schaddelee, Robert I. Todd and Charles L. Henry.

Nor was it a question of politics, for there had been a great variety of combinations of the two parties in the state during the existence of the public utility act, accompanied by corresponding changes in the personnel of the commission, but there always seemed to be the same motive behind the decisions. Mr. Quackenbush said that the principal reason that the commission form of regulation had failed was that the commissioners had not courageously put a stop to such sentiment as that expressed by Ex-Governor Foss at the morning session, which Mr. Quackenbush characterized as "stuff and nonsense." He challenged every statement the ex-governor had made as regards the application of municipal or public ownership of any kind to the New York transportation lines. "They should put a stop to this cheap talk, this buncombe, and the facts should be kept before the people."

The up-state New York commission had shown more disposition to function as it should than the down-state, the witness observed. But one of the most serious criticisms which Mr. Quackenbush had to make of the utilities law administration was the long delay in acting upon petitions. Endeavoring to show what this meant, he said that the New York Railways, now in the hands of a receiver, had issued certificates under the direction of the court in order to make necessary improvements, but owing to the inability of the receiver to secure additional revenue, it now appeared that the receiver would be unable to pay the interest on these certificates and Mr. Quackenbush suggested that it might be necessary to appoint a receiver of the receiver.

THE FINANCING PROBLEMS IN NEW YORK

Mr. Quackenbush then described the detailed situation in New York in connection with much of the financing which has been necessary to build the extended subway system, the Manhattan Bridge 3-cent line, and some of the other lines, endeavoring to show the federal commissioners the attitude of mind taken by the public utility commissioners and the municipal authorities. Commenting upon the manner in which the subway program had been carried out, whereby the commissioners had aimed to secure competition through the building of another Z-shaped subway, Mr. Quackenbush said that there could be found "no justification for this plan either in finance, economics, railroading or common sense." This resulted in the present dual system of subways, which is now nearing completion and the building of so many railroads in Manhattan that none could possibly pay its interest charges. He then told how the Interborough had raised some $80,000,000 when the city had been unable to finance its projects, and had entered into a contract with the city in good faith with all of the facts fully known by both parties and that now the city authorities had shown a decided tendency toward repudiating their contract if they could find any way so to do.

This brought up the subject of the ability of the city to take over the system should it so desire. Mr. Quackenbush stated that neither the city nor the State of New York has any power whatever to finance such a proposition except through an amendment to the constitution of the State. This can be brought about only through a constitutional convention or through the approval of two successive legislatures, of which the second senate must be a new one resulting from a new election. He estimated then that if the effort was made to put through such an amendment right now, the earliest that it could be expected that the law would be provided would be three years, or 1922. This statement was made as a reply to the earlier remark of Ex-Governor Foss that there need be no particular delay in bringing about public ownership.

In presenting the present financial status of the Interborough company, Mr. Quackenbush made it plain that the only remedy which can solve the present difficulties of the company is a blanket increase of fare to 8 cents on the rapid transit lines. Such an increase would also necessitate an 8-cent universal fare in New York, to include the surface lines as well, in order that the element of competition would not defeat the purpose of the increase. This might be brought about through an act of the Legislature giving to State Commissioner Nixon the necessary power. This, of course, would entail much delay and undoubtedly subsequent litigation. This might be avoided and the fare increase secured if Commissioner Nixon, the local transit commission, and the Board of Estimate and Apportionment would concur in the measure. These three bodies could jointly approve the increase without the necessity for any legislation.

Mr. Quackenbush then sounded the seriousness of the situation when he said that unless a fare increase is granted so that the credit of the company will be restored before Jan. 1, 1920, the company will pass into the hands of a receiver. Had it not been for the assistance of the War Finance Corporation last year, the company would not have kept on until this time. Mr. Quackenbush's hope was that the Federal Commission would sound such a clear note of duty to the regulatory authorities generally, that there would be a cessation of the prevailing tendency to starve the electric railway companies. He said that the aim in New York apparently was to starve the Interborough to the point that it would surrender its life, but that this could never be done, although it might result easily in the appointment of a receiver who would then proceed to carry out the existing contract under the direction of the court. In concluding that the 8-cent fare would produce the necessary increase in revenue, Mr. Quackenbush said that ample allowance had been made for the loss in passengers, based on studies made by several prominent engineering firms.

WHAT THE COMMISSIONER SHOULD RECOMMEND

Summing up his talk as to what action the Federal Commission might take which would be helpful in the present emergency, Mr. Quackenbush said that the recommendation of greatest importance would be to point out that it was the duty of the regulatory commissions or local authorities to be courageous in providing the necessary relief, and to determine the proper rate not by ancient history, but by the facts as they now are. The second suggestion offered to the commission effectively pictured the gravity of the situation. In the words of the witness, it was this, addressed to the commissioners: "If you are going to do something, by all means hurry up. Put a little oxygen in the patient to keep him up, and then if a major operation seems necessary, go to it." Get the public to see that it is to their interests to have the proper rate of fare in force. The interest of the people is the supreme law. If the contracts which were entered into many years ago do not now fit the case, it is to the people's interest to recognize the defects of the old contracts and grant new ones.

Concluding his testimony, Mr. Quackenbush reiterated that his criticism was not of the regulatory laws but of the administration of them, and that the opinion of the commission, as expressed in its forthcoming recommendations, could be of greatest help in supplying higher authority for the local authorities and commissioners, mayors, etc., to base their decision and to do the duty which they feel but hesitate to execute.

At this point, Bentley W. Warren, counsel for the electric railways, presented a letter by Thomas A. Edison for inclusion in the records. It had been expected that Mr. Edison might appear personally as a witness, but it was impossible for him to come. His letter appears in full elsewhere in this issue.

A FORMER COMMISSIONER TAKES THE STAND

James O. Carr, formerly a commissioner of the New York up-state commission, was the next witness called to the stand. The theme of Mr. Carr's testimony was that the public utilities commissions should have full power to execute the law, and that their procrastination in acting was largely due to the absence of a clear establishment of their powers. He thought that many commissions would be inclined to give aid speedily if free to do so. He also thought that it would be possible for the railways to establish such prima facie cases before the commission that in a great many instances the latter would be justified in proceeding to grant temporary relief, even without full authority in law.

Mr. Carr's testimony carried over into the evening sitting of the commission on Thursday. He expressed the thought then that the appointment of commissioners should be removed from politics. Also, municipal ownership could never be successful because of the political aspect of the problem and the continual change in management through the appointment of political friends with each change in party control.

Ex-Governor E. N. Foss, the "Go To It Now" Municipal Ownership Advocate.

Richard Schaddelee, vice-president and general manager, United Light & Railways Company, Grand Rapids, testified verbally that commissioners should be appointed for life, that because they were afraid of losing their jobs, unless financially independent, they were much more influenced by what they heard from politics than they were by the opinion of all the experts in the industry. He also confirmed the statement of previous witnesses that great delay was always to be had before a commission would render a decision. He had never secured a decision in less than six months. Mr. Schaddelee also pointed out some of the local situations in Grand Rapids and in cities where his company had properties and endeavored to show that the American people are very just when they know the facts and when these can be told to them without discoloration by politicians. A written statement presented by Mr. Schaddelee appears elsewhere in this issue.

H. J. Pierce, Seattle, formerly president International Railway Company, Buffalo, outlined briefly what in his opinion would solve the present difficulties of the industry. His relief would include the continuance of a straight 5-cent fare, the abolition of all transfers and the remission of all taxes. If this program did not supply sufficient relief, he would charge an extra 5-cent fare outside a central zone 3 miles in diameter.

He would allow the company 8 per cent on its investment, this capital to be not in any event greater than the reconstruction cost of the property, but including replacements of obsolescent equipment. All net earnings beyond 8 per cent should go into the city treasury. This rate of return would satisfy the requirements of financing, and the placing of the surplus in the city treasury would have a good influence upon the public.

If this plan fails, Mr. Pierce could see no other alternative but municipal ownership. This he would very much dislike to see take place, for it is un-American. The function of the government is to govern and regulate, not to operate. He cited the very bad treatment which the public received from employees of the public-owned utilities abroad.

F. B. deBerard, director of the Research Bureau of the Merchants' Association of New York, and a member of the committee of the United States Chamber of Commerce, which is now studying the electric railway situation, discussed the importance of cheap rapid transit and stated that adequate transportation was absolutely essential to the welfare of a community from the standpoint of health. He also presented an 86-page pamphlet on "Government Ownership and Operation of Public Utilities," which was the report of a special committee of the Merchants' Association of New York. A brief review of this pamphlet was presented in the issue of ELECTRIC RAILWAY JOURNAL for Feb. 15, 1919, page 337.

> **"The court ordered the jitneys to desist. But do you suppose they desisted. No they increased."** **RICHARD SCHADDELEE.**

The Thursday evening sitting was adjourned at this point.

Friday's Session

At the beginning of the Friday morning hearing, Counselor Warren read into the record a letter by Samuel Insull, which follows in full:

CHICAGO ELEVATED RAILWAYS
Chicago, Ill.

July 23, 1919.

TO THE FEDERAL ELECTRIC RAILWAY COMMISSION,
Washington, D. C.

GENTLEMEN:

The demands for increased wages by the employees of the Chicago Elevated lines (of whose board I am chairman) has produced a serious situation in this city, and as it is impossible for me to leave to appear before your commission, I should like to set forth briefly the situation in regard to this property which serves (together with the Chicago Surface lines) the transportation needs of the second largest city in the United States.

The increased cost of operation, due to labor and material, has decreased the earning power to such an extent that the Chicago Elevated lines are barely able to cover the interest charges on the underlying companies. The Chicago Elevated Collateral Trust, which owns the stock of the operating companies, had $14,000,000 notes maturing on July 1, 1919, which could not be refinanced and on which we were unable to meet the interest payment due the same date.

The Chicago Elevated lines have been a very important factor in the development of Chicago, and have never earned but a small return on the actual money invested. The rising costs produced by the war have not been offset by an adequate increase in fare, although the fare was increased from 5 to 6 cents, going into effect on Nov. 22, 1918.

We are faced with the problems of meeting the demands of the men for a further increase in wages and changing working conditions at the present time. The condition which confronts us is illustrative of the electric railway industry throughout the country, the earning power being curtailed to such an extent as to destroy the ability of the companies to obtain money or even maintain the integrity of their present securities.

Your commission can, I feel sure, perform a signal service to the nation as a whole by bringing to the attention of the public the present deplorable conditions obtaining in the industry and by recommending as an immediate measure of relief such increase in fares as will prevent the ruin of this necessary public utility and by recommending a comprehensive plan for readjusting relations between the company and the public on a basis that will secure good service for the public, adequate maintenance of the physical property, and such a return to capital as will attract it into the business.

Yours truly,
SAMUEL INSULL,
Chairman.

John H. Pardee, president American Electric Railway Association, then read a formal statement of the situation as applied to the street railways in the smaller cities. The statement follows:

A considerable part of the electric railway business in the United States is located in the smaller cities.

The conditions governing the operation of these street railways in small cities are in general indentical with those governing operations in larger communities. All suggestions made during these hearings for the general relief of the electric railways are applicable to the smaller lines—prompt increase in rates of fare, relief from the unjust burdens and service requirements, prompt action by public authorities on applications of the railway company, co-operation on the part of the public authorities, labor and general public, in the institution of safety cars and other equipment, and methods that will contribute to the solution of the difficulties now being experienced, are urged.

There are, however, some inherent differences due to the size of the communities served which make the electric railway problems in the small cities particularly difficult. Distances of travel being shorter results in fewer rides per capita of population. Also, in order to compete with other methods of getting about and satisfy demands of the public for frequent service even in outlying sections, it is necessary to operate cars on a more frequent schedule than is warranted by the number of passengers to be carried. Under the traffic conditions which prevail in small cities, it seems that the one-man car can be operated to particular advantage.

Public authorities and the public should recognize the necessity for the elimination of unjust franchise requirements in order that the fare may be kept within the limit which permits its greatest possible use.

Counselor Warren then introduced into the record a copy of the New Hampshire law relating to the exemption of electric railways from taxes.

CALIFORNIA ROADS ARE ALSO PINCHED

W. E. Creed, legal adviser for the San Francisco-Oakland Terminal Railways, was the next witness to testify. He reviewed some of the local conditions in connection with the company he represented and stated that it was earning less than 0.5 per cent on the evaluation of the property set up by the public utilities commission, without any allowance for depreciation being taken out. The company had to pay a 5¼ per cent state franchise tax on the gross revenue, and this was not the only tax collected. If the utility companies have any non-operating property such as real estate, this is taxed in addition. The result has been to throw the burden of taxation upon the larger corporations and remove it from the public. He told the commission that there was little opportunity to effect further economies in the cost of operating the property, since this was now down to bed rock and that the employees were receiving generally low salaries and that the executive officers salaries were ridiculously low.

Mr. Creed also contributed some testimony to the question of contingent reserve and expressed the opinion that the consideration of this subject was one of the most important conditions of the permanent settlement of the electric railway problems.

Harlow C. Clark, editor of *Aera*, called to the stand, presented a statement expressing certain recommendations as follows:

Mr. Clark's Outline for Relief, in Full

"The continued furnishing of efficient and sufficient urban and interurban transportation is a recognized vital necessity of modern community life. It is recognized to be a function of the government of each state to provide that such service shall be performed.

"Heretofore the custom, with few exceptions, has been that these necessary facilities should be provided by private agencies, with the use of private capital, and subject to such regulations by governmental agencies as would insure that the service should be continuous, reasonable, sufficient and efficiently rendered.

"To provide service of this character by private capital, it is necessary that the terms and conditions prescribed by the authorities shall make such investment safe and enable them to secure a return which will induce private capital to select investment in the utility to such an extent as will provide the necessary funds for capital purposes. Such further return should be allowed as would stimulate the operating utility to the greatest measure of economy, efficiency and initiative and thus insure the development of the art and the maintenance of the public service at the high standard demanded by the American public; otherwise, private capital will elect to seek other investments, the standard of service will be depreciated, the maintenance and improvement of these properties will have to be provided for from state or municipal sources and the deficits in operation will have to be made up by taxation or the service permitted to deteriorate and finally terminate. As the last alternative is impossible in modern life, the actual question is:

"Shall the service be provided by the use of private capital, or by the use of public credit and resources?

"As existing laws and conditions in the different states do not make a general adoption of the principle of public ownership or operation feasible at this time, the industry must be conducted by the use of private capital, whatever final policy the public may adopt in this respect. This is feasible if the following suggestions for emergency relief and for a permanent plan are followed:

"*Emergency Relief*

"Such an immediate temporary increase in the charge for transportation (subject to revision by the subsequent permanent plan) as is necessary to meet the present crisis and to prevent that financial disaster which is imminent to a large majority of the companies of the industry. This would maintain the service during the development and formulation of a permanent plan, by which also any suitable revision in such emergency increase could be made.

"*Permanent Plan*

"A plan for the permanent conduct of the business, under state or municipal regulation, capable of automatically adjusting itself from time to time to varying conditions. The machinery for such permanent plan should include:

"1. The ascertainment of the amount upon which the enterprise should, in fairness and justice to both the investors and the public, be allowed to earn a return.

"2. The establishment by the authorities of a system of charges for service by which rates will automatically increase or decrease above or below the initial rates named in the permanent plan by a defined method and schedule so as to yield at all times sufficient revenue to meet all the payments contemplated by the plan, including such protective reserves as should be established; and also sufficient opportunity for participation in benefits resulting from economy, efficiency and initiative to induce the greatest efforts by the utility.

"3. Power of regulation, either by state or municipal authorities, in respect to all matters affecting conditions and character of service, including extensions, improvements and betterments.

"4. The utility to be conducted on the so-called indeterminate franchise principle and to be subject to such regulation as may be prescribed by law in respect to accounts, to capital investments, and other matters.

"5. The establishment of the right of the municipality or other governmental agency to purchase, as shall be set forth in the plan, which shall in particular establish the price or the method of ascertaining the price.

"6. All special taxes and all special charges and assessments paid by the utility are in fact paid by the car rider, being a part of the cost of transportation. Car riders as a class should not be subjected to such indirect or special taxation and should, so far as the particular circumstances in each community will permit, be relieved therefrom."

After reading the above statement, Mr. Clark was very closely questioned by the commissioners, bringing out a number of interesting points. Among these was the statement that if the commission should make it clear in its recommendations that a real crisis exists, it would have a tremendous influence over the country for the good of the railways and the public and would fortify men in public positions in making the proper decision. It would also serve to inform some commissions which have assumed that the emergency due to the war was over and have withdrawn their war measures of relief, that the emergency has not passed.

> **"My humble opinion is that the gentlemen on earth in 1850 knew considerably more than the highbrows that have come around since."**
>
> Job Hedges.

In questioning about the service-at-cost plan of operation, the commissioners brought out the opinion of the witness that the lifting of rates ought to be simply a matter of arithmetic. If the public knew that its demand for increased service would necessarily be accompanied by an increase in the rate of fare, this knowledge might serve to restrain unreasonable demands. As to whether the paving should be left in under the service-at-cost plan or removed and assessed against the abutting property owners, it was stated that the presence of a street car line on any street is not a detriment to the property owners along that street, since it serves to enhance the value of the property in every instance. Therefore, it is not necessary to place a paving tax upon the car riders, or rather relieve the abutting property owners from it as a recompense for the presence of the car line. The opinion of the witness and the commissioners seemed to be that this paving burden should not be placed upon the car riders and that while the service-at-cost plan would provide a fare sufficient to take care of this item of expense should it be left in, yet that this seems to be the proper time to bring the cost of transportation down to the proper basis and wipe the slate clean, so to speak, of all those imposts and items which do not enter into the production of transportation. As to what was the most pressing immediate need of the industry, the witness stated that practically every company was faced with the immediate necessity of a flat increase in fares, and that unless this was provided, there would be no use in discussing the permanent remedy.

> **"We offered to get off the streets and let the jitneys operate one month, and then they get off and we operate one month, and let the people choose which they wanted."**
>
> RICHARD SCHADDELEE.

Prof. J. W. Jenks, professor of government research, New York University, was the next witness. He outlined the general principles of the relations between government and business and pointed out that there should be no conflict between the two, for they were largely made up of the same people looking at the problem from two different angles. His belief was that if the public were given all of the facts that it would be inclined to provide the necessary funds with which to supply good service.

ANOTHER OPINION ON PUBLIC OWNERSHIP

On the subject of public ownership, Professor Jenks said that in the small towns where everyone knows everybody it might work out satisfactorily, but generally, it had been the experience in the United States and in Europe that municipal management was not satisfactory. He said it was impossible to get the same spirit or interest in the work in public ownership that can be derived from employers with private ownership. It is also impossible to pick or control the employees as well.

The great trouble with the civil service system of this conutry has not been with its ability to get men, but to get rid of them. He said he had worked sometimes three or four months to get rid of men whom he knew even to be dishonest. This, of course, can be done quickly and efficiently with private management. The tremendous work which has been done during the war by government employees has been wonderful, but it has been done without regard to cost. Such a policy could not be allowed to prevail in times of peace.

Professor Jenks thought that a great deal of the delay and slow action of the public service commissions has been due to the differences of opinion as to the theory to be applied in determining the proper rate of return, depreciation allowances, evaluation, etc. He thought that the Federal Commission could do a very great service if it could find it possible to recommend a definite basis of computation of these things.

A minimum earning upon the utility investment should be assured, with perhaps a division of the profit over that safe amount, with the municipality. He thought that if the city were to derive all of the earnings above the fixed guaranteed return, that the railway operators would lose the desirable incentive for economy and increased earnings. Also, if the city shared partly, it was desirable for this would tend to give the city an interest in increasing the profits. In any case, in drawing up the contract for the permanent settlement of the transportation difficulties, the terms should be so constructed as to make the contract self-adapting to the many changing conditions, for this would then avoid such emergencies as the present and bring about the desired service, with less friction and under better conditions all around. Professor Jenks advocated the indeterminate franchise giving the privilege to the city to buy, but said that the city should never buy.

At this point Counselor Warren put into the record eight letters expressing the views of prominent economists on the question of the probable future price level. The substance of these letters was to the effect that there was no hope for any particular decrease from the present price levels.

Several letters were also read into the record dealing with the question of what relief or economies or increased revenue might be expected from the use of double deck cars. The opinion expressed in each of these letters from various electric railway managers who have tried out this type of car was that the cars were not in general satisfactory and that they offered no particular assistance in the present emergency.

A letter from William B. McKinley, president, Illinois Traction System, was put into the record at this point also.

PROF. CONWAY URGES SERIOUSNESS OF SITUATION

Dr. Thomas Conway, professor of finance, University of Pennsylvania, was the next witness and his testimony somewhat upset the previous general trend of thought from the electric railway men in two respects. First, it was his opinion that a flat fare higher than 7 cents was more likely to produce a decrease than an increase in revenue. Second, the industry is now face to face with a new phase of the crisis, resulting from the very recent wage settlements in several cities which point very definitely to a new general higher level of wages in the electric railway field. An increase granted by any one company has a much greater effect than indicated, as evidenced by the practical standardization of three wage scales for three classes of cities by the War Labor Board. With the thorough organization of the trainmen now in effect, the recent granting of a new high level of wage in several of the principal cities means that the industry will be called upon to take on at least a 25 per cent increase in wages generally. The problem is not, what are the companies to do this fall or this winter, but rather how is this new situation which is upon us now to be met?

> **"Put a stop to this cheap talk, this old stuff (about public ownership). The thing to do is not to talk buncombe but to recognize facts."**
>
> JAMES L. QUACKENBUSH.

If the increases of the last few days which include a rate of 60c. in Detroit, Cleveland and Boston, and a demand for 85c. in Chicago, are forerunners of a general new demand, then all of these increases in fares which have been granted will be as inadequate as the rates in effect before. Reflecting on the problem of meeting this increase, Dr. Conway said that the man on the street did not appreciate the extent of the increase in operating costs and that our great problem was to educate him. The average commission opinion does not point out the facts so that the layman can understand them—they are over his head. The commission talks in the language of the court of review, but he believed that it was just as important if not more so that the commission should speak in the homely language which would serve to justify the decision in the minds of the public.

VIEWS ON THE LABOR ASPECTS OF THE PROBLEM

Dr. Conway remarked that it would be highly desirable if the unions would appear before the Federal Commission and present their aims so that the companies might know how high a hurdle they would have to get over. He said we have got to come to the arrangement whereby labor must take a responsible share in the management of the utilities. We must get away from the feeling which labor now seems to manifest that it is dealing with an enemy alien when dealing with its employer. Labor must be made to realize that there is only a certain amount of money in the business and if it intends to force the industry beyond the point of self support, when it will have to assume municipal employment, that it should at least make this choice with its eyes open.

Reference was made to the large turnover of labor in the street railway industry, which existed before the war, as an unhealthy condition. The rate of wage was then undoubtedly too low and it did not hold a good class of men in the employ of the companies. The pendulum was probably now swinging the other way. The witness believed that the industry would eventually profit by attracting and holding a higher class of labor. If the trainman could make $30 to $40 a week, with the seven-day week and year around work, he would be able to earn much more at a lower rate per hour than the brick layer or highly paid skilled laborer.

WILL THE TEN-CENT FARE BE HELPFUL?

Upon a court evaluation, the Kansas City Railway has recently made application for a 10-cent cash fare with two tickets for 15 cents. The Eastern Massachusetts Street Railway Company instituted a 10-cent fare on July 1. The Boston system followed shortly thereafter. President Busby, of the Chicago Surface Lines, says that a 9- or 10-cent fare will be necessary to meet the present wage demand there. These rates of fare may indicate a general need for that amount to meet expenses while continuing the flat fare system. An increase in fare to 6 cents represented no particular difficulty, but when a 10-cent fare is reached, the industry begins to get into deep water. If for a while 10 cents is made the price to solve the problem in the larger cities, it will mean that the small cities will have to collect a corresponding increase and will then not attract enough riders to pay their operating expenses. What the solution is, then, no one knows.

> **"The utilities and the commissions are more influenced by the politicians than by the people, because the people in these matters are inarticulate, while the politicians are very much articulate."** RICHARD SCHADDELEE.

In this connection the public utility laws of Pennsylvania and Connecticut have one great advantage in that they permit the companies to proceed with the instigation of an increased fare subject to subsequent approval by the commission. The commission cannot suspend this rate of fare unless a complaint is made and followed by a hearing and inquiry. This same policy should be made somehow to be effective all over the country in order to give the companies freedom of action to experiment with different rates of fare and different modes of collection as a means of finding out what is best for the industry.

> Speaking of competition—**"Jitneys are like lice, while these motor trucks are full grown animals."** CHARLES L. HENRY.

Another problem which the industry faces is the eight-hour working day. Different from any other industry, the electric railway can not in any manner increase its production to offset the shorter number of hours in the working day. An eight-hour day in the street railway field means not only the problem of financing the increased wages, but the problem of having more men to pay. Its application is very difficult without a great loss of man-hours, which makes it necessary to pay for a great deal of labor which is not very productive.

An eight-hour day would mean a complete readjustment of the working hours and a decided increase in operating expenses. Either two separate sets of men would be required, one for the morning rush hour and another to operate through the evening rush hour, which would be prohibitive in its cost, or else it will be necessary to use the same men with spread hours, which is one of the objectionable features in the eyes of labor to this class of employment.

EFFECT OF THE 7-CENT FARE ON NUMBER OF RIDERS

Dr. Conway then testified regarding the splendid opportunity he had had in connection with the complete study of traffic made on the Public Service Corporation of New Jersey property to determine the effect of the 7-cent fare upon the gross revenue, and to proportion the loss of riders between classes, as determined by the length of ride.

The installation of the 7-cent fare on the property, which represented a 40 per cent theoretical increase in revenue, resulted on the Public Service lines in an increase of 15 to 16 per cent. But there was a wide diversity in this increase on the various routes of the company, varying from no increase at all or an actual loss in revenue to the opposite extreme where the line earned more than the theoretical 40 per cent. On lines where the length of haul was under 1 mile, not only was there a loss in number of passengers carried, but a loss in revenue. On lines hauling from 1 to 2 miles, there was less loss of passengers and 12 out of 13 lines showed a slight increase in revenue. Where the length of line was from 2 to 3 miles, the results were mixed, due to the varying lengths of rides for different passengers and the presence or absence of jitney competition.

Where the average ride exceeded 1¼ miles some increase in revenue was realized. The loss of passengers on the longer rides was not nearly so great as with the shorter hauls.

In general, the 7-cent fare seemed to drive away a large share of those passengers riding under 1¼ miles, particularly in the cities. In the rural districts where an equal length of ride was involved, the loss was not so noticeable.

The effect of the 7-cent fare on the jitneys in competition with the Public Service Railway was to secure for them a 100 per cent increase in traffic by actual count. The jitneys were charging a flat fare of 5 cents.

From this study, Dr. Conway drew the conclusion that it was idle to talk about 8, 9 or 10-cent flat fares and that if that were necessary, the companies might as well close up shop. This practically points to the necessity for some other scheme of fare collection which will retain the short haul riders and at the same time produce the increase in revenue necessary. He was satisfied that the flat fare drives a continually increasing number of people away with increasing fares.

PRESENT PROBLEMS MOST DIFFICULT IN THE INDUSTRY'S HISTORY

Concluding his testimony, Dr. Conway said, "The street railway industry stands at the greatest crisis in its history. The problems now presented are far more serious than those which were faced when the horse cars were abandoned and the unknown field of electricity entered. The problems in that day were purely mechanical. The problems of to-day are far more serious, for they go to the economic basis of the business. It is now clearly demonstrated that to endeavor to perpetuate such an unsound basis as the flat fare is an economic fallacy. The entire industry must be reorganized and it will require courage and willingness on the part of the electric railway officials and the public service commissions to try experiments and assume the responsibility for possible mistakes, in order to work out the solution of the present problems before neglected maintenance and the failure to keep up with the natural growth of the community by providing new cars and other facilities overwhelms the operating department, destroys public confidence and forecloses the future of the business."

Halford Erickson, consulting engineer and formerly a member and chairman of the Wisconsin Railroad Commission, presented a written statement to the commission in which he reviewed the principal needs of the industry, pointing out the emergency and the necessity for immediate relief. He recommended the sliding scale fare franchise with state regulation. He pointed out the wholesome stabilizing effect of the service-at-cost permit, for any demand for a wage increase is immediately reflected directly to the public in the way of a fare increase. This makes of public opinion a jury which will be as fair to the company as to labor, a condition which does not now obtain.

An abstract of Mr. Erickson's formal statement appears elsewhere in this issue.

At the conclusion of Mr. Erickson's testimony, an exchange of courtesies between Counselor Warren and Chairman Elmquist was followed by the announcement of the latter that the hearing would be adjourned until Aug. 4.

President Pardee Discusses Hearings

JOHN H. PARDEE, President of the American Electric Railway Association, was asked last week by a representative of this paper to express his opinion of the hearings. He said:

"We are very much indebted to the Federal Electric Railway Commission for giving us every facility for presenting our case. The members of the commission manifested a deep interest in the evidence presented, and to allow us to give all of our testimony held sessions in the evening during the last week.

"It is the opinion of the Committee of One Hundred that full evidence on every phase of the situation which is hampering the electric roads has been presented at Washington, and so far as the members of the committee have heard from other railway men, they believe also that the subject has been fully covered. A brief will be presented, summarizing the testimony, but this will be after the hearings have terminated.

"The Committee of One Hundred will be represented at the hearings of the Federal Electric Railway Commission to be held during the week beginning Aug. 4, and also those during the week beginning Aug. 11, and it is just as important for railway men to be in attendance at these hearings as when the committee presented its case. It is also the expectation of the subcommittee on information and service to continue the publication of the bulletins giving a digest of the evidence presented until all of the evidence is in. This week, two bulletins will be published, containing some comments by the daily press on the hearings and also some testimony not heretofore included.

"Beginning next week, the daily issue of the bulletin will be rebegun. The edition of each issue of this bulletin has been about 50,000, and it has been sent to railway companies all over the country and to others who have expressed a desire to have it. The companies seem well pleased with this service."

Commissions Have Failed Properly to Administer the Intent of the Law*

BY RICHARD SCHADDELEE
Vice-President and General Manager United Light & Railways Company, Grand Rapids

DURING February, 1918, the President, the Secretary of State and the Comptroller of the Currency of the United States issued an open letter urging the various rate regulating bodies to give prompt and adequate relief to the utilities under their jurisdiction, where need for relief was reasonably shown. The primary purpose of these appeals by the government was to enable these utilities to function efficiently and adequately in response to the enormously increased demand for utility service caused by the conditions created by the war. The Government realized the vast importance of this in its prosecution and winning of the war.

Previous to this time the utilities as a whole had patriotically and enthusiastically responded to the demands for increased service and facilities, and many had strained their credit to or beyond the breaking point in raising the vast sums needed for additional service, facilities and equipment. The interests of the investors were relegated as of secondary importance to the winning of the war and to patriotic duty. Yet as an example of the treatment received from the regulatory commissions, the following is typical.

---

*Abstract of statement presented to Federal Electric Railway Commission in Washington, July 24, 1919.

In August, 1918, a street car company filed with a state commission a rate schedule providing for a 7-cent car fare to replace the existing 5-cent fare. After a so-called valuation of the visible physical assets of the company by the engineers, a long drawn out audit of the books by the auditors and after several hearings, the commission finally decided, on July 9, 1919, that the company did not need relief. Thus the idea of this commission of promptness is a decision in one year's time from the filing of the application, and its idea of adequate relief is no relief at all. This is given merely as a very recent illustration of the failure of some commissions to be responsive to national emergencies.

The failure of commissions and other rate regulating bodies properly to function is, in my opinion, due to the personnel of these commissions, their manner of appointment and the influences they are subject to, much more than to the laws themselves. The object of the people in passing these laws through the legislatures of the various states was to insure the public good and adequate service at rates reasonable and fair to both the customers of, and the investors in, these utilities. Ultimately, a fare that is not adequate or fair to the utility, is not fair or adequate to the public, for the reason that an inadequate fare will result in inadequate service and facilities.

I am sure that the American people desire that the utilities serving them shall be empowered to collect a charge or fare that will enable them to earn their fair and reasonable operating expenses, taxes, depreciation, etc., and in addition a sufficient rate of net return on their investment to make the investment in street railways attractive to the investor.

Of all the factors to which the present critical condition of the electric lines have been attributed, there is only one against which the commissions cannot afford us protection. This single exception is the competition of the private automobile. And this factor is the one that, in my opinion, is least responsible for our critical illness.

The automobile has fastened the riding habit on the public, has accustomed it to rapid transit and thus has been rather beneficial to us than otherwise. The electric lines with which I am connected or have knowledge of are collecting more fares now than ever before. Our gross business is very satisfactory and will continue to increase if we receive enough money to restore our credit with the investors.

The electric railways are not sick and will not die by reason of being economically obsolete, or superannuated, nor by reason of natural decay. If these were the causes of our illness, or if we were threatened by extinction by a superior mode of locomotion that can perform our functions under the same restrictions as to fares, and under the same requirements as to service, taxes, etc., then in that case it would be useless to ask or request for relief. For no private interests can successfully resist real economic evolution.

Electric railways are now more necessary to, and enter more intimately into, the social and industrial life of our urban, suburban and interurban population than ever before, even if a small percentage of this population is not now as exclusively dependent upon electric railway transportation as it was ten or twenty years ago.

The automobile has been a great factor in relieving congestion in cities by encouraging suburban residence. People who live in the suburbs feel that the automobile makes them independent of the electric lines, yet they will use them habitually, using their car or our cars as their convenience or caprice dictates. Our present critical illness is entirely by reason of an artificial cause, and that is insufficient financial nourishment.

REGULATORY BODIES HAVE BEEN DILATORY

I am sure that your commission is convinced that these state commissions as a whole have wholly failed to live up to expectations and the intent of the people in establishing them. Inasmuch as they were given unlimited authority, they must now assume full responsibility for their failure.

The failure of the commissions to function effectively is due to many and widely different causes. The main reason for the failure of the commissions to function effectively is the fact that they have not been immune from political influence as the people expected they would be.

This summer, in at least two states, to my personal knowledge, numerous bills were introduced either to abolish these commissions or otherwise greatly to curtail their power. In one state the commissioners were compelled to defend themselves against the most ridiculous charges prepared against them by municipal officials and contemptible, self-seeking politicians. The mayor of one city bitterly and unjustly attacked the commissioners, and then sought re-election as mayor shortly afterward, appealing to the people to vote for him and he would see to it that the commission would be abolished, that car fares would not be raised, etc.

In the primaries this man was snowed under, being the low man of three candidates, which indicates how the people feel about these matters.

These commissioners are but human. As a rule they like to retain their positions, and under the conditions cited they cannot be expected to make purely judicial decisions without fear or favor. If they are to function effectively, they must be absolutely removed from political influence and they must be secure in their tenure of office as long as they execute their duties ably, justly and fearlessly.

Under present conditions the commissioners have no backbone, they have no courage, they are not free agents. They are much more influenced by what the local politicians and officials tell them than by what the people are thinking. They hear the words of designing politicians, but they do not know what the people are thinking.

The local politicians themselves are usually entirely wrong as to what the people desire in these matters, as they are much more influenced by what fifty people tell them than by what fifty thousand people do not tell them.

The commissions show by their actions and decisions that they are consciously or unconsciously dominated by the theory that their duties are much more largely toward the people than toward the company and that the people established them mainly as rate reducing bodies instead of rate regulating bodies. Rate increases were practically unknown before the war and the habit of reducing rates like other habits is not easy to break.

Rate reductions have been made with more alacrity than rate increases. Reduced rates are put in effect for indefinite periods. Rate increases are authorized for one year or for 6 months, and the companies are required to file quarterly or monthly statements with the commissions and with the municipalities, so that as soon as the company shows its head above water, a properly administered kick will again submerge it.

These conditions have paralyzed all incentive to economy in the utility business, and no staple financial conditions can be created until they are remedied. The biggest handicap to a utility is to appear before a utility commission with a record and data showing effective operation and careful, economical management. The result is verbal commendation, but the establishment of a lower rate than is allowed another company not so well operated or managed.

There is really now no incentive to economy, nor any incentive to expend effort and money to stimulate expansion of the business.

If money is spent in improved equipment to effect material economies in operation, and thus increase your rate of return over the six per cent or seven per cent allowed you, the commission will eventually confiscate this excess and maybe more and will also confiscate part of the capital you have invested to procure these economies, fixing a so-called depreciated value on the property representing this capital.

In applications for increased fares or rates the commissions examine too much in the past and not enough in the future or present. They are willing to base their decisions on anticipated decreases in the cost of labor and material, but never on anticipated increases in the cost of these items.

Neither the state commissions nor the War Labor Board understand that there is a physical law which is also an economic law, viz.: that the total outgo cannot be in excess of the income. That is the reason we denied the right of the War Labor Board to fix the wages we should pay unless it or some other authority could at the same time regulate our income to enable us to pay the increased wages. Yet my sympathies are all with our workingmen. They have been and are now in the same position as we are, or nearly so.

The local authorities and the commissions must be made to realize that if they withhold prompt and adequate relief from us, they are also withholding prompt and adequate relief from our workingmen and all of our employees.

They must be made to realize that commodity prices have not yet reached the top, and that, under our economic system, the price of labor follows the upward trend of commodities and does not precede it, while on the downward trend the reverse is true. So we are facing increases in the cost of labor; labor must have and is entitled to increases, and both the people and their representatives, as well as labor itself, must recognize that the real employers who must pay these increased wages are the patrons of these utilities.

The fact that a commission decides that a 6 per cent or 7 per cent investment is reasonable does not compel an investor to accept that view and cause him to invest his money on that basis. Commissions have apparently acted on that theory. Neither the commissions, nor the legislatures, nor Congress, nor the President can compel the flow of capital in directions where capital does not desire to go.

This is also an economic law that the commissions must take cognizance of and act upon. The solution of our problem lies in the establishment of mutual confidence between, not only the people and the utilities, but also between the commissions and the people. The spirit of mutual confidence must pervade the relations of all these three parties.

If both the companies and the commissions will cultivate closer relations with the people and take them into their confidence, our problems will be finally solved and solved right.

I have great confidence in the common people and their high sense of justice and fair play, but very little in the political demogogues that infest every community. Where there is real antagonism on the part of the people against the utilities, the blame can be put usually on political demagogues or on the companies themselves, or both. The politicians, demagogues and newspapers often succeed in inciting hostility against certain utilities, when there is no real reason for such hostility. This is because they talk to the people very much, and the utilities talk to the people very little.

Financing, State vs. Local Regulation and Service-at-Cost Plan*

By Halford Erickson

After covering in a very thorough manner the history of development of the industry and the conditions which have placed it in its present financial predicament, the author gets into the subject of what are the costs involved in determining a proper rate of return. On this he has to say in part:

"A living wage in any industry consists of earnings that are high enough to attract all the capital and all other factors of production that are required in the business. In the street railway and public utility fields this means that under normal conditions the earnings must be high enough to yield reasonable returns for the operating expenses including taxes, depreciation, and interest and profit on the fair value of the plant and the business.

"Reasonable returns are represented by fair prices for all the labor, services, materials, supplies, and other things that are needed as well as by fair prices for the capital employed and for the enterpriser or employer."

Taking up the question of what is required in order to attract capital to the electric railway field, the author writes:

"The fact that investment securities must be protected by more property than their par value and by much greater net earnings than the ordinary interest and dividend charges shows:

"1. That the cost of capital is represented by the amount of the net earnings that are required in order that the securities which thus represent the capital may sell on the ordinary investment or income basis, and

"2. That the rates charged by a utility for the service it furnishes must in the long run be high enough to yield such net earnings."

This is followed by an outline of the investment conditions in these respects which prevailed for several years prior to the war; after which the cost of obtaining capital for public utilities during this period is illustrated.

"Twelve representative, 20 to 30-year, first mortgage bond issues covering gas, electric and street railway plants brought out before the war and bearing interest at the rate of 5 per cent, were placed on the market at prices under which they yielded the investors from something over 5½ per cent to more than 6 per cent. The cost to the issuing companies, when discounts, commissions and other expenses averaging about 7 per cent are included, amounted to about 6½ per cent. These issues did not cover more than about one-half of the book values of the property and were protected by net earnings that averaged considerably more than twice as much as the amounts required for interest on the bonds.

---

*Abstract of statement presented to Federal Electric Railway Commission in Washington, July 25, 1919.

"During the same period fifteen, 25 to 30-year, representative second mortgage bonds covering similar properties bearing rates at 5 and 6 per cent were offered at prices which would net investors about 6.7 per cent. On these bonds the accounts and selling expenses amounted to about 8 per cent on the par value of the bonds. These costs when pro-rated on the life of the bonds brought the cost of the capital to the utilities up to over 7 per cent. These issues were protected by half again as much property as their par value and by net earnings that amounted to about twice as much as the interest charges.

"The situation with respect to older issues is about as follows: A group of 27 five per cent first mortgage bonds, most of which are underlying liens upon the whole property and all of which are underlying liens upon at least a part of the property were taken in the 1916 markets by investors at prices upon which the approximate yield was 5½ per cent. There was outstanding about $170,000,000 of these securities, back of which stood a book value of nearly $420,000,000. It is clearly indicated by these figures that these issues cover much less than one-half of the book value of the properties. Net earnings available for these issues amounted to over $27,500,000, of which sum only $10,320,000 was absorbed by interest and sinking fund charges leaving an excess for safety of $17,180,000. Interest charges on these bonds were thus earned 2.7 times over and the margin of safety was 63 per cent.

"A small group of long term 4 per cent bonds whose security is rated highly were similarly demanded by investors at a price to yield approximately 5.09 per cent. The average income available annually for the past five years was three times the interest requirements.

"Another group of about forty utility bond issues, protected on the average by not far from twice as much property and earnings as the face value of the bonds and the interest charges thereon, have sold at prices on which the yield averaged over 6 per cent. The cost to the utilities, however, when all discounts, commissions, outlays and deductions of about 8 per cent are included, increased these figures considerably, or to about 7 per cent.

"A group of eleven collateral trust securities, eight bearing 5 per cent interest, two bearing 4 per cent, were issued to the extent of nearly $120,000,000. The security of these issues is rated high (by Moody). These issues yield approximately 5.84 per cent on an average price, and the interest is covered three times by the income available on a five-year average basis.

"A great many five-year note issues have of late years been offered at prices which would yield investors from 5 to 7.5 per cent. In many of these cases the issues bear interest at 6 per cent. The discounts and other expenses amounting to about 10 per cent make the cost to the utilities in practically all cases more than 8½ per cent per annum. Many such note issues were undertaken for the purpose of postponing comprehensive refinancing plans to a time when long time securities would find a market, and when it is expected that the money market will be easier so that permanent long time mortgages or bonds could be offered at a less financial sacrifice.

"Several preferred stocks protected by ample assets and by net earnings amounting to from 10 to 30 per cent thereon have sold at prices on which they yielded from a little less than 7 per cent to about 8 per cent. With discounts and other expenses, the capital obtained on these issues cost the utilities at least one per cent more than this. Twenty-nine preferred stocks amounting to about $170,000,000, protected by earnings that amounted to 2¼ times the ordinary direct dividend charges sold on a 7 per cent to an 8 per cent income basis.

"The public utility securities which have thus far been discussed belong in large part to those large utilities which are fairly well known and for whose securities there is a fairly well developed market. They represent the leading listed and unlisted securities in all stock exchanges and prominent markets upon which reliable data can be secured. They are mainly of an active class, although some are included, which, though somewhat inactive, are of proven worth.

"All of these facts clearly show that for several years up to the earlier years of the war, the utilities could not obtain all the capital they needed on normal terms and conditions unless the net earnings for returns on the investment amounted to at least 8 per cent on the fair value of the plant and the business.

"These facts show further that during the same years the net earnings for returns did not on the average amount to much more than about half of this or to only about 4 per cent.

"It is further disclosed that the unsatisfactory conditions in which the street railways found themselves at the beginning of the war have steadily grown worse since then. During the past two years they have earned but little more than enough to cover the operating expenses.

"It is clear to all that this is a situation that cannot last. No one will continue to render service at a loss. Unless the street railways are allowed to earn reasonable returns the service is certain to become so bad as to be unbearable. The choice therefore lies between good service at reasonable rates and poor service that is gradually growing worse at the existing rates. As good street car service is indispensable in all growing cities the choice is plain."

LOCAL VERSUS STATE COMMISSIONS

Concluding from this that the electric railways must have assistance, since they are precluded from helping themselves because of the various regulatory limitations, the author urges that full authority be delegated to state or local commissions to deal with the situation. He then treats at some length upon the relative merits of local and state commissions, his thoughts being fairly completely summed up in the following:

"Experience has taught us that the problems of regulation are so complex in their nature, so far reaching in their effect, so persistent in their tendencies that they cannot be successfully handled by any but the strongest and best equipped commissions. Such commissions should be backed up by comprehensive laws and a strong government as well as by adequate appropriations. Less well equipped departments than this will not be able properly to cope with the work. Poorly equipped departments may cause more harm than good. For, lacking the necessary information, their orders are likely to go either too far or else not far enough, and in these and other ways seriously disturb many sensitive industrial and commercial relations.

"This work can be carried on much more cheaply and much more effectively on a large scale by the state, than on a small scale by each local unit or city. The state can employ service experts, appraisers, accountants, statisticians and other assistants at moderate salaries and keep them constantly employed. None but the largest cities can very well do or afford this. Most of the cities feel they cannot afford even occassional service of such experts. The state has broad powers and wide jurisdiction. The information it obtains covers large areas and many plants, and so do the uniform practices and rules which it puts into effect and enforces. Its powers are state wide. The activities of the city on the other hand cannot extend beyond the city limits. Its powers therefore are limited, the information it can obtain is restricted, and so are the rules it can put into effect and enforce. It is in its very nature debarred from doing and seeking most of those things which are essential to effective regulation, economically administered.

"As local units have nothing to say beyond their boundaries, many utilities would have to be regulated by as many bodies as the units they serve if the local principle of control should be carried out. This would obviously be so impracticable that even the most ardent supporters of local control shrink from advocating it.

"A state commission, on the other hand, not only has the necessary jurisdiction over each of the units served, but it is in position to view the situation in a much broader light, and is better equipped for such regulation from every other point of view than local units.

"It is often said that the regulation of municipal utilities through a state commission is undemocratic and deprives the people of power which is theirs by right. This charge is baseless. All power of government and consequently of regulation is vested in the state. The city is simply a creature of the state, given certain powers for the purpose of aiding the state in its functions. Can anyone truthfully say that a city council is more democratic than a state legislature? Both are elected by the people and responsible for their acts to the people.

"In thus considering the source and nature of regulation, the character and scope of the work involved therein, the cost of property administering it, the equipment that is necessary to that end, the jurisdiction required, past experience in these matters, and other conditions, the conclusion would seem inevitable that from the point of view of public interest, state regulation is better and more advantageous than local control."

HOW SHALL THE REMEDIAL WORK PROCEED?

Assuming that all needed power to cope with the problems of relief are supplied to state commissions, the author proceeds to a discussion of how this relief can be administered. He points out that the usual program followed by commissions in rate cases involves necessarily great delay before all the considerations can be thoroughly taken into account and is hence too slow for the present emergency. In order to avoid such delays he suggests that:

"The order of the commission might go far enough to provide for a so-called sliding scale of rates which rates would automatically change with changes in the cost of the service. When the operating expenses increased so as to leave less for depreciation and interest than the amount determined upon, the rates would go up. When the operating expenses fell so as to leave more for depreciation and interest than the amounts determined upon for these purposes the rates would move downward. Such rates would represent true cost of service. The rates first established in this manner would cover the cost of the service as it stood at the time.

"Such sliding scale rates if fairly applied would automatically and fairly meet all necessary changes in the cost of operation, whether these changes were brought about by changes in the prices of labor and material or by additions to the plant and the amount of business obtained from new extensions of the lines. Such an arrangement further would relieve the commissions from at least a part of their work, the controversies and other complications that are certain to arise in connection with all rate changes that are made under prevailing methods. It would operate promptly as well as automatically and would therefore prevent many unjust and embarrassing delays. Through proper examinations and supervision of the accounts, records and practices, such sliding scale, service-at-cost rate arrangements can also be equitably applied without any material increases in the cost of regulation.

"The additional amount of work involved in so extending and broadening the orders of the commission is not great. This extra work would largely consist of determining how much the rates should be changed at each step. With zone fares and ticket systems this extra work would also have to be extended to cover the form of the rate schedules or the proportion in which each specific rate or part of a rate should be effected by the change in the cost. This extra work might also have to include a somewhat closer supervision over the accounts, records of the plants, and over certain other practices and rules than would otherwise be necessary. Such work as this however, the commissions are already equipped for doing.

"It is obvious that service-at-cost rates may offer many advantages. Such arrangements, if carefully entered into and strictly complied with, would greatly reduce the risks involved in the business and therefore tend to lower the cost at which capital can be had. When once fully understood and entered into it is also likely that such agreements would be more cheerfully complied with than is the case with agreements and orders in which sliding scale provisions of this kind are not included."

The Youngstown & Suburban Railway, Youngstown, Ohio, which operates between Youngstown and Leetonia, some months ago installed coasting recorders on its cars. Before the recorders were installed, the consumption was 5.66 kw.-hr. per car-mile. In the first month afterward this was reduced by 10.06 per cent and in the second month by 14.31. When the latest report was received the coasting time amounted to 41 per cent of the total.

AMERICAN ASSOCIATION NEWS

Demands for Exhibit Space

Already 51,000 Sq.Ft. Has Been Leased—Big Meeting Expected

SECRETARY BURRITT announced on July 29 that 51,000 sq. ft. of exhibit space at the October convention has already been leased. This insures the success of the meeting, as in 1916 the total amount of exhibit space taken was 57,000. The exhibit committee expects to lease more than 6,000 sq. ft. of space before October and thus exceed the 1916 figure.

MEMBER COMPANIES WHICH, TO JULY 26, HAVE BEEN ASSIGNED SPACE FOR THE 1919 CONVENTION

American Abrasive Metals Company
American Brake Shoe & Foundry Company
American Car & Foundry Company
American Steel Foundries
Albert & J. M. Anderson Manufacturing Company
E. C. Atkins & Company, Inc.
Atlantic Hand Brake Corporation

Baldwin Locomotive Works
Bethlehem Steel Company
The J. G. Brill Company
The Buda Company

Carnegie Steel Company
Cheatham Electric Switching Device Company
Chicago Pneumatic Tool Company
Chicago Varnish Company
Consolidated Car Fender Company
Consolidated Car-Heating Company
Curtain Supply Company

Drew Electric & Manufacturing Company
Duff Manufacturing Company
Dunbar Manufacturing Company
DuPont Fabrikoid Company

O. M. Edwards Company, Inc.
Edgewater Steel Company
Electric Railway Improvement Company
ELECTRIC RAILWAY JOURNAL
Electric Service Supplies Company
Electric Traction
The Ellcon Company

Galena-Signal Oil Company
General Electric Company
Globe Ticket Company
Gold Car Heating & Lighting Company
Griffin Wheel Company

Hale & Kilburn Corporation
Hauck Manufacturing Company
Heywood Brothers & Wakefield Company
Hubbard & Company

Indianapolis Switch & Frog Company
Ingersoll-Rand Company
International Register Company
International Steel Tie Company
Irving Iron Works Company

Jefferey-DeWitt Insulator Company
H. W. Johns-Manville Company

Lincoln Bonding Company
Locomotive Superheater Company
Lorain Steel Company

Marlin-Rockwell Corporation
Metal & Thermit Corporation
Midvale Steel & Ordnance Company
More-Jones Brass & Metal Company

Nachod Signal Company, Inc.
National Brake Company, Inc.
National Car Wheel Company
National Lock Washer Company
National Pneumatic Company
Newman Clock Company, Inc.
R. D. Nuttall Company

Ohio Brass Company
Ohmer Fare Register Company
The Okonite Company
Oxweld Acetylene Company

The Pantasote Company
Perey Manufacturing Company, Inc.
Pratt & Lambert, Inc.

The Q. & C. Company
The Rail Joint Company
Railway Improvement Company
Railway Materials Company
Railway Track-work Company
Railway Utility Company
Reade Manufacturing Company
Rooke Automatic Register Company

Safety Car Devices Company
Safety Nut & Bolt Company
Schutte & Koerting Company
Shanklin Equipment Company
Sherwin-Williams Company
Simmons-Boardman Publishing Company
Peter Smith Heater Company
Standard Underground Cable Company
Star Brass Works

Taylor Electric Truck Company
Templeton, Kenly & Company, Ltd.
Thayer & Company, Inc.
Trigger Lock Reversible Controller Finger
Trolley Supply Company
Tubular Woven Fabric Company
Tuco Products Corporation

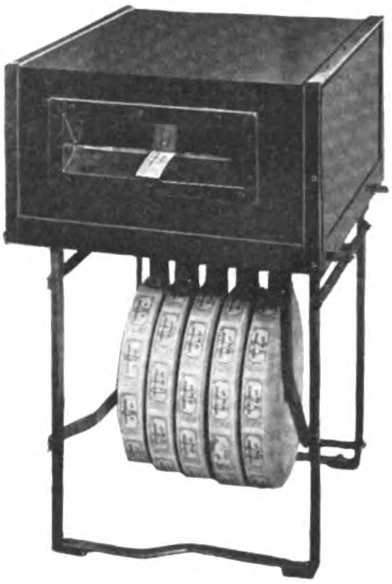
United States Graphite Company
Universal Lubricating Company

Western Electric Company, Inc.
Westinghouse Electric & Manufacturing Company
Wm. Wharton Jr. & Company, Inc.
Wheel Truing Brake Shoe Company
The White Company
Wilson-Imperial Company

Ticket Issuing Machine for Fare Collection

Detailed Description of a Machine Which Is Intended for Prepayment or Postpayment Zone System of Fare Collection

A NEW type of ticket-issuing machine has just been perfected by J. F. Hibner of the Automatic Cashier Corporation, Brooklyn, N. Y. It provides for issuing and cancelling tickets to meet the conditions encountered in prepayment and postpayment zone systems.



TICKET ISSUING AND CANCELING DEVICE FOR VARIOUS SYSTEMS OF FARE COLLECTION

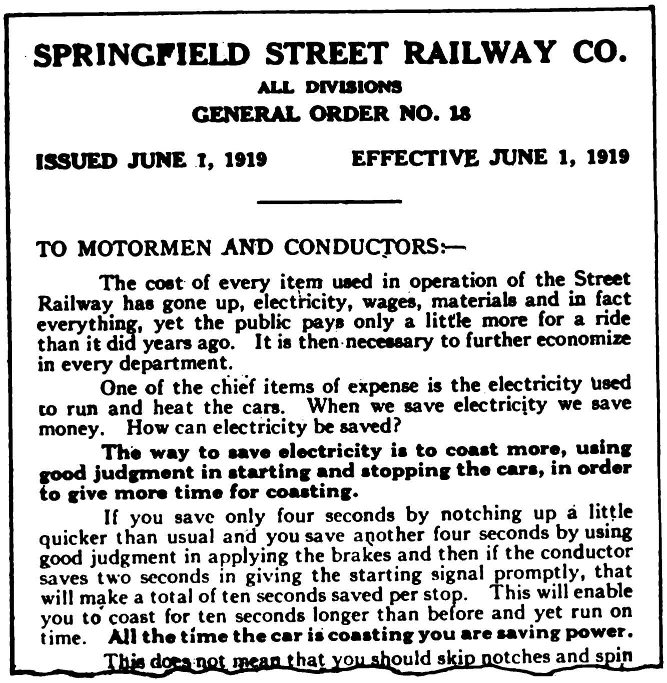
The accompanying illustration shows a machine built for a five-zone prepayment system. It provides for five rolls of tickets, with the different denominations of fare that would be necessary to be collected for the complete route. The rolls of tickets are supported underneath the ticket-issuing mechanism, and the passenger, on paying his fare, receives the ticket through a slot at the front of the machine. To issue the tickets the conductor presses a lever, and this operation automatically stamps the number of the zone on the ticket issued. There is a cylinder in the machine which carries the several zone numbers, and is controlled by a lever on the back. As a new zone is entered, the cylinder is changed by the conductor by the movement of the lever, so that the punching on the ticket will correspond to the number of the zone in which the car is operating. The mechanism cannot be reversed or set back. This cylinder perforates the printed tickets, so that at each issue of a ticket the zone number is punched automatically, providing a positive record of every transaction. In addition each trip is registered. The tickets are numbered consecutively, each roll having a different series of numbers.

With the prepayment system a ticket indicating the zone and the amount paid by the passenger is issued when the car is boarded, and as the passengers leave the car the tickets are collected by the conductor and canceled by the same machine. This canceling is accomplished by inserting the tickets in a slot and operating a canceling lever. The number of the zone which is punched on the ticket in the canceling operation will be the same as for the tickets issued in that zone.

For a postpayment system of fare collection only a single roll of tickets is necessary, and the machine can be operated either by the conductor or the passenger. The pressure of a lever issues a ticket indicating the zone in which the car was boarded, and the passenger delivers the ticket to the conductor at his destination. The conductor cancels the ticket by inserting it in the machine and charges the passenger for the ride as indicated from the point of destination. For front-entrance and rear-exit cars, the issuing part of the mechanism is set at the front of the car and the canceling mechanism in the rear. Both are connected and interlocked so that they work as a unit.

Springfield Street Railway Starts Energy-Saving Campaign

ON JUNE 1, after a preliminary study of the energy consumption per car-mile on the property as a whole, the Springfield (Mass.) Street Railway inaugurated a comprehensive energy-saving campaign with the aid of power-saving recorders. The 225 cars which the company has in active service were equipped with this device. Its inventor, William Arthur, New Haven, Conn., was engaged to act in an organizing capacity in co-operation with the company officials. He is giving general supervision to the details of record keeping and instructional methods used.



SPRINGFIELD STREET RAILWAY CO.
ALL DIVISIONS
GENERAL ORDER NO. 18

ISSUED JUNE 1, 1919 EFFECTIVE JUNE 1, 1919

TO MOTORMEN AND CONDUCTORS:—

The cost of every item used in operation of the Street Railway has gone up, electricity, wages, materials and in fact everything, yet the public pays only a little more for a ride than it did years ago. It is then necessary to further economize in every department.

One of the chief items of expense is the electricity used to run and heat the cars. When we save electricity we save money. How can electricity be saved?

The way to save electricity is to coast more, using good judgment in starting and stopping the cars, in order to give more time for coasting.

If you save only four seconds by notching up a little quicker than usual and you save another four seconds by using good judgment in applying the brakes and then if the conductor saves two seconds in giving the starting signal promptly, that will make a total of ten seconds saved per stop. This will enable you to coast for ten seconds longer than before and yet run on time. **All the time the car is coasting you are saving power.**

This does not mean that you should skip notches and spin

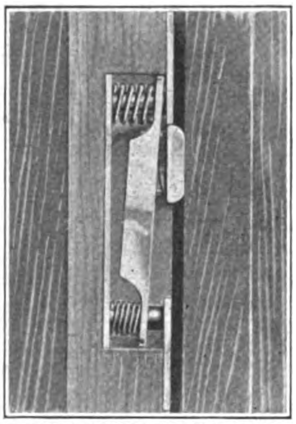
PART OF FIRST PAGE OF FOLDER USED IN ENERGY-SAVING CAMPAIGN

Preliminary to the campaign a small folder was issued to the motormen and conductors, containing general order No. 18, relative to energy saving. This was signed by H. M. Flanders, general manager. It directs attention to the extreme need for economy confronting electric railways everywhere and explains the company's plan for encouraging it on the local property. It states that cash prizes of from $2 to $5 are to be awarded every three months to the motormen on each line on a basis of the record made. It will be possible for from 60 per cent to 70 per cent of the motormen to participate in these prizes.

The issuance of the circular was followed by a meeting, to which all motormen, conductors, inspectors and others interested were invited. The subject of efficient car operation was explained and other matters affecting the repair and inspection department were also taken up. C. V. Wood, president of the company, arranged for a similar illustrated talk to be given before the Springfield Rotary Club.

New Window Sash Brake Device

THE device shown in the accompanying illustration has just been placed on the market by the O. M. Edwards Company, Inc., Syracuse, N. Y., for retarding the downward movement of car window sashes. As indicated in the illustration there are two springs of different strengths with the heavy spring at the top of the device. In raising the sash, a movable shoe slides to the bottom due to the friction on the window casing and compresses the weaker spring. This allows the sash to be raised readily and at the same time prevents all rattle. In lowering the sash, the shoe automatically slides to the top and compresses the heavy spring. This increased pressure gives sufficient friction to prevent the sash from falling, and at the same time holds the sash firmly against the outer stop when the window is closed.



COMPRESSION BRAKE DEVICE AND STOP FOR WINDOW SASH

The Philadelphia Rapid Transit Company has purchased 72,000 of these devices for cars being reconstructed on its system.

New Type of Headlight Switch

A new headlight switch has just been placed on the market by the Crouse-Hinds Co., New York. This is provided with "Off," "Permanent Dim," "Temporary Dim," and "Full Glow" positions. The switch is self-contained and dust tight. In turning the switch off, the "Dim" position is reached before the "Full Glow" position. This gives the lamp filament a chance to heat up before full current is passed through it.

The "Temporary Dim" position is provided for use in passing other cars or when picking up signals. The motorman holds the switch handle in the "Temporary Dim" position until he has passed the other car or signals, when, by releasing the handle, the switch automatically snaps back to "Full Glow" position.

Recent Happenings in Great Britain

Inquiry Into London Traffic—100 New Cars for District Railway—Glasgow Has Semi-Jubilee

(From Our Regular Correspondent)

The outstanding feature of the month of June in traction matters was the inquiry conducted by a select committee of the House of Commons into the problem of congestion in London passenger transport. Many witnesses have been examined and a mass of statistical and other facts has been produced. The first branch of evidence was that of leading officers of the Metropolitan Police who produced figures and information as to the volume of general street traffic. They had, however, no suggestions of importance in the way of remedy.

TRAFFIC BOARD SUGGESTED

An important witness who followed was Sir Lynden Macassey, secretary of Royal Commission which in 1905 recommended the formation of a traffic board for the whole of Greater London. He adhered to the view that in such a board, armed with full powers, lies the solution of many of the difficulties. It was noteworthy that many other witnesses agreed that such an authority should be set up.

Evidence was next heard on behalf of London County Council Tramways, where the difficulties encountered by the undertaking owing to the war were set forth. Hostile questions were put to the witnesses as to the great increases of tramcar fares, but the witnesses maintained that the increases are necessary to meet the higher expenses. Many of the fares have been increased 100 per cent, but the working expenses have increased by more than that, and the immediate prospect points to 15d. per car-mile or more.

Although the fares have been inincreased, they do not reach the statutory maximum of 1d. per mile. The inference to be drawn is that before the war the fares were too low, and this is in fact self-evident because it was not possible to put aside sufficient allowances for reserve, renewals, and depreciation. It was also brought out that the County Council has plenty of cars if it could only get the labor and materials to put them all in repair.

AVERAGE FARE INCREASE 33 PER CENT

A great deal of interesting evidence was afterwards given by representatives of the "Combine" which owns the underground railways and the London General Omnibus Company. In 1913 the average receipts per passenger were 1.47d. while in 1918, owing to increased fares, they were 1.83d. The average rate of dividend in the same period rose from 3.18 per cent to 3.59 per cent. The combine did not object to having a traffic board. The average increase in fares had been 33 per cent. The length of journey for a penny varied from a mile to a mile and a half.

In regard to motor omnibuses, the pre-war cost of a vehicle of this sort was £682, while now it is £1,170. These were the prices of the associated manufacturing companies, but new railway cars had to be purchased outside and prices in that case had increased by 200 per cent. Five hundred new buses are to be built with lower floors and seating accommodation for forty-six passengers each instead of thirty-four. The doors will be wider so as to allow passengers to get on and off simultaneously.

An account was given of improvements contemplated on the underground railways, including the purchase of 100 new cars for the Metropolitan District Railway. The motor cars will have eight doors and the trailer cars six, so as to reduce time of loading and unloading. It was also brought out that the military lorries now being used as omnibuses to diminish congestion were being worked at a loss of 30s. a day each. In regard to railway extensions, some witnesses put forward the consideration that besides the difficulty of the high cost of labor and materials, companies are deterred through uncertainty as to the future owing to the prevalent talk about nationalization.

GOVERNMENT ISSUES FARE REPORT

Apart from the evidence presented to the Parliamentary committee, an independent report of the fares and expenses of the London General Omnibus Company has been issued as a government paper. From this it appears that the working expenses have increased from 7.1d. per mile-run in 1913 to 14.05d. in 1918. The report finds that the increased fares are fully justified by the increased working costs.

On July 1 the Glasgow Corporation Tramway undertaking celebrated its semi-jubilee, the Town Council having taken over the railway from the original company on July 1, 1894. It is well known in America that the business is one of the most successful municipal tramway undertakings in the world. As ample details of the system were recently published in the ELECTRIC RAILWAY JOURNAL, it may be sufficient to say that during the twenty-five years 64 miles of track have grown to nearly 200. Electrification was completed in 1901. The capital debt was paid off more than a year ago.

The Glasgow tramway accounts for the year ended May 31, 1919, show some interesting results, and the tremendous effect of the increased working expenses is brought out. The surplus to be handed over to the "Common Good" is only £14,772, as compared with £177,552 at the end of the previous year. The total receipts were £1,531,319 against £1,412,635, but the expenditure came to £1,249,998 against £1,044,183. The great increases in cost were in materials and wages. In disposing of the surplus, £183,543 is allotted to the renewals and depreciation fund compared with £123,894, but the increase allowance is regarded as none too large in view of the high prices and wages, not to mention arrears of maintenance. It is after this and all other net revenue account allowances that the net sum mentioned above for the "Common Good" remains. If interest and sinking fund charges had still been going on, the balance, if the same net revenue account allowances had been made, would have been badly on the wrong side.

EDINBURGH TAKES OVER RAILWAY

The Town Council of Edinburgh took over its tramway system on July 1. The property has been owned by the Corporation since 1893, but has been worked on lease by a private company. The corporation will as soon as possible convert the undertaking from cable to electric traction. The valuation is £1,507,000 and the outstanding capital indebtedness £470,000. When the change-over has been completed the only cable railways left in Great Britain will be the Glasgow District Subway and some short gradient lines.

The accounts of the London County Council Tramways for the year ended March 31 last, which have just been issued, show that the total revenue was £3,578,256 and that the working expenses were £2,858,414, leaving a surplus of £719,842. For the preceding year the figures were respectively £2,932,140, £2,128,686 and £803,454. After deducting interest on capital, sinking fund contribution, income tax, etc., the net credit balance is only £8,069, compared with £95,559 in the previous year. In the earlier years of the war, however, there were deficits. Nothing has been added to the renewals fund for several years except the small net credit balances. It is hoped, however, that the recent large increases in fares will enable the undertaking to meet the great rise in working expenses and to show a more substantial credit balance The system extends to 149 route-miles, nearly all double track, of which 122 miles are on the conduit system. Nearly all the rest is overhead wire. The number of passengers for the year was more than 636,000,000, an increase of some 40,000,000 over the previous year.

COMMUNICATIONS BILL CHANGED

In the House of Commons in the beginning of July an important change was made in the Ministry of Ways and Communications Bill which has the reseult of disarming much of the opposition to the measure. Under this compromise, while the Minister may still order improvements in facilities at any harbor or dock, the owning authority may appeal to the Lord Chief Justice to appoint an arbitrator to decide whether the changes would be injurious to the undertaking. The provisions of the bill with respect to railways and tramways remain substantially unaltered.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Ouster Order Overruled

Councilmen However, Refused to Recall Order Directing Railway to Cease Operating on Aug. 1

The City Council of Toledo, Ohio, meeting on the evening of July 28, by a vote of twelve to four, refused to rescind its ouster order against the Toledo Railways & Light Company. Immediately afterward an organization made up of business men of the city began the circulation of a petition for a referendum vote on the ordinance which ordered the railway company to cease operations at midnight on July 30.

Ordinance Set Aside

The campaign of the business men met with immediate success. In consequence petitions containing the names of 12,000 voters asking for the submission of the ouster ordinance against the company to a referendum vote were filed with the City Clerk on July 30. Only 7000 signatures were needed. The action in filing the referendum petition automatically set aside the ouster ordinance until that measure has been passed upon by the voters on Nov. 4. It is said that 50 per cent of the names on the petition were those of union labor men. As a body, however, union labor supported the ordinance to oust the company from the streets.

Members of the various civic organizations of the city volunteered as circulators of the petition.

The Council took under advisement an ordinance offered by the Toledo Railways & Light Company through Frank R. Coates, its president. This franchise is based upon the Cleveland plan of operation at cost plus a proper return on the investment, with some modifications to suit conditions in Toledo. It provides for a permanent settlement of the railway controversy and improved service pending municipal ownership of the line, extensions and other items which will be of benefit to the city.

Cleveland Plan Suggested

Under this ordinance a sliding scale of fares is provided, with an initial fare of 5 cents and 1 cent additional for transfer. The maximum is to be 6 cents with 2 cents for transfers, and the minimum, 2 cents with 1 cent for transfer, to be rebated when the transfer is used. The rate is to be based upon the receipts, expenses and cost of operation, plus the dividends on the stock.

In order that the city may exercise supervision over the operation, as provided in the franchise, the Cleveland plan is followed in the provision that a street railway commissioner may be appointed at a salary not to exceed $10,000 a year, to be paid by the company. Differences between the city and company, under the terms of this franchise, are to be arbitrated at the company's expense. The grant is to cover a period of twenty-five years, if the Council decides to submit it to a vote of the electors.

Community ownership on the basis worked several years ago may be exercised in case the city desires to take over the property. Apparently the terms of the proposed franchise are very fair and, if adopted, it will put an end to a long fight which has resulted in no benefit to either side.

The business men are anxious to find some way out of a difficult situation.

Tacoma Ready to Purchase Railway

The city of Tacoma, Wash., through the Council, has submitted two definite propositions to the Tacoma Railway & Power Company, one for the purchase of the railway lines of the company, based on a price of $1,500,000, providing a vote of the people sanctions the purchase; and the other, a resolution passed by the Council to ask the people of Tacoma to approve at a special election the elimination of franchise obligations, including the 2 per cent gross income tax, paving obligations and upkeep of bridges.

The city is frankly taking the action in order that the railway might not claim, in the coming wage negotiations with its employees, that the company had no alternative but an attempt, through a cut in wages, to eliminate the deficit under which it is now operating. Under the offer to purchase, the company is asked to enter an agreement to assist the city in financing the sale of $1,000,000 of public utility bonds with which to rehabilitate the railway system.

In the past, the company has put a valuation of $6,000,000 on its properties. Fares were raised from 5 cents to 7 cents on recommendation of a city committee nine months ago, but reports of the railway to the city show that wage increases and decreased patronage more than wiped out the additional money from increased fares.

The men were to confer with officials of the company on July 25, to discuss wage contracts, which would expire on Aug. 1.

Detroit Problems Up

Engineers Report Against Subway—City Not Impressed With Tayler Plan Operated in Cleveland

In a recent report to the City Council of Detroit, Mich., and Street Railway Commissioners, a representative of the firm of Barclay Parsons & Klapp advised that a subway competing with the surface lines in the city of Detroit would not be practicable. It was considered that a 12-cent fare would be necessary for a period of about fifteen years if a subway were built and that only about 40 per cent of the people could be depended upon to pay that amount. On the other hand the Detroit United Railway could earn 6 per cent with a straight 5-cent fare.

Many Suggestions Made

A subway, rerouting of cars, additional trailers, more skip stops, and better service on interurbans, with unified system of transfers, were all suggested as aids to better traffic conditions.

The Public Utilities Commission of Michigan has issued an order authorizing Dean Mortimer E. Cooley of the College of Engineering, University of Michigan, to complete the valuation of the Detroit United Railway property and its subsidiary branches, to July 1, 1919, for the purpose of enabling the company to refinance itself and make extensions which are being planned. Present plans of the company are understood to include 14 miles of trackage, new equipment and rolling stock, mostly on the city lines of Detroit.

The Tayler system as carried out in Cleveland was not found to be entirely satisfactory by the delegation of street railway commissioners and Councilmen from Detroit who visited Cleveland to investigate. The delegates were advised that the success of the plan which is in operation in Cleveland depended to a great extent on the good will of the two parties involved, the city and the railway.

Although not entirely in accord on all details, the members of the Council favor a subway to relieve congestion in the downtown section.

Fare Arbitrators Selected

Frank H. Goddard, president of the F. H. Goddard Company, Detroit, contractor, has been agreed upon as the third arbitrator in the matter of inquiry into the rate of fare on Detroit lines under Judge Marschner's Circuit Court order. William H. Maybury, Detroit. is the city's appointee, and John J. Stanley, president of the Cleveland (Ohio) Railway, was chosen by the railway.

Surface and Elevated Lines Tied Up

All Chicago Walks Following Strike in Which Unionists Shout "To Hell With the Public"—Settlement Referendum Arranged

A compromise proposition on wages and working conditions was cried down by conductors and motormen of the surface and elevated roads in Chicago, assembled in mass meeting on July 28, and at 4 o'clock the following morning every car on both systems was at a standstill. No attempt was made by the companies to operate. The strike came at a time when race riots were resulting in the death and injury of hundreds of persons in the city.

STRIKE A SURPRISE

The people and the company officials were taken by surprise. At the close of business on Monday union leaders appeared confident that the proposed settlement terms would be accepted. The terms offered to trainmen on the surface lines were as follows:

> Maximum wages to be advanced from 48 to 65 cents an hour, and all other union employees to get a 17-cent increase; eight-hour day with time and a half for overtime; 60 per cent of all runs to be completed in eight hours and all runs to be completed within fourteen hours. The elevated employees were offered a 67-cent maximum wage; an eight-hour day with time and a half for overtime; 70 per cent of all runs to be completed in eight hours and all runs within thirteen hours.

The union demands, formulated at a joint meeting on July 11, called for the following:

> A maximum wage of 85 cents an hour, (2 cents higher on the elevated roads); an eight-hour day, time and a half for overtime; 80 per cent of all runs to be straight time, the balance to be completed within ten consecutive hours; no run, regular or extra, to pay less than eight hours; work on Sundays and holidays to be not more than six hours at a rate of time and a half; six-day week to be established for all employees; fall backs or dinner reliefs to be not less than thirty minutes.

These demands, together with the increased pay to all other employees, if granted, would cost the surface lines about $14,000,000 additional a year and the elevated roads about $5,000,000, it was estimated. This would mean a 9 or 10-cent fare.

NEGOTIATIONS ON SINCE JULY 12

Negotiations between the companies and the men looking toward a settlement were carried on almost continuously from July 12. At the direction of Governor Lowden the Public Utilities Commission acted as intermediary beginning on July 21. There was little evidence of progress for almost a week because the employees would not talk compromise unless the straight eight-hour day and time and a half for overtime were conceded. Presidents L. A. Busby and Britton I. Budd of the railways showed the commissioners what these conditions would mean. It was evident from the start that the car riders would have to pay whatever terms were fixed.

A compromise offer was made by the companies on July 25, on a basis of the Detroit wage scale—60 cents an hour, with minor changes in working conditions. The union committee claimed to take offense at the fact that this offer had been made public. At a meeting the following day before the commission they walked out and announced that a meeting of the men would be held July 28 to take action.

Governor Lowden again got into touch with the leaders of both sides, and arranged for a continuance of conferences on July 28. Company and union officials were in session all day with the utility commissioers and at last the terms named above were agreed upon as being a fair compromise. Public hearings were to have been held on July 29 for the purpose of fixing rates of fare sufficient to meet the additional expenses which were estimated at $7,000,000 for the trainmen of the Chicago Surface Lines alone. It was conceded that this would require at least a 7-cent fare with the possibility of a 1-cent transfer charge or even an 8-cent rate. The new contract and higher fares were to become effective on Aug. 1.

"TO HELL WITH THE PUBLIC"

At the union meeting on the evening of July 28 it was evident from the start that a radical element was in control. They cheered the announcement of International Committeeman Bland that the eight-hour day and time and a half for overtime had been conceded, but when a further explanation showed some restrictions on these terms a big demonstration followed. Mr. Bland told them that the wage offer was the highest for any electric railway and the working conditions excelled by none. He asked for a referendum on the offer, but the radicals had their way. They would not concede forty-eight or even twenty-four hours notice to the public. They were told that their fight would not be with the companies, but with the public of Chicago. "To hell with the public. Let us strike now," they shouted. Without waiting for a formal vote the meeting broke up and a few hours later all cars had been returned to the carhouses, and the people faced the prospect of an indefinite use of jitneys, trucks, steam roads and "shank's mare."

NO ATTEMPT MADE TO OPERATE

The strike situation in Chicago marked time on July 30. According to the companies, no attempt will be made to operate either the elevated or the surface lines, so long as the strike continues.

There has, of course, been an enormous increase in vehicular traffic. This, coupled with the necessity for removing all the traffic police from the loop for race riot duty, has created a condition of traffic congestion such as never prevailed before. It is being urged by the police that all trucks and jitneys discharge and pick up passengers outside the loop district, where most of the business houses are located, in order to relieve conditions.

Everything on wheels has been called into service. The suburban steam lines were pretty well prepared for the strike, having profited by their experience of four years ago. Arrangements had been made so that equipment was rushed to Chicago from other cities immediately upon notice of the strike. Trains of eight and ten cars are being operated by the Northwestern Railway on less than an eight-minute schedule during the rush hours.

MR. MAHON ARRANGES REFERENDUM

L. D. Bland, international treasurer of the union, charges that the rejection of the compromise was due to the activities of less than 300 radicals who went to meeting determined to strike unless every demand was conceded. Since W. D. Mahon, president of the Amalgamated Association, approved the settlement as offered to the men it is expected he will institute a rigid investigation of their action.

Mr. Mahon took hold of the Chicago situation on July 30. He arranged for a referendum on Aug. 1 on the settlement offered by the companies, but turned down by the men on July 28. If the compromise proposition is accepted service may be resumed on Aug. 2. Mr. Mahon is said to favor acceptance.

On the other hand, Mr. Bland indirectly blames the companies. He says that the meeting on the evening of July 29 would never have been called had it not been for a break in the conferences caused by the belief of the employees that President Busby of the Chicago Surface Lines had broken faith with them by issuing certain statements to the newspapers.

BANKERS EXPLAIN OWNERSHIP

The bankers of Chicago formulated a statement on the afternoon of July 30 giving the financial view of the street railway situation. This was published in the daily papers. Among other things the statement said:

> The general public and probably the employees of the railways apparently believe that the railway system is owned by multimillionaires familiarly known as traction barons who have made vast fortunes in the manipulation of securities and fleecing the public.
>
> While it is probably true that in the past men like Charles T. Yerkes and his associates made large profits out of the manipulation of traction securities, nothing of the kind has occurred since the adoption of the present franchise in 1907.
>
> The chief beneficiary has been the city of Chicago, which without a dollar invested in the property has taken close to $25,000,000 from the receipts of the traction companies.
>
> There are approximately $100,000,000 of first mortgage bonds outstanding, largely held in the city of Chicago by persons of moderate means who bought them very close to par. At the present time these bonds are selling at 75 cents on the dollar and under, showing a total loss of more than $25,000,000.
>
> Adequate transportation is absolutely necessary. This cannot be secured without raising additional capital from year to year. This capital cannot be raised unless investors are guaranteed protection.

The leading daily papers have commented editorially on tne strike with severe criticism of the men for their hasty action in refusing to consider a compromise which would have given them the highest wages paid in the United States for similar service.

The employees of the Evanston Railway also went on strike on July 30 because the management could not see its way clear to agree to offer them whatever settlement might be decided upon in Chicago. The Chicago & West Towns Railway, however, has agreed to place in effect with its employees any agreement which was settled upon in Chicago and the men have remained at their places.

The employees of the Aurora, Elgin & Chicago Railroad, which has interurban and city lines in the Fox River Valley and third-rail interurban lines from these towns to Chicago, struck at 3 a.m. on July 31. The strike vote on July 30 was taken as a result of a conference in which E. C. Faber, general manager, notified the men that their demand for a general increase in wages of 41 cents an hour could not be granted unless the company was permitted to increase its rates. Several towns including Elgin, with a population of 50,000, have thus been deprived of electric power, upon which they depended for light and water supply and upon which many of the largest factories depend for current for their operation. An appeal was made to the union by the City Council to permit the operation of the power plants, but no action had been taken up to the night of July 30. Circulars were sent out in some of the towns prohibiting use of water except during certain hours and then only for drinking, cooking and sanitation. A serious condition will exist in case of fire.

Traction Problems Referred to Special Commission

Critical Condition of Operating Companies in Massachusetts Is Considered Likely to Demand Extra Session of Legislature in November — Investigating Committee Named

The Massachusetts Legislature of 1919 adjourned on July 25 after the second longest session in the history of the State. More than 600 acts and resolutions were passed. Of these the most important to electric railways was an act providing for the investigation of the electric railway financial situation by a special commission of thirteen members. This committee, whose members have just been announced by Governor Coolidge, is to report by the middle of November to an extra session which the Governor plans to call to relieve the existing intolerable state of transportation affairs.

RELIEF MEASURES ARE KILLED

Practically all measures of importance bearing upon electric railways which were under consideration in the closing days of the session were tabled or killed in view of the forthcoming extra session. Contrary to the newspaper report mentioned last week, the attempt to re-establish a 5-cent fare in Boston and elsewhere was unsuccessful. Efforts were also made during the session to commit the State to a policy of public ownership of electric railways, but without avail.

As the session closed, opinion was divided between the possibilities of applying zone systems with lower fare units and the retention at least on some systems, of the flat fare, with operating deficits to be made up from tax levies. The feeling was widespread that the high fare unit applied on a flat-rate basis cannot cope with the existing situation.

COMMISSION TO BE REORGANIZED

The investigating committee which will now study this matter is composed of the following: Robert F. Herrick, Milton; former Congressman Charles G. Washburn, Worcester; Federal Judge George W. Anderson, former Interstate Commerce Commissioner, Boston; James L. Doherty, Springfield; Senators Cavanagh, Everett; Hardy, Hampden, and Walsh, Suffolk, and Representatives Kneeland, Winchester; Allen, Norwood; Young, Weston; Maloney, Chelsea, and McDonnell, Boston.

Electric railways are interested in the reorganization of the Public Service Commission and the Gas & Electric Light Commission into a single Department of Public Utilities, effected as a result of a constitutional amendment cutting down the various departments of the State from about 100 to twenty. The new department, which will retain the powers of the predecessor boards, will be composed of a chairman with a maximum salary of $8,000 and four other commissioners with maximum salaries of $7,000 each. The commissioners are to be appointed by the Governor with the consent of the Council for initial terms of one to five years respectively, future terms being of five years duration. Power of removal is also vested in the Governor and Council.

WILL FACILITATE BOARD HEARINGS

The work of the board will be facilitated by a provision that in all but purely formal or administrative matters, two or more commissioners may participate, and, if all parties consent, a single commissioner may sit. The majority opinion with at least three commissioners participating is required in findings. Appeal in equity to the Supreme Court of the State is retained, together with the power of enforcement of the commission's acts by this tribunal. A separate act provides that it shall be the duty of the commission to give seasonable notice by mail to any member of the Legislature of any matter affecting the interests of his district.

The town of Sharon was authorized to acquire and operate a portion of the former Norwood, Canton & Sharon Street Railway. An act was passed requiring the Boston Elevated Railway to transport the pupils of public, private and industrial day and evening schools within the district served by the company to and from schoolhouses and their homes at not more than one-half the regular fare charged by the company for the transportation of other passengers for the same distance.

The Public Service Commission and the Transit Department of the city of Boston are directed to investigate jointly the desirability and feasibility, from the engineering, operating and financial standpoints, of extending the present rapid transit system of the Boston Elevated Railway (1) from the terminus of the Dorchester tunnel at Andrew Square by surface tracks to Mattapan Square, and (2) from the Forest Hills elevated railway terminal to Dedham. The investigation may also include an inquiry as to handling freight, express matter and mails on these so-called "rapid transit circuits," and the construction of transfer stations at suitable points between the surface lines of the Boston Elevated Railway and the rapid transit circuits. The joint board is to report to the Legislature not later than Jan. 10, 1920.

MANY MEASURES FAILED

A large number of measures affecting electric railways failed to pass. These chiefly had to do with the relief of taxation burdens, fares, service and public ownership or operation. Carefully worked-out plans for the reduction of taxation burdens were included in a bill presented by President C. V. Wood of the Massachusetts Street Railway Association, which was heard at length, but the House displayed much hostility to any form of relief for street railways during the present session, and the favorable attitude of the Senate on this general subject went for naught. Undoubtedly the hostility of the House was a primary cause of the special message of Governor Coolidge, which was written almost at the end of the session and urged in no uncertain words the necessity for action in order that the present impasse may be permanently removed.

Attempts to secure appraisals of the Boston Elevated Railway and the Bay State Street Railway (now the Eastern Massachusetts Street Railway) by the Public Service Commission or other special commission failed to pass. A strong sentiment developed in the Legislature against public ownership, the experience of the country with the federal administration of railroads, telephone and telegraph lines being considered so unfavorable. A bill which would have materially helped the Boston Elevated Railway and perhaps have temporarily forestalled the use of the 10-cent fare was one providing for the purchase by the State of the Cambridge subway. This would have provided about $8,000,000 for the immediate needs of the road, and its failure was greatly deplored in electric traction circles.

Another bill which failed was that introduced at the request of Ralph S. Bauer, Lynn. This provided for the purchase by the city of Lynn of the local lines of the Eastern Massachusetts system, the furnishing of free transportation to car riders and the levying of the cost thereof upon taxpayers. The discontinuance of the public operation of the Boston Elevated Railway was sought in another bill as a protest against the 10-cent fare, but it failed to pass. Forty-five bills were considered by the committee on street railways alone and twelve by this committee sitting jointly with the committee on metropolitan affairs.

Minneapolis Franchise Draft

Council Committee Is Holding Hearings on Proposed Service-at-Cost Ordinance

After a long series of negotiations the first real step has been taken toward solution of the Minneapolis Street Railway franchise situation through the presentation to the company by the city attorney of a draft of a proposed ordinance. This is now before the Council committee on street railways.

A 7 PER CENT RETURN PROVIDED

The franchise will give the company the right of operation of surface lines for twenty-five years with a net return of 7 per cent on a valuation of $24,000,000 as of Jan. 1, 1919, with 1 per cent on additional value put into the system above that capital amount. A fund of $250,000 will be set aside to stabilize fares, and when this fund is increased from earnings to $500,000 the fare is to be reduced. The fare is fixed at 5 cents for three months from the effective date of the ordinance. At that time the stabilization fund will act to advance fares if the stabilization fund has been reduced to $150,000.

The city may buy the company's property at the end of any five-year period. The city will supervise the company operation and maintenance, and have access to its books. The supervision operator shall be paid by the company. An amortization fund is provided for. The city may construct new lines and extensions out of its own funds when the company fails to build them, the company to operate them and the city to get the same return on its investment that the company is allowed under the franchise.

F. A. Sager, public utilities expert, has informed the Council committee that the capital value of the Minneapolis Street Railway was increased $1,341,540 between Jan. 1, 1916, and Jan. 1, 1919, or $216,540 more than the figure given by the company when it accepted a valuation of $24,000,000 for franchise purposes. The principal increase was in tracks and a new steam power unit.

Wages Advanced in Los Angeles

Increase in Wages Announced by Both Pacific Electric Railway and Los Angeles Railway

The Pacific Electric Railway and Los Angeles Railway on July 22 announced increases in pay for conductors and motormen, effective on July 30, and Aug. 1, 1919. This action upon the part of both companies was entirely voluntary.

The Los Angeles Railway, beginning July 30, raised the wages of trainmen 3 cents an hour and also increased the guaranteed minimum wage for extra men and beginners from $90 a month to $100. Increases for employees in other departments are, also, under consideration.

The Pacific Electric Railway on Aug. 1 increased the wages of about 1600 conductors and motormen 2 cents an hour and 3 cents an hour for those who do not elect to avail themselves of the annual twelve working days vacation under full pay, now granted by the Pacific Electric. Employees who so desire may take their vacation on full pay this summer, and on return, elect the 3-cent increase effective from the date of signing it. The company has already put into effect as of July 1, 1919, a minimum wage of $100 a month for all platform men who report regularly for duty on extra runs. Previous minimum guarantee for such men was $90 a month.

HIGH COST OF LIVING RESPONSIBLE

There were some 2000 other Pacific Electric Railway employees not included in this increase of pay as announced, but H. B. Titcomb, vice-president, added that these employees would also receive substantial increases to their present salaries. The action of the Pacific Electric is voluntary and due to increased cost of living. Mr. Titcomb states "that while the present revenues of the Pacific Electric Railway do not justify any increases whatever, the company looks with confidence to the State Railroad Commission taking into account the wage increases just made, in dealing with the company's application now before the commission for increase in rates."

The advances in wages will cost the company $250,000 annually.

The wage scale to be made effective by the Pacific Electric Railway for those who do not take the twelve days annual vacation on full pay, is in full as follows:

City service, motormen and conductors—First three months, 41 cents; next nine months, 43 cents; second year, 44 cents; third year, 45 cents; after third year, 47 cents.

Interurban service, motormen and conductors—First three months, 43½ cents; next nine months, 44½ cents; second year, 46½ cents; third year, 47½ cents; after third year, 49½ cents.

Freight and work train service, flat rate throughout—Motormen, 53 cents; conductors, 53 cents; brakemen and switchmen, 48 cents; trolleymen, 43 cents; yard foremen, 53 cents.

For those who elect to take the twelve days' vacation, wages will be 1 cent an hour less in all cases.

The new wage scale of the Los Angeles Railway is as follows:

First three months, 41 cents; next nine months, 43 cents; second year, 44 cents; third year, 45 cents; after third year, 47 cents.

This increase was voluntary in accordance with the company's established policy to meet the requirements of employees so far as possible.

Conditional Wage Settlement

A conditional settlement of the controversy over wages between the Des Moines (Ia.) City Railway and its employees was arrived at on July 28 by the three arbiters, Fred Sargent, representing the company, J. B. Wiley, representing the union men, and Rev. C. W. Reese.

The arbiters agreed upon a tentative wage scale retroactive to March 1, 1919, and to continue in effect to March 1, 1920. The agreement is conditional, however, upon the calling of a special election to permit the people to vote upon an increase in fare. The call for this election must be issued, so it is provided, by the City Council by Aug. 7 and the election must be held not later than Sept. 22. The election is to be called only if the special committee of citizens which is endeavoring to settle the strike or Judge Martin J. Wade of the Federal Court finds by Aug. 4 that the receivers for the Des Moines City Railway are not receiving sufficient revenues to meet the increase.

The scale agreed upon by the arbiters is as follows: first three months, 50 cents; next nine months, 55 cents; after one year, 60 cents. At present the men are receiving 43, 45 and 50 cents for the periods above mentioned. They demanded 55, 60 and 65 cents.

The men voted to strike at an election on July 24, but agreed to withhold action pending an arrival at an agreement on the part of the arbiters and the citizens committee. If the election does not result in an increase an immediate strike is to be called.

Pittsburgh Strike Suit Before Court

The Amalgamated Association has filed a demurrer to the suit brought in the courts of Allegheny County, Pennsylvania, for $2,035,000.78 as damages which resulted from the strike last May of the employees of the Pittsburgh Railways.

The plaintiff in this litigation, Attorney A. E. Anderson of Pittsburgh, brought the suit several weeks ago to test, as he announced at the time, just what the right to strike consists of in cases where direct expense and inconvenience are caused the public. He sued in the name of himself and the rest of the usual patrons of the Pittsburgh Railways, his bill of damages including an estimate of all it had cost Pittsburgers to travel by steam railways and motor bus during the strike, over ordinary expenditures for car fare. The 78 cents is his own personal share of the bill.

Seattle Wage Offer Rejected

The trainmen of the Seattle (Wash.) Municipal Railway have voted to reject the wage scale offered by Thomas F. Murphine, superintendent, as a counter-proposal in answer to the trainmen's demands for increased wages. The carmen reiterated their demand for a minimum wage of $5.50 and $6 a day, the higher wage to be paid after six months service, and rejected Mr. Murphine's offer of a minimum of $5, to be increased to $5.50 after ninety days service, and to pay a bonus of 5 per cent at the end of one year to all trainmen who were credited with twelve months of uninterrupted service.

The objections to Mr. Murphine's plan were based largely upon the bonus feature, the committee stating that "the bonus system, as the carmen view it, is not a bonus, but the difference between the proposed wage scale offered by Mr. Murphine and a living wage demanded by the men. . . . Why hold back the bonus for one year? We need the money now."

Speakers at a recent meeting of the carmen, who represented the majority sentiment, stated that if the city would add the 5 per cent bonus to the wage proposed, and put it in the semi-monthly pay checks, the city and men would not be far apart on the matter of wages. There has been little or no talk of strike, officers of the union declaring that they have faith in the ability of the union to convince the city that a satisfactory wage settlement can be reached, provided the bonus payment plan is eliminated and increases made in the scale proposed by Mr. Murphine.

Franchise Rights Questioned

That the Southern Traction Company of Illinois, the assets of which were bought at public auction by H. D. Mepham, St. Louis, Mo., and associates for $400,000, nas at present no franchise rights on the Free Bridge across the Mississippi River or on any St. Louis streets, is the opinion of Associate City Counselor Hamilton of St. Louis.

The Southern Traction Company was given the right to run over the highway deck of the Free Bridge by an ordinance passed by the City Council of St. Louis on April 11, 1911. This ordinance, however, was amended in November, 1912, and repealed Nov. 7, 1914.

In May, 1913, the City Counselor of St. Louis expressed the opinion that the city could not legally repeal the franchise ordinance. This opinion was disregarded by a later city counselor. The city's policy now is to make the Free Bridge available for any railroad or electric railway which may wish to use it. The Southern Traction Company thus will be able to obtain a license to use the bridge for entrance into St. Louis from southern Illinois, but will not have exclusive rights.

Mr. Mepham stated that he and his associates propose to carry through the original plans of the Southern Traction Company and operate freight and passenger cars between southern Illinois points and St. Louis, with a loop in downtown St. Louis. It has been expected that the road would be valuable as a coal carrier.

The city of St. Louis now has electric railway tracks on the Free Bridge and owns two cars available for use on the bridge.

Shore Line Strike Unsettled

The strike of the employees of the Shore Line Electric Railway, which includes 221 miles and provides the only service in the triangle formed by Westerly, Norwich and New London, with branches north to Willimantic, which became operative on July 16, continues with traffic completely tied up.

It was thought that the appointment of mediators by the Connecticut Chamber of Commerce would have satisfactory results, but a meeting held by the arbitrators in Norwich on July 21 was without results, caused in the main by the insertion of a proviso by the company "that in the event of an award of increased wages the increase should not become effective until the board of arbitrators could determine that the company was financially able to bear the increase."

The representatives of the strikers would not accept the proviso and withdrew from the proposition to arbitrate the differences.

The system, which is owned by the estate of Morton F. Plant, consequently remains idle, matters being complicated by the statement of the executors of the estate that they are without authority to divert to the company other funds of the estate which would be necessary if an increase in wages was granted.

Pittsburgh Protests Paving Provision

The controversy between the receivers of the Pittsburgh (Pa.) Railways and the city administration over the paving question flared up so hotly during the week ended July 19 that both sides issued peppery statements to the public.

The city administration, through its special bureau for traction litigation, announced that if the receivers continued to lag in performing their share of such paving as the city considers necessary, franchises would be annulled as having being violated by the company.

The receivers countered next day with a statement that any move on the part of the city to interfere with their operation without consent of the United States Court would constitute contempt.

Pittsburgh franchises contain a provision that the company must bear the expense of paving and repaving between its tracks and 1 ft. on either side. On the ground that funds available are insufficient, the receivers have declined to enter into the city's street repair program as extensively as the administration considers proper. The whole question was brought to a head over the matter of repaving West Carson Street, on which the city had gone ahead to the point where further work became impossible without the co-operation of the receivers.

Called into conference with the City Council, counsel for the receivers announced that thereafter the company would do no paving except upon court order.

Another angle of the situation that conceivably might prove more serious is restiveness of the smaller municipalities surrounding Pittsburgh over the same paving question. Franchises in most of these boroughs contain paving provisions similar to those in the city franchises. Some of them are beginning to protest at the company's failure to co-operate in street improvements, and they are not parties to the receivership. North Braddock has served notice upon the receivers that unless repairs upon streets and tracks are started by Aug. 12, the tracks within that borough will be torn up.

Rhode Island Men Reject Arbitration

Authority for the receivers of the Rhode Island Company, Providence, R. I., to arbitrate their controversy with the union, on condition that the strikers resume work, was provided in a decree entered late on the afternoon of July 30 in the Superior Court at Providence by Judge Doran. The order did not specify when the car men should return to work, but read "that when" they return and accept one of two plans outlined in the decree, the receivers shall submit to arbitration three questions: How much the wages shall be, the date for that wage to take effect and what working conditions shall be.

The arbitrators, who would be either the utilities commissioners acting as individuals, or citizens of the State chosen by both sides with the third member and chairman chosen by the Governor, would determine what is proper evidence to be considered and decide the questions in dispute. The decision of the majority would be deemed an award which, in any case, would be subject to court approval.

On July 31 the union rejected the plan for arbitration under the conditions laid down by Judge Doran. Officers of the union stated that they would make known the decision of the men in a statement to be issued at noon on Aug. 1.

According to a statement made on July 31 by the chairman of the Public Utilities Commission, that board may take the first step in securing to the receivers the power to operate the road. If the terms of Justice Doran's decree are not accepted by the men, and the receivers can find no other remedy, the commission will summon the receivers to see if at least partial operation may be begun.

News Notes

Demand Goes to War Board.—The demand of the employees of the Cleveland & Eastern Traction Company, Cleveland, Ohio, have been submitted to the Federal War Labor Board for settlement.

New Board for New Orleans.—The Supreme Court having ousted from office the Board of Public Utilities created by the Legislature of Louisiana, the Commission Council of New Orleans proposes to form another board composed of the Mayor, the Commissioner of Public Property and the Commissioner of Public Utilities.

City Names Arbitrator on Dividend Matter.—W. E. Davis, city light commissioner, was selected by Council on July 17 as its arbitrator in the matter of an increase in the dividend of 1 per cent, asked by the Cleveland (Ohio) Railway. J. J. Stanley, president of the company, stated that the company's representative will be selected within a short time.

Cincinnati Will Ask for Loop Bids.—The Cincinnati (Ohio) Rapid Transit Commission has decided to open bids on Aug. 27, for the first section of the rapid transit loop. Plans and specifications will be completed as soon as possible. The first section lies between Walnut and Charles Streets. The cost of construction has been estimated at approximately $543,000.

Report on Grand Rapids Company.—A report on the condition of the Grand Rapids (Mich.) Railway made by the Brownell Engineering Company at the request of the City Commission of Grand Rapids, Mich., holds that the city would be justified in paying $4,500,000 for the company's property. An additional expenditure of $1,500,000 would be needed to establish adequate service.

More Time for Everett Elevated Extension.—The Public Service Commission of Massachusetts has issued a finding authorizing the Boston Elevated Railway to defer the construction of a permanent elevated and surface line terminal at Everett until July 21, 1920. The company showed that it could not obtain capital for the completion of this work at present on reasonable terms.

Men Return, Pending Board Findings.—The Ottawa (Ont.) Electric Railway has resumed full service owing to the decision of its men, who have been on strike for two weeks, to return to work pending the findings of the board of conciliation which is considering their demands. The company, while agreeing to take back men in most cases, reserves the right to refuse re-employment to those whom it considers undesirable.

New England Street Railway Club Holds Outing.—Nearly 200 members and guests of the New England Street Railway Club attended the annual outing of the organization on July 24 at Fort Phoenix Park, Fairhaven, Mass. Elton S. Wilde, general manager Union Street Railway, New Bedford, was master of ceremonies. The program included visits to the Union company's new generating station and to its carhouses and shops in New Bedford, and a shore dinner and sports at the Fort Phoenix Casino.

Examiner to Hear Boston & Worcester Dispute.—Employees of the Boston & Worcester Street Railway, Boston, Mass., have voted to refer their disagreement with the company regarding back pay under the War Labor Board's award of last winter to Examiner Charlton Ogburn of the board for adjudication. It is claimed that about $50,000 in back pay has accumulated since November, 1918.

All Berlin Tied Up.—As a consequence of the strike of street car and other transit workers, Berlin, Germany, has been without transit facilities for several days. Most of the residents of the city remained at home, unable to reach their places of business. Armed troops are reported to be patroling the streets and there is said to have been some disorder. Car lines in several other German cities are likewise tied up.

Milwaukee Electrification Progressing.—Seattle officials of the Chicago, Milwaukee & St. Paul Railway state that operation of the Milwaukee electric line between Othello and Beverly will be begun in a short time, but that the road will not be able to use electricity as a motive power between Beverly and Seattle and Tacoma before November. The delay is occasioned by the slow delivery of electric locomotives and equipment for the substation.

Tacoma Men Oppose Change.—It was reported that trainmen of the Tacoma Railway & Power Company, Tacoma, Wash., planned to call a general strike if the company insists upon entering into a new contract with the men on Aug. 1, the date of expiration of the present agreement. It was said the men were willing to continue the present contract, but that the company was proposing changes that would effect a reduction in wages. The men will not concur in such an agreement, they affirm.

Claims of Carmen Disallowed.—Claims against the Spokane & Inland Empire Railroad, Spokane, Wash., involving more than $1,000,000, were denied by a decision filed in the Federal Court of the State of Washington on July 11. The company is now in the hands of a receiver. The most important of the claims disallowed was that of the railway employees for more than $20,000 in back pay, inasmuch as they recently refused to go on a strike against the company in sympathy with the electrical workers.

Champaign Strike Unchanged.—The strike of the union conductors and motormen of the Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill., remains unchanged. The union men refuse to work longer than nine hours while the members of the brotherhood are willing to work longer. The members of the brotherhood are at their posts, as well as a number of non-union men. There is no disorder. Cars are being operated on a twenty-minute schedule, which is about half the headway under normal conditions.

Disorder in Oklahoma Strike.—The strike of motormen and conductors of the Oklahoma Union Railway, which operates an interurban line between Tulsa and Sapulpa and local lines in these two cities, grows more serious, after a period of quiet during which it was thought the strike was settled. Cars in Sapulpa and on the company's lines in Tulsa have again been stopped, although some of the interurban cars are being operated, but under difficulties on account of attacks by strikers. Pending settlement of the strike, arrangements have been made with the Frisco Railroad for the operation of gasoline motors cars over the line between Tulsa and Sapulpa to care for the traffic.

Omaha Men Present Demands.—A committee representing the employees union of the Omaha & Council Bluffs Street Railway, Omaha, Neb., has presented revised demands for a closed shop, an increase in wages, changed working conditions, promotion by seniority without regard to previous strikes, and relief funds and vacations. The proposed agreement provides for the discharge of any employee who does not become a member of the union within thirty days. Time and a half pay for time over ten hours work is demanded in the compensation clause. The scale of wages is fixed at 65 cents an hour for the first three months of continuous service, 70 cents for the next nine months, and 75 cents after one year. The present wage scale is from 41 to 45 cents an hour.

Short Strike in Macon.—The trainmen in the employ of the Macon Railway & Light Company, Macon, Ga., were on strike from 4:30 a. m., on July 15 until 5 p. m., on July 16. During that time negotiations were under way which were concluded with recognition of the union by the company, the granting of a ten-hour day and an agreement calling for the payment of a wage scale ranging from 36 cents to 40 cents an hour. The previous wage scale was 23 cents to 28 cents an hour. One of the issues which precipitated the strike was the discharge of certain employees. The cases of these men will be taken up and handled by the union with the superintendent of the railway. The company has been charging a 6-cent fare. It is stated unofficially that an increase may now be sought in the hope of recouping the company for the burden which the increase in wages has imposed.

Financial and Corporate

Reviews St. Louis Finances

Financial Vice-President of United Railways Shows Need for Co-operation in Rehabilitation

Robert L. Warner, vice-president of the United Railways, St. Louis, Mo., who resigned recently as financial agent of the receiver, issued a statement in which he urged that security holders, the city of St. Louis, the Public Service Commission of Missouri and the employees of the company should be allowed representation on the company's board of directors, when the company is ultimately reorganized.

Mr. Warner does not believe a complete reorganization can be brought about before May 1, 1920. His statement follows in part:

The action of Judge Lamm in granting the order requested by the receiver, enabling him to sell receiver's certificates for the purpose of discharging the debt to the War Finance Corporation, will dispose of this question to the best possible advantage of all interests.

The next maturity of importance will be $1,900,000 of St. Louis Railroad 4½ per cent bonds, due May 1, 1920. Unless reorganization should take place prior to that date, this maturity also will undoubtedly have to be met by way of receiver's certificates. That, however, is a question for the future to determine.

As to reorganization, I do not see the slightest possibility of any such thing taking place between now and next May 1, unless, indeed, it should be occasioned by a premature foreclosure of the general mortgage, which, at such a time as this, would almost necessarily involve the destruction of all equities junior thereto.

It is difficult to believe that the courts would view such a procedure with favor. On the contrary, it seems much more probable that reorganization will be delayed until the Public Service Commission has received from its engineers their report upon the valuation of the property now in progress, and has rendered a final decision upon the same and also has thereafter considered and determined the rate of return which should equitably be allowed upon such valuation, and the methods whereby the same may be secured with justice to all interests.

Reorganization, in order to be effective and permanent, must provide not only an equitable return on the fair value of the existing property as determined by the Public Service Commission, but also—and this is highly important as a matter of public interest—should afford a thoroughly practical means of financing betterments and extensions to the amount of possibly $2,000,000 or $3,000,000 per annum.

There should also be developed in connection with reorganization such a plan of administration as will afford to all interests adequate representation in dealing with and settling without destructive controversy such problems as are bound to arise from time to time in connection with the management of the new company.

Experience elsewhere indicates strongly the ultimate adoption of a zone system of fares. The public, however, will not be content with this or any other system of revenues unless the same be accompanied by automatic regulation of rates on a service-at-cost basis. To this end the board of directors of the new corporation should include not only representatives of the security holders, but also representatives of the city of St. Louis, the Public Service Commission and the employees. It is impossible to hurry such a reorganization.

Under these circumstances, I have recently expressed to Mr. Wells the desire to be relieved of active service upon behalf of the receiver as soon as the matter of issuance of receiver's certificates should be sufficiently advanced to warrant this step.

I expect to continue as vice-president of the corporation and in that capacity to assist the receiver in every possible way as affairs progress in the general direction of reorganization. I certainly shall continue for the present, at any rate, to be a resident of the city of St. Louis, although, no doubt, putting in a good deal of my time elsewhere during the next few months.

Six-Cent Fare Results in Spokane

The June results in Spokane, Wash., for the 6-cent fare, as compiled by H. C. Bender, city superintendent of public utilities, are as follows:

WASHINGTON WATER POWER COMPANY

Paid passengers hauled, 1,250,838.

Increase over three-year average, 4.5 per cent.

Decrease in gain at 6-cent fare over what it would have been at 5 cents, 17.3 per cent.

Street car revenue for June, $74,909.

Increase over the three-year average, 26.1 per cent.

Revenue gain over what it would have been at 5-cent fare, 2 per cent.

Car-miles covered in June, 291,246.

Decrease in car mileage, 2.7 per cent.

SPOKANE & INLAND EMPIRE TRACTION LINES

Paid passengers hauled, 605,057.

Loss over three-year average, 16.9 per cent.

Decrease in passengers due to 6-cent fare, 11 per cent.

Street car revenue for June, $36,278.

Increase over three-year average, 1 per cent.

Gain at 6 cents over what it would have been at 5 cents, 4 per cent.

Car-miles covered in June, 150,580.

Decrease over three-year average, 21.2 per cent.

Figures on the third month's operation of the 6-cent street car fare, compiled from the books of the two companies by Mr. Bender, together with his deductions as to the effect of the increased fare, show a continued decline from the number of passengers that would have been hauled at the lower fare with a relatively smaller gain in revenue.

Iowa Interurban Earns $5,299 a Mile Net

The Inter-Urban Railway, operating lines to Colfax and Perry, Iowa, made a net profit of $156,891 in 1918, according to a statement just filed with the Iowa State Board of Assessment. This represents a profit of $2,634 per mile on the 59½ miles of trackage. During the year 1918 the traffic over the interurban's Perry line was entirely abnormal for the reason that this line was the only means of reaching Camp Dodge by rail.

The 3.91 miles of track on the Inter-urban Railway line between Des Moines and Valley Junction showed the second best net income of all Iowa interurbans. The net earnings for the line were $19,397, or $4,960 per mile.

The best paying interurban line in the State, according to the statements filed by the various companies, was the line between Cedar Rapids and Marion, which made a net income of $5,299 per mile. The Fort Dodge, Des Moines & Southern Railroad, with 149 miles of track, earned $81,960, or $549 per mile.

All interurban lines in the State showed a profit with the exception of the Tama & Toledo Railway (trackage, 2.95 miles) which showed a loss of $532.

Collateral Ordered Sold

Practical Control of Washington Railway & Electric Company Is Up for Bid

Sale of the 27,500 shares of the common stock of the Washington Railway & Electric Company, held as collateral for the defaulted notes of the Washington Utilities Company, was ordered on July 25 by the protective committee. This large block of stock has practically controlled the Washington electric railway for years, with the proxies that were sent in annually by shareholders.

Committee Hopes for Bid

The committee does not know whether there will be a bid for the property or not, but is hopeful that a sale may be effected. Otherwise the committee will buy in the securities and thus alter its position from a creditors' committee of a defunct organization to that of interested shareholders in the Washington Railway & Electric Company, and therefore be much better qualified to appear before the Public Utilities Commission and also to assume positions on the directorate of the company, if such action should seem desirable.

The committee does not expect to be eliminated from the railway situation through the sale of the security and the liquidation of advances, although it is probable that if a bid should be made for the 27,500 shares of common stock around $50 a share, it would welcome the shifting of the burden to other shoulders.

Possible Merger with Capital Traction

Discussing the probability of a merger with the Capital Traction Company the committee held that the Capital Traction Company might be induced to merge provided a 7-cent fare were granted and an agreement could be reached in the matter of value of shares. This could be much more readily brought about under present conditions than when the stock of the Washington Railway & Electric Company was selling at much higher prices.

As an alternative, it is said, the chances are that the Washington Railway & Electric Company without prospect of relief will seek to abandon some of its lines that are necessary to the passenger traffic of the city; that a default will follow on some of the subsidiary company's mortgages, that the condition of track and equipment will deteriorate and that eventually the federal government may be obliged to come to the rescue and take over the property, when it would at once have to increase fares.

Sacramento Northern Picking Up

The Sacramento (Cal.) Northern Railroad, the reorganized Northern Electric Railway and affiliated companies, for the first six months of operation reported a balance of $58,411 after all deductions. This amount well bears comparison with the deficits reported by the companies before the reorganization. The total gross railway operating revenue was $668,957; and total expenses, much higher than normal and including $120,377 depreciation, amounted to $520,200.

It was reported at the annual meeting that conditions under which the road had been operating were improving and that a fairly satisfactory year might be expected. The warehouses are this year proving profitable, and the bountiful crops all along the lines of the company indicate an increased revenue from that source.

The income statement for the six months ending Dec. 31 follows:

Operating Income:		
Railway operating revenue....	$669,957	
*Railway operating expense...	520,200	
Net revenue operations..................		$149,757
Auxiliary operations—revenue.	$12,376	
Auxiliary operations—expense..	1,520	
Net revenue—auxiliary operations.....		10,855
Net operating revenue..................		$160,612
Taxes assigned to railway operations...		28,550
Operating income.......................		$132,062
Non-operating income.................		17,554
Gross income...........................		$149,616
† Deductions...........................		91,205
§Income balance transferred to profit and loss................................		$58,411

*In railway operating expenses there is included depreciation on way and structures amounting to $120,377.

† Deductions include $23,956 for amortization.

§ The income balance transferred to profit and loss $58,411 was used in amortization of an equal amount of the total of $160,000 reorganization committee expenses.

Dallas Net Improving

The gross earnings of the Dallas (Tex.) Railway for June increased $61,332 over June, 1918, but decreased $4,475 as compared with May, 1919, according to the Supervisor of Public Utilities. The railway operating expenses and appropriations increased $47,498 over June, 1918, and were $4,959 less than for May, 1919. The net earnings from railway operations for June, 1919, increased $13,853 and $483 respectively over June, 1918, and May, 1919.

The total net earnings for June, 1919, showed an increase of $15,758 over the corresponding month of last year and an increase of $990 over the previous month of this year. The total net earnings for June were at the rate of 4.98 per cent (annual basis) on the property value, and for the twenty-one months of operation ended June 30, 1919, 4.23 per cent as compared to the permitted returns of 7 per cent.

The total car-miles operated in June were 605,052, an increase of 42,574 (or 7.6 per cent) over last year. The car-hours were 62,604, an increase of less than one-half of 1 per cent. Thus it will be observed that with practically the same car-hours operated, the car mileage was increased about 7½ per cent.

This was due to the speeding up of the cars, the miles run per hour in June, 1919, being 9.67 as compared to 9.01 in June, 1918. The passenger revenue was 29.6 cents per car-mile this year and 21.1 cents last year. The total passengers carried were 4,390,171 in June, 1919, and 3,025,555 in June, 1918, showing an increase in traffic of about 45 per cent. This material increase was due largely to the fact that jitneys were still operating in June, 1918. The growth of the city, however, accounts for a part of this increase in traffic.

Protests Increase in St. Louis Valuation

In a plea on behalf of the receiver for the United Railways, St. Louis, Mo., before the Missouri State Board of Equalization and the new State Tax Commission, Morton Jourdan, attorney for the receiver, declared that 10 per cent of the gross receipts of the railway goes to pay taxes of some sort or other and that the company is the largest single taxpayer in the State.

Mr. Jourdan asked the State bodies to refrain from making any increase in the tax assessment of the company's property. A year ago the State placed a valuation of $22,000,000 on the properties of the United Railways for tax purposes. If the State board this year increases this valuation in the same proportion in which it has increased the assessment on real estate and personal property, the United Railways would be required to pay taxes on a valuation $4,250,000 higher than that of last year.

The attorney for the railway told the State bodies that things had gone from bad to worse with the property during the last year. The company had not earned enough, he said, to meet its increased obligations. He urged the board to be mindful of the present high valuations of the property and of the financial distress of the company.

St. Louis Results in May

The second monthly report of Rolla Wells, receiver for the United Railways, St. Louis, Mo., filed in the United States District Court, shows that the payroll for May was $297,772. For the last two weeks of April, the payroll was $250,063. Mr. Wells explained that the payment of back wages had been made during April and that other indebtedness was incurred then that did not come up in May.

Total receipts during May were $1,449,343. This income added to the balance on hand, made the receipts aggregate $2,527,238. The total paid out was $2,380,039, leaving a balance on hand at the end of the month of $147,198.

Coupons on the St. Louis Railway bonds, due on May 1, were paid at that time. They totalled $42,750.

Financial News Notes

Note Extension at New Orleans.—In regard to the $4,000,000 of one-year 7 per cent notes of the New Orleans Railway & Light Company, New Orleans, La., which fell due on June 1, 1919, it is reported that many have been extended for one year at the same rate of interest.

Sharon Trolley Line Comes to Life.—The section of the former Norwood, Canton & Sharon Street Railway between Sharon Corner and Sharon Heights, Mass., 5 miles in length, was scheduled to resume operation on July 24. Two 6-cent fare zones will be used and deficits will be met from the town budget.

Would Issue Bonds to Pay for Cars.—The Berkshire Street Railway, Pittsfield, Mass., has applied to the Public Service Commission for approval of an issue of $74,205 of bonds, the proceeds to be applied toward the purchase of seventeen one-man cars costing $98,940. The remaining $24,735 of the purchase price will be paid in cash.

Time for Deposit Extended.—The reorganization comittee of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., has given notice that the time for the deposit of first mortgage bonds under the plan of reorganization dated Jan. 20, 1919, have been extended until Sept. 8, 1919. The National Trust Company, Ltd., Toronto, Ont., is the depositary.

I. T. S. Issues Authorized.—The Illinois Public Utilities Commission has authorized the Decatur Railway & Light Company, Peoria, Ill., a subsidiary of the Illinois Traction System, to issue promissory notes to the amount of $40,698. The Quincy (Ill.) Railway, another subsidiary company of the Illinois Traction System, has been authorized to issue promissory notes in the amount of $104,919.

Pascagoula Company Ordered Sold.—It is reported that the United States Court has ordered the sale of the property of the Pascagoula Street Railway & Power Company, Pascagoula, Miss., and has appointed George P. Money as commissioner to conduct the sale. The appointment of a receiver for this property was noted in the ELECTRIC RAILWAY JOURNAL of April 5.

Offer Reported for St. Louis Control.—A report was current recently in St. Louis, Mo., that an offer had been made to the North American Company for the 186,000 shares of the common stock of the United Railways, St. Louis, that the North American Company holds. This represents a majority of the common stock of the United Railways. It is believed an effort is being made by some of the holding committees to secure control of the common stock.

Change in Control of Maryland Company.—The Cumberland (Md.) Electric Railway and the plants of the Edison Electric Illuminating Company, together with allied corporations of which George L. Wellington, formerly United States Senator, is head, will, it is stated, be taken over by a New York syndicate. Plans under consideration are said to provide for the linking of near-by towns by electric railway, forming a system including Cumberland, Elkins and Grafton, W. Va.

Wants to Shorten Line.—The Millville (N. J.) Traction Company has applied to the State Board of Public Utilities for permission to abandon a portion of its tracks in South Millville because the City Commission wants the corporation to pay $30,000 towards paving the streets in that section. The company claims that it has always operated at a loss in that locality, and that it is financially unable to carry out its share of the proposition. The city will oppose the application.

Rehabilitation of Jackson Company.—It is reported from Jackson, Miss., that the attorneys representing the recent purchasers of the property of the Jackson Light & Traction Company (ELECTRIC RAILWAY JOURNAL of July 19) have applied to the Municipal Commission for a renewal of the company's franchise, which was declared forfeited prior to the proceeding in bankruptcy. At present the property is operated under temporary understanding, but the purchasers say that in order to rehabilitate the property it is essential to have a legal franchise.

Reorganization Plan Approved.—It is reported that the minority bondholders of the Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio, have approved the plan of reorganization submitted by the majority bondholders. Under this agreement the $757,262 of bonds are to be retired in favor of a $400,000 stock issue. The plan calls for an assessment of 10 per cent of the face value of the bonds to pay debts and provide working capital. The majority bondholders agree to pay $40,000 of the assessment.

Tax Matters Under Adjustment.—The Morris County Traction Company, Morristown, N. J., will appeal the decision of the Union County Tax Board in declaring certain rights-of-way taxable. The company claims that the taxing of its gross receipts under a recent law exempted it from the payment of a personal tax and that a right-of-way was personal property. The tax board has already granted the application of the company for exemption from $34,400 of taxes on poles and tracks in Union County.

Receiver for Miamisburg & Germantown Line.—W. E. Hutton, Cincinnati, has been appointed receiver of the Miamisburg & Germantown Traction Company by Judge Patterson of the Common Pleas Court at Dayton, Ohio. The appointment was made in the foreclosure suit in which Philip C. Swing, as trustee, is plaintiff, and the traction company, the Cleveland Trust Company, the Cincinnati & Dayton Traction Company and the Ohio Electric Railway Company are named as defendants. The trust and traction companies are named as co-defendants because of having an interest in the property.

Youngstown Receipts Not Sufficient.—The report of Street Railway Commissioner W. L. Sause shows the loss during June in operating Youngstown (Ohio) street cars under a 5-cent fare to have been in excess of $24,000, and the stabilizing fund which governs the fares to have dropped to $22,887. Under the provisions of the service-at-cost ordinance the fares of the Mahoning & Shenango Railway & Light Company shall increase each month this fund remains below $50,000. Increased receipts are reported under the 6-cent fare in effect since July 1, and the July report is expected to show a decided improvement over June. A deficit of $5,000 or $6,000 during July, however, is expected.

Fares and Valuation at East St. Louis.—The East St. Louis (Ill.) Railway is having a complete physical valuation made of its East St. Louis properties on which it expects to base a petition for a higher rate of fare. The company was authorized in August, 1918, to charge 6 cents for one year and the petition under consideration is for a continuation of the 6-cent rate. The city of East St. Louis, it is said, will offer no objection to the proposed continued higher rate of fare. The valuation which is now being made, together with the findings of the War Labor Board, which now has under consideration a demand for increased wages by the men employed by the company, will form the basis of a petition for a further increase if an increase in wages is granted as is expected. The Public Utilities Commission of Illinois has reserved its decision in the matter of continuing the present 6-cent rate. The company states that the physical valuation will be completed by Sept. 1.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$83,381	*$44,837	$38,544	$20,438	$18,106
1m., May, '18	71,190	*45,993	25,197	19,875	5,322
12m., May, '19	969,607	*627,125	342,482	242,777	99,705
12m., May, '18	902,794	*536,073	366,721	233,238	133,483

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$150,150	*$116,902	$33,248	$22,163	$11,085
1m., May, '18	147,808	*115,601	32,207	22,296	9,911
12m., May, '19	1,860,855	*1,457,790	403,065	269,667	133,398
12m., May, '18	1,531,816	*1,315,437	216,379	356,565	†140,186

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHTY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$54,063	*$36,753	$17,310	$13,903	$3,407
1m., May, '18	46,226	*30,617	15,609	11,513	4,096
5m., May, '19	243,521	*171,126	72,395	74,679	†2,284
5m., May, '18	206,022	*140,872	65,150	57,144	8,006

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$2,055,620	*$1,318,044	$737,576	$556,307	$181,269
1m., May, '18	1,709,860	*1,125,780	584,080	502,430	81,650
12m., May, '19	23,732,692	*15,622,825	8,109,867	6,307,735	1,802,132
12m., May, '18	20,509,341	*13,520,164	6,989,177	5,569,903	1,419,274

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$201,289	*$154,408	$46,881	$55,645	†$8,764
1m., May, '18	254,438	*183,761	70,677	70,343	334
12m., May, '19	3,060,868	*2,129,766	931,102	783,744	147,358
12m., May, '18	3,107,855	*2,159,311	948,544	843,734	104,810

* Includes taxes. †Deficit. ‡ Includes non-operating income.

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$340,613	*$271,917	$68,696	$69,976	†$1,286
1m., May, '18	337,079	*240,069	97,010	68,084	28,926
12m., May, '19	4,366,314	*3,479,449	886,865	826,089	60,776
12m., May, '18	3,841,814	*2,766,053	1,075,761	798,300	277,461

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$4,019,001	*$2,591,942	$1,427,059	$1,631,677	†‡$153,745
1m., May, '18	3,524,432	*2,002,462	1,521,970	1,186,854	‡377,373
11m., May, '19	39,294,196	*26,823,875	12,470,321	16,624,228	†‡3,611,573
11m., May, '18	37,208,118	*20,913,024	16,295,094	12,366,041	‡4,420,658

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$218,574	*$164,200	$54,374	$35,784	$18,590
1m., May, '18	161,528	*118,466	43,062	36,002	7,060
5m., May, '19	963,769	*744,148	219,621	179,368	40,253
5m., May, '18	772,168	*585,297	186,871	181,005	5,866

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$264,678	*$201,161	$63,517	$39,297	$24,220
1m., May, '18	232,266	*149,160	83,106	40,514	42,590
12m., May, '19	3,114,376	*2,206,544	907,832	476,660	431,172
12m., May, '18	2,522,800	*1,617,542	905,258	489,350	5,90,824

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$711,453	*$436,493	$274,960	$192,549	$82,411
1m., May, '18	620,294	*369,387	250,907	187,684	63,223
12m., May, '19	8,186,362	*5,493,901	2,692,461	2,259,266	433,195
12m., May, '18	6,676,191	*4,065,109	2,611,082	2,144,652	466,430

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$488,136	*$362,494	$125,642	$114,985	‡$34,095
1m., May, '18	469,516	*341,744	127,772	104,393	‡29,189
5m., May, '19	2,534,273	*1,842,155	692,118	569,354	‡170,192
5m., May, '18	2,358,742	*1,727,085	631,657	505,749	‡168,061

Traffic and Transportation

Rehearing in Transfer Case

New York City Order Abolishing Transfers Goes Into Effect Pending Rehearing

An order signed on July 29 by Public Service Commissioner Lewis Nixon of the First District of New York, granted the application of Corporation Counsel Burr of New York for a rehearing on the 2-cent transfer order made recently on the petition of Job E. Hedges, receiver for the New York Railways, and set Aug. 4 as the time for the rehearing. The order did not stay the authorization of the 2-cent charge, which went into effect on the morning of Aug. 1.

In his application Mr. Burr contended that the commission had no power to permit a charge for transfers, that the proceedings before the commission did not show any need for it, and that in making the order the commission had neglected to insert in it the points at which free transfers would continue to be given.

COMMISSION'S POWER DISPUTED

The Corporation Counsel said that Commissioner Nixon in his memorandum accompanying the issuance of the transfer order "showed a disposition to ignore the power of the commission in case of the disintegration of the system to fix a joint rate order and makes it apparent that the order rendered was under threat or coercion of the United States District Court and to avoid a disintegration of the entire system with the claimed result of permitting separate companies each to charge a 5-cent fare." Mr. Burr continued.

> The city calls the attention of the commission to the further proceedings in the Federal Court in respect of the Eighth and Ninth Avenue railroad companies in respect of the alleged co-operation between the Federal Court and this commission with regard to the 2-cent transfer charge ordered; in respect of the return of the Eighth Avenue line to its owners, plus the covert threat in the order for such return that if a stay be obtained on the 2-cent order made herein by the commission, a separate 5-cent charge for this line would be imposed, which threat directly challenges the power of the commission to make a proper joint rate order over the Eighth Avenue line, a power that the commission clearly has both under section 49, subdivision 3 and subdivision 7 of the public service commissions law.

TRANSFER CHANGES ANNOUNCED

Notices were sent out on July 26 by Lindley M. Garrison, receiver of the Brooklyn Rapid Transit Company, showing the points where transfers were to be issued free after the order of Commissioner Nixon permitting a 2-cent charge for transfers on the company's surface lines became effective, on the morning of Aug. 1. The order of the commissioner excepted only points where the giving of free transfers is made compulsory by franchise provisions.

Deputy Public Service Commissioner Glennon announced on July 31 that a hearing would be held on Monday, Aug. 4, on the application of the Brooklyn Rapid Transit Company for permission to abolish all transfers between surface and rapid transit lines.

In Brooklyn there were 1008 free transfer points. Under the regulations of Mr. Garrison these have been reduced to forty-nine. It has been estimated that the revenues of the company will be increased $1,200,000 a year by the transfer charges.

Line Seniority to Continue in Kansas City

By a majority of 150, trainmen in the employ of the Kansas City (Mo.) Railways in an election held on June 26 decided to continue what is known as line seniority. Only three divisions showed a majority for the carhouse seniority plan. Nearly 1500 men voted.

A thorough campaign was made throughout the system by the advocates of both plans, and meetings were held at which both sides of the issue were openly discussed.

Line seniority has been the practice on the Kansas City Railways for many years. Under its operation, when a man begins work for the company, he goes to the division for which he has expressed a preference and his name is placed on the extra list. When a vacancy occurs on any line of that division he may accept that vacancy. When he once takes a line he remains on that line continuously, and any change he desires to make places him at the foot of the extra list.

It was contended by some men that line seniority frequently worked a hardship, as time very often made important changes in the desirability of certain lines as places to work. Had the carhouse seniority plan been adopted, men could have selected the runs they desired out of the division where they are employed according to their years of service with the company, their runs to continue for a period of six months. At the end of that time the whole matter would again be thrown open and again selections could have been made, always according to years of service. At each six months period a man could change lines so long as the line he desired was operated out of the same division.

Men who opposed this plan did it on the theory that it might force an undesired change, and in the event of a consolidation of divisions might cause some men to lose good runs.

The issue was submitted to a vote of the trainmen as being one for them to settle. Either plan was satisfactory to the company, its desire in submitting the matter to the men themselves being to let the majority rule. Under the representation plan of the company it is the policy of the company to submit all similar problems to a vote of the men themselves.

Needs Ten-Cent Fare

Pittsburgh Ten-Cent Cash and Seven-and-a-Half Cent Ticket Fare Not Expected to Be Sufficient

Even before the 10-cent cash and 7½-cent ticket fare of the Pittsburgh (Pa.) Railways had been put into effect came a statement by one of the receivers that a straight 10-cent fare is imminent. The new fare went into effect on Friday, Aug. 1. The forecast of a still higher tariff was made last week by Receiver C. A. Fagan in Washington before the commission there investigating the electric railway situation.

Nothing less than a straight 10-cent fare will enable the company to meet its obligations, Mr. Fagan declared. The effect of the publicity the commission's proceedings have given to the difficulties traction companies now face has been apparent in Pittsburgh through the absence of the public protest that might have been expected to follow such a statement.

CITY ENTERS PROTEST

The city of Pittsburgh has entered protest against the tariff that went into effect on Aug. 1, as a matter of course, but little expectation is entertained that the protest will be effective. Hearing on it will be held in Pittsburgh on Aug. 13.

At this hearing will be presented, as was forecast in the ELECTRIC RAILWAY JOURNAL recently, the report of the commission of engineers who have been working more than a year on a physical valuation of the Pittsburgh traction properties. The original plan was to use this valuation as a basis for future fare fixing. If this procedure is carried through, it means resumption, to some degree, of payment of interest and other fixed charges to security holders, who have received no return from investments in Pittsburgh electric railway securities since the receivers began to default payments regularly nearly a year ago.

AWAIT WAR BOARD AWARD

It is expected that the award of the War Labor Board in the wage dispute before that body will also be before the Public Service Commission at the same time. Reports from Washington last week indicated that the award might be expected by Aug. 2. The general expectation is that the men may receive their full demands, which include a maximum wage of 60 cents an hour.

Since the 7½-cent ticket rate went into effect, the Pittsburgh Railways is using metal coins. The coins are sold in fours for 30 cents. It is estimated that they will prove considerably cheaper than the pasteboard tickets heretofore issued.

Zones Ordered in New Jersey

Company and Commission Give Heed to Demand for Low Initial Fare—Test Period Starts Sept. 14

A temporary plan of zone fares for the Public Service Railway for an indefinite trial period was approved by the Board of Public Utility Commissioners of New Jersey on Aug. 1.

CASE STILL OPEN

The proceedings before the commission under the plan for a zone system of fares not having been completed, the board was precluded from adopting any permanent plan at this time. The most pronounced objection of the board to the original zone plan was the imposition of the cost in such a manner as to result in a charge for the first zone mile at a higher rate than for any other zone mile. It is the opinion of the board that the trial of one of the plans proposed by the company on July 29, with such modifications as appeared to be necessary, will be helpful in the final determination of the feasibility of the plan ultimately adopted. The board finds and concludes substantially as follows:

> It will permit, subject to the following modifications, a schedule and tariff of rates to take effect Sept. 14, 1919, based on a zone-mile system of fares filed as follows: 3 cents for a ride within a zone-mile in which the passenger boards the car; 2 cents for a ride in each additional zone-mile or part thereof on the same car. The following rates shall not apply to passengers riding only within the limits of the following zone: (a) the zone between Edgewater Ferry and Grantwood Junction, (b) the zone between Edgewater Ferry and Bluff Road, (c) the zone between Harrison and Eagle Rock Avenues and Mountain Avenue and Murray Street on the Eagle Rock line, West Orange. The fare for passengers riding only within the limits, of the zones above specified as (a), (b) and (c) respectively, shall be 5 cents. Children under the age of seven years when accompanied by an adult paying fare shall be carried free. School tickets shall be issued at the same rate under the same conditions as now issued.
>
> Where superimposed service is now in operation the same shall be operated as now operated so as to avoid the necessity of riders passing from one car to another. Continuation tickets are to be retained in use where now effective.
>
> The board reserves the right without formal order from time to time to make adjustments as become necessary and to require such adjustments of transfer points and heavy loading points as to make transfer points and heavy loading points coincident with the zone limits. In order to test the operation and in order that the results may be used as evidence in pending hearings the company shall file with the commission prior to Aug. 15 its acceptance of the conditions prescribed by the commission.

COMPLETE REPORTS MUST BE FILED

The company will be required to file with the board for each calendar month, beginning with the month of September, so long as the new rates continue in effect, a statement giving the total amount of wages and salaries paid, classified by character of service and the rate per hour, day or period over which the salary or wage is paid, and a statement of operating revenue and operating expenses arranged in accordance with the standard classification of accounts for such properties.

When the Board of Public Utility Commissioners met in Newark on July 29 to continue the Public Service Railway zone rate case, T. N. McCarter, president of the company, asked for permission to submit new figures based upon the increased wages which went into effect as the result of the National War Labor Board's most recent order, also because of added cost of power due to wage, freight and coal price increases.

Mr. McCarter pointed out that the wage item alone meant an additional outlay of approximately $1,175,000 while the added power costs would be about $305,000 more. These extra costs, which could not have been foreseen when the zone report was filed, are substantially all chargeable to "movement" cost and therefore upset the company's calculations for a rate of 5 cents for the initial zone-mile with 1 cent for each mile thereafter and 1 cent for a transfer.

The increase made additional relief necessary and three alternate rates of fare were suggested. If a flat fare were to be continued it would be necessary to make the rate 9 cents with 1 cent for a transfer, but either of two zone plans would produce the required revenue, to wit: the charging of 5 cents for 2 miles with 2 cents for each additional mile and 1 cent for a transfer, or the charging of 3 cents for the first mile and 2 cents for each additional mile with the transfer privilege abolished.

PRESIDENT MCCARTER OPPOSED TO NINE-CENT FARE

Mr. McCarter said he deprecated a flat rate of 9 cents because it would drive so much traffic from the railway that the company would not be fulfilling its functions. On the other hand Frank H. Sommer as counsel for the municipalities had produced so much testimony amounting to a demand for a low initial fare that although such a rate was a radical departure from present conditions and quite at variance with what had been his views on the subject for years, Mr. McCarter added that the company would be willing to test it out. It was to be understood that whatever plan was adopted, the present hearing was to be carried on until the question of the valuation of the company's property and the amount it was entitled to earn should be fully determined.

It was pointed out that according to the best estimates that could be made the 9-cent plan would result in the carrying of 242,500,000 passengers a year; the 5-cent and 2-cent plan would mean 317,800,000 passengers a year and the 3-cent and 2-cent plan would attract 331,700,000 passengers. Of the latter approximately 65,400,000 would ride for 3 cents, 86,000,000 for 5 cents and 69,000,000 for 7 cents.

In other words, nearly half of all the riders would pay less than existing rates and about two-thirds would pay either less or the same as at present. For these reasons the 3-cent and 2-cent plan was favored and the board was urged to sanction its adoption by not later than the middle of September with the idea that its actual operation would give definite information for future guidance and at the same time enable the company to go on.

Six-Cent Fare Extension Granted United Railways

The Public Service Commission of Missouri on July 23 issued an order permitting Rolla Wells, receiver for the United Railways, St. Louis, to continue charging a 6-cent fare until October 31. The extension authorized on May 29 expired on July 28. In his application Mr. Wells stated that the conditions under which the order was originally issued remained unchanged and that the company could not operate on less than a 6-cent fare.

Mr. Wells has appealed to the people of St. Louis for their co-operation in re-establishing the company on a firm financial basis. In commenting on the appeal the St. Louis *Star* says editorially: "The people of St. Louis undoubtedly welcome this invitation to co-operate under conditions that inspire confidence. St. Louis can afford . . . to assume a new attitude of hopefulness and helpfulness in the interest of the future."

Jitney Regulation in Seattle

In a bill introduced in the City Council of Seattle, Wash., recently, and referred to the public safety and the city utilities committees, strict regulation of jitneys and all other motor vehicles engaged in passenger transportation is asked, and also that this duty be assigned to the Superintendent of Public Utilities, who has charge of operating the Seattle Municipal Railway.

In Addition to the license now required for the operation of jitney or other passenger vehicles, the bill requires that certificates be obtained from the Superintendent of Public Utilities. Applications for such certificates must show the route to be followed, the schedule, the rate of fare, which must not exceed 10 cents, and the capacity of the vehicle. The certificate, when issued, will limit such vehicle to the capacity named and prohibit its use on any other route than that designated in the certificate.

After an examination of the applicant for a license the Superintendent of Public Utilities may issue or deny the certificate, and appeals from his decision may be made to the Board of Public Works, and from that body to the City Council. Not more than one change of route will be permissible in each thirty days, and all certificates for operation will expire on the last day of each year in which they are issued.

Constructive Jitney Regulations in Prospect

Kansas City, Mo., is reaching a position on the subject of jitney regulation that promises to help materially in solving the transportation problem for the city. The ordinance resulting from many conferences, introduced in the Council recently, provides for these features:

1. A $5,000 bond for each vehicle operated.
2. License fees: $25 up to seven passengers, $35 up to twelve passengers, and $50 above twelve passengers.
3. A city jitney license inspector, who shall inspect jitneys once in three months.
4. Definite jitney routes, with a limit to the number of jitneys that may operate over each route. Operators may specify first, second and third choices as to routes, but must operate where the license inspector assigns them.
5. Any operator failing to cover the entire route, or deviating from the route, is liable to loss of his license.

Fifteen routes are specified in the ordinance, the limit of jitneys ranging from 50 to 100 on each route, a possible total of 1100 jitneys. Nearly all the routes follow the lines of the Kansas City Railways, though in few cases reaching the terminals of such lines.

Transportation News Notes

Kansas City Plans Safety Campaign.—Plans for a one-year safety-first campaign are being made by the Kansas City (Mo.) Safety Council. Active work, which will be under the auspices of the local safety council, the Traffic Safety League, and the Chamber of Commerce, will begin on Sept. 1.

Increase in Interurban Rates Allowed.—The Public Utilities Commission of Illinois on July 22 authorized the East St. Louis & Suburban Railway to increase fares between East St. Louis and Belleville to 2 cents per mile. The board refused the company's application for a revised zoning system.

Many Hurt in Head-on Collision.—More than 100 persons were injured, two of them perhaps fatally, when two cars of the Public Service Railway met in a head-on collision near Fort Lee, N. J., on July 27. The accident occurred on a lay-over switch in the single-track line that runs out of Fort Lee.

Six-Cent Fare Protested.—Taxpayers of Wilmington, Del., protested at a hearing before the Board of Public Utilities Commissioners on July 11 against the 6-cent fare charged by the Wilmington & Delaware Traction Company. T. W. Wilson, vice-president of the company, said that disintegration of the traction system would follow return to a 5-cent fare.

Seven-Cent Fare on Still Another Road.—The Galesburg & Kewanee Electric Railway, Galesburg, Ill., has been authorized by the Public Utilities Commission of Illinois to increase cash fares in Kewanee and Weatherfield from 6 cents to 7 cents. Ticket fares are raised from eighteen for $1 to four for 25 cents. The rates are to be ineffective after Aug. 1, 1920, unless otherwise ordered.

Enlist Court Aid in Fare Fight.—The San Antonio (Tex.) Public Service Corporation, has brought suit to restrain the city from enforcing an ordinance refusing the petition of the company for the right to increase local fares from 5 cents to 7 cents for adults and from 2½ cents to 3½ cents for children. In support of this plea for an injunction, the company presented figures showing the valuation of its property and recent records of earnings.

Would Remove Tracks Because of High Cost.—A report recently submitted to the city authorities of Santa Ana, Cal., by a committee which has been discussing the transit situation there with the Pacific Electric Railway, states that the company wants to remove the tracks from Main Street, between Fourth and Santa Clara Avenues, because of the excessive cost of paving and replacing the tracks with Trilby rails.

Application for Injunction Withdrawn.—An application for an injunction to restrain the Tulsa (Okla.) Street Railway from extending its lines in North Cheyenne Avenue was withdrawn on July 18. The company has encountered considerable opposition in its plans for expansion, but now it can go on with its construction work. Unrestricted jitney competition has also hindered the company's expansion into outlying parts of the city.

No Return to Free Transfers.—The Public Utilities Commission of Illinois has dismissed the petition of the Village Board of South Elgin to have transfer privileges restored on the line of the Aurora, Elgin & Chicago Railroad in the city of Elgin. The commission held that sufficient cars were being operated between Elgin and South Elgin and that the United States District Court had enjoined the commission from interfering with rates charged by the company.

Road Makes Arrangements for Depot at Columbus.—The Columbus, Delaware & Marion Railway has completed plans to convert the Garden Hotel property on West Gay Street, Columbus, Ohio, into a passenger and freight depot for its own use. General Manager A. F. Van Deines recently requested permission of the City Council to run tracks into the hotel building, and into the yard beside the building. It is probable that these requests will all be granted.

Increase in Freight Service Planned.—In accordance with its recent promise to give better freight facilities and deliveries to Waukegan and other North Shore towns and cities direct from the loop in Chicago, the Chicago, North Shore & Milwaukee Railroad plans to install a freight depot at the corner of Austin Avenue and Franklin Street, Chicago, from which there will be 5-hour service to Waukegan. The company will make three freight deliveries daily.

Eight-Cent Fare Asked.—The St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., has presented a petition to the Missouri Public Service Commission asking, that its first application for a 6-cent fare be consolidated with a second application asking for an 8-cent fare. The company asserts that it cannot make a fair return at the present rate of fare. It is said that the city of St. Joseph will contest the application.

Wants a Seven-Cent Fare.—The Aurora, Elgin & Chicago Railroad, Aurora, Ill., whose petition for a continuation of a 6-cent fare on its Elgin and Aurora lines is now before the Public Utilities Commission of Illinois, will probably apply for a 7-cent fare instead. The company is also applying for an increase in interurban passenger, freight and express rates and for a street car, light and power increase in the city of Elgin. Demands for a 5-cent fare are expected to go by default.

Hastings Still Without Trolley Service.—Hastings, N. Y., whose trolley service was cut off more than three months ago by the Yonkers Railroad under authority of the Public Service Commission for the Second District of New York, continues to ride in jitneys or walk, despite the fact that the city has passed a franchise ordinance acceptable to the company. The franchise was presented to the commission for its approval on July 15, but owing to objections by several Hastingites no decision has yet been arrived at.

Seven Cents in Jamestown.—The Public Service Commission for the Second District of New York has authorized the Jamestown Street Railway to charge a 7-cent fare in Jamestown and to sell twenty and ten-ride tickets for $1 and 50 cents respectively. Free transfers are to be given to the Warren & Jamestown line, and transfers issued by the latter company are to be accepted. The company may make the changes on three days' notice. The Jamestown Common Council gave its approval to the commission's order on July 21.

Jitney Regulation in Centralia.—An ordinance has passed its first reading by the City Council of Centralia, Wash., prohibiting jitneys from operating over certain streets in the southern end of the city for more than a fixed number of round trips daily. The ordinance is intended to relieve the North Coast Power Company, operating an electric railway between Centralia and Chehalis, from jitney competition. By not using the streets in question, the jitneys will be forced to use a circuitous route between the two cities. A similar ordinance was passed by Chehalis, which it is understood the jitney drivers union will contest.

Inclined Plane Fare Raised.—Increases in inclined plane fare in Pittsburgh have been announced by two operating corporations, the Pittsburgh Railways and the Seventeenth Street Inclined Plane Company, effective on Aug. 22. The Pittsburgh Railways will raise the cost of a ride on the Castle Shannon and Mount Oliver planes from 5 cents to 7½ cents by ticket and 10 cents cash. These rates include transfer to surface cars. The Castle Shannon plane ten-coupon books, now sold at 25 cents, will be raised to 30 cents. These coupons do not carry the transfer privilege.

Better Service Promised.—H. B. Titcomb, vice-president of the Pacific Electric Railway, Los Angeles, Cal., speaking at a recent meeting called by the Monrovia Chamber of Commerce to protest against the quality of service between Monrovia and Los Angeles, said that the company would do everything it could to give better service although handicapped by lack of equipment. Mr. Titcomb blamed the auto bus and jitney competition for the fact that whereas the population of the territory served by the company had increased 50 per cent in the last six years, gross receipts had shown no gain.

Wants Higher Petroleum Rate.—Contending that it should be allowed to charge the same rates for transporting petroleum and petroleum products as those of the roads under control of the Railroad Administration, the Pacific Electric Railway, Los Angeles, has filed with the Railroad Commission of California an application for authority to make an increase of 4½ cents on each 100 lb. of the freight named. The application asserts that the company has to meet the same high terminal and transportation costs as the steam roads, and that an increase in the rate is necessary if the transportation of petroleum and its products is to be carried on at a profit.

Protests Against Refusal to Allow Increase.—B. J. Denman, president of the Tri-City Railway and the Moline, Rock Island & Eastern Traction Company, has addressed an open letter to the city officials of Rock Island, Moline and East Moline and to the companies' patrons taking issue with the action of the Public Utilities Commission of Illinois in refusing to grant the two companies a fare increase. Mr. Denman pointed out that the commission took no account of the fact that traffic had dropped off owing to cessation of war activities which formerly centered at the Rock Island arsenal and at many factories in the cities served by the companies.

Protests Fare Increase.—The city solicitor of New Castle, Pa., has filed with the Public Service Commission of Pennsylvania a protest against the increase of fare from 6 cents to 7 cents by the Mahoning & Shenango Railway & Light Company. The New Castle & Lowell Railway has filed a joint tariff with the commission, in connection with that of the Mahoning & Shenango Railway & Light Company. The new rates, effective on Aug. 5, will apply to all stations on the New Castle & Lowell, the Mahoning & Shenango, and the Sharon & New Castle Street Railway. Increases of 1 cent and 2 cents are made in additional fares for transfers issued to passengers boarding cars between Stop 48 and the New Castle terminus.

Would Charge for Transfers.—The Indianapolis (Ind.) Street Railway has filed a petition with the Public Service Commission of Indiana asking for the right to charge 1 cent for a transfer. The company states that this plan is the only feasible way to raise the estimated $125,000 a year which will be taken from the revenue of the company as a result of the increase in wages of conductors and motormen, which became effective on July 16. The Indianapolis Traction & Terminal Company, which controls the Indianapolis Street Railway, last year petitioned the commission for a 6-cent fare, but this was denied. The commission also abolished the 1-cent reimbursable transfer charge and authorized a straight 5-cent fare.

Reading Traffic on the Increase.—The business boom that has set in among industries of Reading, Pa., and its suburbs has restored a full volume of traffic to the Reading Transit & Light Company. The several large plants of the Reading Iron Company, located in different sections of the city, which had been closed pending adjustment of a controversy as to wages, resumed operations recently. These plants employ several thousand men, and a large number of them are daily patrons of the street cars. Several of the textile mills in the suburbs of Reading are in the process of doubling their capacity and number of employees, and this already has warranted an increase in the special street car service that they require.

Jitneys a Menace, But Not a Substitute.—That the jitney will never replace the electric railway to any large extent is the opinion expressed in a recent full-page illustrated article in the Hartford, Conn., *Daily Courant*. According to the writer Connecticut now has more jitneys than any other State except Texas and New Jersey. "The jitneys," says the article, "can never do the full work of the trolleys and can never furnish service so cheaply as the trolley. Jitneys could never care for all the traffic on the main streets during rush hours. There is reason to believe that the jitney cannot make any money over a long period of time." It is only a question of time, thinks the writer of the article, before the majority of jitneurs will go out of business.

Fare Increase Asked for Jacksonville.—An ordinance has been introduced in the City Council of Jacksonville, Fla., amending the charter of the Jacksonville Traction Company to permit of a higher fare charge. Submission of the bill followed the report of the auditors selected by the Council at the Company's request to examine its books. The report showed that the company was operating at a loss and that bankruptcy was imminent unless higher fares were granted, it being brought out that on mere operation of the system, with no allowance for depreciation, etc., the company has carried every passenger at a loss of 0.31 cent. If passed by the Council the fare ordinance will be submitted to the people for their approval at a special city election.

Idaho Company Wants More.—The Caldwell (Idaho) Traction Company has filed an application with the Public Utilities Commission, asking for permission to increase its rates approximately 1 cent a mile for passengers. Under the proposed change no round-trip tickets will be sold and only straight fare will be accepted. The company operates two lines, the total distance covered by both approximately 25 miles. One line runs from Caldwell south to McNeil, and the other from Caldwell to Wilder. The fare from Caldwell to Wilder under the new rate would be 50 cents, while the present charge is only 35 cents. The charge from one end of the line to the other, that is McNeil to Wilder, is now 65 cents, and the proposed fare would increase this amount to 95 cents.

St. Louis Fare Signs Changed.—The United Railways, St. Louis, Mo., has changed the signs in its cars requesting passengers to deposit their own fares in the glass boxes at car entrances, following representations by leaders of the local branch of the carmen's union that the signs were offensive to the men. As first placed the signs requested passengers to deposit fares and added that "under no circumstances must the conductor deposit them." Later this was amended to read "except under unavoidable circumstances." Local union men in support of their attitude pointed to results in Freeport, Ill., where motormen employed by the Illinois Northern Utilities Company drove their cars to the carhouses and went on strike after the company refused to remove like signs posted in the cars a few days before.

Asheville May Not Oppose Fare Increase.—The city authorities of Asheville, N. C., have announced that they will not oppose a fare increase from 5 to 6 cents by the Asheville Power & Light Company, provided an audit of the company's books shows such an increase to be necessary. The company recently filed its application for higher fares with the Corporation Commission of North Carolina. The company has suggested to the Central Labor Union that it would grant its employees a 7 per cent advance in wages on condition that they did not combat the increased fare. Wages were raised 10 per cent last year, and at the same time the company placed the fare at 5 cents straight. In notifying the city of the company's latest application, the commission pointed out that 7-cent fares had been granted in the other principal cities of the State.

Indianapolis City System Spreads Out.—Directors of the new Indianapolis Street Railway have authorized Robert I. Todd, president of the company, to negotiate with Arthur W. Brady, president of the Union Traction Company of Indiana, for the purchase of the Broad Ripple tracks in College Avenue from Fairfield Avenue, the end of the city company's tracks to Forty-sixth Street, in order that the city service may be extended. If the purchase is consummated, city car service to Forty-sixth Street ~~will~~ be established as soon as a loop can be built at the end of the line. An estimate of the value of the property has been given as $150,000. The Board of Public Works of Indianapolis ordered the College Avenue extension some time ago, but the local company asserted that it could not make arrangements with the Union Traction Company for the use of the tracks. The board then considered the advisability of ordering the company to lay new tracks along the interurban.

New Publications

Developing Executive Ability

By Enoch Burton Gowin. The Ronald Press Company, New York, N. Y. 486 pages.

This book is a reliable common-sense recital of the way the problems of personal development should be solved by men who wish to be successful in the business world. It not only points out opportunities but indicates how these should be seized through the effecting of economies of time, energy and money, through the systematizing of work and through the development of the mental faculties. Numerous exercises, illustrations and test charts serve to bring close home to the reader the inspiring lessons to be derived from the book.

Accounting Theory and Practice

By Roy B. Kester. The Ronald Press Company, New York, N. Y. 795 pages.

This work, a continuation of Mr. Kester's estimable first volume reviewed some time ago in these pages, should be very useful to those who have already mastered the principles of accounting, from whatever source. Mr. Kester treats of every aspect of advanced accounting, the book as a whole being built around the relationship of each account to the balance sheet. More than 100 pages are devoted to the timely subject of depreciation. An appendix contains a wealth of queries and practical problems to strengthen the reader's accounting knowledge. Electric railway accountants can ill afford not to broaden their learning through acquaintanceship with such a work.

Personal Mention

Col. W. G. Dows, president of the Iowa Railway & Light Company, with headquarters at Cedar Rapids, Ia., has announced his retirement from active participation in the business. He will be succeeded as general manager by his son, Sutherland C. Dows, who has recently returned from military service.

Walter Silcox, chief inspector for the Trenton & Mercer County Traction Corporation, Trenton, N. J., has been promoted to the position of dispatcher to succeed James A. Hageman, who was recently made traffic superintendent. Mr. Silcox was formerly in the employ of the Philadelphia Rapid Transit Company.

A. H. Vickers has been appointed local auditor of the Eastern Massachusetts Street Railway at Lawrence, Mass. This is a new office and is created under the arrangement whereby each division of the company looks after its own financial matters instead of having a central auditing department in Boston. Mr. Vickers for the last two years has been in the South doing work of a similar nature for the government.

Gordon Campbell, president and general manager of the York (Pa.) Railways Company, has been appointed vice-president of the Municipal Service Company, Philadelphia, Pa. Mr. Campbell will carry on his new duties while retaining his connection with the York Railways, with which he has been associated since 1908. He was recently re-elected to serve a second term as president of the Pennsylvania Street Railway Association.

Frank S. Easton, hydroelectric engineer with the British Columbia Electric Railway, Vancouver, B. C., has resigned to enter the employ of the Mexican Light & Power Company, with headquarters at Mexico City, Mexico. Mr. Easton will have charge of certain hydraulic and electrical work for the company under the direction of G. R. G. Conway, managing director, who was formerly chief engineer of the British Columbia Electric Railway.

Walter E. Anderson, New York, N. Y., has been selected as assistant auditor of the Kansas City (Mo.) Railways. Mr. Anderson is a graduate of the University of Minnesota, with a degree of B.A., and received the advanced degree of M.A. from Princeton University. After several years' experience as a college instructor, he joined the staff of Niles & Niles, certified public accountants, New York. While with this firm he specialized on public service corporation accounting work.

John P. Witt has resigned as secretary and treasurer of the Lake Shore Electric Railway and assistant secretary and treasurer of the Cleveland, Painesville & Eastern Traction Company, both Everett-Moore properties, to become associated with Roland T. Meachan in the brokerage business at Cleveland, Ohio. Mr. Witt has been interested in traction matters for nineteen years and is well known to the men in this line all over the country. He will specialize in the underwriting of new issues.

Emil G. Schmidt, who will retire as president of the Des Moines (Ia.) City Railway and the Inter-Urban Railway at the expiration of his present contract with the Harris interests, has bought a tract of 16 acres, located on the Chicago & Northwestern Railroad upon which he will erect buildings for the Des Moines Foundry & Machine Company. Mr. Schmidt is head of the new concern and his son, C. W. Schmidt, recently discharged from the navy, will be general manager. A group of buildings is to be put up in the spring. Among the products of the new plant will be some railway equipment.

Henry C. Attwill, attorney-general of Massachusetts, has resigned to accept an appointment as a member of the Massachusetts Public Service Commission, succeeding Joseph B. Eastman, now a member of the Interstate Commerce Commission. Mr. Attwill was born at Lynn, Mass., in 1872. His entire career has been passed in legal work. From 1896 to 1898 he was a member of the House of Representatives, and from 1899 to 1901 a member of the State Senate. He served as district-attorney for the eastern district for six years and has been attorney-general of Massachusetts since 1915.

J. S. M. Wharton, president-elect of the Arkansas Utilities Association, is secretary-treasurer and manager of the Helena Gas & Electric Company, Helena, Ark. Mr. Wharton was graduated from Lehigh University in 1909 and for about three years thereafter was employed in the various departments of the United Gas Improvement Company, Philadelphia. He then became manager of the People's Light, Heat & Power Company, Barre, Vt. Later he resigned that position to become manager of a syndicate of gas properties in North and South Carolina, where he stayed until he went to Helena, Ark., about two years ago.

R. R. Bruster has resigned from the position of associate editor of the ELECTRIC RAILWAY JOURNAL to take up public accounting and educational work in Boston. Mr. Bruster was graduated from New York University in 1912 with the degree of Bachelor of Arts; in 1913 with that of Bachelor of Commercial Science, and in 1914 with that of Master of Commercial Science. Prior to 1913 he was for more than a year office manager of the New York University School of Commerce, Accounts and Finance, and in 1913 he joined the staff of this paper. His work thereon has been mainly along economic, financial and accounting lines.

George H. Waring, who has recently been appointed vice-president and assistant general manager of the American Public Utilities Company, with headquarters at Grand Rapids, Mich., was formerly general manager of the Utah Gas & Coke Company of Salt Lake City, a subsidiary company. Mr. Waring was for a number of years connected in various capacities with the United Gas Improvement Company, Philadelphia, Pa., filling engineering, operating and executive positions. The last position he held with that company was vice-president and general manager of the Charleston (S. C.) Consolidated Railway & Light Company. In 1917 he resigned to join the American Public Utilities Company as general manager of the Utah Gas & Coke Company.

William D. Ray, formerly vice-president and general manager of the Pennsylvania Utilities Company, Easton, Pa., and for the last two years a major in the Quartermaster Corps, serving as supervising utilities officer in a number of army camps in the South, expects shortly to re-enter the utility business. Major Ray's work in the service included supervision of electric light and power supply, water supply, sewerage disposal, refrigeration, roads, buildings and shops and fire departments at Camps Jackson, Gordon, Johnston, McClellan, Sheridan, Shelby, Forrest, Sevier, Grant, Wadsworth, and Lee. He is at present stationed at Camp Holabird, Md. Before joining the Pennsylvania Utilities Company, Major Ray was vice-president and manager of the Northern Indiana Gas & Electric Company's properties at Hammond, East Chicago, and Whiting, Ind.

Joseph E. Wayne, superintendent of transportation of the York (Pa.) Railways, has been advanced to the position of vice-president in charge of operation. L. C. Mayer continues as vice-president in charge of engineering and construction. Mr. Wayne was born in Philadelphia, Pa. His railway experience was acquired during his connection with large railways in different parts of the country. He served for three years in the repair shops and power house of the Public Service Corporation of New Jersey, resigning to fill a position with the United Railroads, San Francisco, Cal., later becoming superintendent of the Waynesboro, Chambersburg & Greencastle Street Railway. From this company he resigned to take charge of the Edison Electric Light Company, York, Pa., retiring in 1909 to become connected with the York Railways.

M. S. Sloan has been elected president of the Brooklyn (N. Y.) Edison Company following the resignation of Nicholas F. Brady from that position. Mr. Sloan since the latter part of 1917 has been operating manager of the New York Edison Company. Previous to that he held the position of vice-president and general manager of the New Orleans Railway & Light Company, New Orleans, La. Mr. Sloan is a graduate of the Alabama Polytechnic Institute, and from 1906 until late in 1913 was employed by the Birmingham Railway, Light & Power Company, Birmingham, Ala. During this time he rose from chief engineer to assistant to the president, assuming the latter office in 1910, when he took supervision over all departments. Toward the end of 1913 he resigned at Birmingham to join the executive staff of the New Orleans company, which like the company at Birmingham is affiliated with the American Cities Company.

Carl W. Stocks, for the last two years general passenger agent for the Bay State Street Railway, now the Eastern Massachusetts Street Railway, with headquarters at Boston, Mass., has resigned from that company to join the editorial staff of the ELECTRIC RAILWAY JOURNAL. While with the Bay State Street Railway, Mr. Stocks gave special attention to the study of fare systems and fare collection. Prior to his connection with the Bay State Street Railway, Mr. Stocks was for seven years statistician for the American Electric Railway Association. He is an engineer by education, having been graduated from the electrical engineering course at the Worcester (Mass.) Polytechnic Institute in 1907. After graduation Mr. Stocks for two years was an inspector in the overhead line department of the Boston & Northern Street Railway, which later was a constituent part of the Bay State system. His connection with the association began in 1910.

H. L. Beach has been appointed transportation supervisor of the United States Housing Corporation with headquarters in Washington, D. C., reporting to W. A. Mellen, manager of the transportation department. Mr. Beach has had wide experience in dealing with transportation problems gained as a result of many years of association with a number of electric railway corporations. Entering the railway field in 1899 as publicity manager of the Chicago (Ill.) Union Traction Company, he was later appointed assistant general superintendent of the company's north and west side lines, from which position he was advanced to general superintendent of the northern division of what is now known as the Chicago Railways. He resigned in 1912 to become associated with B. J. Arnold in connection with the appraisal of electric railroad properties in Toronto, Can., and Kansas City, Mo. In 1915 he became manager of the Utah Light & Traction Company, Salt Lake City, tendering his resignation two years later. The Salt Lake City *Herald-Republican* said editorially at that time that the public would be satisfied if the service proved as satisfactory as it had been under Mr. Beach.

Obituary

Frederick Sargent, Power-Plant Engineer, Dead

Frederick Sargent, senior member of the firm of Sargent & Lundy, Chicago, Ill., and one of the most prominent consulting engineers in the United States specializing in the design of electric generating stations, died at his home in Glencoe, Ill., on July 26. He had been taken ill on a recent trip to Europe and on his arrival in Chicago was removed to a hospital, but was later taken to his home.

Mr. Sargent was born in Liskeard, Cornwall, England, on Nov. 11, 1859. Coming to the United States about 1880 he found employment in eastern shipbuilding yards as a designer of steam engines. He then went West as a designer for the Sioux City Engine Company, Sioux City, Ia., later accepting a position with E. P. Allis & Company, engine builders of Milwaukee. In August, 1890, he established himself as an independent electrical and mechanical engineer. The firm of Sargent & Lundy was formed in 1891, Mr. Sargent being the senior partner from its organization to the time of his death. He was one of the first electrical and mechanical engineers who recognized the great part that the steam turbine was destined to play in the development of electric generating stations. He was consulting engineer for many of the important electric light and power companies throughout the country, including the Edison Electric Illuminating Company, Boston; American Gas & Electric Company, New York; Electric Bond & Share Company, New York; the Union Gas & Electric Company, Cincinnati, and the Commonwealth Edison, Chicago, as well as many other smaller organizations.

Of all his achievements, the work which Mr. Sargent did in association with Samuel Insull, president of the Commonwealth Edison Company, is possibly the most noteworthy. He made plans for the machinery layout in the original Edison station in Adams Street in 1889 and later was active in designing the company's modern stations.

William Martin Murphy, Dublin, Ireland, died on June 26. Originally he was a contractor and he built many tramways and railways. He was best known as the chairman and moving spirit of the Dublin United Tramways, an undertaking which has all along been a great success both on the engineering and financial sides. Mr. Murphy smashed a great strike in Dublin early in 1914. His business talent amounted to genius, and at the same time he was a hot politician of the extreme Nationalist side. His death removes one of the most prominent figures in the British tramway field.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Steel and Iron Products Show Advances

Scrap Materials Also Show Higher Prices—Question of Basing Points Being Considered

During the latter part of July there were advances in pig iron prices when ordered in small quantities, and in some silicon steels. No. 2 pig iron per gross ton, Philadelphia, was $29.60 on July 29 and $29.10 a week before. The first of July it stood at $29.00. Basic pig, delivered, eastern Pennsylvania, was $26.60 on July 29, while a week previously it was $26.00.

During the last week of July several independent sheet mills advanced black sheets $2 per ton and galvanized sheets $4, per ton, and it is stated that these prices may become general among all the independent mills in a short time. Also, prices on wire were advanced $2 per ton by three companies, while wire nails went up $5 per ton. It seems probable that the other companies will fall in with these advances.

PRICES FOR SCRAP IRON AND STEEL RESPOND TO INCREASED BUYING

The scrap iron and steel market has also responded to an advance in the last week. Car wheels in Chicago have gone up $1 to $25 per gross ton, and in Philadelphia the same amount to $24. Heavy steel scrap advanced in Pittsburgh 50 cents to $21.00, while in Chicago it advanced $1.50 to $21.00 and in Philadelphia remained unchanged No. 1 cost in Philadelphia increased 50 cents. while in Chicago it went up $2 per net ton. No. 1 R.R. wrought in Chicago advanced $3.50 per net ton.

Buying of iron and steel has increased considerably in the past month, and in order to increase production, several companies have had to start furnaces which had been closed down earlier in the year.

With pig iron advancing in price it is reasonable to expect that an advance in steel products may not be very far off. The upward tendency in iron is expected to be more rapid next month. Consequently it would not be surprising to find rails and track and trolley stock equipment at higher levels this fall.

The question of the practice of having basing points for making rolled steel prices, as well as the question whether Pittsburgh or some other place should be the sole basing point. or whether there should be more than one basing point, are being carefully and clearly investigated. The friendly lawsuit now under way before the Federal Trade Commission, wherein the Western Association of Rolled Steel Consumers is the complainant and the United States Steel Corporation the respondent, is taking all concerned to the bottom of this bogie of the trade for so many years.

Some Copper and Steel Products Advance

Wire Bases, Except Rubber Covered, and Commutator Parts, Higher—Rigid Conduit Up

Although copper has not only halted in its upward price movement but may be purchased from some sources for just under 23 cents a pound—the maximum being 23.50 cents—certain wire bases have continued their advance. Base copper wire at the mill is up ½ cent to 26 cents, bare base is up 2 cents to 26 to 28 cents a pound and weatherproof is quoted at 26 to 29 cents, an advance of 2 cents. Rubber covered, however, has held at 28 cents base although two or three producers are at 29 and 30 cents.

Controller fingers and segments have advanced, as was anticipated, but at this writing the exact amount is not available. Rail bonds are on 10 per cent discount. Overhead line brass still holds constant.

Brass and copper products, such as sheets, bars and tubes, are higher by 1 cent than they were last week.

Rigid iron conduit has finally responded to an advance threatened for some time, and has gone up 10 per cent. A further advance is expected.

International Trade Conference

Invitations extended by the Chamber of Commerce of the United States to Great Britain, France, Italy and Belgium for a joint Commercial Mission to visit this country in the fall have been accepted according to an announcement from the Washington offices of the Chamber.

The missions are due to reach the United States the latter part of September to participate, at Atlantic City during the week of September 29, in an International Trade Conference. This conference will be attended, according to present plans, by at least a thousand leaders in American business, who in meetings with members of the missions will discuss many phases of international trade relations. At the conclusion of the International Trade Conference the plan is for the missions to tour the country, visiting the chief industrial and commercial centers. The return to Europe will be about Nov. 1.

Buying of Railway Motors Increases

Relief Expected from Federal Commission—Coming Winter Should See Much Better Demand

The market for railway motors, although still below 50 per cent of normal, is somewhat better than it was early in the year. Gradually the feeling of pessimism of the last two years is wearing off and manufacturers are of the opinion that the near future holds big buying of railway motors. It is not expected, however, that any material increase in buying will set in before the fall, but the winter months should see much better business than now exists.

Fare increases in different sections of the country are becoming more numerous, and each instance provides one more potential buying power for new cars and equipments.

The orders for motors have picked up as the year has advanced. Only in isolated instances have orders been placed for large numbers of cars, orders of a hundred cars and better, but there have been many scattered purchases of small numbers of new cars and of motors for rebuilding cars and equipping trailers as motor cars.

HEARINGS IN WASHINGTON MAY INFLUENCE MARKETS FAVORABLY

Of course fare increases may not in themselves be large enough to supply sufficient capital for new equipment, but they provide a great incentive to go ahead with the new work so badly needed by practically every traction company. Electric railways and manufacturers place considerable hope for relief of the traction problem in the commission now sitting in Washington, D. C. It is expected that the public opinion and municipal opinion which that commission may direct will be along lines which shall lead the railways out of the woods.

ORDERS FOR CONTROL EQUIPMENT PICKING UP GRADUALLY

The trend of the market with respect to control equipment follows closely that for motor equipment, but there is some control activity where motor activity is lacking. Several roads have been fortunate enough to be able to change some of their methods of motor control but these have been rather scattered.

Buying for export demand has been a big factor in the railway motor industry this year, and it is expected that this market will increase to a great extent in the near future. The factories in England, it is said, are not now in a condition to manufacture sufficient quantities of railway motors to supply both her own home market and any amount of Continental demands.

Railway Track Tools Reduced

Wood Handles Shy—Small Hardware Expected to Advance

Manufacturers of picks, mattocks, sledge hammers and crowbars reduced their prices approximately 10 per cent about the middle of June, but since then the prices have held strong. There has been no recent change in the situation as to hatchets. Dealers continue to hold off placing their orders for future delivery and manufacturers are holding prices firm. The supply of wood handles is such that shortages are rapidly devolping on account of the ever increasing demand. Jobbers have not been able to accumulate stocks and are out of some standard sizes of handles. From all indications the demand will continue to be heavy. Prices are strong, even with a tendency to advance. Wheelbarrows are holding an almost unprecedented demand. Their prices are steady with no sign of a reduction in sight.

Considering the market on small hardware, factory deliveries on the better quality of wire cutters are much behind and no relief is in sight for several months. Wrenches and hack saws have a good market and deliveries are satisfactory. Prices on all hardware are holding now, but tend upward with a probable rise of about 10 per cent.

Rolling Stock

Eastern Massachusetts to Buy 100 Safety Cars

One hundred safety cars will be immediately purchased by the Eastern Massachusetts Street Railway, as the result of a meeting of the trustees of the company at Boston July 25. It is hoped by the trustees that the economies resulting from these cars will point the way toward their larger use on the system and ultimately toward a reduction in fares. At recent meetings between the company's officials and authorities representing municipalities on the system, the trial of one-man cars on a considerable scale has been urged, and the trustees are prepared to make a thorough test of their fitness on the system.

Nova Scotia Tramway & Power Company, Ltd., Halifax, Can., expects to construct additional cars.

Morgantown-Wheeling Railway, Morgantown, W. Va., announces, through C. S. Bailey, general manager, that it expects to purchase three new cars from the Emergency Fleet Corporation.

Chicago, South Bend & Northern Indiana Railway Company, South Bend, Ind., purchased during July sixteen "Standard" C-50-P trucks for city cars, ten safety cars from the National Safety Car & Equipment Company, and one snow sweeper from the McGuire-Cummings Manufacturing Company.

Interurban Railroad, Gary, Ind., has received two large interurban cars which it has placed in service between Gary and Valparaiso, Ind. The cars have a center entrance and have a seating capacity of 65 passengers. The cars are replicas of the ones used between Buffalo, N. Y., and Niagara Falls.

Track and Roadway

Sacramento Northern Railroad, San Francisco, Cal.—The Sacramento Northern Railway will place contracts at once for the construction of a 2-mile extension from the Woodland branch to handle the products of the Conway Ranch.

San Francisco Municipal Railway, San Francisco, Cal.—The City Council of San Francisco has passed an ordinance directing the Board of Public Works to receive bids for an extension of the single track in Polk Street.

Davenport, Springfield & Southern Electric Railway, Springfield, Ill.—It is reported that work will be resumed at once on the construction of the proposed line of the Davenport, Springfield & Southern Electric Railway, extending through Greenville, Centralia and Springfield. Engineers for the road have begun the work of surveying the line. Construction work had begun on the road prior to 1914 but was dropped at the outbreak of the war. The contract for the first section of the line has been let to the Kelley Construction Company, Winnipeg, Can. H. R. Campbell, Indianapolis, Ind., is reported interested.

Paducah Traction Company, Paducah, Ky.—A report from the Paducah Trac-

NEW YORK METAL MARKET PRICES

	July 17	July 31
Copper, ingots, cents per lb	22.50	22.75 to 23.50
Copper wire base, cents per lb	24.50	26.00
Lead, cents per lb	5.50	6.00
Nickel, cents per lb	40.00	40.00
Spelter, cents per lb	8.15 to 8.25	7.90
Tin, cents per lb	70.00 to 70.50	70.00 to 71.00
Aluminum, 98 to 99 per cent, cents per lb	32.00 to 33.00	32.00 to 33.00

OLD METAL PRICES—NEW YORK

	July 17	July 31
Heavy copper, cents per lb	18.00 to 19.00	20.50 to 21.00
Light copper, cents per lb	15.00 to 15.50	15.50 to 16.00
Heavy brass, cents per lb	10.50 to 11.00	11.00 to 11.50
Zinc, cents per lb	5.75 to 6.00	5.25 to 5.50
Yellow brass, cents per lb	9.00 to 9.50	9.50 to 9.75
Lead, heavy, cents per lb	5.00 to 5.12½	5.50 to 5.62½
Steel car axles, Chicago, per net ton	$25.00 to $26.00	$28.00 to $29.00
Old carwheels, Chicago, per gross ton	$22.00 to $22.50	$26.00 to $27.00
Steel rails (scrap), Chicago, per gross ton	$22.00 to $22.50	$25.00 to $26.00
Steel rails (relaying), Chicago, gross ton	$21.00 to $22.00	$29.00 to $30.00
Machine shop turnings, Chicago, net ton	$8.00 to $8.50	$9.50 to 10.50

ELECTRIC RAILWAY MATERIAL PRICES

	July 17	July 31
Rubber-covered wire base, New York, cents per lb	26	28
Weatherproof wire (100 lb. lots), cents per lb., New York	28	30
Weatherproof wire (100 lb. lots), cents per lb., Chicago	27.75	30.75
T rails (A. S. C. E. standard), per gross ton	$49.00 to $51.00	49.00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47.00 to $49.00	47.00 to 49.00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45.00 to $47.00	45.00 to 47.00
T rail, high (Shanghai), cents per lb	3	3
Rails, girder (grooved), cents per lb	3	3
Wire nails, Pittsburgh, cents per lb	3.25	3.25
Railroad spikes, drive, Pittsburgh base, cents per lb	3.35	3.35
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	2.75	2.75
Tie plates (brace type), cents per lb	2.75	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb	3	3
Angle plates, cents per lb	3.90	3.90
Angle bars, cents per lb	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb	4.35	4.35
Steel bars, Pittsburgh, cents per lb	2.35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.25	5.25
Galvanized barbed wire, Pittsburgh. cents per lb	4.10	4.10 to 4.20
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70	3.70 to 3.80
Car window glass (single strength), first three brackets, A quality, New York, discount †	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	81%	81%
Waste, wool (according to grade), cents per lb	14 to 17	14 to 17
Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	8 to 12½
Asphalt, hot (150 tons minimum), per ton delivered	.....	.....
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	......	......
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl	$2.90	$2.90
Cement (carload lots), Chicago, per bbl.	$3.05	$3.05
Cement (carload lots), Seattle, per bbl.	$3.13	$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal	$2.20	$2.20
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$2.22	$2.23
White lead (100 lb. keg), New York, cents per lb	13	13
Turpentine (bbl. lots), New York, cents per gal	1.12½	$1.35

† These prices are f. o. b. works, with boxing charges extra.

tion Company states that work will be begun at once on the reconstruction of its track.

Nova Scotia Tramways, Halifax, N. S.—Improvements amounting to about $1,000,000 will be made by the Nova Scotia Tramways to its system. These improvements include the extension of present lines, extensive track renewals, the construction of additional cars and the installation of additional equipment in its power stations.

Cincinnati, Ohio.—The construction of the new rapid transit loop in Cincinnati will be begun Sept. 1, when the Miami and Erie Canal will be drained.

Interurban Railway & Terminal Company, Cincinnati, Ohio.—As a result of the acceptance by the Cleveland bondholders of the Interurban Railway & Terminal company of a plan to arbitrate final details of the purchase of its tracks by the Cincinnati Traction Company, work will be begun immediately on the extension of the North Norwood line to Kennedy Heights.

Toronto, Ont.—Plans will be prepared and bids will soon be asked by the Ontario Railway Board for the construction of a temporary electric railway on Mount Pleasant Road. The estimated cost is $1,142,294.

Toronto & Eastern Railway, Toronto, Ont.—The Town Council of Bowmansville recently passed a resolution requesting the Hydro-Electric Power Commission to inquire into the cost of acquiring and completing construction of the Toronto & Eastern Railway, between Toronto and Bowmansville. [June 14,'19.]

Portland, Ore.—It is reported that the Public Dock Commission of Portland is considering the construction of an electric railway to connect the municipal terminal at St. Johns and the city railway system. The Portland Railway, Light & Power Company has offered to operate the line on a cost plus 15 per cent basis if the dock commission will build the connecting link. The cost of the connection is estimated at $25,000.

Coatesville (Pa.) Trolley Company.—A mile of trolley tracks from the Lincoln Highway south to the city line has been ordered taken up at once by the municipal officials. The company, of which Henry S. Rich, of Marietta, is president, has sold considerable stock and it is said that $30,000 has been expended on the project. Failure to comply with the franchise caused the stand taken by the city. The company had promised to have cars running three months ago. [Dec. 18, '17.]

Pittsburgh (Pa.) Railways.—The United States District Court has authorized the receiver of the Pittsburgh Railways to undertake construction of a short piece of track downtown which will enable crosstown route cars to run on a loop, avoiding the trolley reversing now necessary on each trip. The cost is estimated at $76,000.

Dallas (Tex.) Railway.—Requisitions of the Dallas Railway covering extensions of four of its street car lines to be made under the service-at-cost franchise granted the company in 1917, have been approved by the Supervisor of Public Utilities and by the City Commission. The routings for the extensions are: (1) A line to the City Hospital; (2) line to Oakland Cemetery; (3) extension of the Oak Lawn Line out Cedar Springs Road; (4) a line in Oak Cliff extending out Seventh Street from Tyler and Seventh to Edgefield, thence north on Edgefield to King's Highway. Work on these extensions is to begin at once and will be completed this fall.

Fort Worth-Mineral Wells Interurban Company, Fort Worth, Tex.—H. E. Robinson, president of the Fort Worth-Mineral Wells Interurban Company, announces that actual construction on the proposed interurban line between Fort Worth and Mineral Wells will begin early in October. The survey through Northern Parker County is nearly complete and the work gangs will be busy on the right of way by August, he says. The first stretch of the line will be built from Fort Worth to Lake Worth, a distance of about 10 miles, touching the lake shore about the mosque and bathing beach. [May 10, 1919.]

Power Houses, Shops and Buildings

Alabama Power Company, Huntsville, Ala.—Construction of a transmission line between Huntsville and Gadsden, Ala., is under way by the Alabama Power Company to carry energy to Boaz, Albertsville, Guntersville, and Huntsville. Eventually there will be a complete circuit of Birmingham, Tuscaloosa, Gadsden, Talladega, Anniston, Huntsville, Decatur, and intervening towns.

Sacramento Northern Railroad, San Francisco, Cal.—A report from the Sacramento Northern Railroad states that it will place contracts at once for a combination passenger and freight station at Marysville, at an approximate cost of $34,000. It will also install an automatic 300 kw. rotary converter at Del Paso.

Illinois Traction System, Peoria, Ill.—Plans are being made by the Illinois Traction System for the erection of a transmission line from its Riverton plant to Decatur, which will take care of the company's needs there for two or three years.

Albia Light & Railway Company, Albia, Ia.—This company reports that it expects to purchase some material for inside plant work.

Boston (Mass.) Elevated Railway.—Plans are well under way for the construction of the Arlington Street station of the Boylston Street subway which has been authorized by the trustees of the Boston Elevated Railway. The work will be done by the transit department at an estimated cost of $400,000. The construction is expected to require a year and a half.

Eastern Massachusetts Street Railway, Boston, Mass.—Fire recently destroyed apparatus in the Quincy power house of the Eastern Massachusetts Street Railway amounting to about $50,000.

Babylon (N. Y.) Railroad.—Plans, it is reported, are under consideration by the Babylon Railroad for the installation of an electric generating plant. The company now purchases energy to operate its system.

Wallkill Transit Company, Middletown, N. Y.—Plans are being made by the Wallkill Transit Company to close down its electric generating plant and secure energy from the Orange County Public Service Company to operate its system. It is proposed to replace the present equipment of the power house with a synchronous motor generator set. The power plant equipment, it is understood, is for sale. Willard M. Gould, superintendent.

Manhattan Railway, New York, N. Y.—The Manhattan Railway has filed plans for extensions in its one-story machine and mechanical repair shop at Lexington Avenue and Ninety-eighth Street, to cost about $50,000.

Sand Springs Railway, Tulsa, Okla.—A report from the Sand Springs Railway states that it expects to place contracts within the next six months for the construction of a new general office building.

San Antonio Public Service Company, San Antonio, Tex.—A new steam turbine of about 13,000 hp. capacity will be installed by the San Antonio Public Service Company at its power house on Conception Avenue, at a cost of about $275,000.

New Advertising Literature

Laclede-Christy, St. Louis, Mo.: Distributed the July issue of Laclede-Christy Bulletin.

National Board of Fire Underwriters, 207 E. Ohio Street, Chicago, Ill.; List of appliances inspected for accident hazard.

Blaw-Knox Company, Pittsburgh, Pa.: Bulletin No. 200 on "Blaw Cableways," describing their automatic single-rope product.

Texas Company, New York City: A forty-six-page booklet "Texaco at Home and Abroad" on the marketing of Texaco petroleum throughout the world.

Sanford Riley Stoker Company, Worcester, Mass.: Folder entitled "Full Control" describes the operation and construction of the Riley two-speed gear box.

Nachod Signal Company, Inc., Louisville, Ky.: A folder on "Manual of Instructions for Nachod Headway Recorders" and a folder on the Nachod Headway Recorder.

Packard Electric Company, Warren, Ohio: Bulletin No. 201 on the Packard power transformer. Complete information and data as to the use of the transformer are given.

Trade Notes

J. E. Slimp has been appointed general manager of the Unit Railway Car Company of Boston, Mass.

Youngstown Steel Car Company has let contracts for a new plant at Niles, Ohio, involving $700,000. The main building will be 200 ft. x 400 ft.

Blaw-Knox Company, Pittsburgh, Pa., announces the appointment of Frank O. Leitzed to the corps of engineer-salesmen in the sheet and tin-mill specialties department.

Cleveland (Ohio) Fare Box Company has been appointed agent of the Arthur power-saving recorder for the states of Ohio, Indiana, Michigan, Illinois, Wisconsin, Kentucky and West Virginia.

Bush Electric Company, formerly the Bush Electric Tool & Manufacturing Works, Redlands, Cal., has moved to 6654 Broadway, Cleveland, Ohio. The reorganized company expects to start production shortly. H. B. Bush is in charge of the factory.

Lapp Insulator Company, Leroy, N. Y., announces the appointment of the H. B. Squires Company, San Francisco, Los Angeles and Seattle, as its exclusive representative for the Pacific Coast, States of Washington, Oregon and California and also for Nevada.

William A. Nugent, who served as a corporal in Company I, 21st Engineers, during the war, has returned from France to resume his duties with the Independent Pneumatic Tool Company as traveling representative. He has been reassigned to his old territory in Indiana.

Canton Culvert & Silo Company, Canton, Ohio, has received the following citation from the Director of Purchase: "The work performed by this company in the fulfillment of its contracts covering engineer material was highly satisfactory and worthy of commendation." The company had on hand government orders, filled and unfilled, for more than $2,000,000 worth of vestable culverts, shelters, etc., when the armistice was signed.

C. & C. Electric & Manufacturing Company, Garwood, N. J., as announced by William E. Tuttle, Jr., receiver for the company, will be sold at auction at the office of the company on Aug. 4, in three parcels as follows: (1) Land, buildings and building equipment; (2) machinery and machine tools; (3) all patterns, drawings, jigs and dies, special attachments for the manufacture of "C. & C." products, small tools such as gages, drills, reamers, arbors and taps, and patents and good will.

Dubilier Condenser Company, Inc., 217 Centre Street, New York City, announces that it has changed its factory from war to peace production and is now making mica condensers especially for line and machine protection from high-frequency surges and lightening discharges. At present it is experimenting with condensers for power-factor correction. This problem has been given serious consideration by its London company, which is now experimenting with a 2-kw. plant at its works, with satisfactory results.

Philip H. Ward, Jr., formerly general manager and secretary in charge of sales and exports of the Chelten Electric Company, announces that he has severed his connections with the former company and has organized the Ward Electric Company, Stock Exchange Building, Philadelphia, Pa. The new corporation will manufacture for domestic and foreign distribution an extensive line of electrical supplies and specialties, including knife, push-button and surface snap switches, flush receptacles, new code and plug fuses, etc.

A. E. Kaiser has been appointed director of production for the Westinghouse Electric & Manufacturing Company. Mr. Kaiser's experience in the works extends over a period of more than twenty-three years. This includes the paint department field and armature machining, winding, assembling, general foreman's office, rate, central production and storekeeping departments. After spending three years in the latter, he was again called to the manager of works' office for one year, from which he was appointed assistant director of production in 1912.

Westinghouse Lamp Company announces that Elliot Reid, formerly advertising manager and more recently assistant to the general manager, became on July 1 sales manager of the company. In that capacity he will be responsible for the commercial activities of the company in both large and miniature classes of lamps in domestic territory. Mr. Reid was advertising manager of the company for six years. He became assistant to the general manager in November of last year. He was born in New York in 1889 and was connected with the Equitable Trust Company for three years.

Page Steel & Wire Company has opened a branch office in Chicago, at 29 South LaSalle Street. This office will handle all Armco iron products, including Armco welding rods, twisted pairs, plain and galvanized strand, bond wires, Armco iron fence and barbed wire and other brands of fence. This company has another new branch office in the Book Building, Detroit. Distribution in Canada is in the hands of Taylor & Arnold, Ltd., Montreal, Toronto, Winnipeg. Local distributers for Armco iron welding rods are located in all principal industrial centers. The sales of the Armco iron department are under the supervision of W. T. Kyle, sales manager, at 30 Church Street, New York.

National Tube Company, Pittsburgh, Pa., announces that it has made arrangements with the National Metal Molding Company of Pittsburgh and the American Circular Loom Company of New York to act as its distributer of spellerized mild-steel tubing, made especially for the manufacture of rigid-steel conduits. These two companies will, as heretofore, finish and market this tubing under the following trade names: National Metal Molding Company, "Sherarduct," sherardized rigid-steel conduit, and "Economy," black-enameled rigid-steel conduit; American Circular Loom Company, "Xduct," galvanized rigid-steel conduit, and "Electroduct," black-enameled rigid-steel conduit. The companies named, it is stated, will probably take the entire output of National conduit pipe.

G. E. Acquires Trumbull Interest.—The General Electric Company made the following statement this week: "The General Electric Company has acquired an interest in the Trumbull Electric Manufacturing Company of Plainville, Conn. The present management of the Trumbull Electric Manufacturing Company still retains a financial interest in the company and will continue in active charge of its manufacturing and selling policy. The Trumbull Electric Manufacturing Company has an enviable reputation, national in its scope, as a large manufacturer of knife switches and safety-first iron-box inclosed switches, as well as a general line of miscellaneous supplies, and the General Electric Company, believing in the great future of the "safety first" movement, feels that an "alliance between these two leading manufacturers of goods designed to promote the safety-first feature in service entrance switches, motor control devices, etc., will give considerable satisfaction, not only to the present customers of the Trumbull company, whose name will remain unchanged, but to the trade in general."

Wheeler Condenser & Engineering Company, Carteret, N. J., announces that at a meeting of the board of directors on July 8, J. J. Brown, formerly vice-president and general manager was elected president, succeeding Charles W. Wheeler, recently deceased. H. S. Brown of 50 Congress Street, Boston, Mass., was elected vice-president. No other changes were made in the officers. H. S. Brown has been associated with the Power Specialty Company, 111 Broadway, New York City, for the past fifteen years, the greater part of the time as New England manager for that company. He is also president of the Brown-Ferries Company, Philadelphia, Pa. The business of the Wheeler company has more than quadrupled during the past ten years under the management of J. J. Brown, and the manufacturing capacity of the plant has been correspondingly increased. One important addition has been the construction of a large tube mill for the manufacture of seamless drawn tubing of brass, copper and special mixture. In this mill the record output of nearly one million pounds of condenser tubing in one month was recently made. This tubing is used not only in Wheeler condensers, evaporators, reboilers, etc., but it is also made in large quantities to customer's specifications for American trade and for exporting.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, August 9, 1919 *Number 6*

Brooklyn Strike Is in Every Way Unjustifiable

As this issue goes to press Brooklyn, N. Y., is in the throes of a strike which spread so rapidly that the police force available in the borough could not be expanded immediately to furnish the needed protection and service was hampered for a time. With proper protection the company will undoubtedly be able to cope with the situation as there is no apparent justification for a strike now. The weakness of the men's case is shown by the attempt to employ intimidation to force loyal workers to quit work in spite of themselves. The public has little sympathy with the insurgent element among the men. Its attitude is reflected by the *New York Times* thus:

> When the strikers make recognition of their union their first demand it appears that they are putting the increase of their powers of offense against the community and their employers over betterment of working conditions, and are reckless about the manner in which they press their demands. A strike of that sort becomes more difficult to win in proportion that it results in disorderly conduct, and inconveniences the community, without whose support strikes are predestined to failure.

Receiver Lindsley M. Garrison is perfectly willing to consider any grievances transmitted by employees of the company through their own representatives, including the question of the adequacy of wages, but properly refuses to have the property dominated by outside interests or to be intimidated by violence.

When and Where Publicity Is Successful

Despite all that has been said as to the need of greater publicity for utilities, there are persons—some of them operators of long experience—who still express grave doubts of its value. A recent issue of the *Doherty News* calls attention editorially to a discussion on this subject at a gathering of public utility men, and a few of their arguments against publicity are set forth. Some of these "standpatters" contend that a majority cannot be made to understand the utilities' case. Others argue that full publicity is likely to leave a loophole which will give the opposition a chance to "come back." Frankly, we do not believe that either of these claims will "hold water." We assume, for instance, that a utility company seeking to make the public understand its position is willing, first of all, to set its own house in order and invite full investigation. If this is not contemplated, the publicity director would do well to exercise proper discretion in choosing the material through which he hopes to win friends for the corporation.

As we have said before, publicity is a two-edged sword, and he who would use it must be careful that it does not cut the wrong way. The case is much like that of a person who is seeking cure from a serious ailment and yet is unwilling to take his doctor into his full confidence. If a company has nothing to conceal, it will not fear leaving a loophole to opponents through publicity. If the contrary is true, the management has no claim against the effectiveness of publicity except in so much as its own case is concerned.

As to the point that is impossible to make a majority understand, we can only say that it takes time to show whether this is true, and while time is passing more friends should be gained if the material used in a campaign is worth while.

The writer in the *Doherty News* hits the nail on the head when he suggests that some publicity directors are to blame for using publicity only when an emergency is at hand or when they want something in a hurry and then have to use hasty and ill-advised material. This is too often the case, as was indicated in numerous replies to a questionnaire sent out by this paper and abstracted in various subsequent issues in the early part of this year. There is no reason why a public utility should not have a continuous, perennial publicity campaign, not necessarily paying for newspaper or poster space every day, but by having every employee an advertiser for the company.

There has been much talk lately of "open covenants." Too often the railway executive keeps from his own staff information which might be making friends for the company if properly distributed. Too often also the superintendent or other minor official fails to let his platform men "in on" certain particulars of the company's business which could be best passed along to the daily patrons by such employees. Then, too, the possibilities of winning friends for the company through courteous trainmen are frequently overlooked.

All in all, it occurs to us that the arguments used against the advisability of publicity are not arguments against publicity itself, but an excuse for self-defense. If frank advertising, well directed, does not gain all it seeks it at least should make friends for the company.

Washington Hearings Should Receive Closest Attention

The great importance of the hearings of the Federal Electric Railway Commission to the industry hardly needs emphasizing. Yet the volume of matter read into the record on the railway side is so great that it would take a long time for anyone simply to read all of the evidence and still longer to digest it. Hence, we have endeavored to aid the busy electric railway men in securing easily a broad view of the proceedings by presenting on another page of this issue the gist of the thought addressed thus far to the commissioners.

The predominating intent of the railway testimony was to secure immediate temporary relief for the burdened companies through a general increase in fares, this to be followed by the cancellation of existing fixed fare franchises and the substitution of service-at-cost permits, the working out of new economies, more equitable systems of fare collection, schemes for increasing the number of riders, and so on. But all of these future plans are based on an immediate restoration of credit without which the testimony has indicated there is no use discussing the permanent settlement.

Beginning next week, the hearings will be open to the other side of the question. The electric railway men can well give the closest attention to what will then be addressed to the commission, for it may throw light on what may be expected in the future. This is also the side of the question about which the railway men know least and can learn most, so it is to be hoped that they will be well represented at the coming hearings and will thoroughly study the testimony, having in mind the principal points made by the railway witnesses.

Enter, the Transfer-less Zone System at Last!

IT MUST BE something extraordinary indeed, in these days of lightning changes in the electric railway industry, that can give a new sensation to the electric railway operator. Yet, we venture to assert that such an extraordinary sensation is afforded by the announcement that the Public Service Railway of New Jersey is going to try a clean-cut zone fare system with a 3-cent minimum charge without transfers within the next few weeks.

Our readers are familiar with the fact that following a most elaborate survey of its traffic and a study of such fragmentary zone systems as the United States had to offer, the Public Service Railway submitted to the Board of Public Utility Commissioners of New Jersey last March a fare plan whereby 5 cents was to be charged for the first zone and 1 cent a zone thereafter for all one-car passengers; and 2 cents was to be charged for the first zone on a transfer car with 1 cent additional for each zone thereafter. This sumission of a zone plan was made at the commission's request in the hope that it would retain the short rider and bring more revenue than an increased flat fare.

The company, it will be remembered, arrived at the 5-cent and 1-cent figures by allocating the costs of transporting a passenger on the basis of stand-by and movement charges. The stand-by cost, in which was absorbed a portion of the expense of handling transfer passengers, was 4.03811 cents and the movement cost was 0.99007 per rider per mile. Subsequent to the filing of the zone report five months ago the National War Labor Board ordered a further wage increase for the company's employees and the cost of power advanced, the increases in the two items amounting to $1,480,000. This large addition to the company's operating expenses necessarily affected the zone report figures relating to stand-by and movement costs. Practically all of the increase is chargeable to movement cost and therefore raised this cost materially above 1 cent per passenger per mile. On the other hand the abolition of transfers enabled the company to reduce its stand-by cost per passenger thus making possible the 3-cent initial fare with a 2-cent zone fare.

The testimony at the hearing developed the fact that jitney competition had increased tremendously since the 7-cent fare had been introduced. During the first six months of 1919 the jitneys of Newark alone carried 16,237,719 passengers who paid $811,885 in fares. These jitneys, of course, cater principally to the short distance riders, and it is quite likely that the company's new low initial fare will have considerable influence in reducing jitney traffic.

In view of changed conditions the company asked permission to amend its application. It submitted two new zone plans and one 9-cent unit fare plan, the last being submitted largely to show what a serious effect it would have upon the utility of the railway to the public. Of the zone fares suggested, the commission has approved for trial the one which calls for a charge of 3 cents for the first mile-zone and 2 cents thereafter for each additional mile-zone or fraction thereof ridden in. This, of course, eliminates the transfer and places the Public Service plan on a logical zone basis. In accordance with general zone fare practice abroad, the distances for a given increment will not be hard and fast but be adjusted, where feasible, to take in heavy traffic points.

With only about six weeks time in which to make this radical change in fare system, the apparatus evolved by the company as its final solution to the difficult problem of zone fare collection obviously will not be available. The temporary plans for collecting the fares, outlined elsewhere in this issue, appear to have been developed along sane business lines and the operating department of the company is confident that it will have little difficulty with this feature of the problem.

Zone fare systems of several types have been in operation in this country to a very limited extent for several years. The Public Service Railway is the pioneer, however, in the application of a fare system, built up on a logical and scientific basis, to a great system of urban and suburban lines. We wish all success to this radical departure from the unit fare and trust that in combination with frequent service and wide publicity, the zone fare of the Public Service Railway will help to inaugurate a more business-like, more prosperous and more useful period for the American city railway.

No Strike Can Be Won Against Public Opinion

"YOUR fight in this case is not with the companies. It is with the public." Scorning this hint from their leaders, the trainmen of the surface and elevated lines in Chicago early last week voted for immediate strike, and for four days the people of that city were subjected to all the inconveniences which a tie-up of an important transportation agency involves. The outcome was just as predicted. A majority of the men of the combined unions were glad to accept the generous terms previously rejected by shouting radicals at a mass meeting. The cars were again put in operation. The public returned, happily to their regular methods of travel, none too friendly toward the uniformed men who had put them to so much trouble, but with an appreciation of the value of car service which boded well for an increase of revenue for the companies.

The Chicago developments prove again that a strike which cannot claim sympathy from the public is lost from the start. When it was evident that the people in general did not consider the men justified in their action it became only a question of the number of days which would elapse before the men returned to work. The strike period showed that the strikers had lost much of the sympathy which they once had. It was noticeable too, during the several days of jitney reign, that trainmen in uniform were not much in evidence about the streets. The sorely tried traveling public was in no mood to be trifled with.

Local comment during the strike showed plainly that the people realized this was their battle. There was no question but that the companies were unable to meet any such terms as the men demanded, and when every additional dollar which had to be raised was to come from the pockets of the car riders the later naturally eagerly watched the negotiations to see that they were not forced to sustain an unreasonable settlement. The union tried to gain sympathy by comparing its wage demands with even higher rates paid to electricians and other skilled workers. It did not speak so loudly about the comparative annual earnings of the various trade unions. They bewailed the hardships of a working day exceeding eight hours, but did not tell how eager is the contest for runs paying more time.

Nobody will begrudge electric railway employees the enjoyment of an increased income during this period of high prices, least of all their employers, but it should be remembered that capital is equally entitled to remuneration, and until fares are raised to recompense adequately both capital and labor, and it has been proved that the public will pay these increased fares, stockholders and employees must be patient. Railways can charge only what the traffic will bear, and until the public gets accustomed to rates of fare in excess of old standards, the employees should be satisfied with wages which on an annual basis are in excess of the income of workers in many other occupations. By loyal co-operation, the trainmen everywhere can help to put the case of the companies in such a light that revenue will be more nearly adequate for growing expenses.

Wage and Rate Problems Recognized as Inter-Dependent

THE chief executive of the nation has asked Congress to create a tribunal which shall have power not only to fix the wages of railway employees, but which shall also have mandatory power over the rate-making body to provide increased rates to take care of the increases in wages. For the first time, thereby, the government has recognized that these two functions are parts of the same problem and the fact that the railway brotherhoods have announced their absolute disapproval of Mr. Wilson's program, does not detract from the significance of this recognition. The Interstate Commerce Commission and other governmental agencies have granted a few rate increases, but heretofore this question has been a consideration entirely divorced from the wage question. The War Labor Board had no authority and little influence over the matter of rates although as a body it did recognize the injustice of the one without the other and so went on record in its recommendations.

But now, as an operator, the government has had brought home to it the absolute impossibility of making wage adjustments upward without a corresponding adjustment of the earning power of the carrier. So we cannot credit the request of the President to any particularly altruistic interest in the welfare of the railroads. But perhaps his pronouncement and the action of Congress which may follow will establish a precedent helpful to the electric railway common carriers that have suffered so materially as the result of this one-sided treatment of the wage-rate question. It may serve to bolster up state and local rate regulating bodies in decisions helpful to the utilities in their difficulties and thereby add to the recommendations along this line which it is hoped will be forthcoming from the Federal Electric Railway Commission, the further influence of higher authority.

Words of Wisdom from the Pennsylvania Commission

"IT IS a matter of ordinary business prudence and sagacity that the public generally should come to an appreciative understanding of what service means to the industrial and commercial life of the state and to each locality within it, and to recognize that the terms upon which it can be continued for their use and enjoyment are that it shall receive at their hands, as ratepayers, revenues sufficient to furnish it."

We quote the above from a recent report of the Pennsylvania public service commission as an example of enlightened commission opinion, altogether too rare in these days of political blindness in situations where the fate of railway utilities is concerned. The opinion was given in the case of the Waverly, Sayre & Athens Traction Company whose advanced rates had just been approved, and Chairman Ainey, speaking for the rest of the commission, also said: "To expect public service of these carriers without permitting them sufficient revenues to produce it, is as fallacious an economic suggestion as to demand bricks without straw or to require faithful toil from the muzzled ox."

The decision apparently turned on the question whether the public wanted to be adequately served. There have been sufficient miles of electric railways abandoned in the past few years to convince at least the people of the communities affected that local transportation is essential for their well being and prosperity. Reduced service in hundreds of other localities, due to lack of revenues, must have made thousands of other converts to this view of the situation. At the recent Washington hearing Mr. Storrs of the Connecticut Company painted a vivid picture of value of electric railways when he told of the dependency of one community upon another and of the efforts of the communities along abandoned interurban lines to have them put again in operation. Too often we hear of the bonanzas of early railroading and the great fortunes made by pioneer promoters, and little is said of the indirect participation in profits by those whose real estate was made more valuable or whose business was made prosperous thereby.

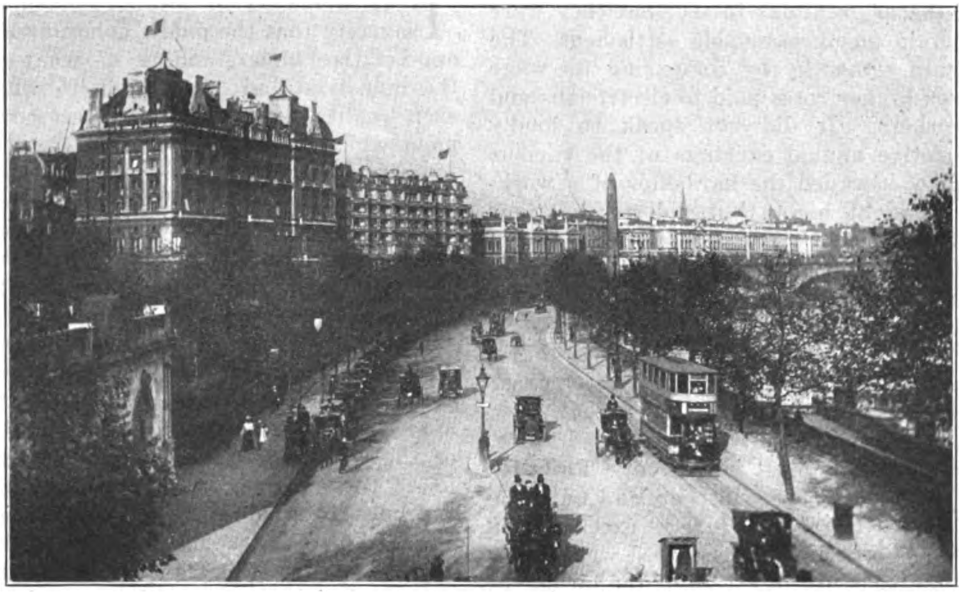
The sale of Liberty bonds is known to have interested millions of persons in the United States who never knew before what investment meant. It may be a slow process to await the awakening of these persons to a sense of fairness towards legitimate investment of all kinds, but we are of the opinion that this will be one of the potent factors in winning future support for the cause of the electric railways. The facts are so evident to intelligent persons who have an open mind that we believe a considerable influence will be exerted through the publicity given the recent hearings in Washington and later through the report of the federal commission. The only danger is that the arousing of public sentiment will come too late.

The Zone Fare in Practice

London County Council—Part II

In May and June, 1918, Fares Were Increased Chiefly by Introducing a Three-Section Penny Stage Averaging 1.8 Miles and by Abolishing Children's and Fractional Fare Tickets—Maximum Fare Fixed at 4d.—Latest Increase Cuts Penny Ride to 1½ Miles Because of Forty-eight-Hour Week

BY WALTER JACKSON



THAMES EMBANKMENT WITH HOTEL CECIL AND CLEOPATRA'S NEEDLE

THE tramways committee of the London County Council Tramways, the equipment and service of which were described in the ELECTRIC RAILWAY JOURNAL of Aug. 2, reported on April 25, 1918, that increased costs made it necessary to raise fares. The most rigid economy had failed to meet the situation. For the year 1913-1914 the operating expenses per car-mile had been only 6.47d., but for 1917-1918 they were 10.38d. In 1919, it was said, the costs would be still higher. For nearly three years no revisions had been made in fares beyond the suspension of ½d. tickets and ordinary return tickets on May 22, 1917. This had brought the increased revenue anticipated, but the gain was £205,290 short of the requirements for 1918-1919; without regard to £125,000 urgently needed for renewals, as recommended by A. L. C. Fell, general manager. The committee, therefore, recommended the following revisions, which became effective in May and June, 1918:

1—That the average length of the 1d. stage should be reduced from approximately 2 miles to 1.8 miles. To avoid hardship, the stages would be divided into three sections in every case. The length of the 2d. stage should be six of such sections, of the 3d. stage nine of such sections, but for 4d. the passenger should be entitled to any number of sections. (Before the revision recommended, the lengths of ride for 1d. varied greatly over different parts of the system, some being four to five sections long. With the changes recommended, particular care was taken to have the fare stages at points most convenient to the patrons.)

2—That the 1½d. and 2½d. fares should be suspended.

3—That ordinary transfer fares should be suspended.

4—That children's reduced fares should be suspended.

5—That workmen's single tickets should be issued at 1d. for four consecutive sections on one car, and at 2d. for any distance on one car with transfers as then given for 1d. single. Return tickets should be issued at 2d. for a journey in each direction over four consecutive sections on one car, both trips to be made over the same sections. Return tickets should be issued at 3d. for any distance on one car, with transfers as then given for 2d. return, the availability of return tickets remaining unaltered. The division of the Woolwich route into sections was also to be retained, but 3d. would be paid by former 2d. passengers and 6d. by former 4d. passengers. The average distance that a 1d. single workman could travel would be 2.4 miles, or 4.8 miles for a 2d. return ticket—in short, for less than 1 cent a mile.

As to the reduction of the average length of the three-section stage from 2 to 1.8 miles, the sections were carefully determined in accordance with traffic-gathering conditions. Hence they were not of equal length. On one route, the sections varied from 0.39 mile to 0.94 mile, but the limits in general lay between 0.4 and 0.8 mile. If one section was unusually short, an endeavor was made to have a section of extra length adjoining so that the passenger would be sure to get at least 1 mile for his penny. The difficulty of collecting all the money due within a half-mile also had to be considered in fixing the length of sections. It might have been more attractive to the passenger to have the overlaps shorter still, but it would have been anything but attractive for the conductor on big busy cars. The plan adopted, therefore, represented the best compromise that could be worked out to keep the passenger from becoming a walker. The variations in length of section on particular routes under the three-lap stages are illustrated.

~~As to the suspension of 1½d. and 2½d. fares, this~~ was in accordance with the action taken by other surface transport operators in the London area. It eliminated inconvenient fare units, simplified the ticket system and brought in more revenue.

As to the suspension of transfers, this was another big step in simplifying the ticket system. At one time transfer tickets were issued to passengers even if they could reach the desired destination by a direct route. These tickets did not indicate the point of transfer, so that it was quite possible for a passenger to double-back, an abuse which need not be explained to the American operator. The first improvement of the transfer system was made in November, 1917, when the use of such tickets was limited to definite transfer points and transfers were issued only in cases where no direct service was available. Although the elimination of a transfer meant two tickets for one, the increase in revenue more than justified the extra cost. The remaining types of transfers, issued only to facilitate the movement of workmen, are described later.

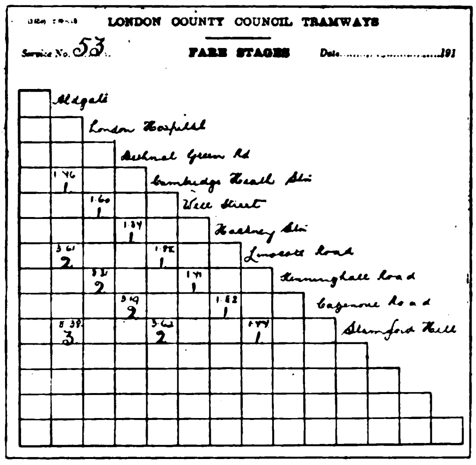
As to the suspension of children's reduced fares, it may be said that when the original concessions for half-rate tickets for children under fourteen years of age were made, it was anticipated that practically all of this riding would come during off hours. With the arrival of war, the number of juvenile workers was greatly augmented. Hence it was deemed unnecessary to grant below-cost transit to youngsters who were not only making money but were doing their riding during the rush hours. The L. C. C. education committee, however, is still allowed to purchase ½d. tokens good for any length of ride for children traveling to and from medical centers, public baths, lectures and the like. The only children's ordinary fares now handled on the London County Council Tramways are those which are issued in accordance with the local rules of the adjoining systems over which L. C. C. cars are operated.

As to the revision of workmen's tickets, the various changes still left such tickets to be sold at less than cost. Since the workmen's ticket harks back to the tramways act of 1870, there cannot be much basis for the oft-repeated assertion that unsatisfactory housing is due largely to the graduated fare.

~~The fixing of 4d. as the~~ maximum ordinary one-way fare greatly improved the ticket system without loss of revenue, as the passengers who paid more than 4d. were not enough to justify special tickets. Up to this rate, the competing buses granted the same distance for the same fare. It should be noted, however, that where buses have no competition, their rates are about 30 per cent higher.

A typical classification of passengers according to fare paid is presented in the following table, derived from a week late in 1918 when about 12,500,000 passengers were carried:

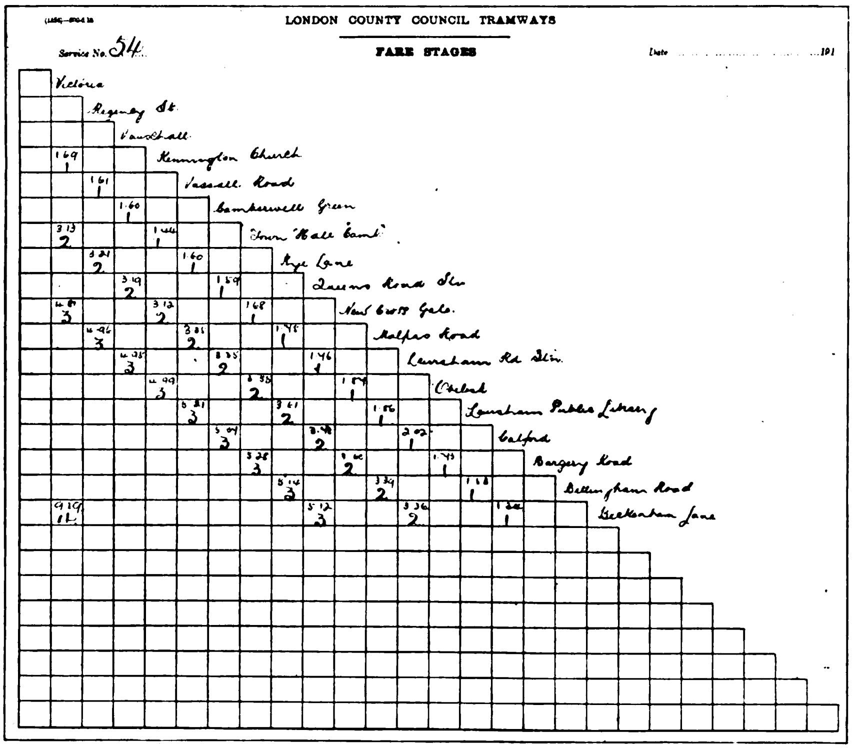
Fares in Pence	Per Cent. of Passengers	Per Cent. of Revenue
½ childrens'	0.34	0.13
1 childrens'	0.05	0.04
1½ childrens'	0.01	0.01
2 childrens'	0.00	0.00
1 ordinary	63.01	47.22
1½ ordinary	0.41	0.47
2 ordinary	16.25	24.36
2½ ordinary	0.06	0.11
3 ordinary	4.34	9.75
3½ ordinary	0.00	0.00
4 ordinary	1.61	4.84
4½ ordinary	0.00	0.00
5 ordinary	0.03	0.09
1 workmen's	5.06	3.79
2 workmen's	0.25	0.37
3 workmen's	0.01	0.01
2 workmen's return	2.83	2.12
3 workmen's return	5.50	6.19
4 workmen's return	0.03	0.06
5 workmen's return	0.07	0.12
6 workmen's return	0.14	0.32
	100.00	100.00



LONDON COUNTY COUNCIL TRAMWAYS

Service No. 53. FARE STAGES Date..................191

Aldgate
London Hospital
Bethnal Green Rd
Cambridge Heath Stn
Well Street
Hackney Stn
Linscott Road
Kenninghall Road
Cazenove Road
Stamford Hill



LONDON COUNTY COUNCIL TRAMWAYS

Service No. 54. FARE STAGES Date..................191

Victoria
Regency St
Vauxhall
Kennington Church
Vassall Road
Camberwell Green
Town Hall Camb.
Rye Lane
Queens Road Stn
New Cross Gate.
Malpas Road
Lewisham Rd Stn.
Obelisk
Lewisham Public Library
Catford
Bargery Road
Bellingham Road
Beckenham Lane

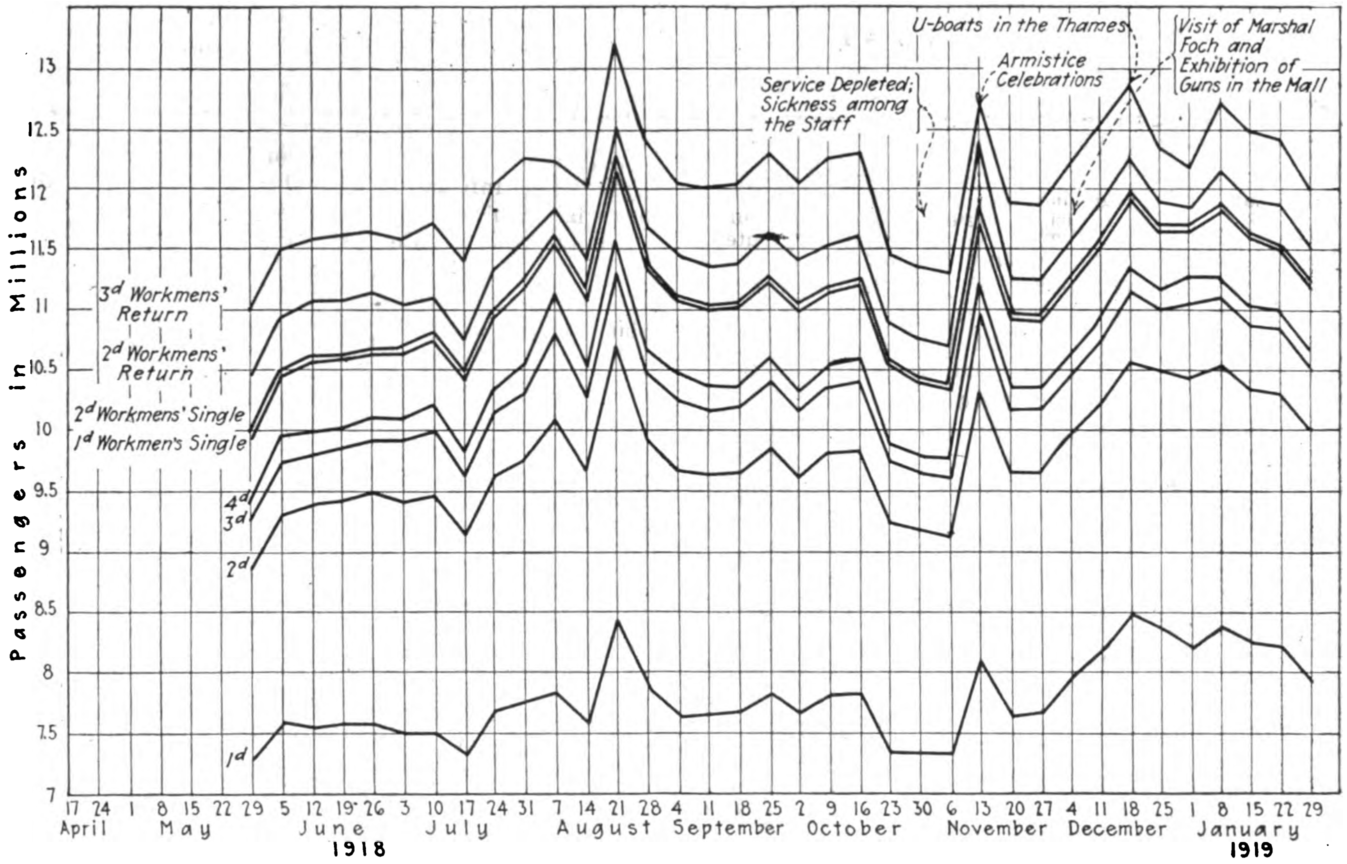
VARIATIONS IN LENGTHS OF L. C. C. STAGES WHEN AVERAGE PENNY RIDE COVERED THREE SECTIONS TOTALING 1.8 MILES

This table indicates that the children's rate had been practically abolished, but that 13.89 per cent of the riders were still traveling at the workmen's rate—a Parliamentary imposition not applying to the motor bus. The enormous amount of pick-up travel is indicated by the fact that 63 per cent of the traffic was within the 1.8-mile penny limit. A similar condition is revealed in the accompanying diagram of traffic from May, 1918, to January, 1919.

Although the car mileage for the year ended March 31, 1919, was 2½ per cent (more than 1,000,000 miles) below that of the preceding year, the number of passengers carried was 50,000,000 in excess of the 586,000,000 carried during the fiscal year 1916-1917, which was quite clear of fare increases. The ratio of short riders was fully maintained, which indicates the judicious rearrangement of stages when it was found necessary to increase fares.

PENNY DISTANCE CUT TO 1.5 MILES

With the adoption, in May, 1919, of a forty-eight-hour week at fifty-four hours' pay, the resourcefulness of the London County Council Tramways management was put to new tests. The annual cost of giving effect to this agreement with the National Transport Workers Federation is estimated at £360,000. The only alleviating feature is that the provisions of the agreement are dependent upon the grant of power before June 30, 1919, by the proper authority to increase fares which are now limited by statute or otherwise. Without the grant of such power by that date, the agreement is terminable upon one month's notice by either side.



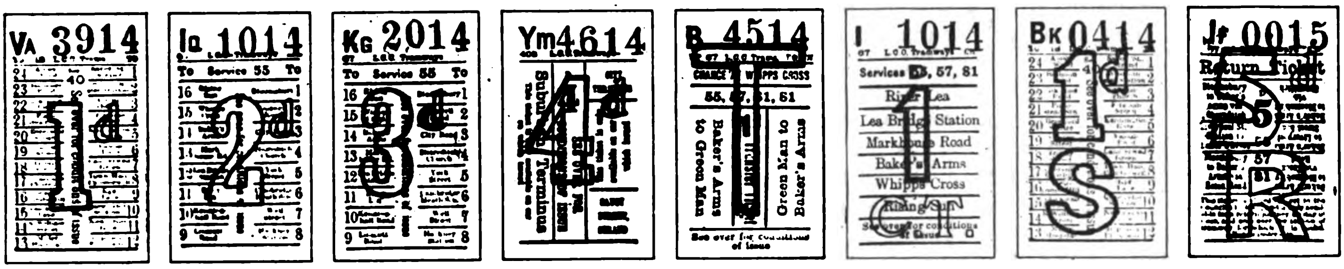
TOTAL PASSENGERS CARRIED ON L. C. C. LINES WITH PROPORTION AT EACH RATE OF FARE

Under date of April 10, 1919, the highways committee stated that in the fiscal year 1913-1914 the total wage bill was £1,102,220 for operating 59,209,289 car-miles, whereas in 1918-1919 the amount was £1,888,600 for 48,052,801 car-miles. For the year 1919-1920 it was estimated that 53,000,000 car-miles would cost £2,421,250. War allowances to tramway men during 1918-1919 amounted to £180,000, and the estimate for 1919-1920 for the reduced number of men still on war service was £50,000. Continuing, the highways committee showed that the increase in operating expenses since 1913-1914 would be as shown in the accompanying table.

Another factor which had to be considered was the urgent necessity for carrying out renewals of track and paving which had been impossible during the war owing to the shortage of labor and the impossibility of obtaining the necessary materials. On March 31, 1918, the renewals fund amounted to £324,451 as compared to £539,749 on March 31, 1914. Up to 1911-1912 full provision for this fund was made out of the revenues of the undertaking on the basis (approved on June 23, 1908) of two-thirds of a penny for each car-mile run, but the financial results of operation during the last six years did not enable provision to be made on this basis. During this period the available surpluses were paid into this fund. The general reserve fund on March 31, 1918, amounted to £74,667 as compared to £190,596 on March 31, 1914.

		Operating Expenses (Including war service allowances)	
Year	Car Miles	Total	Per Car Mile
1913-14	59,209,289	£1,585,251	d. 6.50
1914-15	58,978,792	1,684,243	6.89
1915-16	47,879,675	1,683,660	8.44
1916-17	49,478,973	1,817,693	8.82
1917-18	49,189,866	2,128,685	10.38
1918-19 (estimated)	48,052,801	2,811,465	14.04
1919-20 (estimated)	53,000,000	3,521,925	15.94

The highways committee then observed that the estimates of expenditures (including renewals) for 1919-1920 showed that if the present balance of the renewals and reserve funds (£392,000) was to be preserved, the revenue must be increased from £3,629,000 (the approximate actual receipts for 1918-1919) to £4,668,000. This would be more than £1,000,000 in excess of the receipts for 1918-1919, which were £600,000 more than those for 1917-1918. If the assumptions on which the estimates were based were realized, it was anticipated that nearly one-half the extra revenue required would be derived by running an additional 5,000,000 car-miles and obtaining somewhat higher average receipts, leaving a sum of about £566,000 to be raised by other means. In order to obtain so large a sum it would be necessary to increase fares, but in considering the extent to which this was practicable the committee remembered that there is a point beyond which an increase in fares may cause a reduction of revenue.



TYPES OF L. C. C. FARE RECEIPTS, WITH BOTH STAGE NAMES AND NUMBERS, TOGETHER WITH SERVICE NUMBERS

Proposals, therefore, were recommended and adopted as of May, 1919, as follows:

1. That the average distance for 1d. should be reduced from 1.8 miles to 1.5, with a single overlap in place of the present double overlap. This would involve each route being divided into two sections to be traversed for a penny, four for 2d., six for 3d. and eight or more for 4d.

2. That the following scale should be adopted for workmen's return tickets, and this scale should also be applied to the Woolwich route:

a.—A 2d. ticket for a return journey over a stage of 2 miles (total journey, 4 miles).
b.—A 3d. ticket for a return journey over a stage of 3 miles (total journey, 6 miles).
c.—A 4d. ticket for a return journey over a stage of 4 miles (total journey, 8 miles).
d.—A 5d. ticket above 8 miles (total journey), with transfer facilities.

In regard to the revision of the ordinary fare stage, it was not deemed desirable to continue the system of dividing each penny fare stage into three sections, Since with shortened zones this would mean a reduction in the length of each section to 0.5 mile. Under the three-lap plan used before May, 1919, a large amount of revenue was being lost owing to the inability of conductors to collect all the fares. With the lengthening of the sections from an average of 0.6 mile to 0.75 mile, it is considered that a great proportion of the revenue earned will be collected. It also seems reasonable to expect more efficiency from the staff as a result of the reduction in hours, for which allowance has been made, and it is estimated that £40,000 a year will be forthcoming on account of the improved collection.

TRANSFERS GRANTED ONLY WITH HIGHER FARES

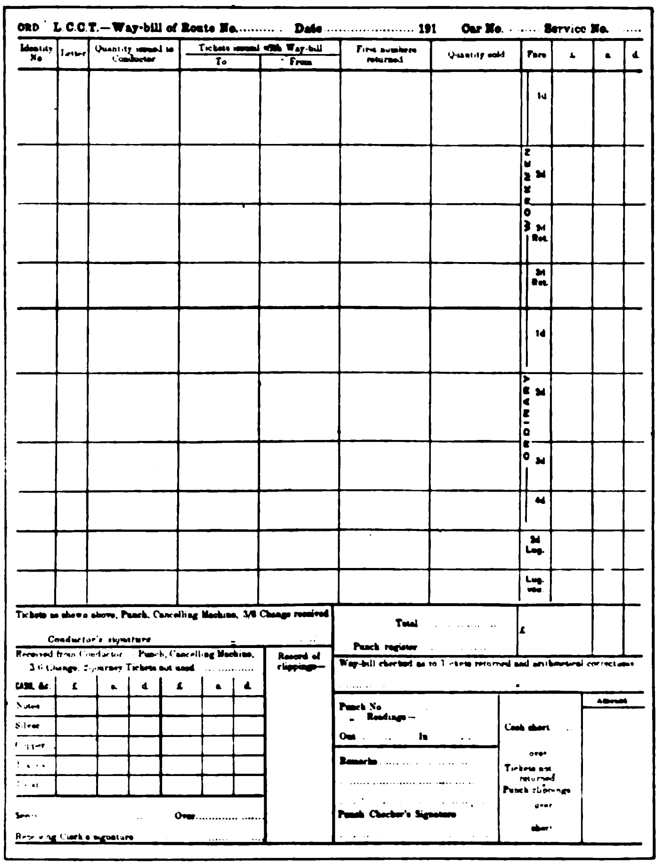
Under the altered workmen's rates the average total distance which a workman can travel for 2d. return is reduced from 4.8 miles to 4 miles, or about 1 mile in excess of the distance covered by the new ordinary 2d. fare. The superseded charge for a workman's return ticket in excess of 4.8 miles was 3d. As now changed, this charge operates only between 4 and 6 miles, the fare being raised by 1d. for each additional 2 miles or part thereof beyond the latter distance with a maximum of 5d. Transfer facilities are now granted for only 5d. return tickets.

The increased revenue to be derived from the revised fares is estimated at £416,000. Of this amount £321,000 is expected from ordinary passengers, £55,000 from workmen passengers and £40,000 from improved fare collection. As regards the workmen's fares, the annual loss on workmen's tickets will be reduced from £160,000 to £105,000 a year.

Even with these changes the highways committee anticipates that it will be necessary to draw upon the renewals fund to the extent of approximately £150,000 in order to meet the expenditure of £371,480 proposed to be incurred for renewals during 1919-1920. The latest fare revisions will be reconsidered in six months' time, when information will be available as to their financial results.

As the London County Council Tramways system prints its own tickets, not more than a week's supply of the popular denominations is made up. The printing plant adjoins the ticket department and is prepared to deliver new tickets within twelve hours. Contrary to common practice, the L. C. C. tickets are stitched rather than nailed together.

The various changes in fares were accompanied by a standardization of tickets with the twofold purpose of serving the convenience of all concerned and of saving



ORD L.C.C.T.—Way-bill of Route No........ Date........................191 Car No. ...... Service No. .....

Identity No	Letter	Quantity issued to Conductor	Tickets issued with Way-bill To	Tickets issued with Way-bill From	First numbers returned	Quantity sold	Fare	£	s.	d.
							1d			
							WORKMEN 2d			
							2d Ret.			
							3d Ret.			
							1d			
							ORDINARY 2d			
							3d			
							4d			
							2d Lug.			
							Lug. vou.			

Tickets as shown above, Punch, Cancelling Machine, 3/6 Change received
Conductor's signature ....

Total .... £
Punch register ....

Received from Conductor — Punch, Cancelling Machine, 3/6 Change, 2-journey Tickets not used ....

Record of clippings—

Way-bill checked as to Tickets returned and arithmetical corrections
....

CASH, &c.	£	s.	d.	£	s.	d.
Notes						
Silver						
Copper						
[illegible]						
Total						

Short .... Over..........
Receiving Clerk's signature ....

Punch No
Readings—
Out ...... In ......

Remarks ....

Punch Checker's Signature
....

Cash short ..
over
Tickets not returned
Punch clippings
over
short

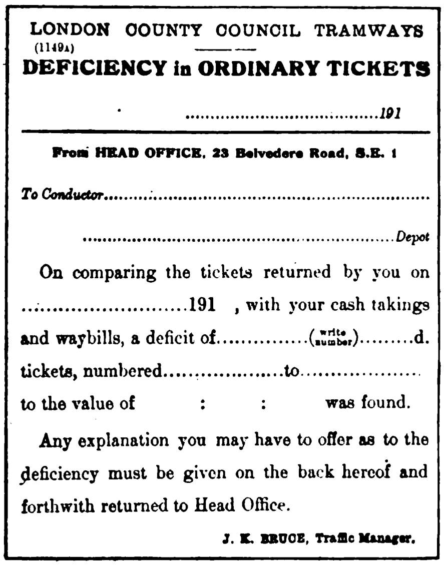
Amount

STANDARD WAYBILL OF L. C. C. LINES

paper. All tickets are 2¼ in. x 1¼ in. Since colored stock is so expensive, the most popular or penny ticket is printed on white paper. Most of the others are colored on the sides by the original 4-in. x 14-in. ticket strips being passed through inked rollers. In the near future this coloring may be done more effectively and cheaply by means of an aërograph process.

The price of the ticket is usually indicated by a large red overprint alone or with a smaller black figure in addition. The overprint "S" means workmen's single, the "R" workmen's return or round trip. On all excepting end-to-end tickets both stage numbers and stage names appear. The enormous number (1,750,000) of tickets printed and used daily makes it desirable to go further with the markings than the usual letters and serial numbers. Consequently the route or service number is added. In some cases, several routes make use of the same ticket. The 4d. ticket is the simplest, as it is available for the longest ride on any route.

Transfers within the L. C. C. area are confined to workmen's tickets. They do not necessarily give a longer ride for the money but offer alternative facilities. They are intended to permit a passenger to return in a car of different "service" number (but not of different routing) because the service used in the morning does not happen to be available for all or part of the afternoon hours. Return tickets are used in the same way. Return tickets are not given up for an exchange ticket but are cancelled by the conductor with an auxiliary non-counting punch. This saves special tickets and accounting detail.


LONDON COUNTY COUNCIL TRAMWAYS

(1149A)

DEFICIENCY in ORDINARY TICKETS

....191

From HEAD OFFICE, 23 Belvedere Road, S.E. 1

To Conductor..

....*Depot*

On comparing the tickets returned by you on ....191 , with your cash takings and waybills, a deficit of...............(write number).........d. tickets, numbered...................to...................
to the value of : : was found.

Any explanation you may have to offer as to the deficiency must be given on the back hereof and forthwith returned to Head Office.

J. K. BRUCE, Traffic Manager.

EXPLANATION FORM FOR TICKET SHORTAGE

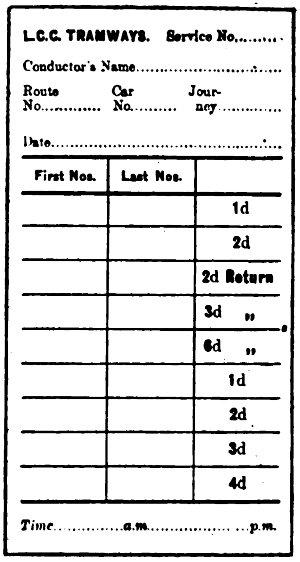
Formerly transfer tickets had overprinted letters which corresponded to certain days of the week in accordance with a code. It was found that this restriction caused too great a complication to make the trouble worth while. There is nothing to prevent the use of the return privilege on some other day, but in effect this is not a serious consideration because the passenger is simply postponing the use of a privilege. In any event, the transfer problem now counts for little.

In addition to the several types of printed tickets shown, celluloid tokens are sold at face value to the post office, merchants, municipal departments and others in quantities of hundreds and thousands.

HOW THE TICKET DEPARTMENT WORKS

The ticket department is responsible for the daily replenishment of the conductors' ticket boxes as returned by the depots. Owing to lack of space the plan of having a separate bin for each conductor and of giving him his tickets from the same 10,000 serials cannot be followed, although it is considered desirable to do so. It is customary, however, to have conductors work off the remainders of their pads when the same box is returned to them on the third day. Each box contains the usual make-up of tickets, counting punch, special non-counting punch and waybill. In addition, the depot inspector may give the conductor 3s. 6d. for change.

The standard waybill is shown on page 273. On this the clerk in the ticket department fills in only the columns covering "Identity No.," "Letter," "Quantity Issued to Conductor," and "Tickets Issued with Waybill to and from." The closing numbers or "First Numbers Returned" are written in by the conductor, and the "Quantity Sold" and money turned in are recorded by the depot inspector. The count is made in the presence of the conductor, who is at liberty to make up any shorts on the spot. When conductors made the extensions on the waybills themselves, errors were so frequent that the practice had to be discontinued. Conductors may hold on to their cash all day, but if they prefer they may "pay in" during their period of relief.


L.C.C. TRAMWAYS. Service No.........

Conductor's Name.......................................

Route No............ Car No......... Journey............

Date...

First Nos.	Last Nos.	
		1d
		2d
		2d Return
		3d "
		6d "
		1d
		2d
		3d
		4d

Time.............*a.m.*...................*p.m.*

MEMORANDUM TO RELIEF CONDUCTOR FOR CHECKING PASSENGERS

The back of the waybill is used by the conductor to fill in his terminal times and the number of each class of ticket used on the individual journey. The reference to "2d. Lug." is to a luggage ticket. This is a standard 2d. passenger ticket which is punched in the serial number instead of the stage to indicate that it is good for any distance.

The bottom of the waybill shows the space reserved for the signature of the conductor when the depot inspector gives him his punch and ticket box; the depot inspector's accounting of the money and other items received from the conductor; and the reports of the clerks in the ticket department, including the record of punchings or clippings counted, if such count is made.

At present not more than two dozen punches out of 2000 in daily use are checked by counting the punchings. Even this is more than in pre-war days when the conductors as a class had greater experience. If there is a discrepancy of four or more, a count is made. Particular care is taken to see that the register itself is not out of order. Part of the punches were purchased from the Bell Punch & Ticket Company after having been on a rental basis for some years, but repairs are still made directly by the manufacturer. In addition to the 2000 Bell punches there are 3000 hand punches of special design somewhat lighter than the Bell but without a seal. The Bell punches are reset to 0 and resealed daily; the hand punches have a series of dials like a gas meter and the numbering goes on indefinitely.

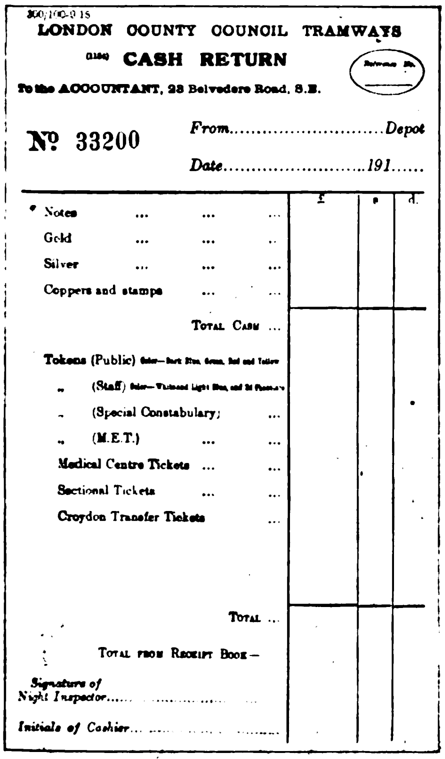
The form used for the explanation of ticket shorts is shown herewith. In the case of overs, the conductor gets a refund if he puts in a prompt claim that he has discovered a shortage in his personal cash. Likewise, if he has issued a wrong ticket, he receives a refund upon turning this in with the name and the address of the passenger concerned.

The second blank reproduced on page 274 is a form used in connection with the ticket system. It is a memorandum from a conductor to his relief to enable the latter to check the passengers already on the car.

The ticket department, which handles no cash, is operated entirely by women and girls. Out of a total of 138, 125 are on duty at any one time. Of the latter number, six are supervisors, eighteen are summary clerks, thirty-two are punch clerks and sixty-eight stock the ticket and punch boxes.

The trail of the cash is entirely separate from that of the returned tickets. When the depot clerk accepts money from a conductor, he gives him a receipt, of which a copy remains in his receipt book. He does not send these individual returns to the cashier but makes up the money first into bags according to denominations, as 6d. pieces into £5 bags, pennies into 5s. rolls, etc. With these bags he forwards the "Cash Return" summary (shown herewith), which should check with the total of the individual receipts issued to the conductors. The receipt book, of course, goes along with this form.

Upon counting the cash, the office of the chief cashier advises the ticket department that certain total amounts have been received from certain depot inspectors, which totals should check against the summaries prepared by the ticket department. The cashiers handle £9,000 to £10,000 daily, including 3 to 4 tons of copper! At one time, the banks refused to carry away the copper themselves, but nowadays they are glad to collect it at their own expense. The staff of the chief cashier numbers ten, exclusive of himself.



300/100-9 15

LONDON COUNTY COUNCIL TRAMWAYS

CASH RETURN

To the ACCOUNTANT, 23 Belvedere Road, S.E.

№ 33200

From.............................*Depot*

Date..........................*191*......

	£	s.	d.
Notes			
Gold			
Silver			
Coppers and stamps			
TOTAL CASH ...			
Tokens (Public) [illegible]			
" (Staff) [illegible]			
" (Special Constabulary) ...			
" (M.E.T.)			
Medical Centre Tickets			
Sectional Tickets			
Croydon Transfer Tickets ...			
TOTAL ...			

TOTAL FROM RECEIPT BOOK—

Signature of Night Inspector..............................

Initials of Cashier..............................

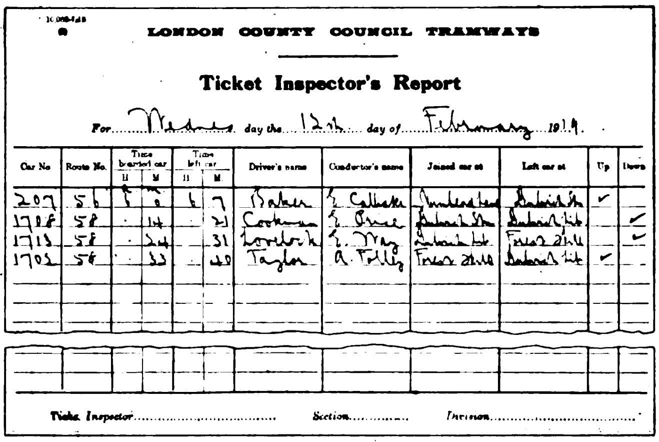
CASH RETURN TO CASHIER MADE BY EACH DEPOT

The waybills do not go to the chief cashier but are returned to the ticket department with the unsold tickets. After serving their purposes there, they are turned over to the operating statistics department.

In totalizing the work of the employees connected with the ticket system, it is proper to include, except in the case of depot inspectors, all the time of the employees in the ticket department. As a proof that ticket inspectors, however, have many duties corresponding to those of traffic inspectors in the United States, three specimen reports are appended:

> Car 1513 jumped the track at the switch point because of a pile of refuse in the point at ——— Bridge on down track. Eight minutes delay to both tracks. Head office informed.
>
> Attached tickets punched on wrong side. Seventeen in. Nine out. No excuse offered.
>
> As this car was being ploughed by ———, the plough rose, striking the carrier bolt and buckling the plough. Two minutes delay.

The accompanying illustration gives a part reproduction of the standard style of ticket inspector's report covering the cars boarded.



10,000-4-18

LONDON COUNTY COUNCIL TRAMWAYS

Ticket Inspector's Report

For.....Wednes.....*day the*.....12th.....*day of*.....February.....*19*19.

Car No	Route No.	Time boarded car H	Time boarded car M	Time left car H	Time left car M	Driver's name	Conductor's name	Joined car at	Left car at	Up	Down
207	56	5	0	6	7	Baker	E. Callister	[illegible]	[illegible]	✓	
1708	58	·	14	·	21	Cockman	E. Orme	[illegible]	[illegible]		✓
1713	58	·	24		31	Lovelock	E. May	[illegible]	[illegible]		✓
1702	58	·	33	·	40	Taylor	A. Tolley	[illegible]	[illegible]	✓	

Ticket Inspector.............................. *Section*.............. *Division*..............................

TICKET INSPECTOR'S SUMMARY OF CARS BOARDED

The printing plant of the London County Council Tramways is handled as an undertaking entirely separate from the cost of "ticket check." The division of "ticket check" in the annual report of the London County Council Tramways for the year 1917-1918 included the following items:

Punches	£974
Inspectors wages (road check)	14,508
Ticket Department (office check)	8,577
Apportionment of salaries of senior officials	122
	£24,181

Power Plant Improvements at "St. Joe," Mo.

A new 10,000-kw. General Electric turbine with Alberger surface condenser is being installed in the plant of the St. Joseph (Mo.) Railway, Light, Heat & Power Company. The new equipment also includes two 1000-hp. Hornsby-Bigelow boilers. G. W. Saathoff is the engineer in charge of the work, which is being done by the company.

The entire St. Joseph plant will be converted for oil burning at once. In this connection a 30,000-gal. oil storage tank is being erected. With the completion of this work, which will probably be in the fall so that the new turbine will be ready for the full load, the St. Joseph plant will be provided with 22,600-kw. of generator capacity, and 9600 rated horsepower of boiler capacity.

After suspension of publication during the war period, *Les Chemins de Fer & Les Tramways*, Paris, has resumed monthly publication. This periodical covers the fields of steam and electric railways. In the opening, or rather reopening issue, considerable space is given to heavy electric traction, in particular the present status of the various electrification projects under way in France.

Side Lights on the Zone Fare—Congestion or Diffusion?

Foreign and American Examples Indicate that Rate of Fare or Method of Fare Charging Is Not the Determining Factor

By Walter Jackson

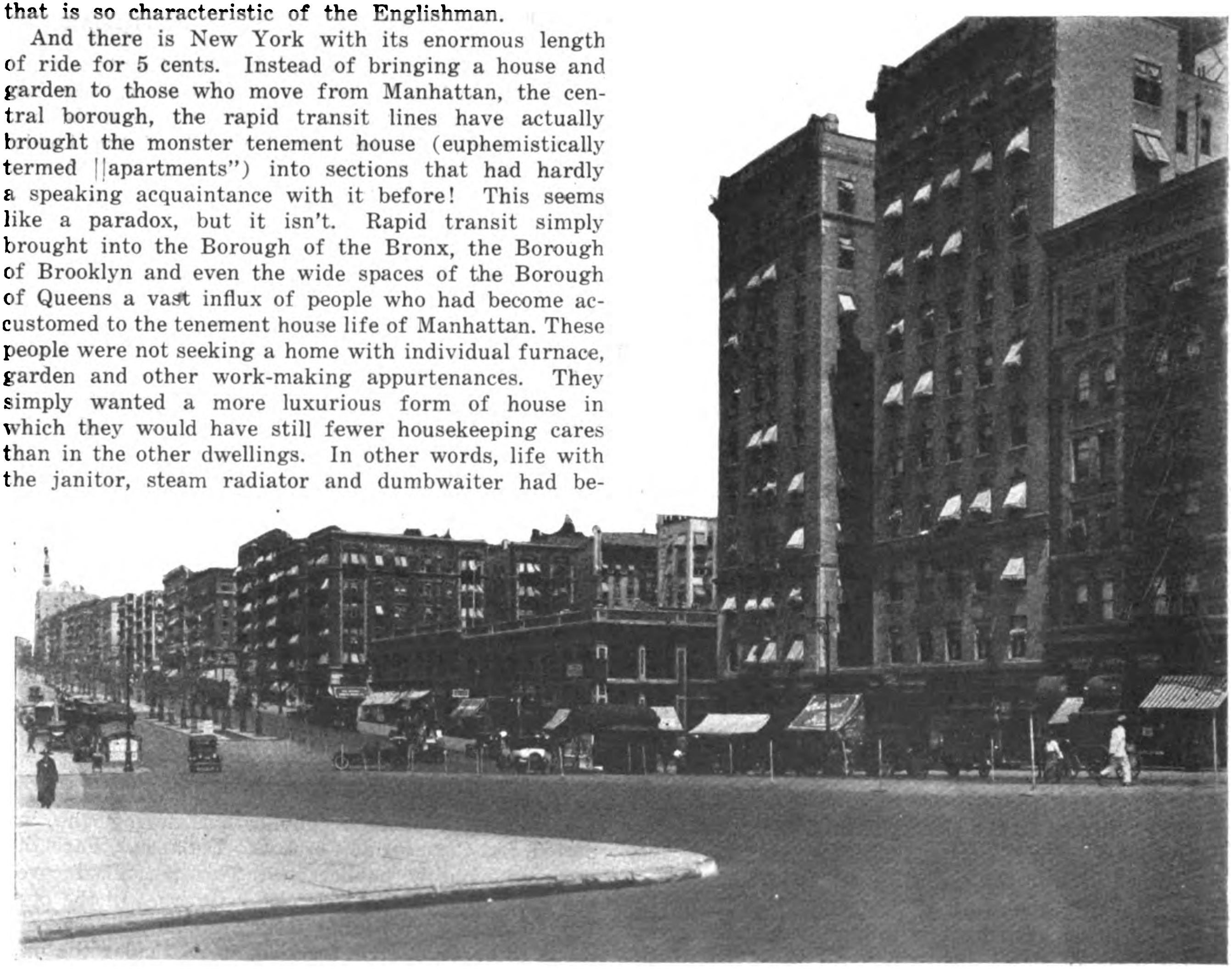
OF ALL the poll-parrot assertions concerning the graduated fare system, the congestion indictment predominates. Yet curiously enough the two most striking examples of congestion or density of population are afforded by the two cities—Glasgow and New York—in which the zone and flat fares respectively give the greatest value for the money. Surely, this phenomenon ought to give us a hint that local topography, municipal characteristics and other factors may have something to do with the case—and they have.

First, let us consider Glasgow. Go where we will in that city, be it in the center or on the outskirts, we find that the prevailing type of dwelling is a three or four-story multi-family house. On inquiring into the reason for this, the student is told that this form of construction came over centuries ago from France; that Scottish people took to this gregarious mode of life and that they retained it as a habit long after the arrival of modern transportation. In any event, neither the resident of Edinburgh nor Glasgow seems to have the same strong urge to isolate himself in the way that is so characteristic of the Englishman.

And there is New York with its enormous length of ride for 5 cents. Instead of bringing a house and garden to those who move from Manhattan, the central borough, the rapid transit lines have actually brought the monster tenement house (euphemistically termed "apartments") into sections that had hardly a speaking acquaintance with it before! This seems like a paradox, but it isn't. Rapid transit simply brought into the Borough of the Bronx, the Borough of Brooklyn and even the wide spaces of the Borough of Queens a vast influx of people who had become accustomed to the tenement house life of Manhattan. These people were not seeking a home with individual furnace, garden and other work-making appurtenances. They simply wanted a more luxurious form of house in which they would have still fewer housekeeping cares than in the other dwellings. In other words, life with the janitor, steam radiator and dumbwaiter had become a habit which no "breezy call for incense-breathing morn" could eradicate except in the case of a few—and those few sought their ideal of chicken coop and rabbit hutch by moving out along a steam railroad reached only by paying fare on the distance system!

If local and national peculiarities were not so controlling a force, how are we to explain the presence of the skyscraper on the endless plains of Texas and the absence of elevator height buildings almost everywhere in compact Britain? It is distressing that we failed to go to the bottom of this phenomenon sooner, for every argument hitherto made for the flat fare has simply ascribed congestion to zone fares as a matter of course and thus bolstered up the fortunes of the real estate operator. To summarize an editorial appearing in the issue of March 2, 1918, of this paper that "Zone Fares Are Not a Primary Cause of Congestion":

> The topography of a city, the relative location of industrial and home sections, the cost of land, building materials and fuel, and the habits of the people are much more important factors of the amount of riding which is done than the rate of fare. In the 70's and 80's, when the combined fares by different companies in the same city for a present 5-cent ride were 10, 15 or even 20 cents, American cities had a larger proportion of homes with gardens than now. If the people in those times when the nickel was real money refused to huddle in crowds, they will not be deterred in these days of 15-cent milk from paying a zone charge of 2 to 5 cents more if they prefer life in the suburbs.



VIEW OF TYPICAL BLOCK NEAR NORTHERN END OF BROADWAY DIVISION, INTERBOROUGH RAPID TRANSIT COMPANY, SHOWING THAT A PRACTICALLY UNLIMITED RIDE FOR FIVE CENTS DOES NOT PREVENT CONGESTION

Coasting Results on the Chicago Elevated

First Year of Operation Shows a Saving of 21,162,217 Kw.-Hrs. or 11.3 Per Cent—Coasting Has Been Increased to 35 Per Cent.

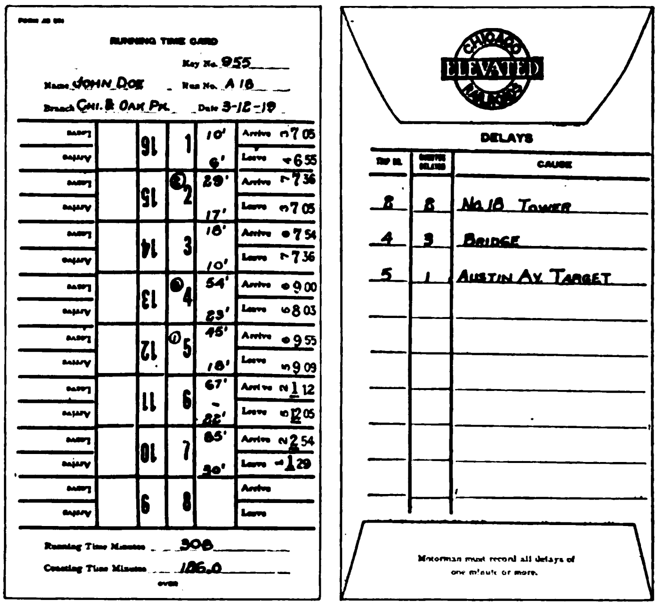
BY H. A. JOHNSON
Master Mechanic Chicago Elevated Railroads

COASTING and efficient operation of trains by motormen have received considerable attention on the Chicago Elevated Railroads for many years. All trains are equipped with multiple-unit control apparatus with automatic acceleration which takes the control of the rate of acceleration out of the hands of the motormen. The limit switches controlling the acceleration were set as high as the capacity of the motors would permit, and some time ago coasting boards were installed between all stations and the motormen were instructed to shut off power at these points whenever it was possible to do so. The regular service inspectors devoted considerable time to coaching the motormen in the matter of coasting and power saving, and special coasting instructors who devoted their entire time to this one subject were put on.

We felt that a great deal had been accomplished by this power-saving campaign, but the summer of 1917 brought about a new situation. The United States had entered the world war and the Fuel Administration asked the electric railways to do everything in their power to save fuel during the coming winter. In addition to this one of our power plants was being dismantled and would not be in service the following winter. For a number of years this plant had been operated during the winter months for a few hours during the morning and evening rush periods, when the demand for power was at a maximum. With this plant out of commission it became highly desirable to reduce the amount of power required to operate the system during the maximum loading hours, so that additional generating equipment would not have to be provided to replace that which was discarded.

After careful study it was decided that, although we had before given considerable attention to coasting and efficient operation of trains, much more could be accomplished by installing on all trains a power-checking device which would show the motormen the results of their efforts, and by providing additional coasting instructors to ride with and assist motormen and conductors in the efficient operation of their trains. After investigating the various devices available and their adaptability to the operating conditions on our property, Rico coasting recorders were purchased. They were received and installed so that by Dec. 1, 1917, each train was equipped, the coasting instructors had been appointed and instructed, the coasting department for handling the records and reports had been organized and the campaign to save power and coal was in full swing.

Great credit is due the employees for their co-operation with the management in making the campaign a success. In sending out the bulletin notices in reference to the operation of the coasting recorders, M. J. Feron, general superintendent of transportation, explained in a frank manner that the management sought the help of every employee in saving coal and power during the war, that this had been requested by the United States Fuel Administration as a patriotic duty, and that the coasting recorders were being installed to assist the motormen to accomplish this end. Mr. Feron also stated that he had personally operated trains equipped with these devices, that he had found them to be of great assistance and that he felt sure that the men would agree with him in this after they had become familiar with the recorders. President Britton I. Budd addressed a personal letter to each motorman on the system, asking his support and earnest endeavor in giving safe and efficient transportation service to the people of Chicago during the war.



RUNNING TIME CARD

Key No. 955
Name JOHN DOE Run No. A 18
Branch CHI. & OAK PK. Date 3-12-19

Arrive		16	1	10'	Arrive 7 05
Leave				6'	Leave 6 55
Arrive		15	2	29'	Arrive 7 36
Leave				17'	Leave 7 05
Arrive		14	3	18'	Arrive 7 54
Leave				10'	Leave 7 36
Arrive		13	4	54'	Arrive 9 00
Leave				23'	Leave 8 03
Arrive		12	5	45'	Arrive 9 55
Leave				18'	Leave 9 09
Arrive		11	6	67'	Arrive 1 12
Leave				22'	Leave 12 05
Arrive		10	7	85'	Arrive 2 54
Leave				30'	Leave 1 29
Arrive		9	8		Arrive
Leave					Leave

Running Time Minutes 308
Coasting Time Minutes 186.0
OVER

DELAYS

Trip No.	Minutes Delayed	Cause
8	8	No. 18 Tower
4	3	Bridge
5	1	Austin Av. Target

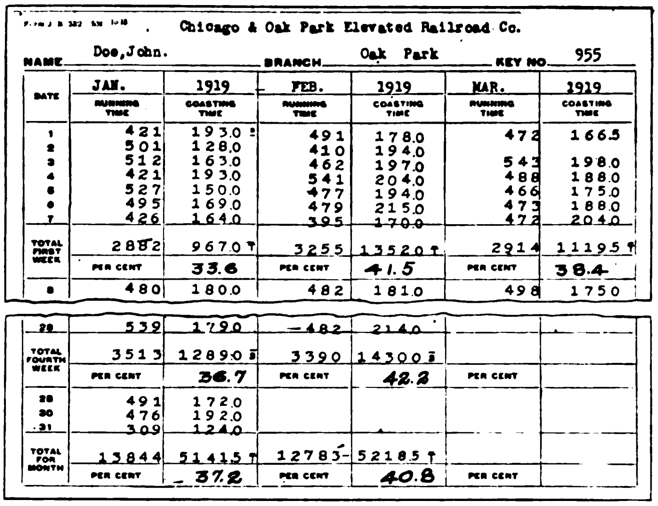
Motorman must record all delays of one minute or more.

ENVELOPE FOR RECORD SLIPS SHOWS LEAVING AND ARRIVING TIME FOR EACH TRIP; BACK OF ENVELOPE IS USED FOR EXPLANATION OF DELAYS

At our company section meeting preceding the date of placing the recorders in service, the supervisory force listened to talks explaining the mechanism of the recorders, the taking of the record slips and such other train data as were wanted, and how the results would be worked up and tabulated on reports to be posted in train rooms. A talk was also given which showed how coasting could be increased by proper operation by the motormen and by prompt, efficient work of the trainmen in unloading and loading passengers at stations; and how increased coasting might be turned into a saving in power.

Seven motormen, who were old in the service, efficient in the performance of their duties and well-liked by their fellow employees, were chosen as coasting instructors. Each was assigned to a certain division of the system and he studied the conditions peculiar to that division. The instructors received instructions from the general superintendent, from their local superintendent and from the mechanical department. These seven men devote practically their entire time to the work.

With this preparatory work completed, the recorders on the entire system were placed in service. Weekly reports showing the standing of the motormen on each division were posted. A substantial saving in power was immediately obtained due to the remarkable cooperation and interest of the motormen and trainmen.



Chicago & Oak Park Elevated Railroad Co.

NAME Doe, John. BRANCH Oak Park KEY NO. 955

DATE	JAN. RUNNING TIME	1919 COASTING TIME	FEB. RUNNING TIME	1919 COASTING TIME	MAR. RUNNING TIME	1919 COASTING TIME
1	421	193.0	491	178.0	472	166.5
2	501	128.0	410	194.0		
3	512	163.0	462	197.0	543	198.0
4	421	193.0	541	204.0	488	188.0
5	527	150.0	477	194.0	466	175.0
6	495	169.0	479	215.0	473	188.0
7	426	164.0	395	170.0	472	204.0
TOTAL FIRST WEEK	2882	967.0 T	3255	1352.0 T	2914	1119.5 T
	PER CENT	33.6	PER CENT	41.5	PER CENT	38.4
8	480	180.0	482	181.0	498	175.0
29	539	179.0	482	214.0		
TOTAL FOURTH WEEK	3513	1289.0	3390	1430.0		
	PER CENT	36.7	PER CENT	42.2	PER CENT	
28	491	172.0				
30	476	192.0				
31	309	124.0				
TOTAL FOR MONTH	13844	5141.5 T	12783	5218.5 T		
	PER CENT	37.2	PER CENT	40.8	PER CENT	

MOTORMAN'S RECORD SHEET SHOWS RUNNING AND COASTING TIME WITH PER CENT COASTING FOR WEEK AND MONTH

There was a reduction in the maximum kilowatt-hours required during the rush hours, as well as a reduction in the total kilowatt-hours per day. This reduction in maximum kilowatt-hours in connection with reductions made along other lines, was sufficiently large to render unnecessary the providing of equipment to replace the power plant dismantled during the summer of 1917.

CLERICAL WORK REDUCED TO A MINIMUM

The clerical work of figuring the coasting percentages, entering them on each motorman's individual record and getting out weekly reports showing the comparative standing of the motormen on each branch of the system, is taken care of by five clerks, the labor cost of keeping the records amounting to 50 cents per month per motorman. This work has been reduced to a minimum. Each motorman is provided with an envelope, 4 in. x 7½ in., shown in an accompanying illustration, for the day's work. He fills in the blanks at the top and enters the leaving and arriving times for Trip No. 1, Trip No. 2, etc. He removes a record slip from the coasting recorder for each trip, marks the number of the trip upon the slip and puts it in the envelope. Any unusual delays may be explained on the back of the envelope.

When his day's work is completed, the motorman seals his envelope and leaves it with his dispatcher. It is then forwarded to the coasting department. The running time and coasting time are calculated and entered in the blank space beside each trip number, and the total running time and coasting time for the day are entered in spaces provided at the bottom of the envelope. The envelope is now filed under the motorman's name until the end of the week.

After the week has passed the envelopes of each motorman are removed from the file and the running time and coasting time are entered on the motorman's record sheet reproduced. This sheet is placed in a split column adding machine which prints and adds the running time and coasting time and prints the totals for the week. The percentage of coasting for the week is then figured by slide rule and entered by hand.

The sheets of all motormen operating on a given branch of the system are grouped together and a weekly report made out showing the standings of the men as to coasting, in order of achievement. Copies of this list are posted on the bulletin boards in the trainrooms and sent to the coasting instructors. The instructors then endeavor to assist those with low ratings. The instructors work with a spirit of assistance and helpfulness and not with a spirit of criticism and they expect or ask a man to do any better than they themselves can do under similar conditions.

FIRST YEAR OF OPERATION SHOWS SAVING OF 30,900 TONS OF COAL

The first year of the operation of coasting recorders ended Dec. 1, 1918. This period showed a reduction in the total consumption of electrical energy from 182,353,279 kw.-hr. to 161,191,080 kw.hr., a saving of 21,162,217 kw.-hr. over the previous year. In other terms, the consumption was reduced from 3.437 kw.-hr. per car-mile to 3.048 kw.-hr. per car-mile, or 11.3 per cent. Working the saving in kilowatt-hours into an equivalent saving in coal we find that 30,900 tons of coal were saved during the first year of operation of coasting recorders.

As we do not separate the power for traction from the total output, the above figures include power for lighting, car heating and all miscellaneous uses, which are not affected by coasting. During the summer months of 1918 when no power was used for heating and a minimum was consumed for lighting and miscellaneous uses, the consumption in kilowatt-hours per car-mile was 13.3 per cent less than for the same period in 1917. This shows that if it was possible to segregate the power used for traction only, the percentage saving in power for traction would be still greater.

The average coasting for the system was increased from approximately 10 per cent before the coasting recorders were installed to 35 per cent. The running time has not been changed to any extent, although some minor adjustments in the schedules have been made. Crews are more prompt and trains are run closer to schedule than before the coasting recorders were installed.

In securing this increased coasting and saving in power, one would naturally expect to find savings in equipment maintenance, brakeshoes, etc. While it is almost impossible to locate definitely the savings in equipment maintenance and to give figures, we are satisfied that the increased coasting has resulted in less wear-and-tear on car equipment which will be reflected in maintenance costs. As an example, the number of brakeshoes used during the first year of operation with coasting recorders was 31,806 as compared with 40,421 for the previous year. This shows a saving of 8615 brakeshoes or 21.3 per cent. There was also a small reduction in car-miles operated, but the net saving in brakeshoes was about 20 per cent.

During the first year the maintenance cost of the coasting recorders has been very low. The cost of operation of the coasting campaign for the year has been obtained by including interest on the investment at 7 per cent, depreciation of the coasting recorder equipment at 10 per cent (which we consider high), the entire salaries of the coasting instructors, salaries of the record clerks, cost of stationery and an estimated cost of the maintenance of recorders, which figure also has purposely been made high. After deducting the operating cost as thus found, the net yearly saving due to the coasting campaign is two and one-half times the total cost of the installation of the coasting recorder equipment.

Making American Citizens at Minneapolis

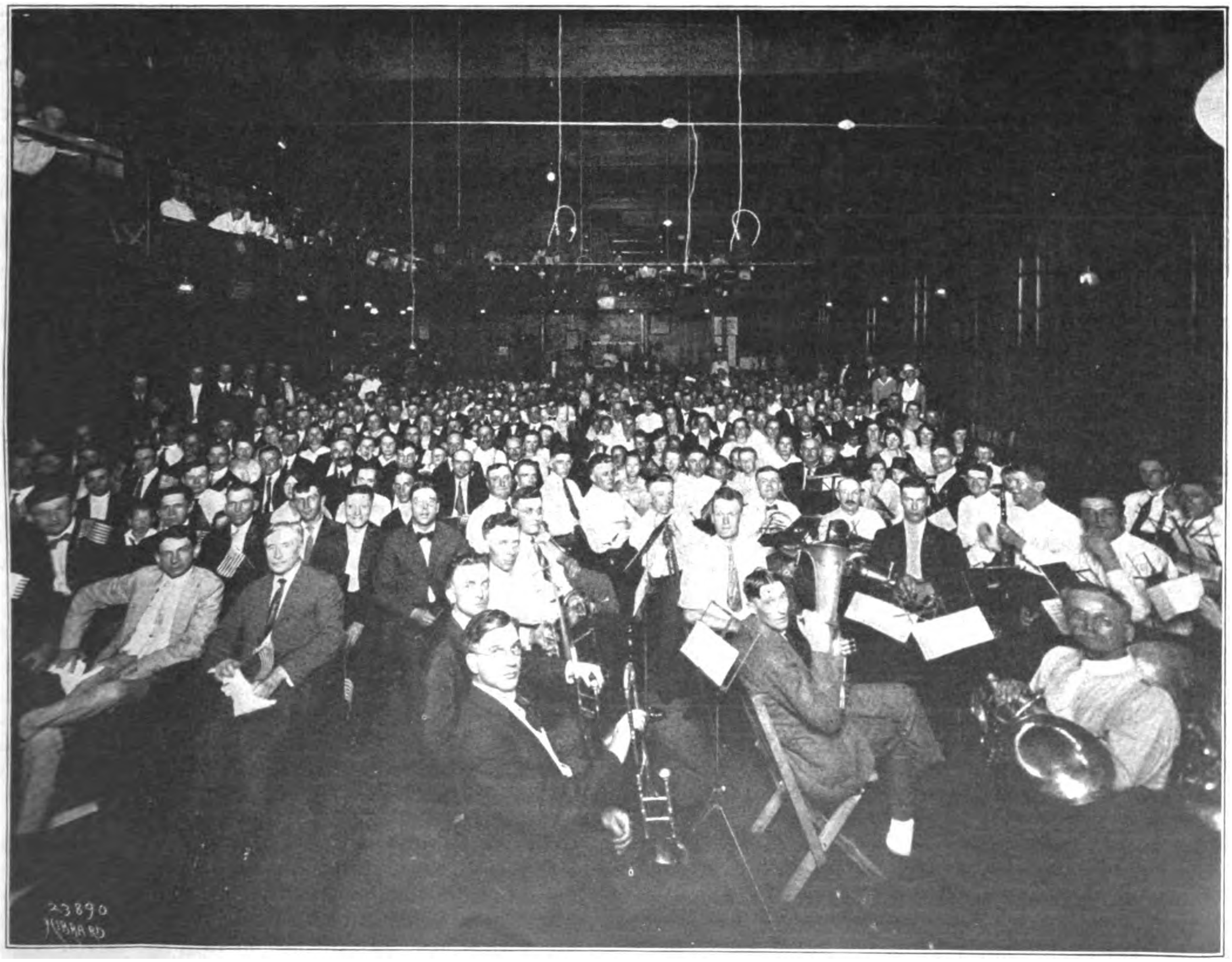
Twin City Foreign-Born Employees Take Four Months' Course in Americanization to Become Citizens of the United States

THE Twin City Rapid Transit Company was one of those to respond promptly to the request of the federal government that employers ascertain which of their employees were not citizens and co-operate with educational agencies in making citizens of them. The result was chronicled briefly in a news article on page 1185 of the issue of this paper for June 14. To supplement this note the following information has been secured from the company:

Following the government's request the company, through F. A. Anderson, secretary of the welfare association, sent out to all of its male employees cards, like that reproduced herewith, to be filled out and returned by those who were not citizens.

Next a short talk was given the men who responded, in small gatherings, making plain to them that they should all be citizens of the United States and that if they did not wish to do this neither the Twin City Lines nor the United States was any place for them to remain. As a result every man who was not a citizen signified his desire to become such and when all the cards were returned the local Board of Education volunteered to conduct classes to train the men for the duties of citizenship.

Classes were organized early in January. For the trainmen these were held in the clubrooms at the various carhouses, and for the shopmen in a classroom fitted up at the shops. The track men were so scattered that they were referred to the community center nearest their homes, where classes were conducted by the school board. The initial enrollment in the Minneapolis classes included 163 students and that in the St. Paul classes 275. Classes were held once a week, in the morning, the recitation taking up about forty-five minutes and the whole period lasting from one to one and one-half hours. The company co-operated by giving



THESE GRADUATION EXERCISES WERE HELD IN ONE OF THE ST. PAUL CARHOUSES the trainmen runs such that they could attend classes regularly.

Two text-books were used, one furnished by the government and the other by the school board. The work included a careful study of the United States Constitution; of United States history leading up to and including the Declaration of Independence; of the three forms of government under which we live, namely, municipal, state and national; of the Senate and the House of Representatives, methods of election and functions; of the three departments of government, namely, executive, legislative and law enforcing, etc. The instruction lasted for a period of four months and early in June 125 men graduated from the Minneapolis classes and the following week a corresponding number from the St. Paul classes.

CLASS IN AMERICAN CITIZENSHIP AT MINNEAPOLIS

Some of the men included in the original enrollment had previously made application for their second papers and received them before the classes were completed, and others left the employ of the company, but the attendance throughout the classes was more than 75 per cent. The graduating exercises were held in the assembly rooms at one of the carhouses in St. Paul on June 19, as shown in the accompanying view, and some 500 of the friends and relatives of the men were present to witness the award of diplomas. Small American flags were distributed among the audience, and the exercises opened with the singing of the "Star Spangled Banner." The Mayor of the city, President Lowry of the company, and several other influential men spoke and then all present took the pledge of allegiance to the flag.

The following questions are to be answered by all employees who are not citizens.

1. Name.............................. Age......
2. Address ....
3. Have you taken out your first naturalization papers? ....
4. Have you made application for your second naturalization papers?..........................
5. If you have not taken out your first papers, state what country you are a subject of............ ....
6. Will you join a class for the purpose of preparing yourself for citizenship?................. ....

REGISTRATION CARD FOR CITIZENSHIP CLASS, TWIN CITY RAPID TRANSIT COMPANY

The diplomas given to the men signify a successful completion of the prescribed course and enable them to become naturalized citizens without the usual examination. The diplomas were signed by Secretary of Labor Wilson, Commissioner of Labor Campbell, Chief Naturalization Examiner Coleman, and the superintendent of the city schools.

Effect of Electrification Upon Signaling

Railway electrification and its influence on signaling forms the basis of an interesting editorial comment published in a recent issue of the *Electrical Review*, London. In this discussion it is stated that while formerly British signaling was considered the best in the world, to-day it is outclassed by American. The main difference between British and American signaling is that the former is based mainly on manual operation and human control, while the latter is based on power operation and electrical control. One of the reasons given for the slow progress in Great Britain is that on most British railways signaling is actually divided into two separate and distinct departments, one of these having to do mostly with the mechanical end of the work being assigned to one department, and the other having to do with the electrical being assigned to another department. Further, it often happens that the heads of these departments are responsible to different main operating heads or possibly to the general manager himself. The result of this type of organization has not been fortunate.

It is pointed out that with the advent of electrification the signaling work will necessarily have to be grouped under a single engineer, preferably one having had electrical training. It is further noted that the present direct-current track circuits will have to be changed to those of the alternating-current type, and that this change will involve the use of impedance bonds of the general type so commonly used in this country. It is noted, however, that whereas bonds of very low impedance, one ohm or less, have proved quite satisfactory in connection with the heavy axles of the rolling stock used here, the conditions in England are not quite the same, as the rail-to-rail resistance of the axles of some of the light vehicles used there is high as compared with the resistance of the permanent shunt-circuit through the track ballast. It is added further that the manual block system under present traffic conditions is becoming very complicated, and that the time is ripe for a change to a simpler and more direct method of signaling. In fact, this latter phase of the question is becoming so important that the electrification of main-line signaling is beginning to seem a necessity, apart altogether from the general question of railway electrification.

United States Consul-General Sammons, Shanghai, China, reports that the Shanghai Tramways have decided to build their own street cars, for which purpose a special building is to be erected. Operations will begin with fifteen cars for use on rails and seven for use in connection with railless operation.

Getting the Personal Touch in Accident-Reduction Campaigns

Experience of Shore Line Shows that a Good Record Can Be Bettered by Enlisting Thoroughgoing Co-operation

ALTHOUGH the Shore Line Electric Railway, Norwich, Conn., has had a very creditable accident record in the past, J. H. Cain, when he became superintendent of transportation of the company, knowing that united effort toward accident reduction is always productive of good results, about two years ago inaugurated a safety campaign the principal feature of which was the securing of greater co-operation on the part of employees. This he has brought about partly through the use of monthly circular letters giving data as to the results secured during the preceding months as compared with those of the corresponding months a year earlier. In addition, there is brief and interesting comment, analyzing the records and the conditions of operation during the months in question, with suggestions as to how the records can be improved. A "bogey" is set informally for each month so that performance can be compared with what in advance would seem to be reasonable in view of previous records, probable business conditions and predicted weather conditions.

ACCIDENT STATISTICS SHORE LINE ELECTRIC RAILWAY

	1917–1918					1918–1919				
				Accidents per					Accidents per	
	Accidents	Revenue Passengers	Car Miles	1,000,000 Passengers	100,000 Car-miles	Accidents	Revenue Passengers	Car Miles	1,000,000 Passengers	100,000 Car-miles
September...	41	1393	392.4	29.4	10.5	35	1443	335.6	24.2	10.4
October......	61	1112	392.2	54.9	15.5	35	1041	313.7	33.6	11.2
November...	44	1065	377.2	41.3	11.7	46	1165	300.9	39.5	15.3
December.....	50	1148	382.2	43.5	13.1	32	1223	317.3	26.2	10.1
January.....	37	990	310.7	37.4	11.9	24	1211	313.0	19.6	7.7
February....	33	802	207.6	41.2	15.9	24	1099	271.8	21.8	8.5
March......	30	1067	296.2	28.1	10.1	29	1221	301.9	23.8	9.7
April........	27	1064	300.8	25.4	9.0					
May........	43	1205	383.1	35.7	11.2					
June........	42	1264	332.2	33.2	12.6					
July........	52	1520	362.4	34.2	14.3					
August......	28	1782	365.4	16.2	7.7					

In his circular letters, Mr. Cain uses an informal style, is brief and to the point, and backs up the letters by personal co-operation directly and indirectly through the division superintendents.

As an example, a recent circular letter is given below:

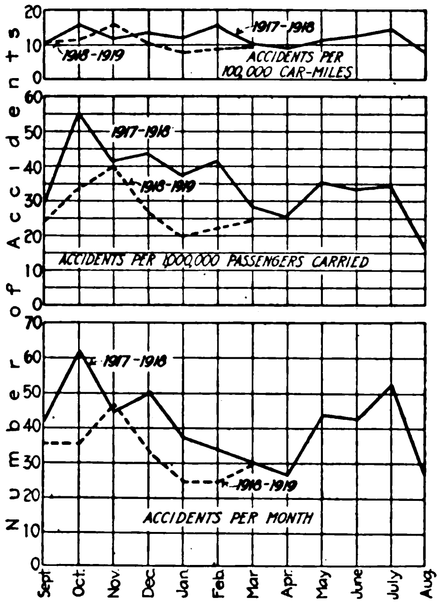
CIRCULAR LETTER NO. 112

March 11, 1919.

Monthly Accident Report for February is given below—

	February, 1918	*February, 1919*
Collisions between cars	0	3
Pedestrians killed	0	1
Collisions with pedestrians..............	2	1
Collisions with vehicles..................	13	2
Passengers boarding and alighting from moving cars	4	7
Derailments and split switches...........	13	5
Miscellaneous	1	5
	33	24
Distribution to carhouses.		
Dayville	4	0
Greenville	9	9
South Coventry	0	0
New London	10	10
Saybrook	8	2
Westerly	2	3
	33	24

Notwithstanding the fact that we went over our permissible quota by two in the month of February, we still have a pretty good report. However, I would like to review it with you just a bit to point out that the largest number of accidents was caused by passengers boarding and alighting from moving cars. This hits the conductors a little bit hard, and while there were cases that conductors could not avoid, in all cases where the conductor is on the back platform this should be absolutely prevented by the conductors putting their hands across the doorway, or, if necessary, taking hold of the person who is about to jump from the car, and, in all cases, preventing the passengers from jumping off moving cars. This applies more particularly, of course, to women and children. I realize that men will step off moving cars, and that it is pretty difficult to stop them; however, you can caution them; you can be prepared to go on the witness stand, and say, "I told this man to wait until the car stopped." That would be very helpful in the event that a damage case was brought against us — you could bring witnesses in who could sustain the statement that you warned the passenger not to step off the car while it was in motion, and if you could do that, we would unquestionably win the case for the company. In the matter of women, try to get in front of them in the doorway and, putting your arm across, insist that they wait until the car stops.



GRAPHICAL RECORD OF ACCIDENTS, SHORE LINE ELECTRIC RAILWAY

In the case of passengers boarding cars, conductors will take time to know passengers are on. Do not take, altogether, except when it is impossible to do otherwise, statements from passengers on the rear of the car, that everybody is on. When you call out, "All right back there?" somebody is liable to say yes, and not care particularly whether they are on or not. Try to determine, in so far as possible, that all passengers are on before giving the starting signal. For the month of March last year, we had a total of thirty accidents. It looks as though we were going to have good weather this month and good operating conditions. Try and have a good operating record.

J. H. CAIN, Superintendent Transportation,
The Shore Line Electric Railway Company.

In the office of the superintendent of transportation at Norwich the accident records are kept in graphical and tabular form. The record from October, 1917, to April 1, 1919, is shown in the diagrams and table.

In addition to the above, standard code rules have been introduced and Mr. Cain has prepared a very complete text-book for use in insuring familiarity on the part of the men with the principles of the equipment which they operate, the usual difficulties they are required to overcome in handling the same, and advice and instruction for their guidance in fare collection and accounting, handling the public, and the interpretation of train orders and train movement. In fact, the subject matter of this book pretty thoroughly covers the complete daily duties of a conductor or motorman, and is based upon, and is prepared in accordance with methods and practices derived from many years of practical experience and which have been productive of good results. This little book is not published but Mr. Cain will be pleased to send copies to superintendents of other companies who are interested in it.

Revolutionary Change in Public Service Railway Fare System

Mile Zones, Low Initial Zone Charge and the Elimination of Transfers Are the Important Elements in the New System

COMING as it has contemporary with the Federal Electric Railway Commission hearings where so many questions have been asked relative to zone fares and including as it does so many radical changes the order handed down by the Board of Public Utility Commissioners of New Jersey relative to the zone fare plan of the Public Service Railway is of especial interest. The order was handed down at Trenton, August 1, and a brief résumé of the main features of the order was published in the news columns of our issue for last week. The hearings of which the order is a result have been proceeding on a more or less regular schedule ever since March 11, when the Public Service Railway report on zone fares was presented to the commission. This report which dealt at length with the results of zone fares on other systems, operating conditions on the Public Service Railway, traffic characteristics and the theory, application and collection of zone fares was abstracted in the ELECTRIC RAILWAY JOURNAL shortly after its presentation.

As the Public Service Railway furnishes transportation to 141 municipalities and over 2,100,000 people, it is by far the largest property involving urban and suburban traffic to which an attempt has been made to apply a distance fare system. The company's 850 miles of track are scattered over the State of New Jersey, from the metropolitan district on the opposite bank of the Hudson from New York to the cities of Camden and Gloucester on the opposite bank of the Delaware River from Philadelphia. Owing to the configuration of the system the central fare zone so commonly used in the zone fare layouts was obviously impossible. The original zone plan presented by the company was based on a zone one mile in length. As was noted in the news columns of our issue for last week, the company's plan to charge 5 cents for the first zone mile and 1 cent for each zone mile thereafter, with 1 cent for transfer was upset by the additional wage and power cost burdens recently imposed on the company.

RECENT FARE HISTORY ON THE PUBLIC SERVICE

In its order the commission sets forth the various changes in fares which have taken place on the Public Service Railway within the last year, together with the causes incident to these changes. Briefly summarized the changes are as follows: Beginning with Aug. 1, 1918, a charge of 1 cent on all initial transfers issued by the company to its passengers was made. By another order dated Sept. 25, 1918, the fare was increased from 5 cents to 7 cents with a 1-cent transfer charge, the increase being effective Oct. 15, 1918. Under this order the fare was automatically decreased to 6 cents with a 1-cent transfer charge beginning April 1, 1919. After a further hearing the order of Sept. 25 was modified, and the 7-cent fare with a 1-cent transfer charge again became effective May 2, 1919. Insufficient revenue was the underlying cause of the fare increases.

Relative to the zone fare report the order of the commission states: "The report is very comprehensive, and is the result of exhaustive investigation. It includes investigation of all zone systems extant in the United States, as well as electric railway systems operated under zone plans abroad. The traffic conditions in the territory served by the company, and their influence upon the formulation of a zone plan were investigated. A study of the distribution of the population tributary to the lines of the company was made as well as the location of factories, theaters, railway depots, shipping districts, parks, and other centers controlling and creating traffic. The tendencies of development were investigated both as to residential districts in cities and towns as well as industrial districts. The rates of fare on competitive steam roads were studied for the purpose of fare comparisons and frequency of service. Estimates were made of the expected losses in traffic due to the operation of competing steam railroads, jitneys and decreases in riding resulting from higher fares of a zone system. The cost of service was estimated and analyzed, and was divided between the two classes, viz., fixed or standby costs and variable or movement costs. In the determination of the cost of service there was included a return upon the outstanding stock of the company. This necessarily involved the valuation of the company's property used and useful in the service of the public and it therefore became necessary for the board to determine the fair value of the property. The proceedings to determine the fair value of the property as well as the reasonableness of the plan proposed, and the rates to be charged thereunder, which necessarily includes an analysis of the fixed charges, rentals and operating expenses have not been concluded."

ALTERNATIVE PLANS PROPOSED

For the reason indicated in the last sentence the order of the commission is necessarily of a temporary nature although no time limit is specified. The action was taken to afford immediate relief because of the financial demands imposed on the company as result of the wage increase of $1,175,000 granted by the National War Labor Board in its decision of July 2, 1919, and of an increase of $305,000 in the cost of power. This increase in operating charges of $1,480,000, practically all of which was chargeable to passenger movement, made the movement charge proposed in the original zone plan altogether too low. To facilitate action in getting the relief necessary the company submitted for the consideration of the Board of Public Utility Commissioners the following three schedules of rates:

1. A charge of 9 cents flat fare instead of the 7 cents now being charged, together with 1 cent for each initial transfer.

2. A system of charges based upon the zone plan as submitted, modifying the charges therein proposed as follows: 5 cents for the first two zone miles and 2 cents

per zone mile thereafter, with 1 cent for each transfer.

3. A system of charges based upon the zone plan as submitted, modifying the charges therein proposed as follows: 3 cents for the first zone mile and 2 cents for each zone mile thereafter without transfers.

The only exceptions to the above plans were the zones between Edgewater Ferry and Grantwood Junction, Edgewater Ferry and Bluff Road, and between Harrison and Eagle Rock Avenues and Mountain Avenue and Murray Street on the Eagle Rock Line, West Orange. On these zones the fare was specified as 5 cents. Presumably local conditions dictated these exceptions, as each line mentioned serves a mountain pleasure park.

The original zone plan called for fares based on a movement charge of 1 cent per passenger per mile and a standby charge of 4 cents. For transfer passengers the standby charge was 1 cent and the movement was 1 cent per passenger per mile. The increase in the movement charges of the zone plans noted above was doubtless due to the great increase in operating charges. Likewise, the elimination of the transfer privilege in the third schedule was likely responsible for the low initial zone charge.

In setting forth the reasons for the order and its tentative nature, the order states: "The proceedings under the plan for a zone system of fares not having been completed, precludes the adoption by the board at this time of any permanent plan, or any of the rates proposed to be charged thereunder. As the hearings progressed, however, it became manifest to the board that the plans and operations thereunder and estimates of revenue expected to be derived therefrom are uncertain.

The allocation of cost to the standby and movement classes of the original zone plan were the subject of very strenuous attack by experts produced on behalf of the municipality. The traffic losses estimated by the company's witnesses were also severely assailed. The most pronounced objection, perhaps, to the original zone plan was the imposition of the cost in such a manner as to result in a high charge for the first zone mile."

In connection with the objection noted in the last sentence the order states, "The board is impressed with the contention of the municipality. Its criticism of the proposed charge for the first zone mile has much merit. It is to the public interest that riding be encouraged rather than discouraged because the loss of each rider must necessarily increase the charge to the other patrons of the company. The establishment of a lower base charge will undoubtedly tend to increase riding on the cars of the company. Increasing the riding habit has the tendency ultimately to decrease fares."

HOW THE NEW FARES COMPARE WITH THE OLD

With these objections in mind, and with the thought that the trial of one of the proposed plans would be of help in the final determination of a permanent plan, the Board of Commissioners ruled in favor of the fare plan which involves a 3-cent charge for the initial zone mile with 2 cents for each additional mile thereafter traversed on the same car and no transfers. Believing that there is a possibility that certain of the transfer points and heavy loading points will require adjustment of some of the zone mile limits the board reserves the right without formal order to make such adjustments as are necessary from time to time. In order to determine the feasibility of the plan as a permanent solution to the problem the company is required to file monthly reports of wages, salaries and revenues all properly classified.

COMPARISON OF PRESENT FLAT FARE AND ZONE FARES

Number of Zones	Present Flat Fare Cents	Original Zone System Fare Cents	Approved Zone System Fare Cents
1	7	5	3
2	7	6	5
3	7	7	7
4	7	8	9
5	7	9	11
6	7	10	13
7	7	11	15
8	7	12	17
9	7	13	19
10	7	14	21

In the accompanying table is shown the comparison of the cost of a straight ride with the present flat fare, the originally proposed zone fare, and the new zone fare. It is worthy of note that only three out of the more than 100 lines of the company enable passengers to ride ten zones under the present 7-cent fare and that two-thirds of the car riders will ride either for the same fare or for one less than they are now paying.

As indicative of the changes made in suburban fares the following list is of interest. The point of origin in each case is the Public Service Railway terminal in Newark and each ride is assumed as a one-car ride.

Suburban Town:	Present Fare Cents	New Zone Fare Cents
Orange Center	7	9
Bloomfield Center	7	11
Glen Ridge, past center	7	11
Montclair Center	7	15
Verona Lake	14	17
Harrison	7	5
Kearny Center	7	7
Irvington Center	7	7

Passengers between Newark and Trenton under the new order will pay the zone fare when riding over the tracks of the Public Service Railway Company and the present rate of interurban fare when traveling on the Public Service Railroad. The zone fare system will also be applied on the Fast Line trolleys between the Public Service terminal and Bayway, from Bonhamtown through New Brunswick to Milltown, and in Trenton.

HOW THE ZONE FARES WILL BE COLLECTED

As was described in the ELECTRIC RAILWAY JOURNAL for March 22, 1919, page 598, the railway company's zone fare report included an extended discussion of the method of fare collection which the company's zoning committee had worked out. This method involved many radically new ideas and a considerable amount of mechanical equipment of a new type. This equpment, the cost of which was estimated at about $650,000, of course, cannot be procured by Sept. 14, when the new order is to take effect.

The company officials are planning to make use of temporary equipment until the new permanent equipment is available. In boarding a car the passenger will enter at the front end and receive a ticket from the motorman. The tickets will be marked with a zone number and differently colored tickets will be used for the different zones. The ticket given a passenger will indicate the zone in which he boarded the car. The tickets will be arranged in a tray conveniently placed for the motorman. The fares will be collected as the passenger leaves the car.

In the rear of the car an arrangement somewhat similar to that used on bank calendars to show the day of the month will be used to indicate the zone in which the car is operating. An indicator of temporary construction placed on the rear bulkhead will show both the zone in which the car is operating and the fare to that zone from other zones. This is to assist the passenger in getting the proper fare ready for payment. On short lines, that is lines of four zones or less, the present fare boxes and clock registers will be retained. About 400 cars are operated on these lines and the conductors will be required to turn in the usual trip report sheets. For the balance of the cars, about 1200 in number, the company is purchasing under a special contract involving a salvage clause a modified type of the ordinary cash register. This will be located at the same place as the present fare boxes. It will be mounted on a shelf supported by an L-shaped iron bar. Lugs on the vertical leg of the L fit into the catches which were provided originally for the fare boxes. The fare will be handed to the conductor who registers its amount. The conductors will be required to keep half-trip records of the number of passengers carried. At heavy traffic points where prepayment terminals are in use arrangements will be made to collect the fares as the passengers leave the terminals. Terminals are now in use at Edgewater, Palisades Park, Port Newark, Hoboken, the Public Service Terminal and at a number of the shipbuilding yards.

A Summing Up of the Railway Testimony

Gist of the Thought Addressed to the Federal Commission on the Causes and Remedies for the Present Emergency

THE principal contributory causes of the present predicament of the electric railway industry as presented at the railway hearings of the Federal Electric Railway Commission may be summed up as the inflexible franchise; the continually increasing service with the constant fare; the inability of most companies to make proper allowances for depreciation, renewals and replacements; the inability to attract capital except at increasingly high cost; the necessity of paying enormous taxes; the failure of commission regulation, and the decreasing purchasing power of the nickel. All of these reasons are fundamental. The vastly increased operating expenses resulting from the war are looked upon not so much as the real reason for the difficulties as the immediate agent which brought to a sudden crisis the fallacies which have been perpetuated and added to from the early days of the industry, and are now greatly accentuated in importance through their accumulated *ensemble* effect.

ANALYSIS OF THE CAUSES

In the analysis of the causes, it has been the general opinion of the witnesses at Washington that the fixed-fare, long-term (the longer the better) franchise was a mistake. While it was a real asset when made, it has come to be a boomerang returning with such force as practically to inflict the death blow in many cases. The demand for continually increasing length of ride and more frequent and better service has been acceded to in violation of the fundamental principles of merchandising, and at the expense of the proper execution of the corporation's obligations to perpetuate the physical property of the utility.

As part of the old system of bartering between the city and the company, the former always pushing further its demands for compensation for the privileges granted, there have been added to the expenditures of the latter numerous imposts and taxes. These have been accumulated until they consume 10 per cent of the gross earnings averaged over the whole industry.

Naturally, the decreasing margin of net earnings available for interest on bonds and dividends on stock was accompanied by the demand from the investors for an increasing rate of return to compensate for the greater risk. This tendency was increased simultaneously with a decreasing market for electric railway securities until at present the market is so poor and the cost of money so high that the credit of the industry may be said to be practically lost and the cost of any new financing prohibitive.

According to several witnesses, the income from the 5-cent fare has never been adequate from the beginning to permit of the proper allowance for depreciation, renewals and replacements. In the opinion of those who testified on this point, the extent of these charges was underestimated by many of the early managers and their effect on earnings was not so apparent when the industry was expanding by leaps and bonds as when traffic had become more stabilized. In consequence of this condition the capitalization had increased more rapidly than the actual earning powers of the properties warranted.

The idea of regulation by state public service commissions has been unanimously approved and endorsed. The failure has not to do with the plan but with the weakness of the laws which in many cases have not given the commissions adequate power to perform their plain duties. There has also been much dissatisfaction with the manner in which the laws have been administered. The state commissions have been severely scored by the railway men for their dilatory procedure in the face of emergency, for their very plain favoring of the interests of the public in contrast with the interests or even rights of the corporation, and for their shifting policies. But principal of the reasons assigned to the failure of the commissions, and one which was reiterated by almost every witness, was the universally long delay which occurred before a decision could be secured.

As to the decrease in purchasing power of the nickel, this has of course been a tendency in the same direction as the increase in service. What the electric railways could afford, to furnish now for 5 cents, they could as well have supplied for 2½ cents in 1900. And this downward trend of the value of money has been progressing steadily for the last twenty years. It is a new condition now only in that the rate of retrogression in buying power has increased very rapidly since 1914. The effect is equivalent to an extreme decrease in net earnings. A great deal of testimony was presented on this point of the higher costs of material and labor, not only by the statistician of the association but by individual operators and manufacturers.

THE PROBLEM BEFORE THE COMMISSION

Coming now to an analysis of what the problem is which is before the Federal Commission for solution, if indeed the commission can find a solution to recommend, perhaps it can best be summed up in the words of F. H. Sisson, vice-president Guaranty Trust Company, New York, as follows:

"Stripped of all complications, the question seems to be whether or not the American public is willing to pay for service rendered. The alternatives are simple—either the service will not be rendered and the growth of our communities and the comfort of our people will be denied, or the cost must be met, either directly through fares, or indirectly through taxes. The open question is whether the traveling public will continue to deny to its utilities the basis of charges which it accepts in every other line of business."

To elaborate this statement slightly, the commission has before it first the task of satisfying itself that the electric railways are working under a system of regulation which has carried them into a situation for which they as private enterprises subject to ordinary business risks are not altogether responsible, and from which to extricate themselves they are deprived of the power. Having done this, which seems to be a fact accepted almost beyond question, the commission will acknowledge the obligation of the regulatory bodies to initiate some general plan of relief. The question then arises as to what form this relief shall take. The remainder of this brief endeavors to sum up the views of the railway men as they were addressed to this question.

POSSIBLE REMEDIES SUGGESTED BY THE RAILWAY MEN

But one witness, a New York banker who appeared on behalf of the railways, openly expressed a conviction that public ownership offered the best remedy for the situation. His thought was not so much of the merits of the plan so far as the service is concerned, although he was optimistic even on this aspect, as of the fact that credit would immediately be re-established and money secured at a lower rate of yield. All other witnesses either counseled against a recommendation for public ownership or were silent on the subject, partly because it has not proved successful where tried, but primarily because the process of bringing it about is beset with so many obstacles that it cannot be accomplished soon enough to meet the present emergency, if at all. Nevertheless, while this thought prevailed there was constantly recurring expression of the opinion that if relief from the present conditions were not forthcoming, public ownership was the only alternative. Ex-Governor Foss made a radical stand for public ownership during railway hearings, but he appeared on his own behalf and not as a witness for the railway side.

As to what shall be the cure for the inflexible franchise, the railway men have expressed themselves as almost unanimously desirous of seeing in force a service-at-cost franchise, in order to settle once for all the absolute interdependence between operating cost and the rate of fare, and forever to bury the mistaken idea of the past that an industry could go on selling its product indefinitely for the same old price. Closely coupled with this plan is the prevalent opinion favoring the inclusion of the indeterminate feature in the franchise. It was also emphasized that the success of this type of franchise was predicated on a fair valuation and a proper provision for depreciation, renewals and replacements, and upon the fixing of the proper rate of return. Great emphasis was laid on the desirability of having the fare, the rate of return and the allowance for depreciation of a flexible nature in order that they might be readily and preferably automatically adapted to future changing conditions. There was also a concensus of opinion that the service-at-cost franchise would be strengthened if it included some provision for rewarding the operators for efficient and economical management.

While there was a distinct manifestation of sentiment that some more equitable basis of charge for transportation in the city should be devised than the present flat fare, yet the zone system was not urged for the reason that its application involved the solution of many difficult problems, and it was considered uncertain whether it would bring about an immediate and substantial increase. This was looked upon rather as a probably desirable change from present practices, to be worked out through experimentation during the next year or two, provided the industry is meantime lifted out of its present condition verging on bankruptcy. The one-man car was considered in much the same light—a system offering good possibilities in increasing the number of passengers at a lower cost of haul per passenger, but requiring new money to finance its installation and postponing the date of relief.

On the matter of taxes there was practically a unanimity of opinion that the electric railways should be relieved of all those imposts which do not actually contribute to the production of transportation. This would mean the removal from the back of the streetcar rider of the cost of paving, sprinkling, etc. In the new order of things hoped for, it was thought that it should be the endeavor to get the cost of the car ride down to a bed-rock basis, eliminating all items which are not legitimately a factor in the cost of producing the ride.

Practically no expression was heard indicating a desire to abolish public service commissions. The remedy for the grievance here was rather to improve upon the laws so that there would be a better continuity of policy, prompt decisions in emergency, freedom from political influence, and powers for the commission adequate to provide orders for increases in fares as well as decreases when warranted by the facts. State commissions were generally endorsed as preferable to local commissions.

The remedy for the decreasing purchasing power of the nickel and the increasing cost of capital was of course an increase in revenue. In this connection the outstanding appeal of the whole railway testimony was for an immediate temporary relief in the way of blanket increases of the flat fare. The first object of this is to re-establish the credit of the industry, so that it may be able to attract the capital necessary to carry out a subsequent permanent plan of relief. But regardless of what measures of relief might ultimately be worked out, an immediate fare increase was deemed the paramount consideration, and unless this were forthcoming as a temporary plan, there would be no occasion to work out the permanent settlement. The zone fare system, the one-man car, and other steps tending toward better revenue and greater economy were freely discussed and indorsed, but the opinion prevailed that nothing short of a substantial fare increase would bring help of sufficient magnitude and quickly enough to stop the procession toward bankruptcy which is now being experienced by practically all companies.

Electric Railway Mail Pay Hearings Concluded

Railways Believed to Have Established Their Case —Question of Proper Compensation Now Being Taken Up

THE final hearing of the electric railways before the Interstate Commerce Commission on the compensation for carrying United States mail took place in Washington, Aug. 4, and it is believed the railways have substantiated their case.

The hearings on this subject were begun in Washington on June 9, and were followed by seventeen regional hearings covering every section of the country. George W. Brown has acted as examiner for the commission, and has personally conducted the hearings at the different cities throughout the country. The Post Office Department has been represented by the Hon. Joseph Stewart, assistant to the attorney general, and he and his assistants have accompanied the examiner on the itinerary throughout the country. For the electric railway companies, the American Electric Railway Association has conducted the case, having engaged as special attorney S. S. Ashbaugh, who has likewise accompanied the representatives of the commission and the Post Office Department on the extended tour.

One of the steps taken by the American Association to secure a comprehensive presentation of the electric railway case was to send out a form of exhibit for the use of all of the companies. This brought about a uniform treatment of the testimony on the part of the electric railways, which was so helpful that it called forth complimentary remarks from the examiner.

In establishing their case, the electric railways have endeavored to present evidence to establish the following four points, and in this it is believed that they have been successful, judging from the absence of refutation:

1. That there has been a general increase in operating costs to the extent that it is now almost three times as much as it was when the rate of pay for carrying mail was previously fixed.

2. That there has been a very substantial growth in the amount of mail to be handled, being as much as ten times the average quantity, in some cases, which was used as the basis for the establishment of the 3-cents-per-pouch rate now in force. The principal expansion in this service has been due to the inauguration of the parcel post system, which has not only resulted in an immense increase in the amount of mail to be handled by the electric railways, but has made it necessary for these carriers to haul this mail at the expense of their own express and freight business, since numerous shipments which were formerly made by this route are now sent by mail.

3. That the side and terminal messenger service which has been provided by the electric railways under protest, as a result of a post office order, is not established in law and the railways cannot be compelled to give this service unless they are adequately compensated.

4. That it is unjust to require street railway cars to carry parcel post mail.

The general aim of the railways has of course been to establish the inadequacy of the present rate of compensation. The final hearing brought forth an attempted rebuttal on the part of Mr. Prentiss, statistician of the Post Office Department. His principal differences had to do with the action of the American Association in sending out a proposed form of exhibit to be used by the member companies in presenting their individual cases, with the method of valuating the service rendered by the electric railways, the elements of cost included in the cost of rendering the mail service, and the return on the investment involved. These contentions were answered by F. W. Doolittle, who succeeded in quickly explaining away the bases of the differences.

STEPS BEING TAKEN TO ESTABLISH SATISFACTORY RATE OF PAY

Now that the hearings are completed, the Interstate Commerce Commission is expected to act in accord with the power vested in it by virtue of an act of Congress approved July 28, 1916, and the subsequent appropriations bills, to fix the rate of compensation for the transportation of mail matter by the urban and interurban electric railways, and to prescribe the conditions of the service. In order to facilitate the work of the commission in establishing the new rate, the American Electric Railway Association has appointed a committee to work out, with the assistance of the electric railway executives of the country, a satisfactory rate of pay and code of conditions, for the consideration of the commission. The members of this committee are P. J. Kealy, C. L. S. Tingley, Victor S. Curtis, W. S. Rodger, J. W. Welsh and S. S. Ashbaugh. This committee has already had one meeting, and has prepared a letter and questionnaire which is being mailed out to the member companies, in order to give the problem the widest consideration and to bring about a recommendation of rates and conditions which will meet the requirements.

In this connection, it is pointed out that this matter is of special interest to every electric railway company, whether or not it is now carrying mail. The law provides that it shall be unlawful for any urban or interurban electric railroad to refuse to perform mail service at the rates or methods of compensation provided by the Interstate Commerce Commission, after such a hearing as has just now been completed. And it is anticipated that the Post Office Department will probably greatly extend the transportation of mail by electric railways on account of the lower cost of this service as compared with other means of transportation.

Presumably three separate rates will be worked out, one for the carrying of first, second and third class mail pouches on city cars, another for the carrying of parcel post and pouches on freight and express cars, and the third for carrying mail on independent railway post office cars.

Advertising and Publicity*

Constant Advertising Properly Directed Will Reduce Accidents, Assist in Improving Service and Cultivate Public Good Will

BY T. T. WRIGHT
Auditor Little Rock (Ark.) Railway & Electric Company

IF YOU wish to know whether or not advertising costs money I can bear testimony in the affirmative as auditing bills for advertising comes under my jurisdiction. It does pay, yet modern business of any kind cannot be successfully conducted without advertising. There has been advertising in some form or other ever since men bought and sold merchandise. It is not necessarily confined to printer's ink, although in these days that is the most efficacious method, but in some form or other advertising has been done for thousands of years.

One of the earliest instances of advertising on record was in Bible times when Joseph was sold into slavery and finally became the first cornerer of corn. He advertised the fact, as there were no newspapers in those days, by sending out messengers with the word that he had corn to sell in time of famine when no one else had any supplies. His brethren and aged father heard the good word and the old man sent his sons to Joseph's market far away. That was advertising. It was letting the world know that he had to sell what the people most needed. That is also the advertising of to-day only by the medium of the newspapers more people are reached, and reached more quickly and more nearly simultaneously, than the ancients could conceive possible. But the ancient and modern ways of advertising differ only in detail.

GOOD ADVERTISING IS TRUTHFUL ADVERTISING

There is good advertising and bad advertising. An immense amount of money is spent on advertising that is profitable to the advertiser. On the other hand, there are vast sums spent on advertising that is so much money thrown away because the advertising is intrinsically bad. There are egotistical advertisers who imagine that the big thing in their copy should be their names. The opposite is true. Look at the big magazines where space costs as high as $1,000 a page and upward. These advertisements are generally prepared by high-priced experts, and their method is to catch the attention of the prospective purchaser with the article advertised. If they succeed in that, you may trust the reader to look for the name of the seller, which is generally found in the smallest of type. To start an advertisement with the name of the seller in glaring type means nothing at all—except, of course, when the article in question is known by the maker's name, as for example the Ford car. Take a cigar advertisement put out by a new dealer or manufacturer. The name heading the advertisement would mean absolutely nothing to the casual reader. The idea is to attract the attention of the smoker, the only man you care to reach. Get his attention, and if your matter appeals to him he will find your name all right.

On the other hand, when it comes to a proprietary article, such as "Pears' Soap" or "Castoria" or "Carter's Little Liver Pills," all that is necessary is to keep the name of the article before the public. Probably not one in a thousand of buyers of "Castoria," for example, knows or cares who makes it or where it is made. The name is familiarized by consistent advertising, and it can be bought at any drug store in any city in the country.

It has been held, and I believe it to be true, that anything good or bad can be sold by clever advertising; but an article without merit cannot be sold twice to the same victim. Therefore the only good advertising is truthful advertising. The advertisement must make good. There are certain brands of watches, of cigars, of tobacco, of hoisery, of various other articles in general demand that have been on the market for generations. They remain in constant demand because they have been kept up to standard quality. Once let them deteriorate and the demand decreases and eventually dies entirely.

CONTINUITY IS AN ADVERTISING ESSENTIAL

No matter how good the article, the advertising must be kept up or the demand will decrease. This is illustrated by the following incident: One of two merchants in a firm desired to discontinue advertising as the firm name was considered well established in the minds of the firm's clientele. His partner converted him by asking who were the vice-presidents under Cleveland and Harrison, whose names the first could not recall. "Well," said the partner, "they were a lot better known than we are or ever will be."

While for many years merchants have recognized the inestimable value of advertising, it is only of recent years that utility companies have done so. The idea seemed to be that with the possession of a franchise and the patronage which in a measure necessarily accompanied it advertising expenditure was useless. Our company advertises every day in all the daily newspapers and has been doing so for several years. The proposal by our president to spend money in advertising was first not taken seriously. What was there to advertise? People had to ride the cars anyway. He finally secured consent for an appropriation for one year by way of experiment, and when that year was up the owners were so thoroughly converted to the advantages of consistent advertising that it has not only been continued by our company but has been taken up by other properties under the same ownership elsewhere.

But remember that we advertise nothing to sell. Our advertising is practically confined to the operating department, and what commercial advertising we do is not at the expense of the space taken by the operating department but in addition thereto. You may ask what benefit we derive from it. It does not increase traffic at all; that is not the object. A very large proportion is devoted to teaching people to be careful. It teaches children not to play on the streets. It teaches parents to warn their children to be cautious. It teaches the danger of crossing streets behind standing cars or to cross streets at other than street intersections. It instructs auto drivers as to traffic rules. It explains courteously just why a street car should have the paramount right of way over other traffic and cites supreme court decisions upholding that right. It suggests to passengers that they stand where the rear of the car stops so as to avoid useless delays in loading cars. It explains how the rush hour is an unavoidable problem which the best thought of the whole civilized world has been unable to solve and suggests means of decreasing the evil by shoppers going home before the hour when all the workers quit simultaneously.

---

*Abstract of paper presented before convention of Arkansas Utilities Association.

When the six-cent fare was proposed we started a campaign to show the people how impossible it was for utility companies to pay the tremendously increased cost of materials and labor and get no more compensation than that fixed by franchises made years before war was even deemed possible. After untold difficulties incident to accommodating Camp Pike, the company took the public fully into its confidence, even to its financial embarrassments and went into the whole subject exhaustively in a series of advertisements running over nearly a month. Past difficulties were explained and future prospects outlined.

The advantages visible from this policy of daily advertising include a smaller percentage of accidents in ratio of passengers carried, greater care by pedestrians, drivers of vehicles and passengers, saving of time and doubtless the effect of constant warnings and reiterations of the traffic rules has had its bearing on juries trying damage suits wherein the plaintiff has at least been guilty of contributory negligence. What is one of the most valuable results is the fact that the company has cultivated the good will of the public, in large measure overcoming the senseless prejudice against public utilities of all kinds.

Federal Commission Notes

Hearings to Be Resumed at 10 a.m. Aug. 11—The Secretary of War to Be the First Witness

NEWTON D. BAKER, secretary of war, will be the first witness, it is expected, at the re-opening of the hearings of the Federal Electric Railway Commission in the Interstate Commerce Commission Building, Washington, Aug. 11 at 10 a. m. He will be followed by several prominent economists. A number of mayors have accepted the invitation of the commission to appear and also the representatives of several governors.

In addition to the list of witnesses published on page 227 of last week's ELECTRIC RAILWAY JOURNAL, who had expressed their intention to appear, the commission has received similar word from Mayor Gainer, Providence, R. I.; Grenville S. MacFarland, Boston; LeRoy J. Williams, public service commissioner of Colorado; William P. Burr, corporation counsel, New York, N. Y.; Lewis Nixon, public service commissioner on regulation of New York; W. D. B. Ainey, chairman, public service commission of Pennsylvania; E. I. Lewis, chairman, public service commission of Indiana; Fielder Sanders, street railroad commissioner of Cleveland, Ohio.; William C. Bliss, chairman, public service commission of Rhode Island; Prof. Dugald C. Jackson, Massachusetts Institute of Technology, and Col. Charles W. Kutz, public utilities commissioner of Washington, D. C. Other prominent men have been invited and will no doubt appear during the week. The hearings will probably continue well through the week.

Word was received in Washington that Commissioner Louis B. Wehle, who has been ill for the past three weeks, is on the road to recovery at Bar Harbor, Me.

In the news account published last week it was inferred that Bentley W. Warren would not be present at the hearings next week and that Charlton Ogburn would act as counsel for the railways in his absence. This was in error due to a misunderstanding of information received from Washington. Mr. Warren does expect to be present. Mr. Ogburn will probably act as counsel for the public (instead of the railways) and prepare the program and the case for the witnesses on the public's side.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

"Hall of Engineers" at Atlantic City

Geo. W. Wells, director of exhibits for the Atlantic City convention, states that a new feature this year will be a "Hall of Engineers," in one of the most attractive exhibition halls on the pier. Two sides of this open on the ocean and have a large window area, insuring plenty of light and a fine view. The hall will be suitably decorated and a large aisle in the center will be furnished with rugs and tables. There also will be attendants in white uniform who will direct callers. The booths will be occupied by representatives of the large engineering and contracting corporations, who will entertain their clients and guests and display photographs of their latest works in engineering and construction work.

As to progress in the exhibits to date Mr. Wells says that the space sold up to the present time is equal to the entire space sold for the 1916 convention, and that applications from manufacturers are coming in at a rate to indicate that all available space will be taken up. He has gathered the impression that the railway operating men are planning this year, to an unusual extent, to make a systematic study of the exhibits so as to apply the lessons learned at the convention to their everyday work. In addition to the exhibits of the usual types, this year special attention will be given to the needs of the accounting department. There will be exhibits of bookkeepers' supplies, calculating machines, office systems, etc.

Freight Traffic Stimulation

A NEW committee of the Transportation and Traffic Association has the task of formulating plans for the encouragement of freight traffic on electric railways. It comprises A. B. Cole, East Pittsburgh, Pa., chairman; F. W. Shappert, Chicago, Ill.; F. D. Norveil, Anderson, Ind.; E. E. Soules, Peoria, Ill.; L. E. Gould, Chicago, Ill.

Letters to the Editors

Morale of Executive Staff Is Affected by Adverse Conditions

BROOKLYN, N. Y., July 29, 1919.

TO THE EDITORS:

Reports of the frequent resignations of officials, technical men, and all classes of office employees from the service of public utility corporations, which are suffering from increased expenses without increased revenue, suggest the question as to why men who occupy positions of trust, and some of whom have built up the existing business from its inception, should leave their employers in time of need.

The fear of losing one's position after the appointment of a receiver may sometimes be a reason for the change, but it is well known that receivers generally are careful not to impair the efficiency of the organization they temporarily control, and any economies they introduce are least likely to be in the office. A recent interview with a public utility manager who had just resigned to go with another company may explain the feelings which actuate most of those who retire under such circumstances from companies they have helped to create. This in substance is the explanation he gave:

"I have been connected with this company for years. By successive promotions I became the manager of this department. I have spared no effort to make the company a success for its stockholders and an unfailing servant to the community. In times of emergency I have worked with my staff early and late, and sacrificed my holidays whenever my duty seemed to be here. If I had owned the whole business I could not have been more faithful. I have illustrated the fact that one learns to love that for which he sacrifices, and have welcomed the opportunities to make myself useful in a town where many of my friends and relatives live, and to a company which is giving to its citizens the best service possible under the circumstances. My work has been appreciated by the board of directors, and I have never been refused what I have asked for, and yet I am resigning because the situation seems so hopeless I am unhappy here.

"What makes me unhappy here is my realization of the impending fate of the company which I have worked so hard to build up. I am unwilling to stay and see the plant steadily depreciate. The buildings are neglected, the railroad is suffering for ordinary repairs, safety appliances really necessary for public safety are lacking, and the operating ratio is mounting because the company's credit is gone, and no money can be had for adequate maintenance to say nothing of extraordinary repairs, improvements and extensions. These adverse conditions are all due to the decreased purchasing power of the fixed fare. I am going to another company that can afford to pay better salaries than are paid here, but it is not so much my own prospects here as it is the prospect of the company which discourages me. I am leaving a company which is necessarily decadent if not moribund, and going to one which is continuously progressive and prosperous. Here, everyone believes the end is inevitable. Everything has been done that can be done to get higher fares, but without any success or encouragement. Operating economy is now regarded as an unattainable ideal, and no more effort is being made to postpone the financial collapse which is impending. I feel myself getting demoralized under these circumstances. I want to travel up grade with hard work rather than run down grade with a rock pile for a stopping. I cannot do myself justice, nor properly discharge my duties, without a sense of good cheer such as I can not have here where things are systematically going wrong. An intelligent human worker needs to have an encouraging prospect before him as much as a machine needs to have oil on its bearings. That is why I am making the change."

GEORGE H. JOHNSON.

[NOTE.—The discouraged railway official, whose point of view is described by Mr. Johnson, goes only half way. It seems to us that he ought not to resign simply because things look dark for the company that has treated him so well. He ought to brace up and do something. If one expedient will not answer to get the company out of its trouble, let him try another. Has he tried to get higher fares for his property, and if so what has been the result? If an increased flat fare has not been as successful as he would like, has he considered the zone system? What has he done to get the city authorities to let him put in one-man cars? Has he tried the skip stop?

Railways will have to be continued in operation, or most of them will. They are a public necessity, and if the companies should abandon them the cities would in self-protection be obliged to keep the cars in motion. The electric railways are at present in bad shape because they have not readjusted themselves to the present scale of prices. This cannot be considered their fault, but it would be so considered if they did not do everything possible to effect a readjustment.—EDS.]

A Lesson from the Candy Business

NEW YORK CITY, Aug. 1, 1919.

TO THE EDITORS:

It is a commonplace among electric railway men to assume that only their business has been hard hit by the increase in prices; that in other lines the public uncomplainingly buys as much at the higher price as it did before. Judging from the large advertising campaigns of milk and meat producers, this easy judgment can hardly be a fact even in the case of genuine necessities. Another sign, perhaps, is the recent halving in the price of the costlier phonograph records.

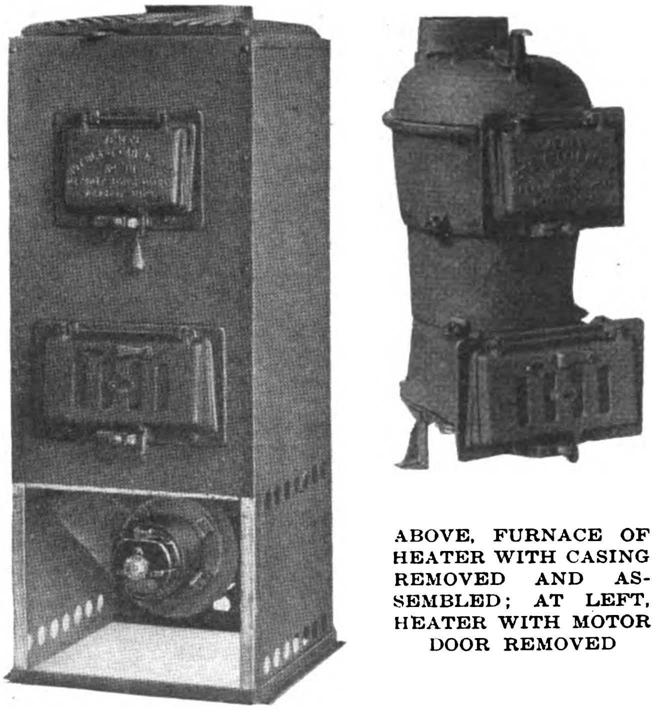
But the change that may have the most interest for the electric railway man is to be noted in the confectionery business. Candy has doubled in price and since it is a luxury—not a necessity—its makers appear to have been using their wits to good purpose in order to keep up the sales. Their reasoning seems to be that if people won't pay a dollar or more per pound, they may be induced to buy smaller packages for as little as 5 cents each. This seems to be a reasonable explanation of the sudden increase in the output and advertising of small packets of chocolates, caramels, mints, lemon drops and various tablets that were formerly sold in pounds or large fractions thereof.

The total cost of a pound of these packet confections would scare custom away, but by giving the customer the choice of buying them in driblets the confectioner is doing exactly the right thing to keep his business going. Of course, it would be a lot easier for him to sell by the box, but he is willing to take the trouble of subdividing his sales as it were.

Does not this plan carry a hint for the electric railway man who has thought it would be too much trouble to sell transportation on a zone or graduated fare basis? The time for sticking to a flat fare, regardless of length of ride, just because it was easier for the accounting department, has gone forever. Let us follow the candy man's lead and sell transportation to the public according to the amount of transportation that the public wants or can afford to buy. "TABS."

New Hot-Blast Forced-Ventilation Heater

A NEW line of heaters for electric railway cars has been developed, the fundamental principles applied being those of the furnace used for domestic heating with the addition of the forced ventilation apparatus. The "hot-blast" feature, described later, was introduced to provide for efficient combustion, including that of smoke and gases. Any reasonable kind of fuel can be used, hard or soft coal, slack, siftings, coke, corncobs or wood. These heaters are made in three sizes, to fit respectively the "safety" car, the usual city car and the heavy interurban car. The medium-size heater weighs 355 lb. complete.



ABOVE, FURNACE OF HEATER WITH CASING REMOVED AND ASSEMBLED; AT LEFT, HEATER WITH MOTOR DOOR REMOVED

Each heater comprises twelve castings, the furnace consisting of four. The fire bowl is made separate so that if it burns out only one simple casting need be replaced. This replacement can be made by two men in two and one-half hours without removal of the stove from the car, and without disconnecting wires or even loosening the heater from the floor. The top grille, top plate and front of the heater casing can also be removed readily and the furnace taken out bodily. The fire-bowl castings have V-joints to prevent leakage of gas, and all bolts between these castings are on the outside to obviate burning. The grate is flat and the ashes are shaken out by moving the shaking handle from side to side. To dump all of the ashes the grate is pulled forward but cannot be entirely withdrawn.

The hot-blast feature referred to above consists of a 2-in. tube, open to the atmosphere at the top and to the combustion chamber at the bottom, natural circulation causing a constant influx of fresh air to the fire bed. The stove is said to hold fire, when standing in the carhouse, for from eighteen to twenty-four hours without attendance. The motor and blower are placed in the bottom of the stove so that the motor will not be subjected to the stove heat. This conduces to low maintenance cost, provides a direct movement of the air and prevents waste of oil by evaporation. A Westinghouse motor is used.

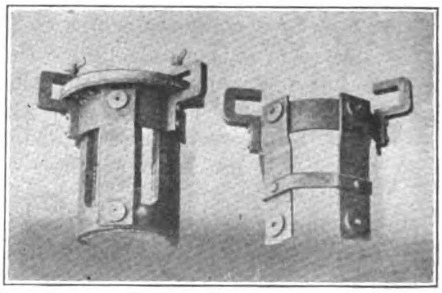
The damper on the ash-pit door is locked in place in such a way that when regulated for any condition it will remain in position. This damper is airtight when closed and the ash-pit door also is practically airtight. This construction provides for caking of the coal, a condition which is said to be highly desirable in obtaining complete combustion. Two complete casings encircle the furnace, insulated with high-pressure block.

Fresh, clean air to be heated and forced into the car body is taken from the top of the car. It is brought down through a 7-in. pipe which surrounds the 6-in. smoke pipe. The temperature of the air is thus raised about 40 deg. before reaching the stove. The air passes around the furnace through baffle plates affixed to the inner casing. These cause effective circulation of the air around the furnace and lead to its delivery to the car through the blower and the usual type of duct at a high temperature. These stoves, which are known as the Jewel "hot-blast forced-ventilation heaters," are made by the Detroit Stove Works. They are marketed by Holden & White, Inc., Chicago.

Bearing Jig for Locating Dowel Pin Holes

INSTEAD of locating dowel pin holes on axle or journal bearings by careful and painstaking measurements jigs have been made in the Des Moines City Railway Shop to accomplish this work with great accuracy and to save much time in carrying out the work. Two of these jigs for different sizes and types of bearings are shown in the accompanying illustration.

These jigs are made from strips of 2 in. x ¼ in. iron properly curved and bent to fit snugly over the bearing. The clamps which hold the jig firmly against the fillet end by means of thumb screws are made of ½ in. square material and all parts are riveted together. The dowel pin holes are carefully located and drilled through steel inserts. These prevent excessive wear which would reduce the accuracy of the template. The jigs can be quickly adjusted and removed from the bearings and the holes can be located without especial care. This makes it possible not only to do the work rapidly but also to accomplish it without skilled labor.



JIGS OR TEMPLATES FOR LOCATING DOWEL PIN HOLES ON AXLE AND JOURNAL BEARINGS

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Dallas Grant Faulty

Head of Dallas Railway Sees Need for Complete Municipalization of Local Lines

J. F. Strickland, president of the Dallas (Tex.) Railway which operates under a service-at-cost franchise, has announced that municipal ownership of the railway lines is preferable to allowing the systems to disintegrate to a point where they can no longer serve the people of the entire city. Mr. Strickland said:

> Municipal ownership would probably be a more direct solution of all difficulties, since the maintenance of the properties could be assured through payments by the people of necessary expenses, either directly or indirectly through taxes.
>
> Laying aside all theories on the subject of government ownership, and looking only to the practical results, we might say that municipal ownership would be better under the present trend of things. When this position is taken, the elements of increase in cost of operation and of a lack of corresponding increase in returns from the railway business bear weight.
>
> If the railway lines are to reach a point where they are unable to keep up their service and to develop with the growth of the cities, municipal control might be adopted, since support could be assured in that event. The city then would be able to accomplish the needed results by changing the ratio of cost of operation to the return, or by assuring the proper maintenance and development of street car properties by taxation.
>
> Or being confronted with the question whether the railway lines are to maintain their service and whether transportation facilities of the city are to develop with its growth, municipal ownership might better meet these needs in the present time.

In following up this statement, Mr. Strickland said he wanted the people of Dallas to devise and suggest some plan by which the Dallas system could be turned over to the city. He said officials of his company had no plan in mind for the transfer of the property, but they realize that something must be done within the next few months in order to enable the railway to meet its financial obligations in 1922, at which time the organization will have to be refinanced. In this connection Mr. Strickland said further:

> The way things are going now, the company will not be able to take care of securities which become due in 1922, and if they are not properly cared for the company will have trouble financing itself for succeeding years. The people of Dallas actually control the lines now, as the service is supervised by a representative of the citizens. However, under the management the company is not making earnings which will enable it to make necessary extensions and to give the service that is needed. If the company disintegrates to such an extent that it cannot give adequate service, it is the people who will suffer the most.

Complete investigation of the financial condition of the Dallas Railway will be made by Mayor Wozencraft as soon as he has completed some important matters now on hand. Mayor Wozencraft said he was devoting all of his time first toward solving those urgency measures in connection with the railway situation, and named among these the skip-stop and extensions. The Mayor plans an investigation in the East with Dallas in mind.

Mr. Meriwether, general manager of the company, in discussing the need for making improvements totaling $1,000,000 to $1,500,000 in the next two to five years, said:

> The Dallas Railway is earning only 4 or 5 per cent and when officials go into the money market to make loans, the investors want to know what the returns on present investments are.
>
> When they learn the return is small, they look askance at the loan, telling us that the money needed for such improvements involve a great risk and as a consequence charge us from 7 to 8 per cent, ofttimes not granting the loan because of the risk they are forced to take.
>
> This is a question that all Dallas should give serious thought to. Dallas will not grow and expand without adequate electric railway service, and increased accommodations cannot be provided without money.
>
> Increase in the cost of operation, material and labor is the thing that is cutting down our return. We are not permitted under our franchise to emulate the baker, butcher and grocer and increase our prices, but are compelled to have a stationary cost even though the cost to us is almost daily increasing.

Terminal Ordinance Passed

Use of Electricity on Illinois Central at Chicago Depends Upon Sanction by War Department

The ordinance providing for the lake front improvement and the electrification of the Illinois Central Railroad as described at length in the ELECTRIC RAILWAY JOURNAL for Jan. 11, page 108, has been passed by the City Council of Chicago, approved by the South Park Board and the Illinois Central Railroad, and signed by Mayor Thompson. The only step now remaining before actual work can be started to carry out the provisions of the ordinance is a sanction by the War Department for harbor changes, etc.

Briefly, the ordinance provides for the expenditure of about $110,000,000 and the electrification of the Illinois Central Railroad, the construction of an immense new passenger terminal at Twelfth Street, the building of a lake front park, and the formation of a new harbor district south of Grant Park.

The passage of this ordinance represents the successful completion of agitation started as long ago as 1915. During this time frequent efforts have been made to draft an ordinance which would be acceptable to both the city and the Illinois Central Railroad. This has at last been accomplished, and as soon as permission can be obtained from the War Department work will be begun on Chicago's greatest single railroad improvement.

Wage Increase by P. R. T.

Seven-Cent Advance Goes Into Effect In Accordance With Company's Co-operative Plan

The Stotesbury-Mitten management has announced a further increase in wages of the employees of the Philadelphia (Pa.) Rapid Transit Company, this being in accordance with the terms of the co-operative plan of 1918, by which the management undertakes, with the employees, that the scale of wages paid in Philadelphia shall be equal to the average in the four cities, Buffalo, Detroit, Cleveland and Chicago.

EFFECTIVE FROM AUG. 7

While certain retroactive adjustments are made by the railway company, as of July 1 and July 13, covering increases granted in Detroit and Cleveland respectively, the sum of these increases, together with that of Chicago, is represented in the maximum scale which, following the action of the co-operative committees, will be made effective as of Aug. 7, namely, elevated motormen, 61 cents an hour; surface motormen and conductors, 58 cents an hour.

ADJUSTMENTS FOR OTHER EMPLOYEES

Increases and adjustments in the wages of employees in other departments will be made in conformity with the plan. The total increase in wages paid to the employees will represent considerably more than $2,000,000 per annum. A statement which was made by the company in announcing the change follows in part.

> The introduction of improved operating methods, including removal of wasted effort, has thus far in Philadelphia served to keep pace with increased wages and other costs, as against the alternative of raising fares.
>
> Increasing fares in other cities has almost invariably resulted in reducing the number of passengers carried by forcing many who would and should be car-riders to walk or use other means of transportation.
>
> The remedy, it is believed, is to be found in doing everything possible to increase revenues by increasing the number of passengers carried and decreasing the costs of operation.
>
> No relief in the way of additional carrying capacity can be expected from the city's plans for transit development, as against the requirements of the coming winter, so that the withdrawal of unnecessary and duplicate service should be encouraged and every car utilized to best serve the public need. Delays occasioned by unloading coal wagons and other vehicular interference should be eliminated, and action by Select and Common Councils looking to increased speed of the street cars and a quickening of the service is essential.
>
> The Stotesbury-Mitten management has, ever since its incoming in 1911, considered improved service to the public to be its first duty. It now bespeaks the co-operation and help of press and public in its efforts to keep fares down and wages up, and provide the best possible service to the public.

New York Commissioner Suggests Solution

Financial and Corporate Housecleaning Followed by Service at Cost Is His Idea

In a statement issued on Aug. 3 Public Service Commissioner Lewis Nixon replied to some of the attacks made upon him because of his 2-cent transfer order and his attitude toward the railroad companies. He also outlined a plan for the reorganization of the companies which he thought would simplify operation, safeguard investors in the properties, and serve the public better than the present method.

Mr. Nixon's plan for bettering the transportation situation is to place all of the lines under one management, or possibly two, by the separation of the surface and the rapid transit lines, the termination of all present franchises and the substitution for them of franchises to live only for fixed periods, and a flexible fare to be subject to the financial needs of the companies. He also suggested that the city have upon the directorates of the companies a representative to see that the public's rights were protected. As Mr. Nixon's ideas represent enlightened opinion on public utility matters among regulators and other public officials the statement that he made is published in full as follows:

The recent decisions of the Court of Appeals have clarified the traction situation in a way which presents to city and State officials both duty and opportunity.

Their duty is to promote the interests of the traveling public by insuring adequate facilities and service, and further avoid any recurrence of the present emergencies by just and equitable readjustment of the entire traction situation.

It is to be regretted that statements made to the public have given the impression that under any existing conditions the traction systems can fall into the hands of the city government. Those responsible for such statements know that the courts will protect property rights, thus safeguarding bondholders by receivers. And even when they know from their own previous statements that the city is unable to acquire such systems, except through confiscation or abandonment, both of which they know also to be impossible, they cannot promise cheaper or better conditions for the traveling public under their ownership.

Such arguments follow a vicious circle very similar to the open charging of improper relations between public officials, who must be guided by their intelligence and judgment, and those seemingly favored.

SUGGESTS SOLUTION OF PROBLEM

The opportunity is that the relations bebetween municipalities and railroads may be so readjusted that co-operation shall take the place of conflict, that flexible fares shall meet changing conditions, that both city and investors shall receive fair returns, and that the city may be able to establish municipal ownership or operation, or both, when it desires and is in a position to do so.

The present situation is intolerable, and must have an early solution. The transportation systems are, some bankrupt, and others approaching bankruptcy. Their ability to meet or even properly protect the necessities of passenger traffic is suspended or threatened. Those who deny this and do not try to furnish proofs, but rely upon vague insinuation, do not understand the facts as they exist, or prefer to leave the public in error. In so far as the transfer orders are concerned, they were based upon the fullest power on my part as well as a sense of justice to all concerned. Simply for purposes of controversy to question my power does no good. The courts will attend to that.

My study of the question confirms my earlier conclusions. From the viewpoint of the city, or the public and of the investor the solution of the present emergency must be along the following lines, which in the main repeat the views I have heretofore stated:

1. Each of the present transit systems to be simplified by the consolidation or merging of the constituent companies into one railroad corporation. Of course, it may be found desirable to have separate corporations for surface railroads and rapid transit railroads, respectively. Personally, I trust to see such steps taken as will insure one corporation only, with which the city and the commission can deal, but this is a detail.

2. All holding corporations, so called (not railroad corporations), to be abolished.

3. Leases of roads to be terminated.

4. Perpetual franchises to be changed to franchises limited to fixed periods within city charter limitations, or to what are known as indeterminate franchises.

5. Values of properties to be agreed upon or arrived at by such means as will leave them unquestioned.

6. The city to have the option of acquiring the properties within a fixed period at the agreed valuation, plus the cost of additions, extensions, and improvements. (It may be desirable to provide for amortization of purchase price out of earnings.)

7. A flexible fare to be established, whereby fares shall be automatically adjusted to meet the cost of service, together with a reasonable return both to city and investors upon the agreed fixed valuations and upon the cost of additions, extensions, and improvements. The variation in fare to be secured mainly by maximum and minimum limits in a surplus fund, the operation of which shall be so simple that it can be taught to and understood by the pupils of our public schools.

Traction Fares a Political Issue

Ex-Governor Eugene N. Foss of Massachusetts, whose testimony before the Federal electric railway investigating commission aroused comment because of the sensational demand for public ownership combined with a return to the 5-cent fare, has announced himself a candidate for the Democratic nomination for Governor at the forthcoming primaries. In a long statement Mr. Foss declares that the foregoing tenets will constitute his platform. He contends that no further need of investigating electric railway finances in Massachusetts exists; that public control has failed, and that no other method than municipal ownership exists for solving the problem of electric railway revenue.

Shore Line Resumes Service

The Shore Line Electric Railway, Norwich, Conn., which operates 221 miles of line, was shut down absolutely for two weeks beginning July 16 because of a strike of its trainmen. On Wednesday, July 30, however, the company began operating in New London, spreading out from there gradually, using such men as it could obtain. On Aug. 4 the company was giving full schedule in New London and out on the East Lyme road as far as Golden Spur, and had arranged to open up the main line from New London to Norwich, on an hourly schedule.

The Amalgamated Association turned down every effort at arbitration, even plans suggested by the mediation committee of the State Chamber of Commerce and by the Mayor and a committee of the Common Council of New London.

The orignal proposal of the company for arbitration called for a jury of twelve men. This was before the strike. Later the company agreed to an arbitration board made up in the usual manner, one selected by the company, one by the men and the third appointed by Messrs. Taft and Manly, of the War Labor Board, but stipulated that if the board was made up in this way the findings must cover a consideration of the wage question coupled with the question of the ability of the company to meet any award. The company further stipulated that if an award of an increase in wage was made it should only be effective when the arbitration board found that the company was in financial condition to meet it.

Through the intervention of the mediation committee, the company agreed to withdraw all restrictions as to the findings, provided the men would withdraw all restrictions and leave the differences up to a board of three, one selected by the men, one by the company and the third by Governor Holcomb of Connecticut. This proposal being refused, it was suggested that possibly the men might accept as the third man an appointment made by the Governor of Massachusetts.

After finding that it was impossible to agree with the representatives of the Amalgamated Association on any fair and reasonable arbitration, the company, as stated previously, began to secure such men as it could and start operations. Only a comparatively few of the old men stood by the company, and it is operating mostly with new employees who have to be broken in on each line.

Increase for New Bedford Men

The directors of the Union Street Railway, New Bedford, Mass., have acted upon the request of the men for an increase of wages, and the announcement of the new wage schedule, giving an increase of 7 cents an hour, making a maximum rate now of 55 cents an hour, was made by the company recently.

The old wage scale ran from 41 to 48 cents an hour, according to the length of service, and the new scale runs from 48 to 55 cents. The increase is to date from July 20. The directors have likewise prepared a statement directed to the public, giving forewarning of a probable increase of fare, and in the statement there is an interesting discussion as to the various ways that may be adopted to obtain the necessary additional revenues to meet the increased costs of operation. The proposal of the company on fares is referred to on page 304 of this issue.

The old and the new rates in cents per hour compare as follows:

	Old Rate	New Rate
First six months	41	48
Second six months	42	49
Second year	44	51
Third year	45	52
Fourth year	46	53
Fifth year	47	54
Sixth year and after	48	55

Chicago Strike Settled

Referendum, Orderly Conducted, Results in Acceptance by Men of Terms Previously Rejected at Noisy Demonstration

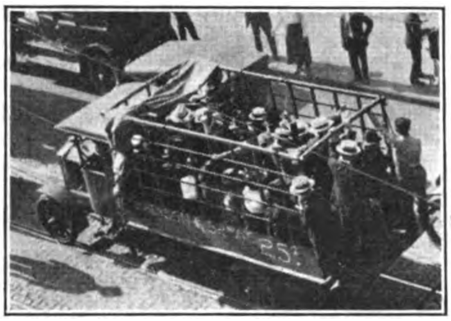
A four-day strike of the surface and elevated trainmen in Chicago ended at midnight on Aug. 1 with the acceptance by the men of the terms previously offered by the companies. The car riders of that city now face the practical certainty of higher rates of fare. The applications of the companies for increased rates were taken under advisement on Aug. 5 with the prospect of an immediate decision by the Public Utilities Commission. It was expected that the Chicago Surface Lines fares hereafter would be 7 cents with a 1-cent charge for transfers, and the elevated rates at least 8 and possibly 10 cents.

Developments in Chicago came fast after International President W. D. Mahon arrived in the city to take charge of affairs for the striking conductors and motormen. After several conferences with Governor Lowden, the officials of the railways and the utility commissioners, Mr. Mahon arranged for a referendum vote by all the trainmen on Aug. 1. The balloting lasted most of the day and it was early in the evening before the results were known. It was found that 12,334 out of the 15,000 union members had cast their ballots, and that while a majority of 665 of the Chicago Surface Lines union were opposed to the settlement terms, the elevated men favored their acceptance by a majority of 1,051. The end of the strike was, therefore, brought about by the narrow margin of 386 votes.

Mr. Mahon at once notified the companies that the offer was accepted, and arrangements were made to get the men back to the carhouses so service could be started at midnight. With the start of business in the morning full service was effective.

The terms that were finally accepted by the men were set forth in the ELECTRIC RAILWAY JOURNAL for Aug. 2, page 249. The maximum wages will be 65 cents on the surface and 67 cents for motormen on the elevated lines. The only concession made at the request of Mr. Mahon was that the utility commissioners would endeavor to shorten the fourteen-hour limit of spread for swing runs and to hasten the preparation of new schedules on an eight-hour basis.

Hearings before the Public Utility Commission began on Aug 4 and would have closed in a few hours but for the dilatory tactics of the city's lawyers. Mayor Thompson had taken no active part in settling the strike and was apparently willing that Governor Lowden should get the credit or blame for urging higher fares. L. A. Busby, president of the Chicago Surface Lines, stated that the settlement with the union would add $7,685,790 to this year's payroll, and other additional expenses would bring the total extra operating cost above $9,000,00. G. T. Seeley, assistant general manager of the elevated roads, said the new terms would swell his company's payroll to the extent of $2,435,515.



DE LUXE TRANSPORTATION AT TWENTY-FIVE CENTS PER PERSON

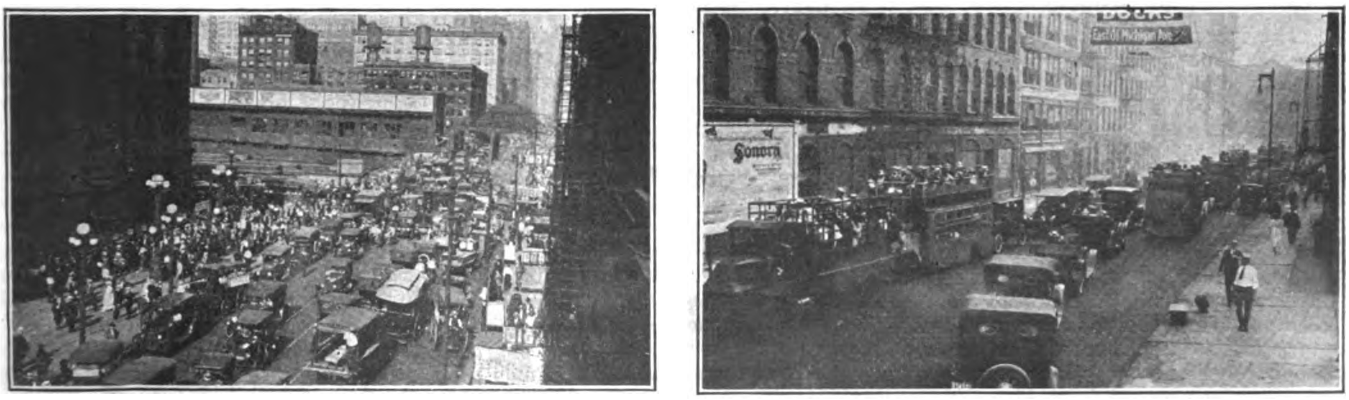
President Busby presented figures giving the results of operation on the surface lines for eleven months ended June 30, 1919. These showed gross revenue of $33,540,882, an increase of $1,933,667; operating expenses and taxes of $25,899,109, an increase of $4,554,705. Cost of conducting transportation had increased $2,787,206 under the War Labor Board scale of wages. The average return on the purchase price of the road to the city, as fixed under the franchise settlement ordinance for eleven months, was 4.985 per cent.

The Surface Lines' exhibits also showed that the total man-hours for trainmen during the past year was 25,775,000, and man-hours for other employees who would benefit by the settlement to the extent of 17 cents an hour were 11,112,000. It was stated that additional maintenance costs the coming year would call for $600,000; increase in the damage reserve, $362,000; increased taxes, $374,000. It was estimated that $100,000 would be lost in traffic earnings before the regular patrons would use the commutation tickets which they bought from steam roads during the strike. Other additions to expenses may be expected under the power contract and under a new agreement with the city for cleaning and sprinkling streets. President Busby stated that the average wage for trainmen in 1914 was 30.16 cents, while the new contract would make it 64.87 cents, an increase of 115 per cent in five years.

Hearing of the elevated companies' case revealed that a 10-cent fare within the city probably would be needed, and 7 cents additional for a local ride in the suburbs north and west. The statements showed an estimated loss of 40 per cent in traffic because of the higher rate. Mr. Seeley said a 10-cent local fare would mean a return of 7.12 on the valuation of $70,924,000; a 9-cent fare, 5.67 per cent and an 8-cent fare, 4.28 per cent—none of these figures allowing for depreciation. The deficit for July under the 6-cent fare, he said, was $61,884, and with the new increases in the payrolls the deficit would be $1,217,757 during the next six months unless relief were given.

The new wage scales are effective from Aug. 6. It is likely that several months will be required to change the 280 time-tables used on the surface lines.

One development in the settlement of the strike was the statement of Mr. Mahon that the union laws had been violated in calling the strike without a referendum. The opposition showed so much strength that it was conceded the election laws of the union would have to be changed to restore good feeling.



TWO VIEWS TYPICAL OF THE CONGESTION OF TRAFFIC IN CHICAGO DURING THE STRIKE

Wage Compromise Accepted

Seattle Men Vote Favorably on Offer of City Superintendent of Public Utilities

By a vote of two to one the trainmen of the Seattle (Wash.) Municipal Railway have voted to accept the wage compromise offered them by Thomas F. Murphine, superintendent of public utilities. A secret vote was taken at all city carhouses. The union's vote means that the carmen and their unions are willing to accept the wage schedule Mr. Murphine has recommended to the City Council, and that a possible strike has been averted.

The offer of Mr. Murphine was to recommend to the Council the establishment of a minimum wage of $5 a day for new men, to be increased to $5.50 after ninety days, and to be further increased by a bonus of at least 5 per cent to be paid at the end of one year of uninterrupted service. The working day was fixed at eight and one-half hours.

The original demand of the union was for a minimum of $5.50, to be increased to $6 after six months service. The opposition to Mr. Murphine's plan, which, by the way, had once been turned down, centered largely on the bonus plan. The men generally contended that the 5 per cent should be included by Mr. Murphine in his wage scale.

Mr. Murphine has recommended that the Council approve the new wage scale immediately, and that it be retroactive to Aug. 1. Mr. Murphine believes that the bonus plan will work to tremendous advantage for the municipal railway system, as it will minimize the "turnover," and serve the majority of the experienced trainmen. Mr. Murphine says:

> The experienced, careful motorman will save hundreds of dollars annually in equipment, track, overhead, rolling stock and damage claims. Our experience has shown that there is as high as 1 cent a mile difference in power cost between a skilled and unskilled motorman. * * * We realize that the wages proposed will only be sufficient provided the cost of living does not keep increasing, and we would earnestly recommend to the Council that some provision be made for a survey of the living cost, with report made semi-annually, and in case of further increase in cost of living, that the wages be proportionately increased at said time.

St. Louis Wage Arbitration Starts on Aug. 5

The increased wage demands of the carmen and other employees of the United Railways, St. Louis, will be heard by the Public Service Commission of Missouri sitting as a board of arbitration on Aug. 5. Receiver Rolla Wells for the company estimates that the increased wages that are asked would cost the company an aggregate of $3,125,000 annually.

Under a stipulation signed by Receiver Wells and his attorney for the company, and the president and secretary of the union, both sides agree to abide by the finding of the commission.

The men now get from 36 to 42 cents an hour, the average being about 40 cents. They demand a scale running from 55 to 65 cents, dependent on the length of service.

The carmen propose that they get the increase to 65 cents an hour after nine months service. Most of the employees have been in the service longer than nine months. An eight-hour day also is demanded, the work to be completed in nine consecutive hours.

Elevated Suggested for St. Louis

Recommendations for extending a number of railway lines in St. Louis and the building of an elevated line to total 64 miles at a cost of approximately $30,000 a mile are contained in a report submitted by C. S. Butts, city engineer of the department of public utilities of St. Louis, to Director Hooke of that department.

According to Mr. Butts' plan the elevated road would start at Seventh Street in downtown St. Louis, run to the levee at Chateau Avenue to connect with the St. Louis Transit lines and the Missouri Pacific Railroad. Thence the "L" would go north to Cedar and Plum Streets and then west to Second. The grade would be about 2 per cent.

Proceeding north on Second Street the line would connect with the Merchants' Bridge at Gratiot Street. From Gratiot Street to Fourteenth Street where the Missouri Pacific yards are situated, a double track is proposed.

Aurora-Elgin Service Still Tied Up

On the night of Aug. 4 the employees of the Aurora, Elgin & Chicago Railway, Wheaton, Ill., were still out on strike. Service was discontinued at 4 a.m. on July 30. The demands of the men for an increase in wages of 41 cents an hour had been refused previously by Edward C. Faber, general manager, on the grounds that the company could not possibly meet the proposition.

The first meeting of the striking employees and the company was held on Aug. 3, but no settlement was reached. The strikers offered to return to work for a week with the understanding that they would again walk out at the end of that time if their increase demand, which has now been reduced to 21 cents an hour, was not granted. Mr. Faber refused to entertain the proposition.

The reduction of the demand of 41 cents an hour increase in wages came as a result of the settlement made in Chicago with the elevated and surface men who had been on strike, and the increase now asked of 21 cents an hour brings the wages to the maximum scale of 67 cents an hour granted to the elevated motormen in Chicago.

On Monday it seemed doubtful that any settlement of the controversy would be reached soon. In the meantime, many large manufacturing companies have been compelled to shut down their plants due to lack of power which was being purchased from the interurban.

Third Windsor Strike Settled

Service Resumed After Brief Walkout Caused by Discharge of Employee—Men Agree to Arbitration

The Sandwich, Windsor & Amherstburg Railway, Windsor, Ont., has again resumed service after the third strike of its employees. The walkout, which was of two days duration, was precipitated by the discharge of Motorman Ernest Thorn, who acted as the union's business agent. It came a few hours after James Gibbons, representative of the International Association, had convinced the men that their demands for a maximum rate of 60 cents an hour were impracticable and the second strike had been called off.

TWO STRIKES IN SHORT PERIOD

Following the second walkout of the men, when the by-law to grant the company a higher rate of fare failed to pass a special election of the voters of Windsor and Walkerville, the city Councils of the two towns asked the Ontario Railway Board to operate the line while the dispute was being settled. The chairman of the board stated that the demand for 60 cents an hour could not possibly be granted and that the board was determined to resume service even if it proved to be necessary to import outside labor.

Developments on July 15 brought forth the threat from the board to cancel certificates of striking motormen and the threat was later carried out. All motormen are required to have a certificate entitling them to operate cars, which the board can cancel at any time when the men are deemed incompetent. At the same time it was stated that the conductors would lose their seniority rights, reducing them to the status of newly-engaged employees in case they applied for re-employment on any other line in the Province of Ontario under control of the Railway Board. The board's right to cancel certificates was disputed by the men and the matter was left by the local union to be taken up later by the Amalgamated Association with the understanding that the action of the board in cancelling the certificates be referred to the Ontario Minister of Labor.

MEN ACCEPT OFFER

The men were persuaded to accept the offer of the board and cars were started on practically all lines, to continue only for a short period and then be halted by trouble precipitated by the company's action in discharging business agent Thorn. The men agreed to co-operate in giving full and efficient service after A. B. Ingram, vice-president of the Railway Board, had provided for the reinstatement of Thorn. The settlement with the men provided that they should take cognizance of the provision according to which all differences will be arbitrated by a committee, if possible, before a strike is called.

Brooklyn Men Out on Strike

Company Prepared to Give Service, but Operation Stopped Owing to Lack of Protection

On the afternoon of Aug. 7 practically all Brooklyn was walking. The employees of the Brooklyn Rapid Transit Company struck on the morning of Aug. 5, but the company went ahead with operation so far as the men who remained loyal to it would permit. At the outset of the trouble service was almost normal, with prospect good that the full schedule could be resumed again very shortly. Then came a series of attacks on the property of the company with the result that service on the surface lines was withdrawn entirely. The company says it was forced to this move by inadequate police protection and contends that the strike could have been broken at its inception had the lines been properly policed.

STATEMENT OF ISSUE INVOLVED

So much for the operating phase of the situation at the time of going to press. As for the issues involved they are very clear cut. Essentially they are a demand upon the company by outsiders for union recognition, an increase in the wages of trainmen to 75 cents an hour with proportionate increases for all other employees, an eight-hour day and the reinstatement of employees said by the strikers to have been discharged for their union activities. These demands were presented to the officers of the company on the morning of Aug. 4.

COMPANY WON'T RECOGNIZE UNION

Lindley M. Garrison, the receiver of the company, responded to the union committee that very afternoon. He referred incidentally to the matter of the wage demand and the proposed decrease in hours of labor, but his reply had to do mostly with the subject of union recognition, which it appears is the principal demand. The company is unmistakably opposed to dealing with any but committees of its own employees. Mr. Garrison's reply made his position plain on this point as follows:

> Your association is fully informed of my attitude in respect of recognizing it. As you are aware, this matter was raised last March, and I then took the position, which I now maintain, that I will not deal with outside organizations, such as your association. I am always willing to deal with the employees of the system in respect of any matters affecting them, but I will not deal with outside organizations.
>
> Your frank statement that the second article of your demand, namely the recognition of the union, is your principal demand, rids the situation of any confusion, and as that is the main issue it is not useful to take up in detail the other matters adverted to in your communication.

There could be no mistaking the purport of a statement like that. The union, such as it is, took up the gauntlet and on the morning of Aug. 5 the strike went into effect so far as the union had been able to carry out the work of organization. That no great measure of success had attended the efforts toward unionization is borne out by the fact that out of 16,000 surface and rapid transit and shopmen the company estimated that certainly not more than 1500 had quit work. As stated previously, service on the morning the strike was declarel was practically normal, but the disorder which followed quickly, coupled with inadequate police protection, made it seem best to the management to shut down some of the surface lines.

The strike was in progress as this paper goes to press.

New Wage Contract in Cincinnati

A new contract between the Cincinnati (Ohio) Traction Company and the union employees was ratified by the union, as a result of negotiations between William D. Mahon, president of the Amalgamated Association, and Walter Draper, vice-president of the traction company.

Under the new contract motormen and conductors will receive a maximum of 50 cents an hour, an increase of 2 cents; Other provisions are: Guarantee of $85 a month, an increase of $20, to substitutes; 37 cents an hour to greasers, trackmen, watchmen and car cleaners; incline plane men, 40 cents an hour, with ten-hour day; carhouse men of certain classes, 42½ cents to 56 cents an hour; allowance for time used in making certain reports.

The contract is retroactive to June 30. It is estimated that the new agreement will increase operating expenses of the company $125,000 to $130,000 annually.

Providence Men Return at 56 Cents

After nineteen days, during which practically all Rhode Island was without electric railway service, the strike on the lines of the Rhode Island Company, Providence, R. I., was declared off late on Aug. 6. It was planned to resume service on the system at 4 a.m. on Aug. 7.

By a vote of 1311 to 107, the strikers accepted the compromise agreement entered into by their officials with the receivers of the road, providing for a maximum wage of 56 cents an hour, retroactive from June 1 to the beginning of the strike on July 19. The 1917 working agreement continues in force. The new maximum is an increase of 8 cents an hour over the previous wage, but the nine-hour day is the same. The men in the original demands asked for 75 cents maximum.

At one point in the negotiations the men agreed to go back to work for 55 cents an hour, but the receivers of the company held off. The following day an award of 60 cents was made to the Boston railway men, and the Rhode Island employees at once demanded 60 cents. In consequence the deadlock over the wage matter continued.

An attempt to arbirtrate the strike was without success. On July 30 Judge Doran in the Superior Court issued a decree directing the receivers to submit their case to a board of arbitration, but the men declined to accept the plan except on their own terms.

Justice Blodgett entered a decree on Aug. 6 clearing the way for operation of the lines by the receivers in case the strike was not settled by agreement. By this decree the order for arbitration was vacated and the original decree appointing the receivers and ordering them to operate the lines was reaffirmed. Backed with this decree the receivers were prepared to resume service on Aug. 7 if the men refused to yield, since strikers interfering with the cars would have been punishable for contempt of court.

The Public Utilities Commission will be petitioned by the receivers to authorize a new schedule of fares designed to bring in at once the revenue required to meet the increase in wages.

News Notes

May Use Gasoline Cars on Ohio Road.—Judge J. M. Killits, of the United States District Court, has instructed C. G. Taylor, receiver of the Sandusky, Norwalk & Mansfield Railway, to report on the advisability of using gasoline cars.

Opens Books to Public.—Rolla Wells receiver of the United Railways, St. Louis, Mo., has announced that hereafter the books of the company will be open to the public. This is a part of his plan to increase the confidence of the public in the company.

$10,000 for Railway Investigation.—The Board of Aldermen of St. Louis, Mo., has passed a bill authorizing the appropriation of $10,000 to investigate the affairs of the United Railways. The money will be provided for the use of the Circuit Attorney, who had announced that his annual appropriation was insufficient to conduct an inquiry into the affairs of the railway.

Freeport Men Threaten Strike.—Motormen employed by the Illinois Northern Utilities Company Freeport, Ill., have threatened to strike unless their demands for a shorter working day and more wages are granted. They ask a wage increase from 36½ cents an hour to 45 cents, an eight-hour day and time and one-half for work overtime or on holidays.

Strike on Ohio Electric Unlikely.—A conference between representatives of the Ohio Electric Railway and its platform employees has been arranged to discuss a demand from the men for an increase in wages from 45 cents to

60 cents an hour. Although conferences arranged previously have been postponed from time to time and there has been some talk of a strike, the prospects for a settlement are said to be good.

Suburban Settlement on Chicago Basis.—Cars of the Chicago & West Towns Railway continued to operate during the Chicago strike, but it was agreed that the Chicago wage scale would be accepted by the management. This, of course, would call for additional revenue, and the Public Service Commission gave prompt hearing to the company's petition on that account. It was thought the zone rates on that system would range from 7 to 15 cents.

Men in Oklahoma Organizing.—Workers in public utilities in all parts of Oklahoma, particularly city railway and interurban workers not heretofore unionized are being organized. The movement seems to be the outgrowth of the efforts at unionization at Muskogee, Tulsa and Sapulpa, which have tied up the electric railways and have resulted in considerable rioting and other disturbances.

Tulsa Strike Settled.—The cars of the Oklahoma Union Railway, Tulsa, Okla., are running on schedule after a tie-up lasting more than five weeks. Recognition of the union was the chief issue, no demand for higher wages having been made. Besides recognizing the union the company has agreed to reinstatement of the strikers, and to seniority preference. The company further agreed to drop damage suits against the members of the union.

City Won't Build Cars.—A member of the Board of Trade of Toronto, Ont., suggested recently that as the city proposed taking over the Toronto Railway the city should build a factory to manufacture cars. The sub-committee on transit advised against doing this, however, as enough new cars would not be needed continuously to warrant running the factory. The committee advised that such new cars as might be needed should be purchased from the regular car builders.

Seattle Railway Construction Delayed.—Announcement of another delay in the operation of Seattle's municipal elevated railway has been made. While it was hoped to have the cars running by July 15, it is now considered likely that at least another month will elapse before the line can be put in operation. The delay is largely due to the fact that the steel guard rails which will supplement the timbered guard rails cannot be delivered and put in place until about Sept. 1.

Wages Raised at Little Rock. — A wage increase of 11 cents an hour, a ten-hour day, and time-and-one-half for overtime have been awarded employees of the Little Rock Railway & Electric Company, Little Rock, Ark., by the board of arbitration appointed to consider their demands. The increase, which is retroactive to May 22, raises wages from 30 cents and 35 cents an hour to 41 cents and 46 cents an hour. Although the award is less than the men had asked for they have accepted the new scale.

Ford Car Nearing Completion.—Charles E. Sorenson, general manager of the Fordson Tractor Plant, recently made a statement before the Council of Detroit in regard to the new Ford gasoline railway car. Mr. Sorenson is quoted as follows: "The plans and the castings have been completed for our first car and 200 men are now rushing it to completion. As soon as it is done, we want to arrange with Mr. Bronner for a test on the Michigan Central tracks. We want to run this car to Chicago in competition with the Wolverine."

Authorized Settlement of Claims.—Judge Dyer in the United States District Court at St. Louis, Mo., has issued an order on the recommendation of Special Master Henry Lamm authorizing Receiver Rolla Wells of the United Railways, St. Louis, "to compromise and settle" claims against the company that have ripened into judgments and in which appeals have been taken. Another order permits the company to build an extended platform, a new repair shop and an ironclad frame building at an expense of $8,000.

Will Resume Service in Amarillo.—Electric railway service will be resumed in Amarillo, Tex., after having been suspended for several months. Negotiations have been under way since February between the City Commission and the officials of the Amarillo Street Railway and an agreement has been tentatively reached whereby service will be resumed. Increased fares will be granted. In return the railway agrees to put its track and rolling stock in first-class condition and maintain better service than it gave before.

Worcester and Springfield Wages to be Arbitrated.—An agreement to arbitrate the questions at issue between the employees and the managements of the Worcester Consolidated Street Railway and the Springfield Street Railway, both of Massachusetts, has been reached. The men demanded $5 a day and an eight-hour day. The board of arbitration consists of H. B. Endicott of Boston, chairman; J. H. Vahey, representing the carmen; and Bentley W. Warren and C. V. Wood, representing the companies. Hearings have already begun.

Manchester Wage Arbitration Begun.—Claims of the employees of the Manchester (N. H.) Street Railway for an increase in wages were presented on July 28 to a board of arbitration composed of Charlton Ogburn, representing the War Labor Board; P. F. Sullivan, formerly president of the Bay State Street Railway, and James H. Vahey, Boston, attorney for the employees. The men contend that they are entitled to the same wages as those granted employees of the Boston Elevated Railway by the War Labor Board. The company argued that any increase would have to be borne by the public in the shape of higher fares.

New Albany Scale Accepted.—By a vote of 563 to 525 the employees of the Albany and Troy divisions of the United Traction Company, Albany, N. Y., have voted to accept the offer of the company of 45 cents an hour, to date from July 1. The company will pay to new employees 41 cents an hour for the first six months of service, 43 cents for the second six months, and 45 cents an hour thereafter. Most of the motormen and conductors in the employ of the company will receive the 45-cent rate, which is an advance of 5 cents an hour over the old scale. The new scale also provides for 61 cents an hour for foremen in the carhouses, 51 cents an hour for first-class carpenters and electricians, and 43 cents an hour for helpers.

Memphis Wages an Issue.—Because of the absence of T. H. Tutwiler, receiver and general manager of the Memphis (Tenn.) Street Railway, presentation of the new schedule of wages asked by motormen and conductors has been deferred until Aug. 7. The contract with the union expired on Aug. 1. The men have been receiving a minimum of 36 cents an hour and a maximum of 40 cents an hour depending upon the number of years they have been in the service. They will ask that the maximum be increased to 75 cents an hour, with 10 cents an hour additional for motormen operating cars equipped with hand brakes. It is said that no significant changes in working conditions will be asked.

New Appointee to Massachusetts Commission.—Levi Greenwood, Gardner, Mass., president of the State Senate, was nominated by Governor Coolidge as a member of the special commission to study the street railway situation in the State and report at a special meeting of the Legislature next November. Mr. Greenwood will take the place of Oliver Prescott, New Bedford, who was nominated by the Governor but who found it impossible to give his time to the work. The executive council has confirmed all the nominations for the special commission. These include Mr. Greenwood, Robert F. Herrick, Milton; Charles G. Washburn, Worcester; George W. Anderson, Boston, and James L. Doherty, Springfield.

Spartanburg Strike Settled. — Employees of the South Carolina Light, Power & Railways Company who went on strike on July 3, tying up railway service in Spartanburg, S. C., returned to work on July 19 after an agreement had been reached between the strikers and officials of the company. The men had stood out for a nine-hour day. This the company agreed to put in effect as soon as possible. Under the agreement which has been signed the wages of motormen and conductors are placed at 37 cents an hour for the first six months, 38 cents an hour for the second six months period, 39 cents an hour for the second year, with an advance of 1 cent an hour for each additional year up to a maximum wage of 42 cents an hour for those who have been in the company's employ for five years or more. The wage scale of carhouse and shopmen has been raised 20 per cent.

Financial and Corporate

Wants Taxes Remitted

Pittsburgh Railways Seeks Aid of Court Toward Relief from Municipal Burdens

The receivers of the Pittsburgh (Pa.) Railways have asked the United States Court to relieve them of the obligation to pay municipal taxes. The request is made in an answer filed to a petition of the city of McKeesport seeking to have the receivers ordered to pay $10,000 due as a license task under an old franchise.

From now on the receivers intend to take the position that remission of such tax claims should be considered only equitable on the part of municipalities making them, it was stated at their office on the day the answer was filed. The desire of the receivers is to impress upon public officials that it is absolutely impossible for them to pay political subdivisions what they claim and also pay for proper service to the public out of present revenues.

The company has paid no taxes, license claims, bridge tolls or bills for street cleaning or other similar work since the first of the year, and the receivers hope to establish that relief from such expenses is only a just contribution on the part of municipalities toward the cost of maintaining an essential service that cannot be made to pay for itself through the fare box. The answer of the receivers declares:

> A community expecting transportation service must recognize that such service can continue only as long as the revenue derived from the fares is sufficient to pay the costs of service, including all repairs and maintenance charges, a fair return on the capital actually employed in furnishing the service, and for all taxes and municipal charges.

The receivers' contention in this matter may be presented by means of an argument that such a municipal tax as McKeesport is attempting to levy is not reasonable. The answer, while admitting that the receivers may lawfully be required to pay any reasonable tax, sets forth that there is no evidence that the claim made is "reasonable."

The railway traverses fifty or more municipalities, many of which levy a license tax or some other form of tax which has constituted a considerable drain upon the company's revenues.

Abandonment Threatened

The Knoxville Railway & Light Company, Knoxville, Tenn., has given formal notice that it declines to lay a double-track car line on Morelia Avenue, and also declines to agree to pay for the paving between the car rails on that avenue and on Pershing and Chickamauga Avenues. It proposes to take up that part of the Oakwood and Lincoln Park line "in order that these improvements may proceed."

These matters are discussed in a letter written by C. H. Harvey, president of the company, to Commissioner John W. Flenniken, in reply to a letter from Commissioner Flenniken requesting that the paving work be done by the company. Mr. Harvey asserts that the rights-of-way grants contained no provision in regard to paving. He then states that his company is in no financial position to do the work, even though it be required to do so, and that it certainly can not do it "as a gratuity." In conclusion he said:

> It seems unnecessary to say to your honorable commission that this company would not lightly propose to abandon a part of what has always been considered one of its best lines of railway, and it does so at this time only because of the practical impossibility of doing what is asked of it in the premises, and because of the serious exigencies from a financial standpoint which are confronting and pressing in upon it.

Dismantlement Stopped

The authorities of Randolph and Stoughton, Mass., have stopped the dismantling of the Bristol & Norfolk Street Railway by Edward Cohen, who purchased the road for junk. The selectmen of the two towns have ordered Mr. Cohen to furnish a bond in the sum of $25,000 to insure the town against accidents. Mr. Cohen is to leave the highways of the town in as good condition after the rails are taken up as they are at the present time.

The movement started by residents of both towns to purchase the road by subscription is meeting with some success.

Shore Line Affairs Reviewed

Edward M. Day, counsel for the Shore Line Electric Railway, Norwich, Conn., has filed with the Public Utilities Commission a petition asking approval of the company's plan to sell its franchises, privileges and rights to generate and distribute electricity, to the Eastern Connecticut Power Company, with headquarters in Norwich. The Eastern Connecticut Power Company was organized by the late Morton F. Plant, who was also principal owner of the Shore Line Electric Railway.

R. W. Perkins, president of the Shore Line Company, on July 23 issued the following statement concerning the company's finances: The gross earnings for six months in all departments, $820,832.35; gross operating expenses, $847,359.26; deficit exclusive of taxes $26,526.91. The taxes amount to $35,406.41, making the total loss $61,933.32.

Rentals amounting to $112,063.43 for six months have not been earned, nor has the interest on bonds amounting to $80,000 been met. The statement says further that if the company on Jan. 1 had turned the property over to the employees, the latter would have had to assess themselves $173,996 to make good the losses up to June 30.

$535,336 Loss in June

Boston Elevated Railway Ran Behind Half Million for Last Month of Six-Month's Period

The Boston (Mass.) Elevated Railway sustained a net loss from June operations of $535,336. This does not include any back pay for which the road is liable under recent wage increases. The net loss for May was $324,002 and that for April, $316,392. It should be stated, however, that one of the reasons for the larger deficit for June was the excess of track and car repair work, above a fair monthly average, which was necessarily performed. In other words, the bulk of this work is done in the warm summer months, whereas from an accounting standpoint the expense can properly be pro-rated over the full year.

The detailed financial statement of operations for June, as made public by the company, follows:

Receipts.	
From fares	$2,261,498
From operation of special cars, mail pouch service, express and service cars	11,653
From advertising in cars, on transfers, privileges at stations, etc.	23,781
From other railway companies for their use of tracks and facilities	3,962
From rent of buildings and other property	6,259
From sale of power and other revenue	7,314
Total receipts from direct operation of the road	2,314,468
Interest on deposits, income from securities, etc.	7,417
Total	$2,321,886
Cost of Service.	
Maintaining, track, line equipment and buildings	$519,782
Maintaining cars, shop equipment, etc.	213,621
Power (including 20,775 tons of coal at $5.299) $110,106	280,883
Depreciation	167,000
Transportation expenses (including wages of car employees, car house expenses, etc.)	807,901
Salaries of administrative officers	7,583
Law expenses, injuries and damages and insurance	94,619
Other general expenses	82,568
Total operating expenses (of which $1,282,490 wages)	$2,173,961
Taxes, proportion	82,453
Rent for leased roads (exclusive of subways)	216,016
Proportion of rent of subways and tunnels to be paid to the city of Boston, exclusive of Cambridge subway, owned by the B. E. Ry	126,373
Interest on Boston Elevated bonds and notes	136,978
Miscellaneous items	4,443
Proportion of dividends under acts of 1918	116,997
Total cost of service	$2,857,223
Net loss	$535,336
Revenue passengers	28,386,561
Receipts per revenue passenger	8.176 cents
Cost of service per revenue passenger	10.065 cents
(of which labor cost 4.518 cents)	

Slight Improvement in April Revenues

Increase in Cost of All Items of Expense Still Reflected in Association Compilation

Returns compiled by the information bureau of the American Electric Railway Association for the month of April, 1919, indicate a slight improvement in electric railway operating conditions over the same month of the previous year. In all, the association compilation consists as usual of eight tables, one of which is reproduced on this page and the other seven on page 299. Table I shows a comparison of the statistics for forty-two companies, and Table II the same figures on a per car-mile basis.

OPERATING REVENUES UP 19.53 PER CENT

Referring to Table II it will be seen that operating revenues increased 19.53 per cent. This increase, however, was offset by a still larger increase in operating expenses. The result is a net revenue from operation of 9.85 cents per car-mile in 1919, as compared with 9.70 cents in 1918, an increase of more than 1½ per cent. These net figures, of course, do not take account of taxes and other deductions from net.

Taxes in 1919 amounted to 2.45 cents per car-mile, and fixed charges to 7.09 cents per car-mile, which when deducted from the net revenue of 9.85 cents leaves a return of 0.31 cent, as compared with 0.89 cent in 1918. However, taking the non-operating income and net return from auxiliary operations into account, the net income is 3.05 cents per car-mile as compared with 2.76 cents for 1918, an increase of more than 10 per cent.

The ratio of railway operating expenses to railway operating revenues shows an increase of 7.42 per cent, the operating ratio for 1919 being 71.92 as against 66.95 for 1918.

GREAT SLUMP IN SOUTH

As in the past, the returns from both city and interurban companies have been classified according to the following geographic grouping: Eastern District—east of the Mississippi River and north of the Ohio River; Southern District—south of the Ohio River and east of the Mississippi River; Western District—west of the Mississippi River.

Further analyzing Table II according to this grouping it will be seen that the Southern District experienced the greatest slump, its net revenue dropping 9.33 per cent. Despite this fact, this district makes the best showing of all, its net income being 5.14 cents per car-mile as compared with 2.92 cents for the East and 2.31 cents for the West.

The operating ratio for the South increased from 59.68 per cent in April, 1918, to 68.35 per cent in April, 1919, while for the West the operaing ratio increased from 62.81 to 68.84, and for the East from 72.59 to 75.22.

Table III gives the operating expenses divided up among the several departments while in Table IV the expenses per car-mile of these departments are shown. Sixty-four companies are represented and analysis of their expenses contributes to a better understanding of the returns in Tables I and II.

The increased cost of materials is strongly reflected in the way and structures account. The cost in 1919 was 3.59 cents per car-mile as compared with 2.29 cents for 1918, an increase of 56.76 per cent. The cost of maintenance of equipment increased 32.43 per cent, from 2.55 cents per car-mile in 1918 to 3.37 cents in 1919. These accounts, of course, include wages, but they reflect the high cost of materials also.

WAGE DECISIONS A FACTOR

The effects of the War Labor Board decisions is strongly reflected in the conducting transportation account, which shows an increase of 30.33 per cent, from 9.10 cents per car-mile in 1918 to 11.86 cents in 1919.

Referring further to Table IV, the West shows the largest increases in the cost of labor and materials, although the increases in these items are pretty general throughout the country. In the way and structures account, the percentage increase for this district was 72.56 per cent as compared with 53.90 for the East and 37.63 per cent for the South. The South shows the largest increase in the cost of equipment, the percentage increase being 46.77 as compared with 45.64 per cent for the West, and 22.38 per cent for the East.

The Eastern District shows an increase of 35.33 per cent in the conducting transportation account as compared with 28.18 per cent for the South and 25.14 for the West.

The income statement of 121 electric railways for the month of April, 1919, is shown in Table V. Table VI shows the same statement on a per car-mile basis.

Table VII is a detailed statement of the operating expenses for April, 1919, of 140 companies, and in Table VIII the same statement is shown on a per car-mile basis.

The most interesting of these is Table VIII, in which the operating expenses per car-mile are divided among the main operating departments, way and structures, equipment, power, conducting, transportation, etc.

Power and Traction Deal Pending

While admitting that negotiations of sale are pending, James A. McHenry, the heaviest stockholder in the Edison Electric Illuminating & Power Company, Cumberland, Md., and the Cumberland Electric Railway, denies the report that the properties have been sold to a New York syndicate, as indicated in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 2, page 256.

Mr. McHenry has declared that should the deal go through the light and power company and the railway would go together. The Edison company's plant at Cumberland furnishes power not only to the city but for electric railway service and to operate the mines in Georges Creek, Allegheny County.

The proposition is that a company of capitalists, known as the West Virginia Power Company, may acquire these two properties of the Western Maryland Railway to Elkins, W. Va. The plan calls for connecting up all the towns by electric railway, forming a system between Cumberland and Elkins and Grafton. If this project should go through, the new company will take over, own and operate all the light and power plants along the Western Maryland Railway between Cumberland and Grafton, inclusive, and ultimately connect up all intervening towns with these two cities by electric railway, thus forming a loop extending practically from Grafton to Cumberland.

TABLE I—INCOME STATEMENT OF FORTY-TWO ELECTRIC RAILWAYS FOR APRIL, 1919, COMPARED WITH APRIL, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918
Operating revenue	$7,338,225	$6,104,285	$3,630,990	$2,905,025	$1,173,254	$1,007,223	$2,533,981	$2,192,037
Operating expenses	5,277,805	4,086,718	2,731,393	2,108,873	801,926	601,126	1,744,486	1,376,719
Net operating revenue	2,060,420	2,017,567	899,597	796,151	371,328	406,097	789,493	815,218
Net revenue: Auxiliary operations	454,750	380,599	209,724	155,038	186,347	168,167	58,679	57,394
Taxes	512,168	402,230	266,785	188,374	98,952	94,812	146,431	119,044
Operating income	2,003,002	1,995,836	842,536	762,815	458,723	479,452	701,741	753,566
Non-operating income	118,135	11,039	90,805	527	190	231	27,140	10,281
Gross income	2,121,137	2,006,875	933,342	763,438	458,913	479,683	728,881	763,847
Deductions from gross income	1,482,921	1,433,086	671,367	633,429	277,415	272,041	534,139	527,616
Net income	638,216	573,789	261,975	130,020	181,497	207,642	194,742	236,231
Operating ratio (per cent)	71.92	66.95	75.22	72.59	68.35	59.68	68.84	62.81
Car-miles operated	20,924,733	20,805,676	8,951,370	8,893,248	3,533,390	3,503,584	8,439,973	8 408,844

TABLE II—INCOME STATEMENT IN CENTS PER CAR-MILE FOR FORTY-WOO COMPANIES SHOWN IN TABLE I, FOR APRIL, 1919, COMPARED WITH APRIL, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating revenue	35.07	29.34	19.53	40.56	32.67	24.15	33.20	28.74	15.52	30.02	26.07	15.15
Operating expenses	25.22	19.64	28.41	30.51	23.71	28.68	22.70	17.16	32.28	20.66	16.37	26.26
Net operating revenue	9.85	9.70	1.54	10.05	8.96	12.15	10.50	11.58	*9.33*	9.36	9.70	*3.51*
Net revenue from auxiliary operations	2.17	1.82	19.21	2.34	1.74	34.48	5.27	4.80	9.79	0.70	0 69	1.44
Taxes	2.45	1.93	26.95	2.98	2.12	40.56	2.80	2.70	3.70	1.75	1.43	22.37
Operating income	9.57	9.59	*0.21*	9.41	8.48	10.97	12.97	13.68	*5.20*	8.31	8.97	*7.36*
Non-operating income	0.57	0.05	1,040	1.01	.....	.....	......	......	......	0.33	0.12	1.75
Gross income	10 14	9.64	5.20	10.42	8.48	22.87	12.97	13.68	*5.20*	8.64	9.09	*4.96*
Deductions from gross income	7.09	6.88	3.05	7.50	7.02	6.83	7.83	7.76	0.90	6.33	6.27	0.95
Net income	3.05	2.76	10.51	2.92	1.46	100.00	5.14	5.92	*13.17*	2.31	2.82	*18.09*
Operating ratio	71.92	66.95	7.42	75.22	72.59	3.62	68.35	59.68	14.53	68.84	62.81	9.60
Car-miles operated	20,924,733	20,805,676	0.57	8,951,370	8,893,248	0.65	3,533,390	3,503,584	0.85	8,439,973	8,408,844	0.37

NOTE—Figures in *italic* denote decrease.

TABLE III—OPERATING EXPENSES OF SIXTY-FOUR ELECTRIC RAILWAYS FOR APRIL, 1919, COMPARED WITH APRIL, 1918

	United States		East		South		West	
	1919	1918	1919*	1918	1919	1918	1919	1918
Operating expenses	$6,430,938	$4,916,258	$3,269,378	$2,473,254	$1,035,944	$765,198	$2,125,616	$1,677,806
Way and structures	860,688	547,444	492,852	318,734	118,365	84,739	249,471	143,971
Equipment	808,468	607,719	431,756	351,461	126,128	84,851	250,584	171,407
Power	971,099	787,421	543,330	459,334	89,850	45,874	337,919	282,213
Conducting transportation	2,846,776	2,175,485	1,303,195	959,940	563,853	435158	979,728	780,387
Traffic	32,146	34,452	11,878	16,012	2,635	2,570	17,633	15,870
General and miscellaneous	877,404	768,826	445,998	367,812	135,113	112,006	296,293	289,008
Transportation for investment—Cr.	*6,012*	*5,089*	....	*39*	....	....	*6,012*	*5,050*
Car-miles operated	23,992,103	23,877,521	10,540,726	10,491,224	4,625,860	4,585,201	8,825,517	8,801,096

*Includes $40,369 depreciation not divided among sub-accounts.

TABLE IV—OPERATING EXPENSES IN CENTS PER CAR-MILE OF THE SIXTY-FOUR ELECTRIC RAILWAYS SHOWN IN TABLE III, FOR APRIL, 1919, COMPARED WITH APRIL, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating expenses	*26.80	20.58	30.22	†31.02	23.56	31.66	22.39	16.64	34.55	24.08	19.06	26.34
Way and structures	3.59	2.29	56.76	4.68	3.04	53.90	2.56	1.86	37.63	2.83	1.64	72.56
Equipment	3.37	2.55	32.43	4.10	3.35	22.38	2.73	1.86	46.77	2.84	1.95	45.64
Power	4.05	3.30	22.72	5.15	4.37	17.85	1.94	1.00	94.00	3.82	3.20	19.37
Conducting transportation	11.86	9.10	30.33	12.37	9.14	35.33	12.19	9.51	28.18	11.10	8.87	25.14
Traffic	0.13	0.14	*7.15*	0.11	0.15	*26.67*	0.05	0.05	......	0.19	0.18	5.55
General and miscellaneous	3.65	3.22	13.36	4.23	3.51	20.51	2.92	2.44	19.67	3.36	3.28	2.44
Transp. for investment—Cr.	*0.02*	*0.02*	.....	....	....	.....	....	....	......	*00.6*	*0.06*	.....
Car-miles operated	23,992,103	23,877,521	0.48	10,540,726	10,491,224	0.47	4,625,860	4.585,201	0189	8,825,517	8,801,096	0.28

*Includes 0.17 cents per car mile for depreciation not divided among sub.accounts.
†Includes 0.38 cents per car mile for depreciation not divided amongsub-accounts.

TABLE V—INCOME STATEMENT OF 121 COMPANIES FOR APRIL, 1919

	United States	East	South	West
Operating revenue	$20,244,332	$15,691,482	$1,613,476	$3,981,938
Operating expenses	15,014,413	11,803,750	1,139,376	2,788,604
Net operating revenue	5,229,919	3,887,732	474,100	1,193,334
Net revenue: Auxiliary operations	932,962	394,689	314,812	223,461
Taxes	1,212,292	893,023	142,424	241,921
Operating income	4,950,589	3,389,398	646,488	1,174,874
Non-operating income	366,588	244,893	7,043	128,624
Gross income	5,317,177	3,634,291	653,531	1,303,498
Deductions from gross income	4,319,404	3,274,691	401,852	892,578
Net income	997,773	359,600	251,679	410,920
Operating ratio	74.21	75.22	70.62	70.03
Car-miles operated	57,484,943	40,998,490	4,802,600	11,683,853

TABLE VII—DETAILED STATEMENT OF THE OPERATING EXPENSES OF 140 COMPANIES FOR APRIL, 1919

	United States	East	South	West
Operating expenses	$*16,798,828	$*12,509,305	$1,373,384	$2,916,139
Way and structures	2,275,358	1,749,564	166,068	359,726
Equipment	2,098,114	1,575,038	167,201	355,875
Power	2,547,648	1,967,515	133,418	446,715
Conducting transportation	7,392,660	5,335,744	716,028	1,340,888
Traffic	65,879	38,771	4,872	22,236
Meneral and miscellaneous	2,164,435	1,581,928	185,797	396,710
Transportation for investment—Cr	*7,456*	*1,444*	....	*6,012*
Car-miles operated	61,513,871	43,407,105	5,895,070	12,211,696

* Includes $262,190 depreciation not divided among sub-accounts.

TABLE VI—INCOME STATEMENT IN CENTS PER MILE OF THE 121 COMPANIES SHOWN IN TABLE V

	United States	East	South	West
Operating revenue	35.22	38.27	33.60	34.08
Operating expenses	26.14	28.79	23.72	23.86
Net operating revenue	9.08	9.48	9.88	10.22
Net revenue: Auxiliary operations	1.62	0.95	6.56	1.86
Taxes	2.09	2.18	2.97	2.03
Operating income	8.61	8.25	13.47	10.05
Non-operating income	0.64	0.60	0.15	1.10
Gross income	9.25	8.85	13.62	11.15
Deductions from gross income	7.52	7.98	8.37	7.64
Net income	1.73	0.87	5.25	3.51
Operating ratio	74.21	75.21	70.62	70.03
Car-miles operated	57,484,943	40,998,490	4,802,600	11,683,853

TABLE VIII—DETAILED STATEMENT IN CENTS PER CAR-MILE OF THE OPERATING EXPENSES OF THE 140 COMPANIES SHOWN IN TABLE VII, FOR APRIL, 1919

	United States	East	South	West
Operating expenses	*27.31	†28.82	23.30	23.88
Way and structures	3.70	4.03	2.82	2.95
Equipment	3.41	3.63	2.84	2.90
Power	4.14	4.53	2.26	3.68
Conducting transportation	12.02	12.29	12.15	10.98
Traffic	0.11	0.09	0.08	0.18
General and miscellaneous	3.52	3.64	3.15	3.24
Transportation for investment—Cr	*0.01*	....	....	*0.05*
Car-miles operated	61,513,871	43,407,105	5,895,070	12,211,696

* Includes 0.42 cents per car mile for depreciation not divided among sub-accounts. † Includes 0.61 cents per car mile for depreciation not divided among sub-accounts.

Financial News Notes

Note Interest Remains Unpaid.—It is stated now that neither the principal nor the interest due on June 1, 1919, on the $4,000,000 of 7 per cent one-year gold notes of the New Orleans Railway & Light Company, New Orleans, La., was paid.

Chattanooga Receivership Extended.—Judge E. T. Sanford has ordered that the receivership of the Chattanooga Railway & Light Company, Chattanooga, Tenn., be extended to apply to the power and light departments of the company as well as to the electric railway branch.

Interest on Chicago Debentures Unpaid.—It is reported that the coupons due on July 1, on the $7,000,000 of 1914 debentures of the Chicago (Ill.) Elevated Railways, collateral trust were not paid. Moreover, according to a statement made by Samuel Insull, chairman of the board of the company, before the Federal Electric Railways Commission, $14,000,000 of five-year notes due on July 1 could not be refinanced, and the trust was unable to meet the interest payment due on the same date.

Cleveland Arbitrators Disagree Over Umpire.—W. E. Davis, city light commissioner, will represent the city on the board of arbitration which is to decide whether stockholders of the Cleveland (Ohio) Railway shall receive an increase of 1 per cent in dividends, while J. R. Nutt, president of the Citizens' Saving & Trust Company, will represent the railway. They have failed to agree upon a third member and the choice will probably be left to Federal Judge Westenhaver. The company asked for an increase from 6 per cent to 7 per cent in the dividends.

Interurban Approves Bond Issue.—The directors of the Syracuse & Surburban Railroad, Syracuse, N. Y., have authorized the issuance of $750,000 of first and refunding 5 per cent bonds. The Public Service Commission has also approved the issue. Of the total amount $400,000 will be held in trust to retire the first mortgage bonds due in 1926 and $150,000 to retire the general mortgage bonds falling due in 1953. The remaining $200,000 will be issued and sold for cash, one-half to be taken by the bondholders and the other half by the stockholders. The proceeds will wipe out the floating debt and leave $55,000 for improvements and $18,000 for working capital. The Syracuse Trust Company has been designated as trustee of the mortgage.

Evansville Receivership Accounting.—William A. Carson, receiver for the Evansville (Ind.) Railways, has filed his final report in the Vandenberg County Superior Court, showing that during the receivership he received $103,025. An itemized statement of expenses was filed at the same time. The holders of some of the bonds who did not come in on the reorganization of the company are to receive 24.34 per cent of the face value of their securities. This will be paid out of the net balance of $2,692. With the ratification by the court of the report, the receivership will be brought to an end. The Evansville Railways underwent reorganization shortly after the appointment of Mr. Carson as receiver. The various lines owned by that company have now passed to the control of the new company, known as the Evansville & Ohio Valley Railway.

Foreclosure Suit Against B. R. T.—The Equitable Trust Company, New York, N. Y., as successor of the Colonial Trust Company, and the Trust Company of America has brought a mortgage foreclosure suit in the Federal District Court against the Brooklyn Rapid Transit Company, for which Lindley M. Garrison is receiver. The litigation is the result of default on April 1, last, in payment of the semi-annual instalment of interest on first mortgage bonds, aggregating $7,000,000 and known as the 5 per cent fifty-year gold mortgage bonds. As the default has continued the Equitable Trust Company, under the terms of the mortgage, says the principal and interest are now due and asks for the foreclosure and sale of the property pledged as security. The hearing before the Public Service Commission on the application of the company to issue $15,000,000 of receiver's certificates was closed on July 31. The issue was authorized by Federal Judge Mayer to meet the cost of completing the rapid transit system, but it must have the commission's approval.

Ready to Enter Foreclosure Decree.—Justice Morrill at Auburn, Me., on July 31 filed his decree on the bill in equity of the Old Colony Trust Company, Boston, Mass., against the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., in which the petitioner, trustee under the mortgages securing the first and refunding bonds of the railroad, asked for permission to foreclose mortgages and sell property and franchises. The decree states that the amount of the first and refunding bonds secured by the mortgages to the Old Colony Trust Company is $2,937,000, on which there is overdue interest to the amount of $151,133. It orders the railroad to pay this latter sum with interest before Aug. 11. In the event of default in this payment, Wallace H. White, Lewiston, special master, is ordered to sell the property. Bids are to be called for the whole property, also for the property exclusive of the Turner branch, for the Turner branch including its franchise, and for the physical property of the Turner branch alone. If the bid for the whole property is greater than the combined bids for the different items mentioned, then it is to be sold as a whole, otherwise each piece is to be sold separately.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$28,558	*$18,042	$10,516	$3,447	$7,069
1m., May, '18	20,455	*11,221	9,234	3,359	5,875
12m., May, '19	307,889	*179,573	128,316	42,203	86,113
12m., May, '18	240,609	*125,228	115,381	38,899	76,482

CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$46,350	*$38,450	$7,900	$5,693	$2,207
1m., May, '18	38,916	*27,740	11,176	5,255	5,921
12m., May, '19	550,059	*419,485	130,574	64,113	66,461
12m., May, '18	483,028	*335,899	147,129	63,074	84,055

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$101,645	*$52,341	$49,304	$30,129	$19,175
1m., May, '18	101,017	*38,403	62,614	28,407	34,207
12m., May, '19	1,190,199	*628,320	561,879	353,847	208,032
12m., May, '18	1,166,369	*459,522	706,847	322,277	384,570

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$110,107	*$67,869	$42,238	$13,084	‡$29,278
1m., May, '18	94,395	*53,320	41,075	11,865	29,210
12m., May, '19	1,235,895	*748,274	487,621	154,587	‡335,184
12m., May, '18	996,074	*554,905	441,169	134,226	‡329,780

EL PASO (TEX.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$126,205	*$91,353	$34,852	$7,508	$27,344
1m., May, '18	$105,575	*73,101	32,474	6,446	26,028
12m., May, '19	1,350,625	*962,285	388,340	83,881	304,459
12m., May, '18	1,277,199	*830,315	446,884	72,554	374,330

*Includes taxes. †Deficit. ‡Includes non-operating income.

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$248,596	*$181,613	$66,983	$35,638	$31,345
1m., May, '18	209,765	*142,898	66,867	29,618	37,249
12m., May, '19	2,898,992	*2,083,365	815,627	372,425	443,202
12m., May, '18	2,319,050	*1,517,439	801,611	341,274	460,337

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$22,188	*$17,403	$4,785	$3,994	$791
1m., May, '18	25,122	*17,118	8,004	4,110	3,894
12m., May, '19	307,347	*213,362	93,985	49,030	44,955
12m., May, '18	339,555	*218,696	120,859	49,774	71,085

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$85,484	*$75,357	$10,127	$14,346	†$4,219
1m., May, '18	83,210	*55,601	27,609	14,972	12,637
12m., May, '19	1,005,377	*848,863	156,514	177,402	†20,888
12m., May, '18	776,083	*529,673	246,410	169,744	76,666

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$264,546	*$170,727	$93,819	$25,042	‡$78,360
1m., May, '18	247,016	*156,341	90,675	25,213	‡75,046
12m., May, '19	2,904,145	*1,925,637	978,508	300,677	‡792,831
12m., May, '18	2,999,061	*1,694,123	1,304,938	308,908	‡1,072,697

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$924,854	$623,330	$311,524	$158,595	$152,929
1m., June, '18	808,431	542,769	265,662	155,612	110,050
6m., June, '19	5,342,680	3,827,038	1,515,642	950,228	565,414
6m., June, '18	4,847,573	3,515,491	1,332,082	938,080	384,002

Traffic and Transportation

Norfolk Ordinance Ready

Fare Measure Looking Toward Relief for Virginia Railway & Power Company Comes Up on Aug. 19

The City Council of Norfolk, Va., will on Aug. 19 hold a public hearing on the matter of a proposed ordinance looking to granting relief to the Virginia Railway & Power Company in the way of a 6-cent fare with a charge of 2 cents for transfers. The Council has read the ordinance the first time, and has begun its advertising, announcing that the public will be heard on the above date.

OUTCOME OF CONFERENCES

The ordinance is the result of a number of conferences between the "citizens' committee," initiated by the Chamber of Commerce of Norfolk, and participated in by members of the City Council, A. B. Carney, attorney for the commonwealth, and others representing the county of Norfolk. The conferences were brought about as a result of opposition on the part of certain industrial interests to a zone system the traction company proposed for its lines outside the cities of Norfolk and Portsmouth, in Norfolk County.

The citizens' committee approached the recently organized public relations department of the traction company with a request for conferences "in an effort to provide needed relief for the company and at the same time avoid the necessity of increasing the number of zones outside the city in the county of Norfolk."

After three weeks of conferences the citizens' committee submitted a proposed ordinance which, while it does not meet the views of the officials of the company in many points, will give certain relief, in the matter of increased wages to platform men, the company agreeing to advance their wage from 41 cents to 45 cents an hour "when a 6-cent fare shall have been allowed."

The City Council was represented on the citizens' committee by a number of members, its chairman being President Albert L. Roper of the Council, who is also Mayor of the city of Norfolk. Those members of the Council who were and are members of the citizens' committee are of the opinion that there will be no delay in putting the new ordinance into effect.

WILL WITHDRAW SUITS

The proposed ordinance, in addition to providing for the increased fare and charge for transfers, carries with it an agreement on the part of the company to withdraw its suits against the city for taxes paid the city for the last two years, for which it holds itself not to be liable under a recent decision of the Supreme Court of the State of Virginia, when the ordinance shall have been in effect for a period of twelve months.

At the closing conference between the citizens' committee and the company officials a number of the members of the committee commented at length upon the spirit of fairness which marked the deliberations on both sides of the table. Mayor Roper was the leading spokesman in this regard, and T. S. Wheelwright, president of the company, followed with an appreciation of the changing sentiment toward the company.

Competition from One-Man Interurban Autos

In the recent case of the Louisville & Interurban Railway before the State Railroad Commission of Kentucky over increased rates, which the commission held were not warranted, the railway showed conclusively that the automobile had greatly cut into earnings. The pleasure cars and bus lines have reduced passenger travel, while trucks are hauling livestock, grain and general merchandise of all kinds. Quantities of milk and cream formerly hauled into Louisville by interurban are now placed on platforms along the road and picked up by the truck lines under contract.

Two types of auto in particular have been giving considerable trouble. One is the passenger car equipped with a large body, with side seats. A car of this kind is run out the Taylorsville road on the schedule staggered with that of the electric railway. The auto does an excellent business at the expense of the railroad. The driver is, of course, both motorman and conductor.

The other type of car that has come forward as a competitor is the transfer line truck. One of these vehicals is now run parallel to the Shelbyville line, and on out to Grafenburg, Ky., which will be on the interurban line as soon as a link between Shelbyville and Frankfort is completed. This truck is equipped with a body that is interchangeable for handling various kinds of freight, from package merchandise to livestock. Pork and beef are so high in price that the driving of livestock to market has been stopped and all is now taken to town by interurban, truck or motor to save the fat. Similar trucks are to be found in operation on practically every road, whether or not an interurban line is operated over that particular road.

Transfer Order Enforced

New Yorkers Paying Two Cents at More Than 1000 Points Where Transfers Were Free

The 2-cent transfer charge authorized on July 18 by Lewis Nixon, Public Service Commissioner for the First District of New York, went into effect on Aug. 1 at more than 1000 transfer points on the lines of the New York Railways and the Brooklyn Rapid Transit Company. Commissioner Nixon had granted a rehearing of the transfer case on July 29, but refused to stay the order.

COURT FIGHT EXPECTED

Despite threats of trouble on the part of large numbers of the companies' patrons, the charge for transfers has caused little difficulty. Opponents of the railways plan to carry the matter to the courts. Persons wishing to contest the order are advised to pay the charge demanded by conductors and then to file a complaint. A test case will be brought under the railroad laws of 1890 which it is contended provide that any railway charging more than the legal rate of fare shall be liable for fifty times the amount of excess fare collected.

Commissioner Nixon in opening the rehearing on Aug. 4 declined to hear evidence relative to his authority in issuing the order, and stated that the only matter to be determined was the responsibility for naming the points at which the charge should be made. Corporation Counsel Burr of New York, who is contesting the order, contends that the order was defective in that it failed to name definitely the points at which transfers should be charged for. The transfer points which remain free are only those at which franchises or special agreements with the city forbid the extra charge. Only fourteen of the 113 points in Manhattan at which transfers formerly were issued free remain, while in Brooklyn out of 1008 free transfer points only thirty are exempted, with the exception of forty-eight "feeder" points at which transfers continue to be given free of charge.

MUST FILE REPORTS

Each company is obliged to keep a detailed account of its income under the new arrangement for the report to the Public Service Commission. The Brooklyn Rapid Transit Company must file monthly reports, while the New York Railways must convince the city that the valuation of its property submitted at hearings is true, or the city may, in six months, petition the commission for a rehearing.

In Manhattan the New York Railways will benefit by this order until July 7, 1920. In Brooklyn it holds good until July 30, 1920, and in each instance Commissioner Nixon has reserved the right to extend the time if operating results prove a continuation advisable.

Ten-Cent Fare on Middlesex & Boston

Seven and Eight Cents Have Been the Charges Since July, 1918 —Increase of $132,000 Anticipated

A tentative allowance of 10-cent fares on the Middlesex & Boston Street Railway was declared in a finding of the Public Service Commission of Massachusetts on July 31. Previous fares, established on July 1, 1918, were 7 cents on the main traffic lines and 8 cents on the remainder of the system except on the Westborough-Hopkinton line, where, by agreement with the towns affected, the fare was increased in November, 1918, to 10 cents.

Under the schedule recently filed the company proposes to increase the fare to 10 cents on all parts of its system except on the lines in Waltham, on the Commonwealth Avenue, Newton line, and on the other Newton lines formerly owned by the Newton and the Wellesley & Boston street railways, where the present fares are retained. The tariff as filed also provides for an additional charge of 3 cents for transfers. At the hearing, however, the company agreed to furnish free transfer privileges to patrons paying a 10-cent fare. The charge for passengers using a transfer would thus be uniformly 10 cents on the entire system.

Prior to July 1, 1914, the fares were 5 cents on the principal city lines and 6 cents, with a 5-cent ticket rate, on the remainder of the system. During the last year under that schedule the passenger revenue of the company amounted to $951,808. During the year just ended, the passenger revenue, after three successive fare increases, was only $938,533, which was insufficient by about $65,000 to meet operating expenses and fixed charges. During the year ended June 30, 1919, covering the period of the last fare increase, traffic fell off nearly 20 per cent and revenue decreased more than 10 per cent.

Upon this showing the company's need of more revenue was exceeded by all in interest, but the commission and the remonstrants doubt the efficiency of a further increase in fare unit. The commission believes that a zone system of fares offers more hope, and will take up the design of such a system with the company, meanwhile allowing the 10-cent fare unit to go into effect for a trial period of three months, subject to the modification given below. As the company has been unable to meet the payment of current operating expenses or to meet excise taxes now owing to the municipalities, and as negotiations are now pending with its employees for a further wage increase, its needs of additional revenue, in the commission's view, is "immediate and urgent." The last hearing was on July 24, 1919. The company estimates that the new schedule will yield $132,000 in increased revenue. While the board is not optimistic in regard to the revenue effects of a 10-cent fare on this system, it does not feel justified in over-riding the judgment of the company or in making a positive finding that no increase in revenue would result from the proposed fares.

The commission has advised the company that the revenue received within the two fare zones on the main line between Newton Lower Falls and Framingham, as compared with the average revenue from the proposed 7-cent lines, does not justify a spread of 3 cents in the fares charged, and that tickets at the rate of six for 50 cents without transfer privileges should be made available on the two zones mentioned. Readjustments in the fare situation on the Lexington & Boston division and the South Natick line appear also to be desirable; but on the basis of the total length of ride available and the revenue results from existing zones, the fare proposed for these lines does not appear discriminatory, and any adjustment of fares, the board states, should be accompanied by a revision of fare zones.

Ten Cents Being Charged in Pittsburgh

Question of Fares Will Be Gone Into Exhaustively at Hearing to Commence on Aug. 20

Fares on Pittsburgh (Pa.) Railways were raised on Aug. 1 to 10 cents, if paid in cash, and 7½ cents if tickets are bought by the passenger.

In the few days the new fare has been in force the company has not been able to get figures upon which to base final conclusions as to its effect, but certain results are easily discernible to any observer.

FEW RESIDENTS PAY TEN CENTS

For one thing, it has been pretty well established already that, as far as Pittsburghers are concerned, there is nothing but a 7½-cent fare. Residents all buy tickets, leaving such cash business as is transacted to transients. This arrangement, of course, is satisfactory from the viewpoint of the public with which the Pittsburgh Railways has to deal, for the local public sees the outsider contributing much more heavily than the native to the maintenance of the city's transportation service. In consequence little is heard of protest against the 10-cent cash fare feature of the new tariff. Conductors on many lines, particularly those serving suburban districts, report that trips are frequent upon which they never see cash, except that tendered for the little brass disks issued four for 30 cents. Considerable cash business is transacted, of course, on cars traversing downtown lines between railroad stations.

Probably the most notable feature of the situation immediately following the raise was an increases in traffic on the many railroad lines serving suburban districts. Pittsburgh, as is well known, strings out in three directions, along its three rivers, in long arms where population is dense. The high hills between the valleys, in general, are not thickly populated.

RAILWAYS HEAVILY PATRONIZED

These valleys afford entrance to the city to the steam railroad trunk lines and each of them is traversed by two or more. Commutation service is supplied by practically all of these railroads, and this, by the nature of things, is much faster than the service the Pittsburgh Railways can offer.

Heretofore, train fare has exceeded electric railway fare so slightly from most points, or has been so little less that the rider usually preferred the convenience of the electric railway to the walk to the railroad station. That half-cent raise in car fare, however, has seemed to tilt the scale in favor of the railroads in many instances, however—that, and the inevitable irritation of the public over any increase in fares.

For another thing, the increase was instituted on the first of the month, from which day the cheap monthly commutation tickets are dated. Thus the regular electric railway patron could change over to the railroad without loss, as he could not have done had the new tariff gone into effect, say, on the tenth of the month. In the latter case a third of his monthly ticket would have been useless to him and possibly he would have become accustomed to the 7½-cent fare by the first of September and would not have thought of patronizing the steam lines.

PATRONAGE FALLS OFF

At any rate, it was easily observed on the morning of Aug. 1 that the patronage of the Pittsburgh Railways had fallen off. Seats were available in cars that had always been packed during the rush hours. This condition, however, became less noticeable on the second and third days.

For several hundreds of thousands of Pittsburghers the new tariff involves a 50 per cent increase in the cost of transportation, for it must be remembered that although 7 cents has been charged in the outer rim of the city for a number of months, the rate has been 5 cents for a ride beginning and ending within a territory of a radius of approximately 2 miles from the center of the downtown district.

This is the most densely populated section of the city, of course, and the section in which live those to whom a sudden 50 per cent increase in the cost of any necessity pretty nearly puts it out of the necessity class. These people also live closest to the downtown district. There can be no doubt that thousands of them have decided to walk to work. Rush hour crowds on the bridges leading across the rivers into the city show that plainly.

The question of whether or not rebate slips should be issued upon payment of the new fares threatened for a day to start a controversy with the city administration. It has been the practice heretofore in Pittsburgh for the railway to issue such receipts for fares paid in excess of the last one legally approved, which is the old 5-cent rate. This has resulted from the fact that in Pennsylvania a public service company can, without awaiting approval of the commission, increase its tariff upon thirty days' notice to the commission. If the commission disapproves, the company can continue to collect the new rate, upon appeal to the courts from the commission's finding. So to protect passengers, receipts have been issued calling for refund of the excess in event of overthrow of the excess.

The Pittsburgh Railways has issued receipts for hundreds of thousands of dollars of these "excess fares" since its first increase to 5½ cents from the old 5-cent fare at the beginning of 1918. None of the subsequent increases have been passed upon finally. In the present instance the rebate slips are issued only to purchasers of tickets at the office of the company.

The whole question of fares in Pittsburgh will be gone into exhaustively at a hearing before the commission in Pittsburgh on Aug. 20, of the city's protest against the new fare. At this hearing, for the first time, the commission will have before it a physical valuation of the properties of the company. This task has been in the hands of five engineers for more than a year.

It is hoped that a fare policy for the Pittsburgh Railways may be worked out following this hearing that will form a permanent basis for future dealings. Consideration of all of the increases in fare above the original 5-cent charge has been postponed by the Public Service Commission pending the report of the valuation commission, the company in the meantime collecting the new fares and issuing excess receipts.

Kansas City, Kan., Disputes Not Yet Settled

Because of the illness of Frank Hagerman, one of the arbitrators appointed by Judge John C. Pollock of the Kansas Federal Court to adjust the fare dispute between the city of Kansas City, Kan., and the Kansas City Railways, no action to settle the controversy will be taken before September. The board of arbitration is to report on the questions of fares, of franchises and all public contracts, the use of the city viaduct and removal of the "L" structure. Pending the report fares will remain at 6 cents under the temporary restraining order issued by Judge Pollock, which also provides that the inter-city viaduct shall be used by the company until the arbitrators settle the question of rental.

Eight Cents in Kansas City

This Will Be the Cash Rate, With Two Tickets for Fifteen Cents —Effective One Year

The Public Service Commission of Missouri has ordered that the Kansas City Railways be permitted to increase fares to 8 cents, or two fare tickets for 15 cents, seven tickets for 50 cents, fifty tickets for $3.50. The half fare rates, heretofore 2½ cents, are increased to 4 cents, with four tickets for 15 cents, fourteen tickets for 50 cents, or 100 tickets for $3.50. The higher fares are put in for a year, effective on Aug. 20. The commission retained jurisdiction.

The commission's action was technically the action on the deferred subject of 6-cent fares. The company had been authorized to charge 6 cents for the year to July 10, 1919, the commission retaining jurisdiction. When the year was up the company made a plea for still higher fares and for relief from certain expenses that made it impossible to keep pace with debts. The commission's findings at this time makes no mention of relief from burdensome franchise requirements, as to paving, taxes, etc., but it is understood that the State and the city, to a larger degree than ever before, are trying to work out the problem.

City officials have announced, however, that they will oppose the 8-cent fare, but no statement is made of the steps to be taken.

Following is the finding of the commission, written by the chairman, W. G. Busby, concurred in by Commissioners Blair, Simpson and Flad, dissented to by Commissioner Bean:

> 1. That the company be permitted to increase its rate for adult passengers from 6 cents to 8 cents cash fare, or two tickets for 15 cents, seven tickets for 50 cents, or fifty tickets for $3.50, and to increase its rates for half-fare passengers from 2½ cents to 4 cents, cash fare, four tickets for 15 cents, fourteen tickets for 50 cents, or 100 tickets for $3.50.
>
> 2. The increased rates are put in for a temporary period of one year only from Aug. 20, 1919, with reservation of jurisdiction in the commission to hereafter change or reduce the rates at any time in accordance with changed conditions.
>
> 3. The commission finds that the company failed to earn operating expenses on the Missouri property during the eleven months ended May 31, 1919, by $208,140; that it failed to earn operating expenses and fixed charges on the Mississippi property during the same eleven months by $1,711,166; that it failed to earn operating expenses on the entire system during the year ended June 30, 1919, by $362,753, and failed to earn operating expenses and fixed charges on the entire system during the same years by $2,255,368; and that since July 1, 1919, the company has granted further wage increases amounting to $575,000 per annum.
>
> 4. The commission estimates that the new rates allowed will yield the company 4.8 per cent per annum for depreciation and return on $20,742,420, the "bare bones" value of the Missouri intrastate property.
>
> This estimated return of 4.8 per cent for depreciation and return on $20,742,420 is dependent on the company increasing the number of passengers 21 per cent over the number carried for the year ended June 30, 1919, and is exclusive of the cost of operating additional cars. It is also estimated that the cost of carrying Missouri intrastate passengers, based on normal traffic of May and June, 1918, is 7.8 per cent per passenger.
>
> The company is ordered to restore what is known as the "July schedule" of service within ninety days from Aug. 20, 1919, which means that it must have 100 more cars in operation within ninety days than it had in operation on July 1, 1919. If necessary the commission will place one of its representatives in the employment office of the company to aid in restoring the service.
>
> 6. That the company was unable to pay the interest due on its bonds on July 1, 1919, in the sum of $600,000, and immediate relief is necessary to save the company from bankruptcy.

Binghamton Fights Proposed Fare Advance

The city of Binghamton has begun proceedings to restrain the Public Service Commission for the Second District of New York from granting the application of the Binghamton Railway Company for an increase of fare, on the grounds that a contract exists between the city and the company in its franchise fixing the fare at 5 cents. The Interborough Rapid Transit Company, New York, joined with the Binghamton Railway in opposing the city's application for a writ of prohibition made before Justice Nichols at Albany, the case being looked upon as a test one to determine the right of the Public Service Commission to order an increase in fares where a contract exists fixing the rate at 5 cents.

The company seeks to raise the fare to 6 cents. The commission on June 28 refused to dismiss the application of Receiver William J. Phelps on the ground of lack of jurisdiction.

Trenton Company Asks More

The Trenton & Mercer County Traction Corporation, Trenton, N. J., has filed a petition with the Board of Public Utilities Commissioners asking for increased rates consisting of 1 cent for transfers on the local and suburban lines and four new 6-cent fare zones on the suburban service. The present rate of fare is 6 cents with free transfer in the city and 6 cents in each of the suburban zones. If the increase is granted riders in the city will have to pay 7 cents and suburban riders will have to pay 6 cents additional for the new zones proposed. The company, in its application, declares that with the present fares it had a deficit of $167,812 for 1918. New sources of revenue are required owing to increased wages and expenditures for improvements.

The proposed change in fare zones would add one zone each to the Hopewell, Princeton, Hamilton Square and Yardville lines. The present rate of fare to Hopewell and Princeton is 18 cents and the increase would make it 24 cents. The utility commission will set a date for a public hearing on the proposed increase. The company's petition, among other things, says:

> That the question of an increase in wages to certain of its employees is about to be arbitrated; that if any increase of wages should be awarded pending the determination of this application your petitioner asks for such further increases as may be necessary to produce additional revenue equal in amount to any increase in expenses caused by the decision of the board of arbitration now considering the rate of wages to be paid by your petitioner during the period of its next working agreement with its employees.

Transportation News Notes

Seven Cents in Butte.—The Railroad and Public Service Commission of Montana on July 23 issued an order granting the Butte Electric Railway an increase in fares from 6 to 7 cents. The commission in January, 1919, denied the company's petition for a higher fare.

Seven Cents in McAlester.—The Corporation Commission of Oklahoma has approved the application of the Pittsburgh County Railway, McAlester, Okla., for an increase in local fares within the city limits of McAlester from 5 cents to 7 cents. The increase becomes effective immediately and applies only within the city limits.

Increasing the Short Hauls in Kansas City.—The Kansas City (Mo.) Railways is rerouting its cars to give special attention to the short hauls. Under the new plan service will be concentrated in congested districts. The changes are in the interest of better service to the patrons and to overcome so far as possible the severe competition of the jitneys.

Jitneys Regulated in Biddeford, Me.—Jitney operators of Biddeford, Me., are required to pay license fees of $20 and $30 depending on the size of their vehicles, under the terms of an ordinance passed recently by the City Council. Bonds or insurance policies of from $3,000 to $6,000 are to be deposited with the city clerk before licenses are issued.

Naval Base Employees Protest Fare Advance.—Employees of the Norfolk naval base recently protested through Admiral Fechteler against the proposal of the Virginia Railway & Power Company to increase fares to the base. In reply the company contended that the service was adequate and that the increase was necessary on account of higher operating costs.

Four-Cent Fare Hearing Closed.—The Public Service Commission for the First District of New York has concluded hearings in reference to the application of the Van Brunt Street & Erie Basin Railroad, Brooklyn, for permission to increase fares from 3 cents to 4 cents. The distance traversed by the line is slightly more than a mile. The company's franchise permits a maximum charge of 4 cents.

One-Man Cars Discussed in Richmond.—The City Council of Richmond, Va., has been investigating the operation of one-man cars with a view to their use by the Virginia Railway & Power Company. The city attorney has been instructed to advise the committee on streets as to the legal rights of the company in installing such cars. It was agreed that the safety features of the car should be looked into.

Transfer Charge Allowed.—The City Council of East Liverpool, Ohio, has consented to an increase in fare on the lines of the Steubenville, East Liverpool & Beaver Valley Traction Company, consisting of a 1-cent transfer charge. After consideration of an appeal from the company for financial relief, the Council directed the city solicitor to draw up an ordinance allowing the new charge, which will be passed immediately.

Baltimore Fare Hearing Postponed.—The hearing of the application of the United Railways & Electric Company, Baltimore, Md., for an increase from the present 6-cent to a 7-cent car fare, was postponed from Aug. 4 to Aug. 7. There was a vacancy on the Public Service Commission, due to the resignation of Chairman Albert Towers. Governor Harrington stated that he would appoint a successor to Mr. Towers at once so that a full board might hear the company's case.

Will Seek Rehearing in Rate Cases.—The East St. Louis & Suburban Railway, East St. Louis, Ill., will seek a rehearing of its application to the Public Utilities Commission of Illinois for an increased fare between East St. Louis and Belleville and within the city limits of Belleville. The commission allowed a slight increase in the rate per mile on the interurban line, but it refused to permit the company to establish two additional fare zones, which was the chief object sought.

Increased Fare and Wages Held Up.—Petitions asking for a referendum vote on the ordinance granting the Ashtabula (Ohio) Rapid Transit Company an increase from 5 cents to 6 cents in fare have been filed with the City Clerk. This automatically suspends the operation of the ordinance until the vote is taken. It also suspends the contract giving the men an increase in wages, as this was contingent upon an increase in the rate of fare. The vote will probably be taken at the regular election in November.

Wants Transfer Charge in Rochester.—Application has been made by the New York State Railways, Rochester Lines, to the Public Service Commission for the Second District for permission to charge 2 cents for transfers in the city of Rochester. In its petition the company says that in 1918 69,695,318 passengers paid fares on Rochester city lines and 23,529,602 passengers were carried on transfers. It says that the free transfer has become a burden upon the company, which, coupled with a 5-cent fare to which the company is limited, threatens destruction of its property.

No Fare Increase in Newcastle.—An increase in fare from 6 cents to 7 cents, as proposed by the Mahoning & Shenango Railway & Light Company on the lines of the New Castle (Pa.) Electric Street Railway and the New Castle Mahonington Street Railway, which it leases, has been refused by the Public Service Commission of Pennsylvania. The 6-cent fare was granted by the commission on April 28, and under the present agreement will remain in effect until May 1, 1920, when a 5-cent fare will be restored unless the company can show that the revenue derived from the increases is necessary for operation.

One-Man Cars Barred.—One-man cars have been barred in Beaumont, Tex., on account of their encouraging race feeling, and the City Council has denied the application of the Beaumont Traction Company for authority to purchase six additional cars of this type for use on the Beaumont lines. The Council took the position that the cars being so constructed that negroes are compelled to pass through that section of the car set apart for white persons in entering and leaving them, race hatred is engendered which leads to frequent clashes between whites and blacks. Use of the cars was opposed by the company's white patrons.

Agitation for Safety Devices.—A conference between the City Commission and officials of the Birmingham Railway, Light & Power Company, Birmingham, Ala., will be held in a short time on the question of providing local cars with safety devices. At a meeting of the City Commission on July 29, a committee from the Trades Council charged that most of the recent accidents in Birmingham were due to lack of proper safety appliances on the cars. A resolution was adopted by the Commission calling for a conference with officials of the company to take up the question of safety appliances. A committee of the commission was appointed to investigate the matter and report to the commission prior to the conference.

New Bedford Would Retain the Nickel.—The retention of the traditional nickel as the basic fare, the elimination of the transfer privilege and the establishment of a zone system, whereby two fares will be collected on some of the longer lines, is the plan announced by the directors of the Union Street Railway, New Bedford, Mass. In their opinion, it is the method best adapted to produce the added revenue the corporation needs in order to meet the greater demand upon the treasury, occasioned by the substantial increase in wages granted recently to all the employees of the company. In order to sound public sentiment as to the course they had better follow in the effort to increase the corporation's income, the directors had canvassers about the streets for several days to ask men and women what method they favored. The persons interviewed were selected at random wherever crowds congregated, and of more than 1000 who were approached, over 700 expressed their preference for the plan which will be adopted. The question of a fare increase has been brought to a head by the recent advance in wages to the company's men, as noted on page 292 of this issue.

Personal Mention

Mr. Dempsey Goes Into Oil

Vice-President of B. R. T. In Charge of Operation Becomes Connected With One of the Most Successful of the Independent Oil Companies

John J. Dempsey, vice-president in charge of operation of the Brooklyn (N. Y.) Rapid Transit Company, tendered his resignation on Aug. 5 to take effect on Sept. 1. Mr. Dempsey resigns to become connected with the Seamans Oil Company, with headquarters in New York, said to be one of the largest and most prosperous of the independent oil companies, with wells and acreage in Kansas, Oklahoma, Texas and Louisiana.

Mr. Dempsey has had a remarkable career in railway work and is undoubtedly one of the ablest operators in the field. He was elected vice-president of the Brooklyn Rapid Transit organization in December, 1917, to succeed S. W. Huff, after having started with the company in 1894 as a telegraph operator with the Brooklyn Union Elevated Railroad. This was not the beginning, however, of Mr. Dempsey's railroad career, for he had entered the service of the Lehigh Valley Railroad as a boy. After remaining with the Brooklyn Union Elevated Railroad from 1894 to 1897, Mr. Dempsey resigned to return to the Lehigh Valley as a telegraph operator. From this position he was promoted to yardmaster. In 1902 he resigned from the Lehigh Valley and returned to the employ of the Brooklyn Rapid Transit Company as assistant dispatcher.

J. J. DEMPSEY

Quick acknowledgement followed of his ability, and his rise after this with the Brooklyn Rapid Transit Company was very rapid. He was successively advanced from assistant dispatcher to dispatcher, trainmaster, chief dispatcher, assistant superintendent and finally superintendent of transportation of the New York Consolidated Railroad (Brooklyn Rapid Transit System). Then followed his election as vice-president of the operating subsidiaries of the Brooklyn Rapid Transit Company, including the Brooklyn Heights Railroad, Brooklyn, Queens County & Suburban Railway and others.

Despite the fact that Mr. Dempsey was largely responsible for the entire operation of all of the surface and elevated lines in the Brooklyn Rapid Transit System, which is the second or third largest perhaps in the world, he found time to engage in association activities and served on a number of committees of the American Electric Railway Association and was president of the New York Electric Railway Association in 1915-16. He is also at present a member of the executive committee of the American Electric Railway Transportation & Traffic Association.

The withdrawal of "Jack" Dempsey, as he is familiarly known to a wide circle of acquaintances, from the transportation field, particularly at this time, when the need is felt for men who, like him, have a keen appreciation, born of personal knowledge, of the hopes, aspirations and trials of the men who keep the transportation wheels turning, is a distinct loss to the company with which he has been so long associated and to the industry of which he has been a part.

Edward Dana has been appointed acting general manager of the Boston (Mass.) Elevated Railway succeeding C. D. Emmons, who resigned recently to become president of the United Railways & Electric Company, Baltimore, Md.

Timothy J. Donahue, formerly superintendent of the Salem division of the Bay State Street Railway, now the Eastern Massachusetts Street Railway, has been assigned to the inspection department of the system with headquarters at Boston. Mr. Donahue has been with the system since 1905.

Charles DeMoss Emmons assumed his duties as president of the United Railways & Electric Company, Baltimore, Md., on Aug. 1, on which date also Thomas A. Cross, former president, became chairman of the board of directors. The election of Mr. Emmons to the presidency and of Mr. Cross to his new position took place at a meeting of the board on July 23, after a very careful survey of the railway situation for the purpose of strengthening the organization. Mr. Emmons was formerly general manager of the Boston (Mass.) Elevated Railway.

Ralph Broadwater, Sr., Sisterville, W. Va., recently submitted his resignation as superintendent and general manager of the Tyler Traction Company. At Mr. Broadwater's request the resignation was accepted, he stating that he wished to devote more of his time to private business matters and to closing up matters of the Union Traction Company, of which he was president and general manager until the sale of its properties a short time ago. Mr. Broadwater expects to take a rest, after which he will devote his full time to a bank in Pennsboro of which he is president.

Albert R. Olds has resigned as engineer of maintenance of way of the Havana Electric Railway, Light & Power Company, Havana, Cuba, effective on Aug. 15. Mr. Olds entered the employ of the Havana company in June, 1908. In January, 1909, he was placed in charge of the track and roadway department, with jurisdiction over the construction and maintenance of tracks, buildings and structures. In July, 1911, the civil engineering department was added to Mr. Olds' department and he was given the title of engineer of maintenance of way. Mr. Olds is going to Los Angeles, Cal., to enter the employ of Smith-Booth-Usher. His successor at Havana has not been chosen.

Obituary

F. W. Bullock, assistant purchasing agent of the Safety Car Heating & Lighting Company, New York, N. Y., died on July 16 at the age of thirty-eight years. Mr. Bullock was taken ill while on his vacation and his death came suddenly. He had been with the company for more than twenty years.

William O. Stout, formerly connected with the Minneapolis (Minn.) Street Railway, died on July 22 at Rupert, Idaho, at the age of sixty-one years. Mr. Stout, after practicing law and serving as probate judge, entered the employ of the Minneapolis Street Railway as claim agent, a position which he held for more than twenty-five years. Mr. Stout left the company in 1913 to go to Idaho.

James Gunn, superintendent of the Toronto (Ont.) Railway, died at his home in that city on July 25, after an illness of four months. The late Mr. Gunn was an historic figure in street railway development in Canada, having been connected with the Toronto Railway for more than fifty years. He was born in Banniskirk, Scotland, and settled in Canada in 1867. In those days the Toronto Railway was a small horsecar line and Mr. Gunn in addition to acting as secretary on many occasions took his turn as a conductor. When the present company acquired the franchise and converted the line into an electric railway system in 1892 Mr. Gunn became superintendent, which position he held until his death.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Cotton and Silk Products Show Advances

Bell Cord and Insulating Tapes Marked Up—Silk Insulating Materials Higher

Cotton products have again reacted to an advance in the cotton market, short lived though it was, and to general labor conditions, and prices in some instances have been marked up. A week ago manufacturers of cotton bell rope and register cord advanced their prices from 6 to 10 per cent. Although there has been no noticeable increase in buying by railways, general purchasing has increased. This of course has its effect in slowing down deliveries on cord.

All cotton insulation manufacturers did not advance prices this week. Cotton webbing has been reported up about 10 per cent and sleeving about 14 per cent as of Aug. 1. Varnished cambric has not appeared on the upward list at this time, but it is expected that it will respond in due course. Returns show friction tape higher by 2 cents a pound. There is no present indication that flexible non-metallic conduit is to rise.

ORDERS ARE INCREASING

Some cotton mills are 2 months behind on shipments. This is particularly true of the braiding mills. Other mills can make shipments in one month. Orders for cotton insulating materials are coming through in large volume, and the orders themselves are large. The export market has opened up in an especially attractive manner.

Silk for insulating purposes has become harder and harder to obtain, and supplies have been badly curtailed. The demand for silk for garments is increasing rapidly and the price has gone up in consequence. This has resulted in further advances by manufacturers of silk insulation, wherein silk covered wire increased about 10 per cent the first of August and varnished silk insulation the same amount.

Tool Steel Gear Sales Firm

A Buying Movement Is Developing—No Price Increases Likely—Production Satisfactory

Brisk sales of tool-steel gears and pinions indicate that a decided buying movement is developing in regard to these products. Sales have increased during June and July over earlier months and it is expected that August and September will show further increases in this respect.

The majority of orders are for maintenance although a goodly number of large companies are placing orders for new stock. Some, however, put in a large supply in the fall of 1918 prior to the signing of the armistice, and have sufficient stock to fill present demands and are in good shape except on certain sizes.

Labor conditions are satisfactory and the production is slightly above normal, hence an increase in prices is unlikely at this time. Deliveries are good.

High-Tension Insulator Market More Active

Orders for $1,500,000 Reported About to Be Placed—Prices Are Just Changing

The market for high-tension insulators has shown increasing activity, and great promise is held out for the near future. This is shown by the report that there are orders for about $1,500,000 worth of high-tension insulators in the placing at this time. The domestic market is opening up in good shape and the foreign market holds out extremely good hope. Projected European transmission lines form the basis for much of the foreign promise.

Prices on high-tension porcelain insulators are to advance 10 per cent on Aug. 11. It is some time since this product has increased and the advance was not unexpected.

LONGER DELIVERIES PREDICTED

Shipments of certain types of high-tension insulators may be made from stock, while shipments of other types are given at this time as thirty days. Manufacturers predict longer deliveries on account of increasing orders going through the factories and advise early ordering of any anticipated needs.

Although labor conditions are threatening, manufacturers report that they shall be able to make good on present deliveries, unless some unforeseen trouble arises. Operators who are forehanded are placing their orders now for two reasons, first, in order to secure deliveries in a reasonable amount of time, and second, to place their orders before conditions should become such that a further increase in price might become effective. The latter hinges on the cost of labor, which in the case of the ordinary high-tension insulators amounts to 50 per cent. As there is no likelihood of a decrease in insulator material, it is plain to be seen that the labor in this case is the controlling factor in regard to the price. Some little difficulty has been encountered in malleable fittings, but not sufficient to cause appreciable delay in present deliveries.

Copper Lower, But Some Products Advance

Rail Bonds at 7½ Per Cent—Overhead Line Brass Shows Increase of About 10 Per Cent

Although there has been no advance in copper in the past two weeks, prices have advanced or are about to advance on several items of electric railway material utilizing copper or brass. Copper may be purchased now at 22 cents a pound.

Rail bonds reached a higher level when the discount was changed to 7½ per cent on August 4. It was only two weeks ago that the discount dropped from 15 to 10 per cent. Orders for rail bonds are being received continually, but the volume is not so great as it should be at this time. Many of the railways have sent out inquiries on prices, but have not placed orders on account of financial difficulties. As soon as some of the relief which has been granted to various companies, in the manner of fare increases or in charges for transfers, is granted to other companies the volume of business will be greatly increased.

OVERHEAD BRASS INCREASES

Reports have been received that overhead line brass is to increase in the neighborhood of 10 per cent on August 11. This advance has been anticipated ever since the rise in copper sent up prices on manufacturered copper and brass products. In so far as these ears and other bronze goods are concerned prices on this line were reduced, following the market price of copper, during the early part of the year. But the continual advance in the copper market, plus increased cost of labor, will probably put the cost of this class of material back to where it was during the war, or possibly even higher, according to the statement of a prominent line material manufacturer.

It is also noted that malleable iron in small castings has been advanced on an average of 15 per cent during the last two weeks owing to the high wages which the foundries have had to grant the moulders. The general increase in labor of the character used in the manufacture of line material will average about 30 per cent. Shellac, which is used in the manufacture of line material, has advanced from 14 cents per pound just before the war to $1.10 at the present time.

The wire bases increased some this week. Six manufacturers of rubber covered wire are on a 28 cent base while 7 are on 30 cent base. The majority last week were on 28 cents.

Good Sales Expected in Car Fittings

Maintenance Orders on Curtain Fixtures Just Fair—Scattered Orders for Car Hardware

Car hardware, curtain fixtures and seats and seating material show but little activity although it is known that much equipment of this kind will be purchased in the near future. Maintenance orders as a rule are only fair. Many companies are operating cars with old or sun-faded curtains whose edges are badly worn, and these probably will be renewed this fall when the cars are overhauled. In places where hardware is missing is has not been replaced, and a considerable amount of this business is looked for when the companies begin making repairs.

Car seatings are in demand for spares although the volume of new business is not large. There has been no change in prices with the exception of genuine leather which has increased from 8 to 10 per cent. It is used in the smoking compartments of the inter-urbans. This is the first increase noted for several months in these lines.

The general feeling is that many roads will bring up their equipment to the condition that it was in previous to the war. All organizations are in better shape to take care of necessary repairs as most of the skilled employees have been released from the service. These men are available for the overhauling and repairs that have not been made in their absence, due to lack of finances or skilled labor.

Rolling Stock

Brooklyn (N. Y.) Rapid Transit Company has placd an order with the Pressed Steel Car Company for 100 subway cars.

Elmira Water, Light & Railroad Company, Elmira, N. Y., has placed an order with the Osgood-Bradley Car Company for seven safety cars.

Berkshire Street Railway, Pittsfield, Mass., has been authorized by the Public Service Commission to expend $74,000 for seventeen safety cars.

Marshall (Tex.) Traction Company has just received two new double truck cars for use on its lines in Dallas. The cars had been ordered for several months, but had been delayed en route.

Safety Car Devices Company, St. Louis, Mo., has received an order from the J. G. Brill Company, covering 200 sets of its complete air and safety control equipment including brakes, Westinghouse compressors and governors for the cars recently ordered by the Brooklyn Rapid Transit System.

Municipal Railway of San Francisco, Cal., through City Engineer O'Shaughnessy, has announced its preliminary plans for the construction of a new model street car for its Union Street branch. The Board of Public Works, it is reported, asked the supervisors to call for bids for the building of a sample car, designed particularly to meet the heavy grade conditions on that line. It is to be a center entrance and exit car, built at an estimated cost of $11,000 for the first car, on a cost-plus basis.

Recent Incorporations

Northeast Oklahoma Traction Company, Miami Okla.—Incorporated with a capital stock of $1,000,000 to construct and operate an interurban line from Miami to Commerce, Tar River, Picher and Hockerville, all in Ottawa County, Oklahoma. (Apr. 6, '18).

Track and Roadway

Pacific Electric Railway, Los Angeles, Cal.—Work has been completed by the Pacific Electric Railway on the electrification of the old Southern Pacific link between Colton Avenue and Market Street, Riverside. This line will be used by the interurban cars coming into the city from Redlands, San Bernardino and Colton.

Peoria (Ill.) Railway.—Work on the rehabilitation program as tendered the Peoria Railway by the city of Peoria, precedent to the 6-cent car fare agreement, will be begun by the middle of this month with the improvement of the Monroe Street line. An order for 250 tons of steel has just been placed by the company and the greater part of this will be used in relaying the Monroe Street line. Plans and specifications for rebuilding the cemetery bridge, leading to Glendale cemetery, are now in the hands of the company officials and that work is expected to be begun in the near future. The work of rehabilitation will cost about $100,000 and, according to the new contract, is to be completed by Dec. 1.

New Orleans Railway & Light Company, New Orleans, La.—The construction of a new line by the New Orleans Railway & Light Company, to be known as the Industrial Canal Line, has been approved by Judge Foster of the United States District Court and work will be completed about Oct. 1.

United Railways, St. Louis, Mo.—Receiver Wells of the United Railways has adopted the plans prepared by the company's engineers before the receivership for the reconstruction of twenty-one miles of track at a cost of $750,000.

Plainfield, N. J.—Residents of Plainfield, South Plainfield and Metuchen have taken steps to organize the New Jersey Trackless Trolley Company to build and operate a trackless trolley line between the three municipalities. Charles H. Frost and Tepper Brothers, Plainfield, have started the movement. It is estimated that it will cost about $125,000 to build and equip the line.

Interborough Rapid Transit Company, New York, N. Y.—Transit Construction Commissioner John H. Delaney has awarded to A. W. King for $810,279 a contract for the building of eleven stations on the Pelham Bay Park Branch of the Lexington Avenue subway. The bid of Mr. King was the lowest received. Contracts have already been let for general construction and track work and the former is in progress. Commissioner Delaney has also approved the award of P. N. Brown & Company of a contract for the construction of the new Atlantic Avenue station on the Brighton Beach connection of the Fourth Avenue subway in Brooklyn. The price was $85,781.

Philadelphia, Pa.—Sealed proposals will be received until Aug. 19 by George T. Atkinson, assistant director of the Department of City Transit, Philadelphia, Pa., for the construction of the tracks of the Frankford Elevated Railway on the elevated structure on Front Street, Kensington Avenue and Frankford Avenue between Callowhill Street and Harrison Street, 5 miles. The contract will include the furnishing and laying of about 11 miles of single track, of which 38,900 ft. will be laid in stone ballast and 20,800 ft. will be laid with short ties bedded in concrete. Plans and specifications may be obtained upon deposit of $10, which will be refunded upon the return of plans.

Sherbrooke Railway & Power Company, Sherbrooke, Que.—Plans are being made by the Sherbrooke Railway & Power Company for the construction of an extension of its lines.

Dallas (Tex.) Railway.—Work on a new interurban line for Dallas will be begun within the next few months, according to formal notice to this effect given to the City Commission by J. F. Strickland, president of the Dallas Railway. The traction company is obligated under its franchise to build two interurban lines at least 30 miles in length each. Work on the first must start by Oct. 1, 1919, and on the second by Oct. 1, 1920.

Corpus Christi (Tex.) Railway & Light Company.—It is reported that improvements will be made to the property of the Corpus Christi Railway & Light Company, recently placed in the hands of a receiver, as soon as the sanction of the court for the same is obtained.

Waco-Temple Interurban Association, Waco, Tex.—H. W. Meisner and H. L. Dailey, both of Temple, have been selected as directors of the Waco-Temple Interurban Association, promoted by O. A. Ryfle of Waco, with the announced purpose of building and operating an interurban line between Temple and Waco. Contract for surveys has been awarded by the Assocaition to the J. G. White Engineering Company of New York and work has already begun on these surveys which will determine the route to be followed by the line. [July 5, 1919.]

Wichita Falls, Tex.—The immediate construction of an electric interurban line from Wichita Falls to Burkburnett, 10 miles north, is proposed by a company now being organized among the oil men of these two towns. Burkburnett interests have pledged $50,000 of the proposed $200,000 capital stock to be sold, and Wichita Falls men have agreed to underwrite the remaining $150,000. Leading business men of the two towns are interested in the movement.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—It is reported that the Wisconsin Traction, Light, Heat & Power Company will extend its lines to nearby towns. Work on the construction of an extension to Hortonville has been begun.

Power Houses, Shops and Buildings

Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala.—A cold storage plant and creamery will be constructed by the Tuscaloosa Railway & Utilities Company.

British Columbia Electric Railway, Ltd., Vancouver, B. C.—Plans have been prepared by the British Columbia Electric Railway for the construction of a transformer station at Barnet.

Shore Line Electric Railway, Norwich, Conn.—The Shore Line Electric Railway has petitioned the Public Utilities Commission of Connecticut for its approval of the method of construction of a 33,000-volt transmission line from Hallville to the Noank substation.

Union Traction Company of Indiana, Anderson, Ind.—The directors of the Union Traction Company of Indiana are negotiating for the purchase of the power plant at Detamore and the water rights of the Cartwright stone quarry.

Winnipeg River Power Company, Winnipeg, Man.—Work has been begun by the Winnipeg River Power Company on the construction of a large hydro-electric power plant at Dubonnet Falls on the Winnipeg River, 75 miles from Winnipeg. The company, which is closely allied with the Winnipeg Electric Railway, contemplates not only supplying power to the latter company but to develop an extensive power business in towns throughout Manitoba. The cost of the plant and transmission system is estimated at about $6,000,000.

Missouri & Kansas Interurban Railway, Kansas City, Mo.—Preparations are being made by the Missouri & Kansas Interurban Railway to extend its electric lighting, power and heating service in the towns and farming districts along its railway lines. Substations will be located at Adams and at Milburn Place. The company obtains all of its energy from the Kansas City Light & Power Company.

Chatham, Wallaceburg & Lake Erie Railway, Chatham, Ont.—It is reported that the Chatham, Wallaceburg & Lake Erie Railway will be operated under hydro power in about a month. Two 250-kw. rotaries will be installed in Chatham, one at Wallaceburg and one at Cedar Springs.

Trade Notes

Naugle Pole & Tie Company, Chicago, announces the opening of a branch office, in charge of E. L. Morier, at Room 800, 41 Park Row, New York.

Hess-Bright Manufacturing Company, Front and Erie Streets, Philadelphia, has taken bids for a two-story addition, 43 ft. by 105 ft., for its ball-bearing factory.

The American Precision Works, 135 Cedar Street, New York City, plans to remove its works to some city near New York, probably Newark, where it will increase its manufacturing schedule.

Inquiry No. 30,032.—A street railway company in Spain wishes to receive catalogs of materials such as rails, overhead construction and electrical conductors. Correspondence should be in Spanish.

Westinghouse Air Brake Home Building Company, an interest of the Westinghouse Air Brake Company, Wilmerding, Pa., has bought eight and one-half acres of ground in Swissvale, Pa., near its plant, on which to erect homes for employees of the Westinghouse interests.

Trump Manufacturing Company, of Springfield, Ohio, manufacturer of water-power machinery, announces that R. A. Burford, of Atlanta, Ga., has been appointed general representative of the company for the sale of hydraulic turbines in Georgia and North Carolina. Mr. Burford's office is in the Forsyth Building, Atlanta.

Dr. Edgar Kidwell, M. E., formerly Pacific Coast manager of the Babcock & Wilcox Company, New York, has been elected general manager of the Kidwell Boiler & Engineering Company, organized at Milwaukee, Wis., with a capital stock of $1,000,000, to manufacture high-pressure water-tube boilers of his own design.

F. N. Cooley has been promoted from assistant sales manager to sales manager of the Seattle office of the Western Electric Company. Mr. Cooley first became associated with the company in 1912 as lamp salesman at San Francisco. Two years later he became supply specialist at Seattle, a little later becoming assistant manager there.

Green Engineering Company, East Chicago, Ind., announces the appointment of the firm of Bull & Livensparger as its sales representatives in Chicago and northern Illinois territory, with headquarters at 14 East Jackson Boulevard. Mr. Bull has been connected with the company as an engineer for the past seven years, and Mr. Livensparger has been a member of its sales force for the past nine years. For these reasons the members of the firm bring a wealth of experience to their new work.

Edison Lamp Works of the General Electric Company on June 8 delivered to the Republic Electric Company, Cleveland, Ohio, one of the new Mazda C-4 tipless lamps, via aerial mail service. The regular mail plane left Belmont Park, New York, at 5 a.m., arriving in Cleveland about noon, and the lamp was delivered to Louis Griesser, president of the Republic Electric Company, in good condition, through the regular post office channels. The transportation department of the Edison Lamp Works announces that it is now ready, in cases of emergency, to make delivery of lamps by aëroplane, in all sections of the country covered by government aerial mail. It is expected that Heller Field, at Newark, the largest government landing field for aerial mail service in the East, will be ready for use shortly, and this will make for even quicker service. Packages shipped by aerial mail are limited to 30 in. in length and girth.

British Electrical Importers' Association.—It is reported in the London *Electrician* that the Electrical Importers and Traders' Association has recently been formed and several leading firms have already applied for membership. The object of the association is to combine importers and traders in opposition to the action of British manufacturers for the total prohibition of imports of certain classes of electrical and allied goods. The association will oppose such unreasonable restrictions of trade and will try to secure reasonable facilities for importing and distributing such goods as are required by the public and are not manufactured in England either in sufficient quantities or suitable quality. The association is in full sympathy with legitimate means of fostering home industries and encouraging the handling of British goods, but considers that established importing interests should be fairly treated and is not willing to see the trade given over to a group of manufacturers to the detriment of consumers. The address of the association is 97 Cannon Street, London, E. C. 4. Frank W. Challis is secretary.

New Advertising Literature

Lungmotor Company, 711 Boylston Street, Boston, Mass.: Booklet on the Lungmotor and the Need of It.

Electric Undercurrent Company, Lamberton, W. Va.: Catalog descriptive of a sectional surface contact system.

Blaw-Knox Company, Pittsburg, Pa.: Bulletin No. 200, descriptive of Blaw cableways, of the automatic single-rope type.

Combustion Engineering Corporation, New York, N. Y.: Illustrated booklet showing details of construction of the Crieve grate for hand-fired boilers.

Clark Tructractor Company, Chicago, Ill.: Illustrated pamphlet showing construction and application of the "tructractor," a gasoline-propelled truck of small size for hauling trailers in industrial establishments and elsewhere.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, August 16, 1919 *Number 7*

Will a P. O. and Nickel Fare Platform Elect?

EX-GOVERNOR EUGENE N. FOSS of Massachusetts has announced his intention to be a candidate for the gubernatorial nomination at the primaries next month on a platform of public ownership of the public utilities and 5-cent street car fares. This he believes is the issue of the hour, at least in Massachusetts, and his announcement repeats his statement made at the hearing in Washington that he was advocating public ownership in the interest of a better democracy. Electric railway interest may watch this movement in Massachusetts with keen attention, for the results will give an expression of the will of the people on this subject as of to-day. It may be that the public is thinking differently of the matter now than it has in the past and hence, if the final campaign issue in Massachusetts proves to be the ex-governor's platform, then the answer which will be supplied will throw much light on this situation generally.

Mr. Foss is the only Democrat who has ever served three terms as governor of Massachusetts. He has also been prominently identified with a number of traction properties in New York and Massachusetts, so that he has studied the matter both as owner and from the public point of view. This adds to the interest of his present platform.

Higher Fares Will Succeed with Better Service

THE fact that the makers of other commodities have succeeded in getting higher prices for their product without improving its quality or the quantity of the same is small consolation for the electric railway operator who faces a diminishing clientele because of much smaller increases in street railway fares. The only way to do is to take the phenomenon for granted regardless of theories, and try to find a way out of the tangle.

Perhaps there is no one best course out of that tangle. Still, a reasonably safe road is the introduction of more service rather than less when a fare increase is necessary. We can think of nothing less likely to coax back the patron of 5-cent days than the cutting down of mileage in proportion to the losses that usually follow in the immediate wake of a fare increase. Many a man who dropped off upon the increase in fare would come back in a few weeks if his determination to stay away were not stiffened by cuts in service which turn him into a confirmed walker, a jitney patron or an automobile owner.

"But," says the despairing management, "what else is there for us to do? We must earn so many cents per car-mile run." Herein lies the fallacy of the long headway. Better to earn less per car-mile but run more car-miles and at a lower cost per car-mile. That lower cost is obtainable to the greatest degree with new cars of one-third the weight, and one-half the platform expense, but even with the existing cars wonders can be worked at a cost not exceeding two months' wages of the rear platform alone! In an age when needless manual labor is inexcusable, in an industry where ample power is always on tap and at a time when every dollar is needed, no electric railway manager can afford to make his utility less useful to the public. Let him screw up his courage to the sticking point, if need be, and arrange to give this increase in service before rather than after an increase in fare. Then, and then only, will he be able to rely upon the fairness and squareness of the American public which does not hate any public utility with half the fervor that it hates a quitter.

Safeguarding the Quality of Factory Product by Materials Testing

WHEN a failure occurs with some piece of electric railway equipment, the cause is immediately sought to determine whether it was poor material, bad workmanship, faulty design, improper use or insufficient maintenance. There is a natural tendency on the part of operators to shift the blame for failure from their own shoulders, and the manufacturer is usually the first one asked for a reason. It is thus important for the manufacturer to test thoroughly the materials and detail parts of his product and, at the same time, to have the design of each piece of apparatus as nearly perfect as possible. These specifications require an intimate knowledge of the properties of the materials employed in its construction. To bring out this phase of the manufacturer's work, J. S. Dean explains in this issue the way in which one manufacturer tests materials that enter into the construction of railway motors.

This article, among other things, brings out the large variety and number of materials which enter into the construction of a railway motor. In fact, there is a constant demand for new materials or new combinations of materials that will meet the service conditions encountered. Some of the remarkable advances in railway apparatus which have been made in recent years have been the result of new applications or the use of untried materials. For example, the necessity for using a steel of very high tensile strength and ability to resist shock and vibration in railway motor work has led to the use of alloy steels. Testing is an essential part of such development.

The necessity for determining the properties of materials is illustrated by the test outlined for the hardness of copper used in railway motors. Hard copper is required for commutators and soft copper for coil windings. It is not sufficient to say that copper is hard or soft, but methods must be devised for determining relatively how hard or soft the material is. Further, in perfecting a motor design, magnetic flux, magnetic pull, permeability, heat dissipation, etc., must be taken into account. For example, the amount of heat that can be dissipated by the motor and its several windings varies with different methods of insulating the conductors, and this difference considerably affects the cost of our modern motors.

In any decision on the materials to be used, the question of price is most important. Sometimes a designer may be prevented from using the most desirable materials because the customer will not pay enough for the product to permit this. With sufficient data available from tests, the designer can select material that will be sufficiently reliable for the service within price limitations. Prices are largely determined by competition, and it requires more than a verbal statement to convince the buyer that the materials furnished will perform the service or that a higher price is warranted due to the better qualities of the materials. Accurate testing will furnish this.

Again, the manufacturer of apparatus finds testing necessary because the same processes and methods of manufacture do not always produce the same quality of material. Take, for illustration, the product of the steel foundry. Here all heats are not equally good, and one part of each ingot is inferior to the remainder. The inferior part that cannot be sold must remain as scrap or be worked over again, with increase in manufacturing cost of the marketable product. Hence the inducement to the steel man to force as much of his product as possible upon the purchaser, even though some of it may be slightly inferior. The testing department prevents this.

Is There Any Standard Track Sub-Construction?

WHAT is the best track sub-construction? Naturally the answer is, that which will remain in good condition the longest, at the least cost, require the least maintenance and maintain the smoothest and most serviceable pavement. But what will do this? There seems to be a difference of opinion.

Thus, at the recent meeting of the Illinois Electric Railways Association the author of a paper on track maintenance maintained that the expense of monolithic concrete construction was not warranted either by the improvement in the finished work or by the decreased maintenance, and during the discussion which followed all of those who participated agreed with this contention. It was also contended that the cheapest wood ties were the best for paved track and that a 7-ft. tie was just as good as one 8 ft. long. On the other hand, there are advocates of the solid concrete construction and steel ties as first choice. This is borne out in one instance by an article which appeared in the ELECTRIC RAILWAY JOURNAL on May 3 on the Chicago standards.

Another emphatic statement by the Illinois delegates was that manganese rails and crossings are absolutely useless. This is somewhat the same idea, stated more positively, as that outlined in an editorial in this paper on July 12. There are some, however, who consider manganese curves and special work well worth the additional cost.

A third subject is that of paving. The delegates at a recent convention of Iowa electric railway operators were unanimous in their approval of brick for ordinary traffic, with granite block for exceptionally heavy service, and in their condemnation of wood block. At the Illinois meeting it was stated that service had demonstrated that a smoother pavement than either granite block or brick was necessary and that wood block and monolithic pavement were best for heavy traffic.

All of these facts simply illustrate the divergence of opinion. In some respects it is fortunate that all engineers do not think alike, else many commercial products would find no champions. Of course "old man Local Conditions" is the big factor which dictates the choice. Each property is anxious, however, to settle upon the best construction which will meet these local conditions, and we look forward to some further interesting papers and discussion on the subject of track construction at the Atlantic City Convention this fall.

Can City and Railway Be Good Partners?

THE deplorable traction situation of New York City brings up an interesting aspect of the question of partnership in electric railway enterprises between municipality and company. It is the essence of partnership agreements that the interests of the partners should be mutual. In the New York case it would seem that there is room for a perfectly legitimate divergence of view, although the result is unfair to the railway.

Without going into details, it may be stated that the Interborough Rapid Transit Company and the New York Municipal Railway Corporation are partners with the City of New York in the financial results obtained with the rapid transit lines built at the cost of the latter. When the agreements were made the Interborough Rapid Transit Company was granted a prior lien upon the net earnings for the purpose of paying an agreed-upon rate of return upon its investment in the pioneer rapid transit system which it had been operating under an earlier agreement. A very similar plan was followed in the Brooklyn case.

What looked like a good bargain at the time has now become an intolerable burden on the railways concerned, through the increases in costs and the continued increase in average length of ride. A situation has been reached where both the private and public partners in the enterprise are losing money at an alarming rate. Yet the present administration of the City of New York evinces no interest in any plan of continuing to make the rapid transit system self-sustaining. Its attitude appears to be that it can stand the losses at least as long as its partners.

Whether expressed or implied, this attitude brings out sharply the divergence of interests in a case of this kind. The railway as a private undertaking must stand on its own bottom. It cannot get new capital for better service unless it is giving a satisfactory return on the capital already invested. If it cannot sell its product—transportation—at a satisfactory price, it must be listed as a failure.

Contrariwise, the city partner may hold the view that the losses from transit operation are of less account than higher fares that might tend to discourage the spreading of the population, increase policing and sanitation charges, reduce the income from real city taxation, etc. In short, from the city's point of view, unrestricted transportation facilities are important enough to be paid for by others than the car riders alone.

whereas the private operator must not only depend absolutely upon the car riders for revenue but must actually turn over part of that revenue to the tax funds!

There is room for a wide difference of opinion as to the meaning of "good service" when one partner means as much service as the fare receipts permit and another partner means as much service as the municipal treasury can stand. So obvious a clash of interest brings out the weaknesses in public-private partnerships of the New York type. Justice is possible only in those service-at-cost contracts in which the operator is assured a certain return or at least the privilege of raising fares until that return is secured.

Massachusetts Wants a 5-Cent Fare Back

IS IT possible that the 5-cent fare is coming back? Is King Nickel Coin to regain his throne after having been banished in so many of his dominions and threatened with exile in other places? This is the thought that must come to mind when reading that the Massachusetts Senate has passed a bill fixing a 5-cent limit for fares on trolley lines in that State, the excess to be assessed upon the taxpayers.

If any state has had experiences with varying rates for car rides it is Massachusetts. That commonwealth was alive to the street railway situation and authorized fare increases before most of the other states woke up. It went farther than the others when the Boston trustee plan was approved. But the results under that measure have tended to irritate the car riders, more and more patrons having drifted away to "shank's mare" or the steam road competitors as the cost of rides mounted to 7, 8 and 10 cents. An additional wage burden estimated at $2,500,000 having been imposed by the recent strike settlement, the question of where next to turn for revenue became another menacing problem.

It is perhaps too early to say seriously that the trustee plan of operation, as carried out in Boston, is a failure. On its face, the measure appeared to offer an ideal solution of the transportation question. It happened, unfortunately, that there was much deferred maintenance to be caught up with and other expenses increased so fast that frequent changes in rates of fare were necessary. The security holders, of course, were safe in the guarantee of their return, but to insure this the people who used the cars—a constantly decreasing number—had to be taxed higher and higher.

Apparently the time had come for seeking other remedies, and as the Legislature was in session when the railway strike pointed to still more complications, the 5-cent maximum fare bill was quickly approved. Supporters of this 5-cent fare law argued that the burden of an indispensable public utility should not fall wholly upon those who use it but should be borne in part by those who share in its benefits, directly or indirectly. It was pointed out that if the maintenance of a fire department justifies taxation, the people of a community should share also in the cost of maintaining an important transportation system.

In view of the extent to which some form of subsidy is being urged, though not by railway men, it would be quite worth while for the Federal Electric Railway Commission to consider it, even if only to outline when and where subsidies are desirable. Such a study, in our opinion, would show that the number of such places is extremely limited. What the industry as a whole wants is to be given just a fair chance to stand on its own legs. That means relief from all of those imposts which arise out of no part of the production of the commodity, transportation, and a reasonable measure of freedom in collecting what, and only what, is the actual cost of that commodity, including the continuing cost of the money which made the service possible.

Divergent but Concurrent Views on Electric Railway Crisis

AFTER an interruption of two weeks the hearings before the Federal Electric Railway Commission were resumed on Monday, Aug. 11, with the Secretary of War on the stand. The fact that an official of Mr. Baker's responsibilities would take several hours from his crowded schedule for this purpose is an indication of the intimate association in the minds of public officials between the public welfare and electric railway prosperity. The earlier hearings were arranged by the American Electric Railway Association effectively to stress the predicament of the industry, with a view ultimately to suggesting possible remedies. The second group of witnesses were selected by the commission for the purpose of bringing out the public's point of view.

Taking a perspective view of the testimony to date, a remarkable unanimity is seen among the views expressed by men holding all sorts of ideas as to causes and remedies. Focussing on the essentials, they in the main agree that through the action of gradual as well as unexpected influences, a vital public agency is in danger of collapse before the ordinary time-consuming remedies can be applied. Further, the crisis is recognized as so acute that preconceived notions as to theories and practices must be set aside for the time to permit some remedy to be used in time to save the patient. The commission repeatedly brought the witnesses back from discursions into the general field of economics to reply to the pointed question: "What can be done for the railways *now?*"

In studying the evidence presented to the commission, therefore, it can be divided into two parts: namely, that relating to the ultimate solution or solutions of the problem, and that bearing on the immediate solution or solutions. The testimony will help, we trust, in finding both. For the present we are primarily interested in the latter. In this connection opinion seems unanimous that such fares should be permitted as will produce the greatest net income, regardless for the time of ordinary restrictions. Then, after all unjust imposts are eliminated, taxes should be reduced, thus throwing a part of the railway load upon the shoulders of the general public. Concurrently and essentially the public and the railways must get together as never before to save the business from destruction, leaving to a later decision the determination of which can, in a given case, give the desired service with best satisfaction to the local constituency.

At the hearings it was especially interesting and encouraging to note that the state commissioners and others in administrative positions expressed deep concern in regard to the crisis and showed a sincere desire for justice to a utility which has so greatly contributed to the welfare and general prosperity of the country and is continuing to do so in increasing measure in spite of jitneys, private automobiles and other means of transportation.

Insuring Adequate Coal Supply with the Least Expenditure

Of Several Plans Considered the Layout Adopted for Handling Coal Represented the Most Efficient Use of the Investment—Special Ways to Keep the Cost Down Are Described

By GEORGE E. WOOD
Supervisor of Power Plants, The Connecticut Company, New Haven, Conn.

HAVING constructed a new power plant at New Haven, Conn., on a site adjacent to an old one, and having vividly in mind the experiences of the winter of 1918, this company realized from the points of view of continuity of service and efficiency, that new and larger coal storage and better transportation facilities, and more efficient handling equipment were necessary. All coal supplied to the old plant came by way of barges on the river. While there had frequently been a few days at a time during which the barge route was icebound, the situation in that respect did not become serious until the cold winter of 1918. With no railroad connections to the yard, it was difficult to get coal by that route, and anyway, the great shortage of cars which existed at that time made it practically hopeless, so that we had impressed upon us very forcibly our need for larger storage facilities.

With these requirements in mind, we set about to determine what plan could be worked out that would suffice and at the same time not entail too great an investment, for money was not readily available. The general plan of Fig. 1 shows the scheme which was finally decided upon.

The original coal-handling facilities consisted of an 85-ft. mast and gaff and steam hoisting engine, handling a 1½-yd. clamshell grab bucket. With this equipment, coal was unloaded from barges and transferred to an overhead receiving hopper from which it was discharged into 5-ton standard-gage coal cars operating on a wooden trestle 45 ft. high. These cars were hauled by

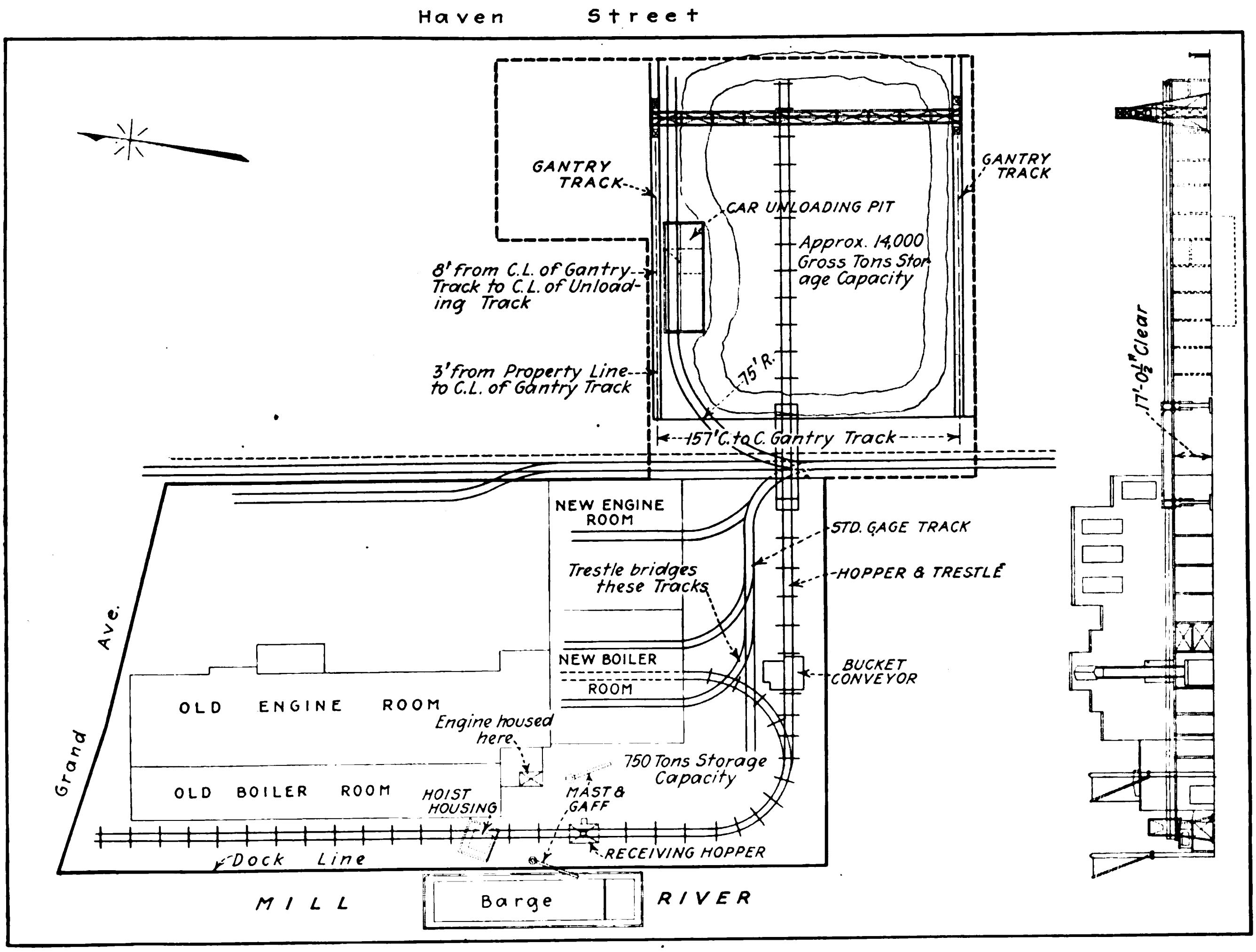

Haven Street
GANTRY TRACK
GANTRY TRACK
CAR UNLOADING PIT
Approx. 14,000 Gross Tons Storage Capacity
8' from C.L. of Gantry Track to C.L. of Unloading Track
3' from Property Line to C.L. of Gantry Track
75' R.
157' C. to C. Gantry Track
NEW ENGINE ROOM
STD. GAGE TRACK
Trestle bridges these Tracks
HOPPER & TRESTLE
NEW BOILER ROOM
BUCKET CONVEYOR
Grand Ave.
OLD ENGINE ROOM
Engine housed here
750 Tons Storage Capacity
OLD BOILER ROOM
HOIST HOUSING
MAST & GAFF
RECEIVING HOPPER
Dock Line
MILL
Barge
RIVER
17'-0½" Clear

FIG. 1—GENERAL LAYOUT OF COAL HANDLING EQUIPMENT AND STORAGE FACILITIES AT NEW HAVEN, CONN.

an electric locomotive and their loads dumped into a conveyor hopper or into a storage pile underneath the trestle. All coal was reclaimed from storage by means of a traveling monorail crane operating on a track suspended from the cap timbers of the trestle bents. As there was but one conveyor supplying bunkers, the monorail track was extended into the boiler room and down through the firing aisle, to permit getting coal onto the floor in the event of a failure in any of the conveyor machinery. The total available storage capacity in the layout was but 6000 gross tons, and this fact kept the fuel agents on the anxious seat during the winter when the barges would become weatherbound. There was also no possibility of securing rail connection for the plant, since there was insufficient space to install the necessary track and special work.

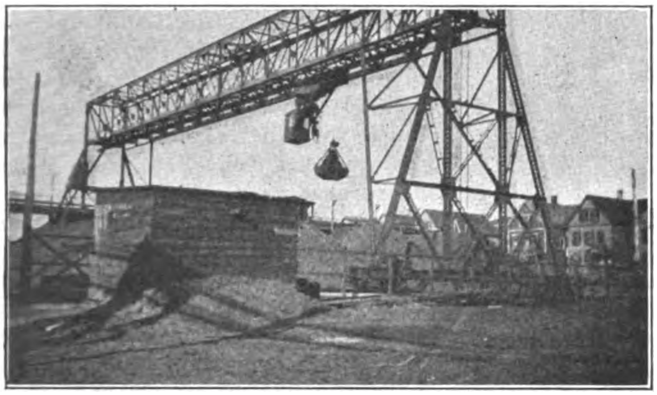


FIG. 2—TRAVELING TRANSFER AND PICK-UP BRIDGE CONSTRUCTION

Planning Additional Facilities

After a thorough investigation of the possibilities of utilizing any of the original property north of the plant for storage, it was decided that additional land would be necessary. Consequently, the piece of land inclosed by the dotted boundary line in Fig. 1 was purchased, it being the only property available.

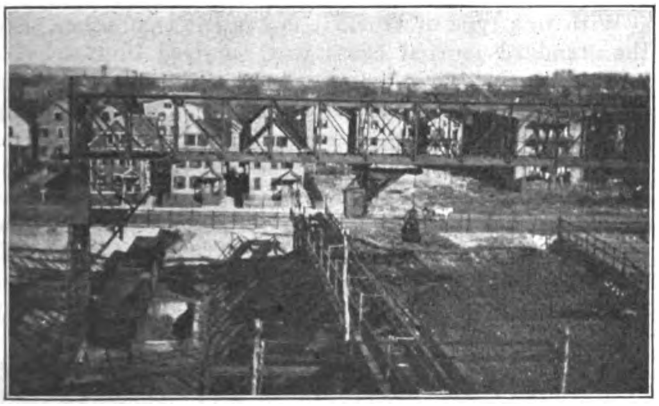


FIG. 3.—THE TRAVELING BRIDGE WITH TRESTLE CAR TRACK UNDERNEATH AND CAR DUMP PIT AT LEFT

The problem of getting coal from the water front to storage was next considered, and eight schemes were evolved, employing locomotive cranes, cable and automatic railways, belt conveyors, bucket conveyors, cable telpher, pivoted boom, and the traveling transfer and pick-up bridge. By the process of elimination, considering all the factors entering into each case, the traveling transfer and pick-up bridge shown in Fig. 2 was finally decided upon as the one which would be of the maximum service and at the same time involve the minimum cost.

Tentative plans were then drawn up, giving the overall dimensions for the structural steel bridge and towers and a contract for fabricating and erecting this part of the equipment was awarded the Berlin Construction Company. The span of the traveling transfer bridge from center line to center line of towers is 157 ft., with a clear height from railhead to lower chord of the bridge truss of 41 ft. 9 in. The monorail crane previously suspended from the cap timbers of the trestle bents along the river and used for reclaiming the coal from that storage pile, was later transferred to the steel pick-up bridge and suspended on the center line of its lower chord. A power rail supplies energy to its motor.

When the order for the traveling transfer bridge had been placed, the first work done in connection with the new storage area was to construct the footings and track for the traveling bridge. These footings were made of concrete set in the ground an average of 5 ft. apart where they rested on solid ground. These were then spanned by 8-in. x 12-in. yellow pine stringers, to which the 100-lb. T-rails were fastened with 6-in. screw spikes. At the same time work progressed on a concrete unloading pit 40 ft. long by 23 ft. wide and of sufficient capacity to contain three carloads of coal. This pit was located at one side of the storage area where the coal could be removed from it by the pick-up bridge, and so situated longitudinally that the length of track either side of the pit provided sufficient space for two cars. Three cars at a time could thus be set in the yard clear of the main industrial track of the Manufacturers' Railroad, and with the first car standing over the pit. The electric car which is used in hauling the ash cars from the plant to the dump is also used in shifting the standard coal cars.

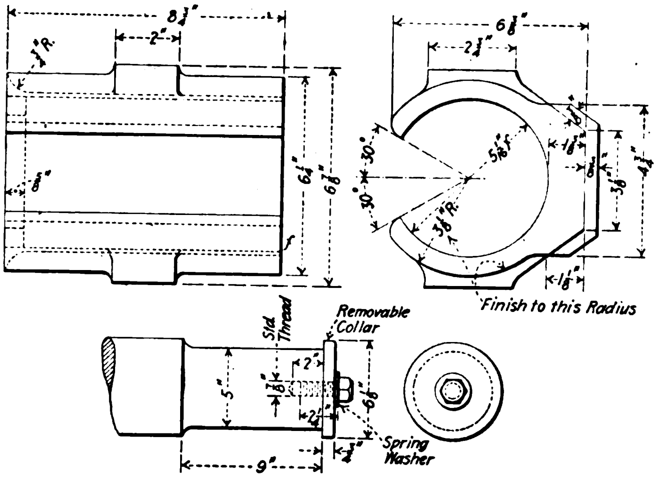


FIG. 4—SPECIAL AXLE BEARING BRASSES FOR TRAVELING TRANSFER BRIDGE

One of the problems which came up in connection with the transfer from the old to the new layout was the lowering of the old trestle 23 ft. without interrupting the operation of the coal cars at the higher level. This was done by cutting off the posts in the bents, and framing in new caps and stringers in the section of the trestle between the unloading mast and the conveyor hopper. New rails were laid and when ready, the cars and the locomotive were lowered to the new level and were operated there while the upper section of the trestle was removed.

This trestle was also extended in a curve into the

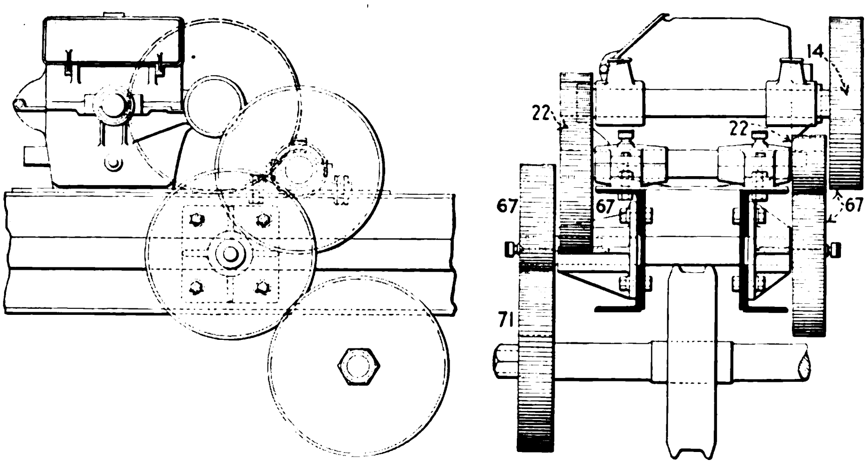


FIG. 5—GEAR TRAIN REQUIRED IN DRIVE MECHANISM OF TRAVELING BRIDGE

power house so that coal might be delivered, in case the conveyor broke down, on the boiler-room floor with end dump cars. In order to avoid having tracks for this purpose in the concrete floor of the boiler room, since it would be used only in emergency, use was made of some old tram rail. Iron thimbles were placed in the floor at proper intervals to receive steel dowels welded to the tram rail. Wooden dowels were placed in the floor at the proper spacing to receive screw spikes placed through the holes in the flat tram. By this means the rails can quickly be installed at any time they are needed, and yet the floor is kept clear of the obstruction for normal operation.

The section of the trestle between the conveyor and the Manufacturer's Railroad was next lowered and extended over the 34-ft. railway right-of-way and drive onto the new property. All old timber fit for further use was utilized in erecting the extension to the trestle across the new storage area. For the bridge members across the railroad, it so happened that the girder plates of one of the interurban line bridges had just been removed in order to strengthen that bridge, and these plates were made use of in the coal yard, although it took some figuring in order to utilize them. The bridge as built consisted of these steel plates with angle girders spaced 13 ft. 6 in. apart and supported at either end by box girder caps 14 ft. 6 in. long x 30 in. wide. These caps rest on a lattice column located on the center line of the track, the columns having a section 4 ft. x 15 in. This arrangement was necessary in order to provide clearance for the ash cars in going to and from the plant, since the curve is of such short radius as to cause considerable overhang. In constructing the bridge no new materials other than the plates and lattice bars, were purchased.

Power for the locomotive in hauling cars over the trestle is taken from a third rail which extends along the entire length of the trestle.

Power for operating the bridge and monorail crane is collected through a standard trolley pole and wheel (as manufactured by The Connecticut Company) and trolley base mounted on a bracket on the north tower, from an overhead trolley wire.

The trucks and driving mechanism were designed, manufactured, and installed by The Connecticut Company, as the expenditure necessary, had they been purchased from manufacturers, was prohibitive. The trucks consist of 24-in. double-flange steel wheels pressed onto 5-in. axles (turned out of old car axles) running in 5-in. x 9-in. standard MCB journal boxes of the freight-car type. These wheels are spaced in pairs 5 ft. 2 in. on centers, and 40 ft. from center to center of pairs, four on the north and four on the south tower.

The design of the trucks is somewhat similar to that of a car truck, the journal box being secured to the sills by two 1⅛-in. diameter bolts, and the bottom of the box being held rigid by an arch bar of 4-in. x ⅜-in. flat iron forged to shape. In order to prevent mutilation of the flange angles of the box and the sills, 1¼-in. plates were installed between the upper side of the journal boxes and the sills in such a manner as to throw all possible wear on these easily renewable filler plates. The wear due to thrust in the arch bars is cared for in a similar manner. Additional rigidity is secured by angle braces connecting the bottoms of each pair of journal boxes.

With this type of truck it is evident that other than the standard journal brass was required in the boxes containing the driving shaft or axle, in order to prevent the shaft from throwing out of line and thereby allowing the gears to be thrown out of mesh and the wheel flanges to bind on the rail head. This was taken care of at small expense as shown in Fig. 4, by making a brass provided with lugs at the center fitting against the side of the box, directly in line with the 1⅛-in. bolts which secure the box to the sill. The top of this brass is identical with standard design, thus rendering any

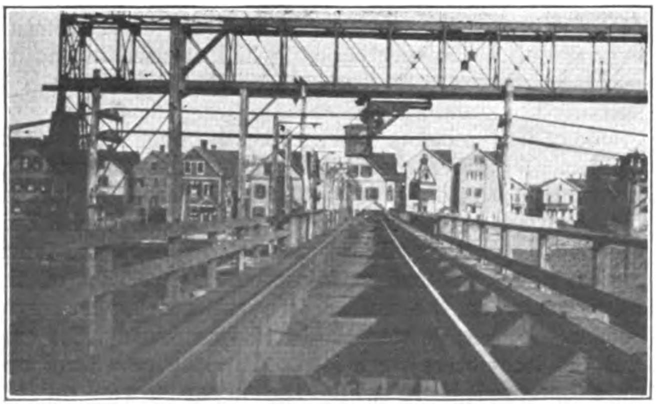


FIG. 6.—TRESTLE AND TRACK EXTENDING THROUGH MAIN STORAGE AREA

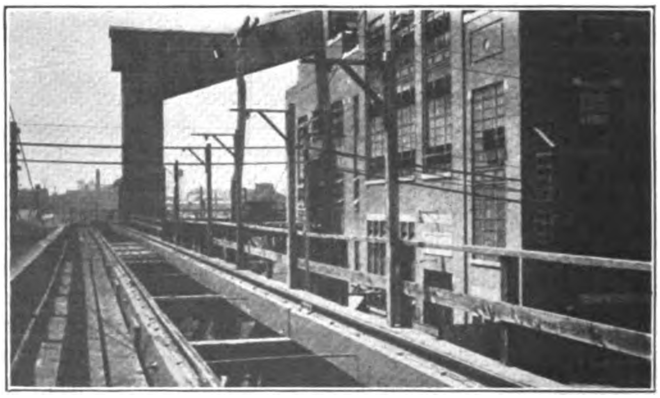


FIG. 7—LOWERED TRESTLE THROUGH OLD PROPERTY AND THE CONVEYOR WHICH DELIVERS THE COAL

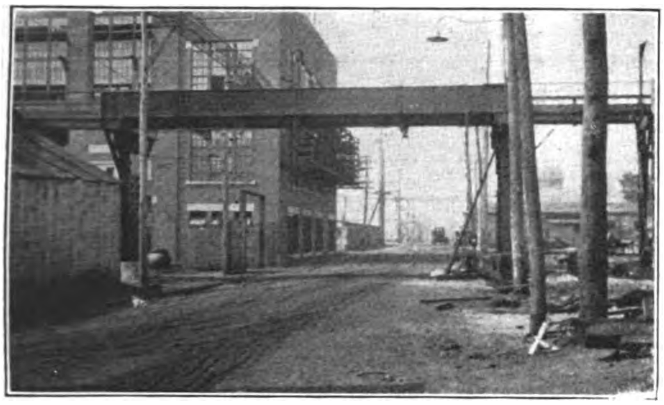


FIG. 8—BRIDGE OVER MANUFACTURERS' RAILROAD AND DRIVE

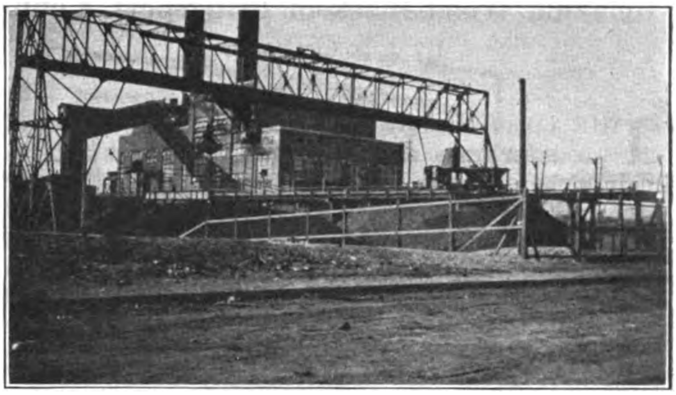


FIG. 10—POWER PLANT AND STORAGE AREA FROM HAVEN STREET

standard wedge of the proper size available for repairs. The sides are brought down around the journal and bored $\frac{1}{16}$ in. larger in diameter than the journal, the bottom being slotted to provide for lubrication. The brass is slipped in place from the end of the axle. This design successfully held the shaft in line.

Estimates were secured as to the cost of placing the driving motor for the traveling transfer up on the bridge with shafting and gears to connect it to a driving wheel on either leg. On account of the very long and heavy shafting and numerous bearings, and the beveled gears which would be required, the cost of this drive was very high and considered prohibitive. As a substitute, the scheme of placing a motor on the sill of each tower of the transfer and operating the two in series, was decided upon as an experiment. There was some misgiving as to whether this would work out satisfactorily on account of the difference in voltage which would be applied to the two motors even though they were connected in series. But the saving by such a scheme was so great that it was considered worth trying, and the nosing which it was feared would prevent satisfactory operation has been found to exist only in a very mild form.

The motors used were two GE-80 machines, installed one on the truck sill on either tower. These were connected through a train of gears and pinions of the type used on cars to the axles of two opposite wheels. The shafting used in mounting these gears was made from old car axles which were turned down and mounted in bearings specially designed for the purpose. The arrangement of the gears was complicated to a great extent by the difficulties of clearance and by the fact that it was impossible to cut a hole through the truck frame for supporting the gear shaft, at a point sufficiently near the top of the girder to mesh the gear and motor pinion. This made it necessary to resort to the multiplicity of gears shown in Fig. 5, but even with this, the saving over the usual method of driving such a structure was very great.

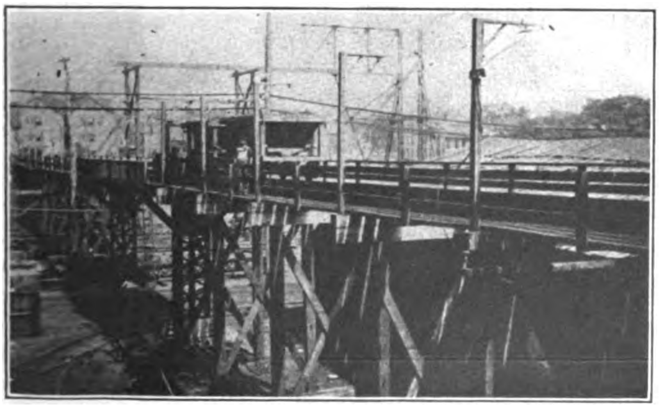


FIG. 9—LATTICED COLUMNS OF THE BRIDGE AND TRESTLE TIMBERING

SAFEGUARDS TO CONTINUITY OF SERVICE

By resorting to the various makeshifts which have been outlined above and utilizing old equipment wherever possible and doing practically all the work with its own forces, the company was able to provide the entire layout which has been described with an expenditure of approximately only $40,000. But the operation of the New Haven power station is now surrounded with every reasonable safeguard which would seem necessary. For example if the barge shipments of coal fail, coal can be received by railroad, and also promptly unloaded so that there is no demurrage to pay. If the railroad situation should be bad the barge would likely be in operation, but if not the new storage area provides approximately 14,000 gross tons of storage capacity which would keep the plant running for some time. If the mast and gaff working with the barge should fail, coal can be hauled from the main storage area or incoming cars to the bucket conveyor until repairs are made. If the bucket conveyor should fail, the track which has been extended from the trestle into the boiler-room floor can be used in conjunction with end-dump cars to bring coal into the boiler-room floor from whence it can be supplied to the boilers by hand until the conveyor is repaired. If the traveling transfer should be disabled, coal can be supplied in the absence of a barge by using the auxiliary mast and gaff adjacent to the barge end of the trestle to take coal from the 750-ton storage pile located there and lifted into the receiving hopper. This storage pile of coal is kept up to capacity by lifting coal from the barge and dumping it into the receiving hopper on the trestle, from which it is released through a chute on the opposite side of the hopper, rather than through the bottom into the cars. Apparently the supply of coal to the power house is well surrounded with safeguards looking toward the absolute avoidance of any shutdown from this cause.

A point of interest in connection with the recent strike of street railway employees of Chicago is the report that during the strike automobile thefts jumped from the usual average of ten per day to thirty, or an increase of 200 per cent.

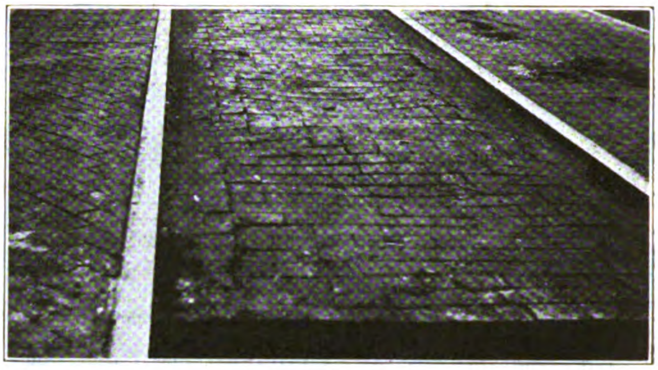
Relaying Wood Block in Bridgeport, Conn.

By J. S. Crandell
Consulting Engineer, General Tarvia Department,
The Barrett Company

THE Connecticut Company has a large yardage of wood-block pavement in Bridgeport that has to be maintained. That portion laid in the area where T-rails are used has given much trouble from bulging and blowing up. The wood blocks were originally laid on a sand cushion over a concrete base, with sand filler. Since the joints were not waterproof, water found its way easily to the sand cushion; the sand shifted, shoving the blocks up in some cases, and forming depressions in others.

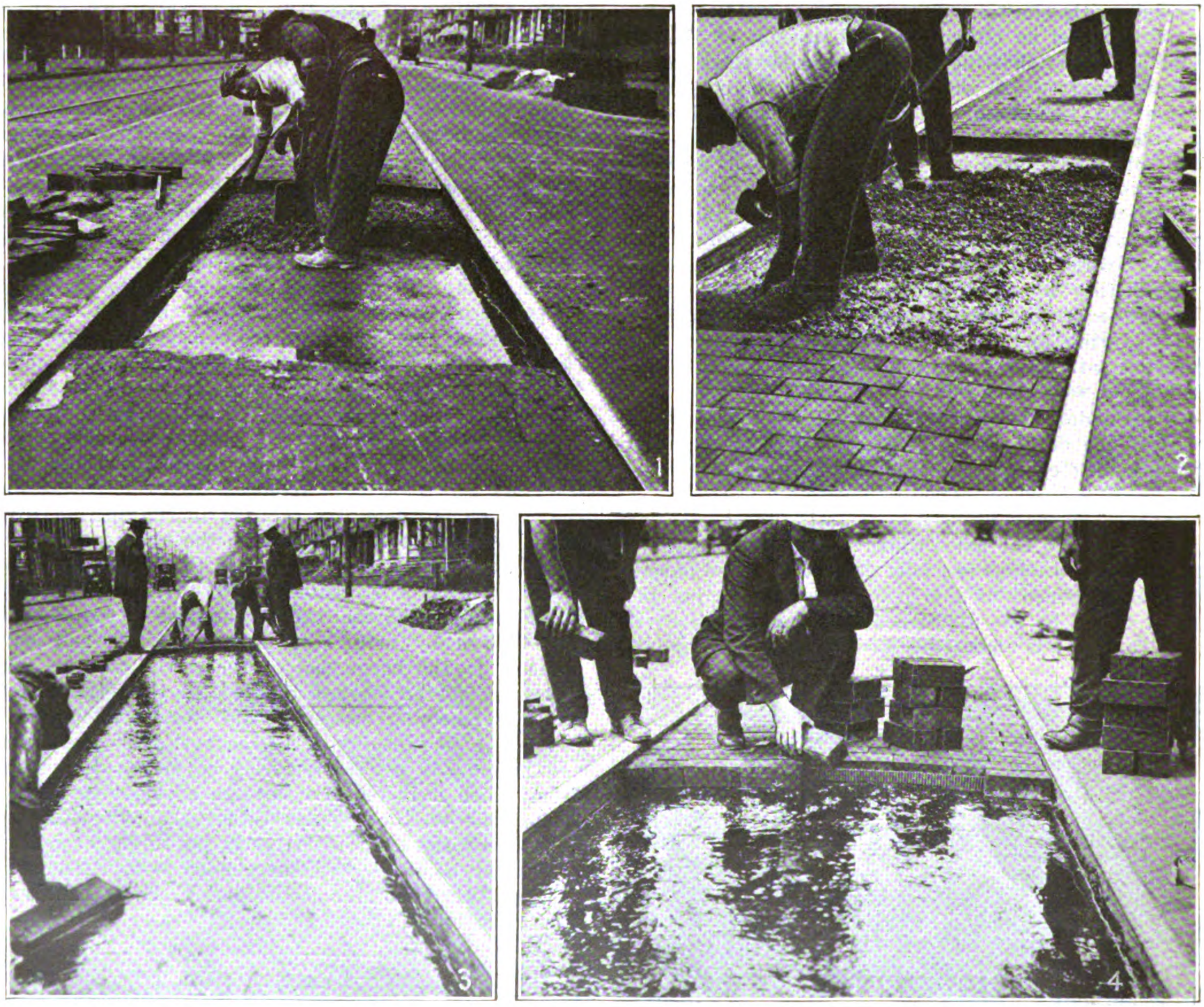
An accompanying illustration shows a section of pavement on State Street on a dry day. Wet weather causes severe bulging, so that it is no uncommon thing to have a dozen emergency calls in a day to have the bulges or "blow-ups" repaired.

After examining a number of failures it was decided to repave the worst areas. The blocks were removed carefully so as to save as many as possible. The sand cushion was shoveled out, and a 1 : 2 : 3 concrete was laid in its place. The crown between rails was reduced; the crown in the dummy or devil strip was kept about the same, as it was not excessive. The concrete was floated to a smooth surface and allowed to set for twenty-four hours. A coat of hot coal tar paving pitch was then spread at ½ gal. per square yard. After the pitch had cooled the blocks were laid on it and the joints filled half-way to the top with paving pitch.



BUCKLED PAVEMENT ON STATE ST., BRIDGEPORT, CONN.

An innovation was tried on June 6. With plain rectangular blocks it is often difficult to get the filler to



VARIOUS OPERATIONS USED FOR REPAVING BETWEEN TRACKS

1—Placing Concrete on Base
2—Sand Cushion Removed, Concrete in Place
3—Pitch Paint Coat Over Smooth Concrete
4—Applying Joint Spacers

flow into the joints. Numerous devices have been tried, with varying degrees of success, to separate the rows of blocks so as to allow the filler to enter the joints, and also to permit the blocks to swell without causing buckling of the pavement. The spacer used here for the first time is the invention of the writer, who has applied for a patent on it. It is simply a strip of single-face corrugated cardboard about 1¼ in. wide by 3/16 in. thick. This is placed between the rows, separating the blocks sufficiently to insure the entrance of the filler, allow expansion of the individual blocks, and yet not permit the blocks to drag or move. The trial of this spacer was very successful, and the following week it was used on Thirty-fourth Street, New York City.

The pitch paint coat and the waterproofing of the joints with pitch filler will prevent further trouble from expansion of the blocks in Bridgeport.

The work of repaving is being done under the direction of Mr. M. E. Stark, roadmaster of the Connecticut Company at Bridgeport, with Mr. Foster superintending construction.

Building Special Work with an Oxygen-Acetylene Cutting and Welding Outfit

With Practically No Tools Other than the Cutting and Welding Outfit, Frogs, Switches, Switchmates and Other Special Work Jobs Were Completed

By MONTELLE C. SMITH
Formerly Local Manager and Electrical Engineer, Brockton & Plymouth Street Railway, Plymouth, Mass.

EARLY in 1917 the Brockton & Plymouth Street Railway purchased an oxygen-acetylene cutting and welding outfit to reclaim and to prolong the life of installed special work. A few weeks of use showed that this outfit possessed possibilities far beyond all expectations, and we soon began to consider not only the repairing of installed special work, but also the building of new special work in our own shop with its aid. We have been building this special work at odd jobs as opportunity offered ever since, and feel entirely satisfied with the results achieved.

Since the major part of our badly worn special work consisted of frogs, these were the first pieces attempted, and more of these pieces have been built to date than of the others, though a few of the others have also been completed.

The first rail of the frog is shown in Fig. 1. To construct this two measurements only are necessary, the width of the through-rail head at the point *E* and the distance from this point to *F*, the end of the frog point. The rail is first heated to a red heat on the line *E D* in an ordinary blacksmith's forge; it is then bent by placing a "jim crow" with the head at *E* until the line *M E* produced falls on *F*. After this bend sets, the cuts necessary for shaping the frog are made with the cutting outfit. These are indicated by dash lines in the illustrations. In cutting, an iron straightedge is used as a guide for the cutting nozzle to insure the cuts being straight and smooth.

The construction for the second rail of the frog is shown in Fig. 2. The point *C* is located a distance from the end of the rail equal to *H D* in Fig. 1. The rail is then heated and bent so that the line *G C* projected will fall slightly outside the center line at *E*. The cut *E C* is then made and a distance *E F* equal to the *G H* in Fig. 1 is laid off and the cut *F D* is made. The two pieces can then be bolted together. Ordinarily, we fasten these with two ⅝-in. bolts and, to secure additional strength and rigidity, the rails are welded along the line *L M N*, Fig. 3, to a depth of approximately ½ in.

To shape the guard and leading-in rails of the frog, the outline of the frog point already made is laid out in chalk on the floor. The lines *A C* and *B C*, Fig. 3, are produced to *F* and *G*. At the points *D* and *E* where these lines are separated 1½ in. (the usual width of a flangeway) will come the bend in the leading-in rails of the frog. The points *H* and *I* are located 1½ in. out from the point rails. The lines *H D F* and *I E G* then show the shape of the leading-in rails and these are heated and bent as already described to conform to these shapes. Cuts made along *H K* and *J I* in the ball of the rail form the approach to the guide. The pieces are now ready for drilling and assembling.

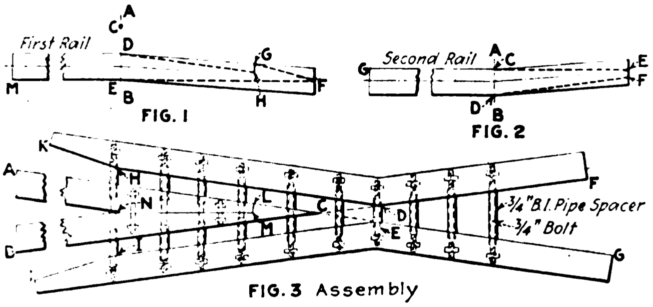


FIG. 3 Assembly

FIGS. 1, 2 AND 3—CONSTRUCTION OF THE FROG

To facilitate the drilling, the entire frog is spiked temporarily in close alignment and, so far as possible, it is drilled with one setting. This drilling is done with a ¾-in. drill and ¾-in. bolts are used for tying, so that a tight fit is secured between the tie bolts and the ¾-in. pipe used for spacers. It is important that black-iron rather than galvanized-iron pipe be used for spacers, as molten iron will not lie close to the latter.

The pouring of the castings, which is done at a local foundry, completes the frog. In pouring this casting the frog is laid right side up on a sand bed and fire clay and sand dams are made at the point where the castings are to be stopped. Also, a dam is made around the outside of the frog distant from the rails about 6 in. This space from the outside of the rails to the dam is filled first with molten iron and allowed to set until the entire frog is red hot, the advantage of this being that in this way the frog itself is expanded to the same degree as is the molten iron of the casting, and as the whole cools and contracts the fits between the rails and castings remain perfectly tight. When the frog is sufficiently heated, the inside casting is poured flush with the bottom of the ball of the rail or very slightly above it. The whole is then covered with sand and allowed to cool. When the frog is removed from its bed, the castings which have been poured on the outside for heating purposes break away, leaving only the casting between the rails.

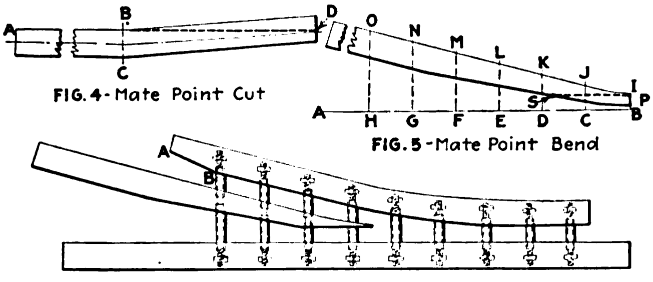


FIG. 4 - Mate Point Cut

FIG. 5 - Mate Point Bend

FIG. 6 - Assembly

FIGS. 4, 5 AND 6—CONSTRUCTION OF SWITCH MATE

We find that two men can build a frog of this kind complete, ready for the pouring of the castings, in an eight-hour working day after becoming familiar with the procedure. The average cost per frog complete, including the castings, has been $28.25.

HOW THE SWITCH MATE IS CONSTRUCTED

To make the switch mate a piece of rail on which we proposed to make the mate point is first cut to the desired length, as shown in Fig. 4. This rail is then heated and bent at some point, *B*, which need not be any specific distance from the end, but ordinarily should not be less than 18 in. This is bent until the line *A B* projects just outside the center line. The cut *B D* on the head is then made. Where the old mate is available we bend the new rail to conform to the old one. Otherwise, the curve is determined by taking the running side of the main rail of the old mate as a base and erecting ordinates at intervals. The distance from the running side of the main rail to the running side of the mate rail is laid off on each ordinate. Points are thus located (Fig. 5.) and a curve drawn through these, as *I J K*, etc., gives the shape of the mate point desired. The rail is bent to conform to this line. After bending, the cut *SP* is made, the point *S* being that point on the mate rail where the mate rail is separated from the running rail by a distance of 1½ in. After cutting the running rail to the desired length, this, together with the mate point, is placed temporarily in alignment (Fig. 6). For the guards we use scrap rail with an entrance cut, *A B*. This is bent to conform to the curve of the mate point and joins smoothly to the running rail. The guard rail is next temporarily spiked in position and the whole drilled and tied together in the same manner as the frog.

We find that two men can build a mate in practically three-quarters of a working day at an average cost of approximately $25.

BUILDING A COMPLETE SWITCH

The first step in the making of a switch is to form the offsets in the main and guard rails shown at *A* and *B*, Fig. 7. After these have been made, the rails are bent to the shape of the switch pan. The old rails may be used as a pattern or the shape of the inside of the rail may be plotted on the floor in the same way as previously described. The rail *G* is cut at the end to conform to the shape of the heel of the switch tongue and the piece of guard *H* is fitted. The pieces can be temporarily spiked in position and the whole drilled and bolted up in the same way as were the previous pieces. In drilling we spaced the holes at such a distance from the top of the rail ball that, when the top of the switch tongue is flush with the top of the rail, ⅜ in. of casting is allowed between the bottom of the tongue and the top of the pipe used as a spacer. After the switch is bolted up, we cut a piece of ⅜-in. steel plate to fit the space from the center of the bolt *J* to the center of bolt *I*, and spot-weld this to the spacers on these bolts. This brings the heel of the switch pan to the desired height with the advantage that at the heel of the switch where the greatest wear always comes, we have a steel rather than a cast-iron pan. The circle to accommodate the switch tongue pin is cut in this steel plate and on the under side a short piece of steel tubing is welded. The inside diameter of this is the same as the outside diameter of the switch-tongue pin. This tubing not only gives a tight fit between the pin and its socket with steel rather than cast iron to take the wear, but also obviates the necessity of coring out this pin hole in the casting, with the likelihood of having it somewhat out of place, and consequently getting a poor fit between the heel of the switch point and the rail *G*.

The switch is now ready for casting. The switch is first laid right side up and a wood flooring of ⅜-in. boards fitted from bolt *I* to the end of the guard rail at the switch point. Wood strips are also placed between the under side of the ball of the rail and the flooring. A long cope extending from bolt *J* to the end of the guard rail at the switch point is placed over the switch and thoroughly rammed. This cope is then removed and turned on its back on a previously prepared bed. The flooring is removed from the switch pan and the switch turned bottom side up on the cope. A dam for holding the preheating metal is made in the manner previously described. The switch is heated and the casting poured from the bottom. As soon as it has become sufficiently cooled to minimize the danger of bending, the switch was turned right side up and a casting poured from bolt *J* to the end of the guard at *E* from the top.

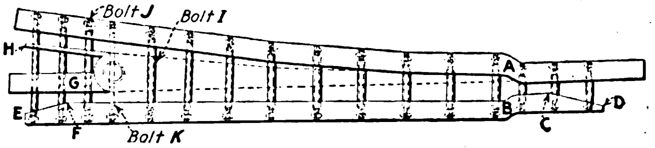


FIG. 7. CONSTRUCTION OF COMPLETE SWITCH

So far only one switch has been completed, and we cannot therefore give any very accurate data as to the time required for building or as to cost. The labor of two men for one and one-half days was required to build this first switch, and the entire cost of it, exclusive of the cost of the switch point, was approximately $39. Undoubtedly, this figure can be bettered as the men become more familiar with the work.

It is, of course, too early as yet to form an opinion as to the wearing qualities of this home-made special work compared to the all-rail special work that is made by the factory. We have had, however, two frogs in service for slightly over two years, one of these under fifteen-minute headway for eighteen hours per day, and the other between the main line and carhouse tracks under approximately seven-and-one-half-minute headway. On the first of these no noticeable cupping has as yet taken place. On the second, however, slight cups approximately $\frac{3}{16}$ in. deep have formed at the point where the wheels leave the leading-in rails and start onto the frog point.

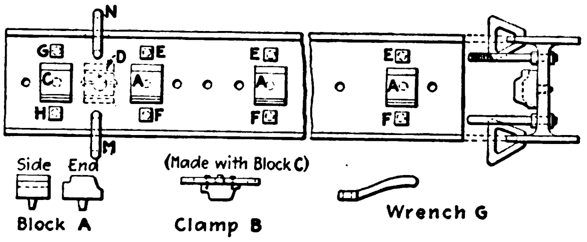


FIG. 8—DEVICE FOR MAKING OFF-SET BEND

DEVICE FOR MAKING THE OFFSET BEND IN THE SIDE RAILS

In shaping side rails for switches, considerable difficulty was experienced in making the offset bend at the end of the switch point as shown at *A* and *B*, Fig. 7. Several ways of using two "jim crows" to make this bend were tried, but we found in every case that while we could get the bend it was always longer than desired, and there was always some twist to the rail. Finally, we built the device shown in Fig. 8. The base of this is made of an 18-in. I-beam which we happened to have available, the length required being about 10 ft. Through the center of this 1-in. holes were drilled every 6 in. to take the pins at the bottom of the block *A*. At *M* and *N* the sides were drilled and three-cornered links were put in of sufficient width to accommodate the hooks of the "jim crow." In the holes *H, G, E* and *F*, ⅞-in. upright iron rods were fastened with nuts on each side of the web of the I-beam. These rods were about 10 in. long and were threaded on the upper end to take the wrenches *G*. The two blocks *A* and *C* were cast from steel and were identical except that block *A* is 1 in. deeper than block *C*. Block *D* for the "jim crow" head was made by cutting the pin from one of the blocks *A* and drilling the block to fit the end of the "jim crow" screw.

Clamp *B* is made by fastening a piece of 3-in. x ½-in. iron to the back of block *C* and drilling this flat piece to fit over block *G H* or *E F*. The distance between the edges of blocks *D* and *A* determine the length of the offset bend.

The method of using this device consists, first, in removing the "jim crow" and all of the clamps *B*. The rail is then heated at the point where the bend is desired and laid on blocks *A* so that the heated portion will come between blocks *A* and *B*, block *B* being of course out when the rail is put in. In this position the rail lies flat on its side and on all the blocks *A*, but is 1 in. above block *C*. Clamps *B* are placed over both *E* and *F* and fastened tightly with wrenches *G*. The "jim crow" carrying-block *D* is then hooked under links *M* and *N* and pressure is applied. As this pressure comes on, the rail makes first a single bend until it touches block *C*. This bend is closely followed with another clamp *B* on studs *G* and *H*, which prevents the end of the rail from springing up again. As this continued pressure is applied the rail gradually takes the offset bend and at its completion lies flat on both blocks *A* and *C*.

British Diesel Engine Development

BRITISH engineers in recent years have taken an active interest in the development of the Diesel engine, which was formerly promoted principally on the continent. For example in Britain, there has been a departure from the normal design of the Diesel engine whereby use is made of a system of injecting the fuel into the combustion chamber by means of a high pressure placed upon the fuel alone. This system has been used in contrast to the air injection system of supplying the fuel to the combustion chambers. The newer scheme has been very successful in providing a sufficiently finely divided state of the oil for satisfactory combustion.

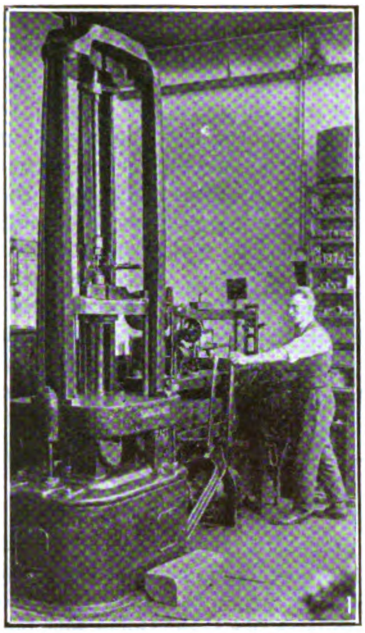
The advantages claimed for this system are that lower compression pressures are required than for air injection engines. Two reasons are given for this. First, because of the relatively slow manner in which combustion starts with the "solid" supply system, fuel injection can be begun many degrees before the dead center, and this pre-injection gives heat to the gases and air within the combustion chamber and assists in the ignition and combustion of the ensuing charge of fuel.

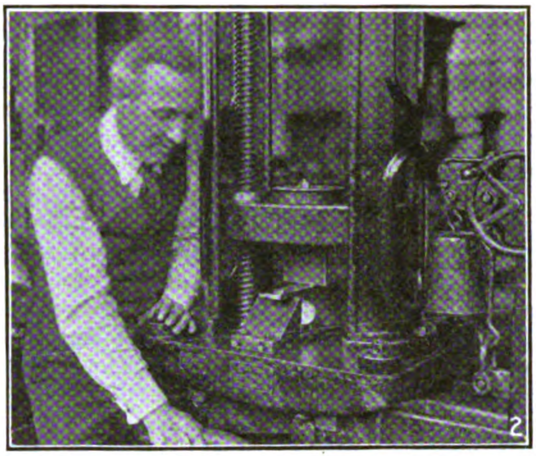
The second advantage is that the cooling effect of the expanding fuel injection air is absent with the solid or mechanical injection engine. This cooling effect of the air in air injection engines must be counteracted by carrying the compression to a higher pressure and hence higher temperature than otherwise would be required.

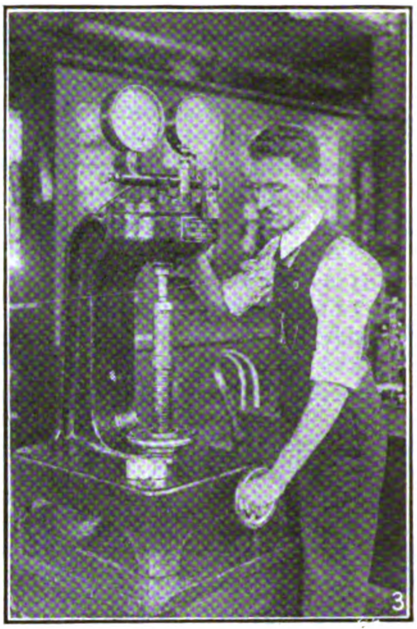
Opportunities of a Foreman

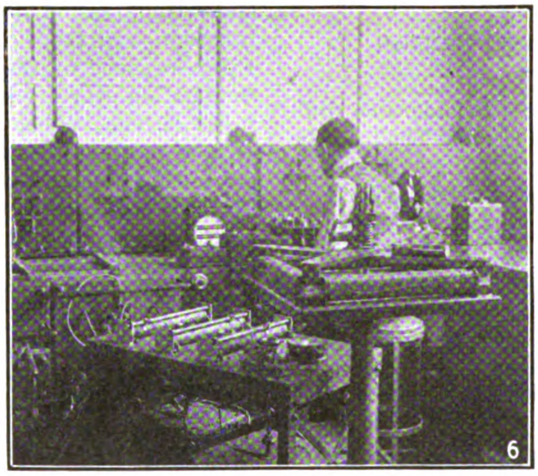
In its "executive series" the National Safety Council urges the co-operation of foremen in reducing accident risks by gaining the confidence of their men. Among other things a recent circular says: "If you are not a leader you are not a good foreman. What the men think of you is what they think of the company. The contentedness of the workers is determined by you. Know the job yourself and then show your workmen how to do it. You are responsible for the protection of your men and you can determine their attitude toward safety. If yau are careless they will become so—and the careless man is a dangerous man."

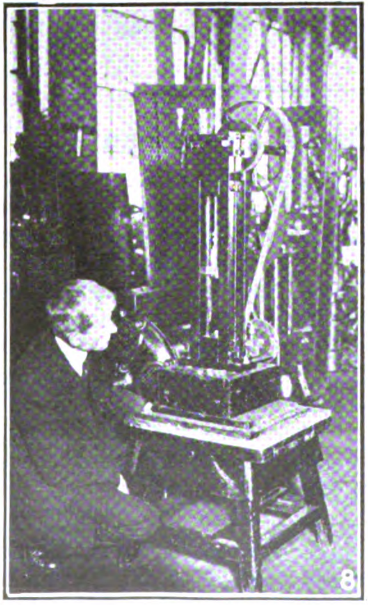
Speaking editorially regarding certain transportation projects in Great Britain, the *Electrician*, London, makes the following statement as to the economies of the situation: "For the state to develop enterprises which are not sufficiently good to tempt private capital is, generally speaking, a proposition that is not sound."

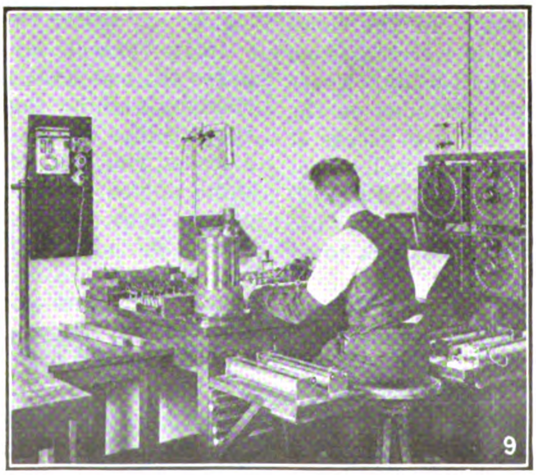












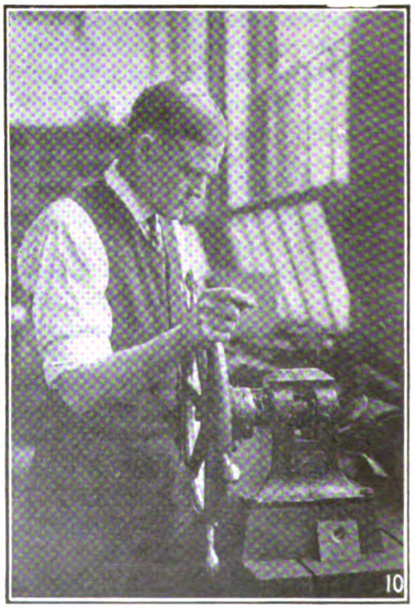


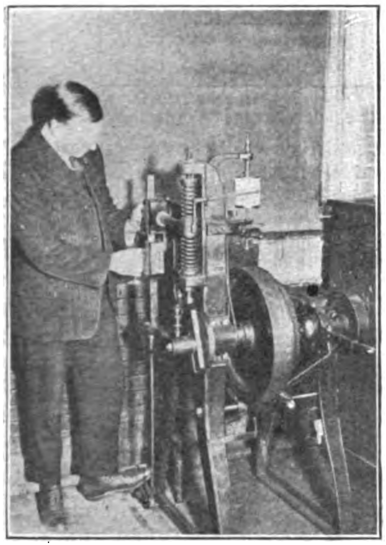
Fig. 1—Making a Tension Test.
Fig. 2—Making a Transverse Test on a Sample of Cast Iron.
Fig. 3—Subjecting a Sample to the Brinell Hardness Test.
Fig. 4—Drop Test on a Rough Turned Shaft.
Fig. 5—Measuring Conductivity with a Hoope's Bridge.

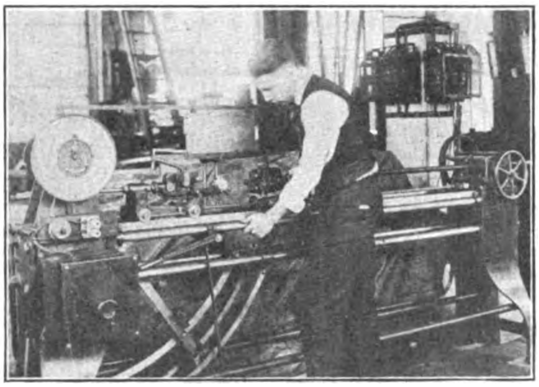
Fig. 6—Making a Core Loss Test.
Fig. 7—An Impact Test on a Small Sample.
Fig. 8—Subjecting a Sample to a Hammer Test.
Fig. 9—Testing a Sample of Sheet Steel for Permeability.
Fig. 10—The Draw Test of a Sample of Sheet Steel.

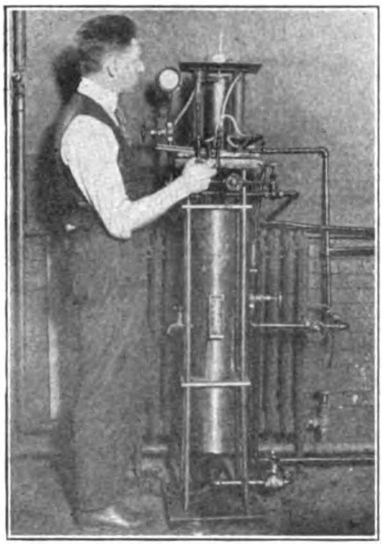
Manufacturers' Tests of Materials for Railway Motors

The Writer Describes Various Tests, the Apparatus Used and the Results Obtained for Determining the Physical and Electrical Properties of Material Entering Into the Construction of Railway Motors

By J. S. DEAN
Railway Engineer Westinghouse Electric & Manufacturing Company







MAKING TESTS ON SAMPLES OF MATERIALS

Fig. 11—Left—A Fatigue Test on a Specimen of Metal.

Fig. 12—Center—Measuring the Tensile Strength of Wire.

Fig. 13—Right—Measuring the Coefficient of Expansion of a Test Piece.

OWING to the severe operating conditions that railway motors must withstand in service, it is essential that all materials should have a large factor of safety, that they should be of uniform texture and strength and free from flaws and defects. Otherwise failures and breakdowns in service may occur, possibly causing serious accident and congestion of traffic.

In order to insure a reliable supply of raw materials to fulfill the above conditions, in the works of this company, materials are covered by a "P. D." (purchasing department) specification or an "M" (material) number, setting forth the requisite physical properties that materials must have in order to meet the desired requirements, as a guide to the inspection department in the acceptance of this material. To a very large extent, the percentage of material subjected to a rigid inspection and test is governed by common sense, past experience, source of supply and amount of trouble reported by the shop. To give every piece of raw material a careful inspection and a series of physical tests would be an unnecessary waste of time, money and material, which would not only handicap production, but enormously increase the cost of manufacture. The price factor in design is most important and is continually being impressed in designers to keep costs low.

In general, materials are given a careful inspection and are selected under the supervision of the research division of the engineering department. Some of the tests are made at the mills of the supplier, either by our own inspectors or by the manufacturer's testing experts, witnessed and approved by our representatives, and others are tested and inspected at our own plant. Some of the most essential of these tests of metals and alloys will be briefly outlined and illustrated to give the railway operating men a better working knowledge of this very important subject.

From the railway motor material chart as given in the article which appeared in the April 17, 1919, issue of the ELECTRIC RAILWAY JOURNAL, we have prepared the summary shown above of the metals and alloys used in the manufacture of a railway motor.

- Metals............
  - Steel
    - Cast
    - Forged
    - Hot rolled
    - Cold rolled
    - Axle
    - Special alloy
    - Electrical sheet
    - Sheet
    - Plate
    - Spring
    - Wire
  - Iron .... Malleable
  - Copper ....
    - Wire
    - Ribbon
    - Strap
    - Cable
    - Braided
    - Hard drawn bars
  - Tin.................
    - Strip
    - Sheet (tin plate)
- Alloys ....
  - Brass
  - Bronze
  - Babbitt
  - Solder

In general, the various tests given to metals and alloys depend largely upon the application which is to be made of the materials, the method of manufacture.

shape, size and characteristics of material and are classified as follows:

- Mechanical
  - Tension.....
    - Iron........... Malleable
    - Steel........... Cast, Forged, Hot-rolled, Cold-rolled, Axle, Special alloy, Sheet, Plate, Wire
    - Copper........ Wire, Ribbon, Strap
    - Alloys......... Brass, Bronze
  - Compression
    - Steel........... Cast, Forged
    - Iron........... Malleable
    - Alloy......... Brass, Bronze
  - Transverse ..
    - Steel........... Axle, Spring
    - Iron........... Malleable
    - Copper........ Hard-drawn bars
    - Alloys......... Brass, Bronze
  - Hardness....
    - Steel........... Forged
    - Copper........ Hard-drawn
    - Alloys......... Brass, Bronze, Babbitt
- Electrical..
  - Conductivity
    - Copper........ Wire, Ribbon, Strap
    - Alloy........... Brass
  - Core Loss Steel........... Electrical sheet
  - Permeability Steel........... Electrical sheet, Cast

Special Mechanical Tests

Drop tests	Alloy steel—shafts
Hammer tests	Babbitt and bronze bearings
Impact tests	Metals and alloys
Fatigue tests	Metals and alloys
Draw tests	Sheet steel
Pulling tests	Wire
Coefficient of expansion	Metals and alloys

CHEMICAL TESTS MADE ON STEEL AND NON-FERROUS ALLOYS

In connection with the mechanical and electrical tests made on metals and alloys, a chemical analysis of certain of the materials is also frequently made, to determine their chemical properties. This is especially applicable to the various grades of steel and non-ferrous alloys such as bronze for bearing shells, babbitt for bearing lining and the various solders, as the amount of metals combined must be of a definite percentage to produce a satisfactory alloy to meet the required service conditions. Facilities for making these tests are provided by a well-equipped chemical laboratory in charge of expert chemists and metallurgists directly under the supervision of the research division of the engineering department.

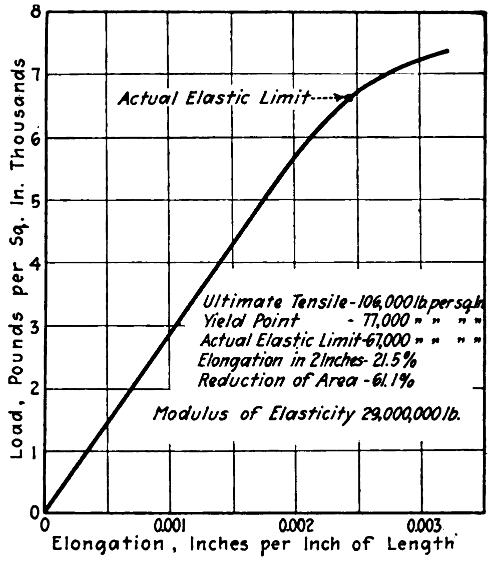


FIG. 14—GRAPH OF TENSILE TEST ON SPECIMEN OF HEAT TREATED AXLE STEEL

The contour and preparation of test specimens depend upon the shape of the material, the method of manufacture, the nature of tests to be made and design of testing machine. A group of test specimens used in connection with the various tests herein described is shown in Fig. 20. These specimens conform to the requirements of the American Society for Testing Materials.

In the case of alloy castings special sample pieces are cast from the same heat of metal from which the regular castings are poured, as shown in a second illustration, Fig. 18. The standard test specimens are machined from these sample castings. When the material is rolled or drawn stock, a section of the bar is taken and machined to the proper shape. Sheet metal is cut up to size to conform to the specified test dimensions. The required length of wire or cable for test specimens is cut from the end of the coils or reels and requires no further preparation or machining. Special alloy steel for shafts and large forgings have the test specimens removed by means of a hollow drill, after which they are machined to the standard size as shown in Fig. 19.

The physical testing machine shown in Fig. 1 has a capacity of 150,000 lb. It is used for tension tests on various samples.

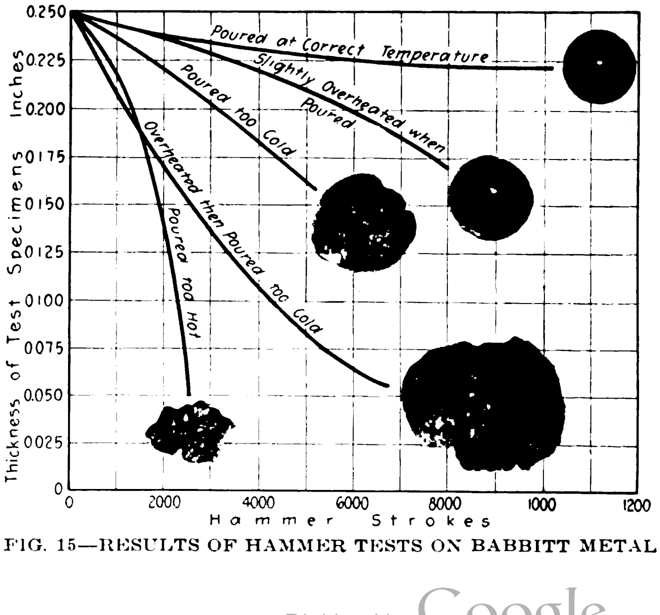


FIG. 15—RESULTS OF HAMMER TESTS ON BABBITT METAL

The most common test piece used with this machine is 4¼ in. long (with 2-in. gage length) and 0.505 in. in diameter. Other pieces 0.357 in. in diameter by 1½ in. long, and 0.798 in. in diameter by ⅞ in. long are sometimes used. In the case of sheet metal, pieces are cut 1 in. wide and 10 in. to 14 in. long. (See Fig. 20 on page 325.)

In testing samples the pieces are screwed into a bar held in the machine or gripped in the jaws of the machine and power is then applied. The ultimate tensile strength is automatically recorded on the scale. The yield point and actual elastic limit are determined by the divider method or by means of the extensometer.

The following set of readings shows the results of a test made on a specimen of heat-treated axle steel.

Description	Results
Ultimate tensile strength	106,700 lb. per sq.in.
Yield point	77,000 lb. per sq.in.
Actual elastic limit	67,000 lb. per sq.in.
Elongation in 2 in	21.5 per cent
Reduction of area	61.1 per cent

These results are further shown graphically in Fig.14.

The apparatus used for making compression tests consists of the 150,000-lb. testing machine already referred to. The test specimen used is 2½ in. long and 0.798 in. in diameter. (See Fig. 20 C.)

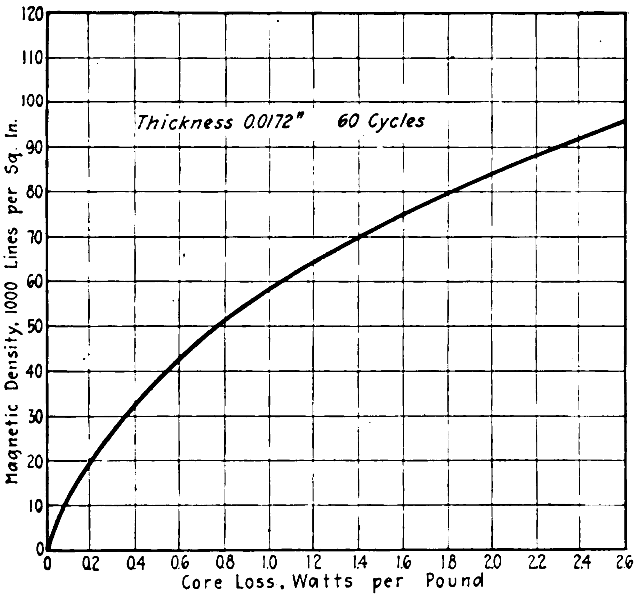


FIG. 16—GRAPH FOR CORE LOSS OF ELECTRIC SHEET STEEL WITH 60 CYCLES

It is placed between the plates or heads of the machine and power is applied until the piece fails by either bending or breaking. In the case of soft metal, it is compressed ¼ in. and maximum readings are then taken as the ultimate strength which is automatically recorded on the scale. The elastic limit is determined by means of the extensometer.

The following results were obtained from tests on a piece of brass used for brushholder castings. This sample was compressed ¼ in.

Description	Results
Ultimate compression	29,340 lb. per sq.in.
Elastic limit	9,400 lb. per sq.in.

The physical testing machine of 5000 lb. capacity shown in Fig. 2 is used for making transverse tests. The test specimen for cast iron is made 12 in. long and 1 in. square in section. Other sizes may be used depending upon the available material to be tested. Standard commutator bars of a tapered section are used for the test specimen of hard drawn copper bars. (See Fig. 20 R). The method of making a test consists of placing the test piece on supports 1 in. apart, with dial gage under the middle to indicate the deflection. The load is applied at the center of the bar until 0.001 in. permanent deflection is obtained. The stress is then figured from the following formula.

$$\text{Where } S = \frac{3PL}{2BD^2}$$

S = Fiber stress in pounds per square inch.
P = Load in pounds.
L = Distance between supports in inches.
B = Width of piece in inches.
D = Thickness of piece in inches.

The results obtained from a sample section of a commutator bar showed a fiber stress of 21,350 lb. necessary to produce 0.001 in. deflection.

A Brinell hardness tester is shown in Fig. 3. The hardness test can be made on almost any section and shape of test specimen not too large to be placed in the jaws of the testing machine. In case of gears and pinions, the test is made on the finished product. When special test pieces are made up, they are ¾ in. thick and taper from 1⅞ in. to 2 in. in diameter, as per sample H, Fig. 20.

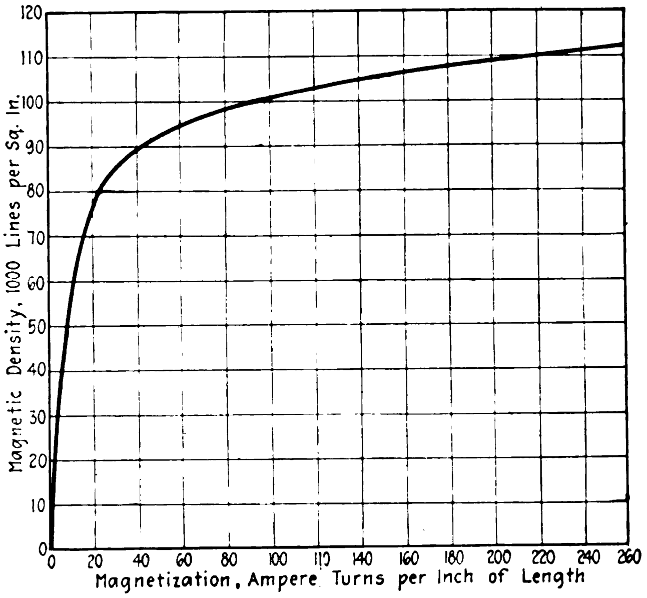


FIG. 17—MAGNETIZATION CURVE FOR CAST STEEL SAMPLE

HOW TO OBTAIN BRINELL HARDNESS

To carry out this test a 10-mm. hardened steel ball is pressed into the test specimen by a force of 500 or 3000 kg. (depending upon the metals being tested), by hydraulic pressure. The spherical impression of indentation indicates the hardness of the material. The Brinell number is obtained by dividing the applied load by the curved area of the impression, which is obtained by calculation from the diameter of the impression.

Some results which were obtained from actual tests on metals are given below.

Material	Brinell Hardness Number
Babbitt bearings	30
B.P. forged-steel pinions	512

Hoope's conductivity bridge with the necessary accessory apparatus shown in Fig. 5 is used in making conductivity tests. For this purpose samples of wire are cut 38 in. long. In testing conductivity of various alloys machined specimens are made 0.25 in. in diameter and 10 in. long. (See Fig. 20, N.)

The test piece of wire is weighed in a sensitive balance and its diameter is determined by calculations. It is then clamped in the bridge terminals and the sliding contacts are adjusted until an electric balance of voltage is obtained which is indicated by the absence of deflection on the galvanometer. Conductivity is read directly from the scale on the bridge. Results of tests on copper wire used in making railway motor armature and field coils show average conductivity of 99½ per cent.

The apparatus used for making core loss tests on samples of sheet steel consists of an Epstein core-loss testing machine with the necessary accessory apparatus as shown in Fig. 6.

Sample pieces of sheet steel are cut 3 cm. ($1\frac{3}{16}$ in.) wide and 50 cm. ($19\frac{11}{16}$ in.) long from the test sheets and made up into four bundles approximately ½ in. thick (5 kg. or 11 lb.) and taped together as shown in the accompanying Fig. 20 K.

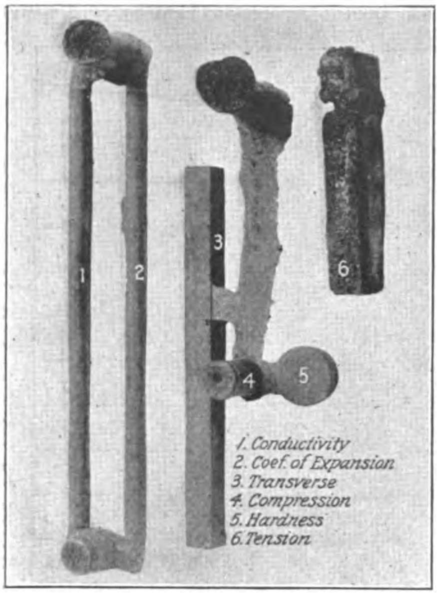


FIG. 18—TEST SOMPLES OF ALLOY CASTINGS POURED FROM SAME HEAT AS METAL USED

To make the test samples are placed in the four hollow coils which are set at right angles and the ends of the samples are clamped together to get a complete magnetic circuit through the iron. Voltage is then applied to the coils surrounding the samples to give standard induction in the iron, and the losses are measured by a wattmeter in the circuit. The results of a core-loss test made on a sample of electric sheet steel, such as is used in railway motor armatures and field pole punchings, is shown graphically on page 323 in the illustration Fig. 16.

A modified Burrough's permeameter with the necessary accessory apparatus as shown in Fig. 9 is used for making permeability tests. Sample pieces of sheet steel are cut 3 cm. ($1\frac{3}{16}$ in.) wide and 50 cm. ($19\frac{11}{16}$ in.) long from the test sheets and made up into two bundles of approximately ¼ in. thick (1 kg. or 2.2 lb.) and taped together, as shown in Fig. 20 P.

The test samples are inserted in the two hollow coils which are placed side by side and both ends of the test pieces are joined together by iron yokes to complete the magnetic circuit. Adjustments are made and checked by means of a galvanometer, to get a uniform flux distribution of a known value around the test specimen. Current readings are then taken by reading an ammeter connected in the circuit.

The results of a permeability test made on a sample of cast steel used in railway motor frames are shown graphically in Fig. 17.

A special drop testing machine built by the Westinghouse Electric & Manufacturing Company is shown in Fig. 4. This machine is used for making drop tests of various materials. For the test illustrated a rough turned shaft is used as the test specimen.

The shaft after being rough-turned is placed on the half-round supports near the ends, and a tup (heavy weight) which is released by a latch, strikes the shaft a blow half way between the supports. The tone of the sound of the impact is an indication of the condition (presence of absence of flaws and cracks) of the metal in the shaft. When the shaft is hit by the tup, a clear ringing sound indicates that the metal is "O.K.," while a dull, dead sound indicates a defective shaft.

A special machine, built by the Westinghouse Electric & Manufacturing Company, shown in Fig 8, is used for obtaining regular hammer blows of constant intensity. Test pieces are machined to 1 in. in diameter by ¼ in. thick as shown in Fig. 20 M. To carry out a test the pieces are placed on the anvil of the machine and subjected to a series of regular hammer blows of constant foot-pounds stroke.

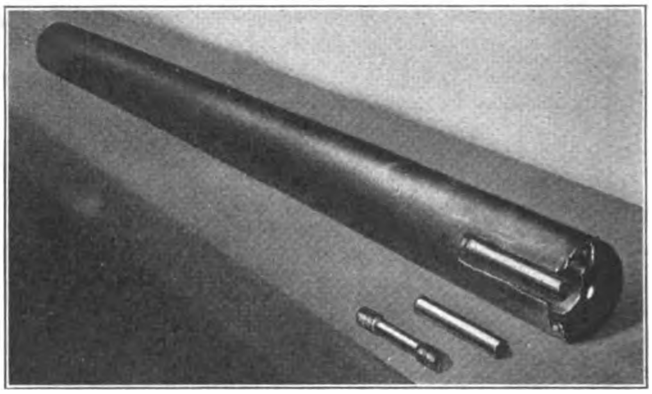


FIG. 19—TEST SPECIMENS REMOVED FROM SPECIAL ALLOY STEEL FOR SHAFTS

The results of a series of tests made on babbitt metal used on railway motor bearings are shown graphically in Fig. 15. This test indicates that 460 deg. to 485 deg. Cent. is the best pouring temperature and that the metal should not be permitted at any time to become hotter than 490 deg.

An Izod impact testing machine of 120 ft.-lb. capacity is shown in Fig. 7. It is used for the impact test. The best specimen is machined 10 mm. (0.393 in.) square and 75 mm. (2.95 in.) long with a deep groove 2 mm. (0.078 in.) on one side, 28 mm. (1.10 in.) from one end as shown in Fig. 20 I.

The test piece is clamped between the steel jaws of the machine with the grooved side toward the hammer head on the pendulum, which is released by means of a latch and swings down, striking the test piece. The force of the blow or impact is obtained from the scale attached to the machine by subtracting the registered swing of pendulum when test piece is in place, from the initial free swing of the pendulum.

Results of tests made on samples of material are as shown in the following table:

Cold-rolled bar steel as rolled	2.5 ft'-lb
Cold-rolled bar steel annealed	77 ft.-lb
Hot-rolled open-hearth steel as rolled	58 ft.-lb

The Upton-Lewis fatigue machine shown in Fig. 11 is used for fatigue tests of various materials. The test specimen of metal cut from the strap or bar, is about 8 in. long, as shown in Fig 20 F. The test piece is clamped between the jaws of the machine and power is applied. This bends the material forward and backward through a distance that can be regulated by adjusting the length of the stroke of the machine. Pieces are thus vibrated until they break or until a large number of vibrations have been withstood. The number of vibrations is recorded automatically by a cyclometer attached to the machine.

The results of a test on a piece of treated, hot-rolled steel 0.196 in. thick and 1 in. wide are as follows:

Duration of test	Six hours, twenty-five minutes
Number of vibrations to break	111,085
Length of throw	$\frac{3}{8}$ in.

A draw test of material is made with the Erichsen-type draw-test machine as shown in Fig. 10. The test pieces of sheet steel are cut 3 in. square as shown in Fig. 20 D, and are placed in the machine and a blunt cone-shaped steel plunger is forced against the metal. Pressure is applied by means of the hand wheel, drawing a portion of the metal into the small cup-shaped projection until it shows signs of destruction. The depth of the cup is automatically registered on a scale attached to the machine.

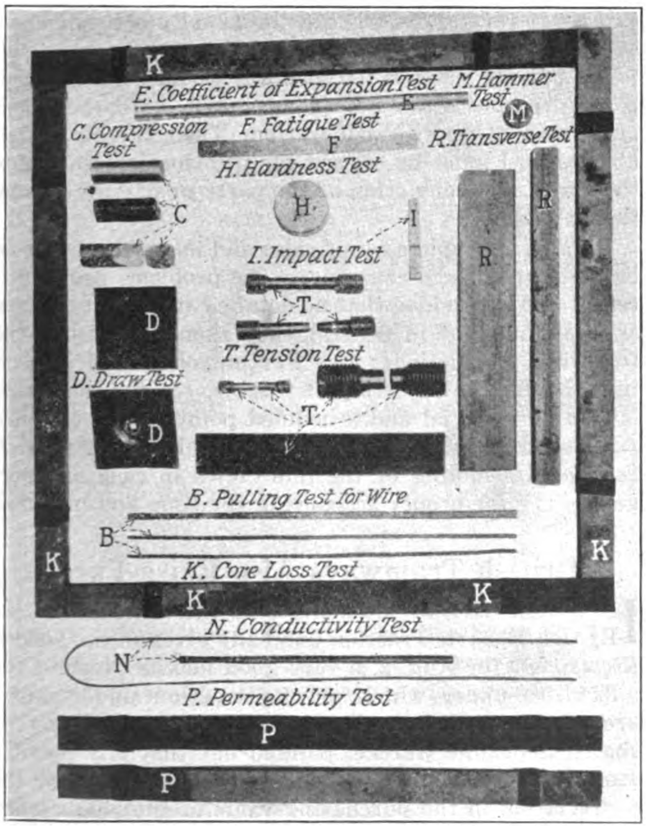


FIG. 20—GROUP OF SPECIMENS USED FOR VARIOUS TESTS

The results on a test piece of cold rolled sheet steel $\frac{1}{16}$ in. thick show a depression of 13 mm. (0.507 in.).

PULLING TEST FOR WIRE

A horizontal testing machine of 1000 lb. capacity, shown in Fig. 12 is used for determining the tensile strength of wire. To make this test a section of wire is cut at least 12 in. long as shown in Fig. 20 B. The test piece of wire is clamped in the jaws of the machine and power is applied. The ultimate tensile strength is automatically recorded on a chart. The elastic limit is determined by observing the chart and noting the sharp bend in the curve.

Results obtained from a test on 0.0808 in. soft copper wire used in railway motor armature coils are given below.

Description	Results
Ultimate tensile strength	38,000 lb. per sq.in.
Elastic limit	4,000 lb. per sq.in.
Elongation in 10 in	32 per cent

Special apparatus built by the Westinghouse Company and shown in Fig. 13 is used for determining the coefficient of expansion. To make such a test, the test piece is machined to $\frac{1}{2}$ in. in diameter and 10 in. long, as shown in Fig. 20 E. The test piece is placed in a bath of circulating cold water, and readings of temperature and length are taken. Live steam is then substituted for the cold water and another set of readings of temperature and length is taken. From these readings, the coefficient of expansion, which is the expansion per degree of temperature for each inch of material, is calculated.

Tests on a sample specimen of brass used in the manufacture of railway motor brushholders shown 0.0000189 in. expansion for each inch of material for an increase of one degree Centigrade in temperature.

Keeping the High-Tension Line in Good Repair

After the Line Has Been Well Built Careful Patroling and Prompt Repair Will Conduce to Reliability in Operation

BY JOHN M. DRABELLE
Mechanical and Electrical Engineer, Iowa Railway & Light Company, Cedar Rapids, Iowa.

PROPER maintenance of high-tension lines is one of the most serious problems that confronts the power transmission companies to-day, that is to accomplish it economically and efficiently. The public and the public service commissions are continually increasing the rigidity of the requirements for continuity of service. To render with this characteristic service requires both the highest technical skill and the closest co-operation among the men upon whose shoulders rests the responsibility of producing it.

The maintenance problem on high-tension lines really begins with the original design of the line itself and its routing. A poorly-designed and poorly-built line will always be a line expensive to maintain. Here as elsewhere we get only what we pay for, and if second and third-rate material enters into the construction, and if careless workmanship is tolerated, trouble is always sure to result.

The lower the voltage, generally speaking, the easier is the problem of maintenance, for at high voltages and extra high voltages many electrical effects manifest themselves that would not appear and need not be taken into account on the short, lower voltage line. The selection of insulators is of prime importance. Insulators should be selected on the basis of competitive tests and upon operating information from other companies, rather than upon a price basis. A cheap insulator is a very expensive piece of porcelain. For example, on one large

Iowa property the average cost of replacing an insulator is around $10.50, not including the loss of revenue while the line is out of service.

The maintenance of the high-tension line begins properly with the patroling, and the patrolmen should be selected with great care. A man who is quick to observe, quick to think, and careful in all details of his work, is the man who will make the best patrolman.

All poles and structures should be numbered, in order that a definite reference may be given to the men who are to make repairs. Trees should be kept carefully trimmed back from the line to such a distance that under the most severe wind conditions they cannot whip into the circuits, thus causing grounds and probable interruptions of service. On a wood pole line, the guys should all be kept pulled up tight, as the guying of the line is its real strength. With transmission lines that follow railway right-of-way, trouble may result in the summer and fall due to poles being burned down by railway sectionmen burning the right-of-way. It is at this time of the year that particular vigilance must be exercised by the patrolman.

A small supply of maintenance material should be kept available at points not to exceed 7 to 10 miles apart. Insulators, pins, transmission-line conductor, splicing sleeves, tie wire and guy material, consisting of messenger, anchors and three-pole clamps, should be available. Thus long trips back to the storeroom can be avoided and considerable time saved, especially if an insulator has been partially shot away by hunters, or if there has been a severe wind storm.

PROVISION FOR EMERGENCY REPAIR IS ESPECIALLY IMPORTANT

In times of severe electrical or sleet storms, the regular line crews at different substations or generating points should keep in touch with the substation operator, or the system operator, as the case might be, so that they can be readily available in case of major trouble. It is well to set aside in each large storeroom maintained by the operating company a supply of emergency line material, the stock of which should not be altered or changed by anyone except the line foreman. If any material is used it should be promptly replaced by the storekeeper in order that the supply may be "100 per cent available" at all times. In this way delays can be eliminated due to waiting for material out of the general store.

Each patrolman should be provided with some means of transportation. For the average conditions the Ford automobile is the most satisfactory of all. It will go in any kind of weather and over roads that are impassable to larger and heavier cars. The patrolman should always carry his belt, spurs and ordinary belt tools, and in addition, should be provided with a chain for short-circuiting and grounding the high-tension line. For transmission lines provided with telephone circuits, the Western Electric Code No. 1375-B telephone set provides an easy portable telephone, light in weight and quite efficient in transmission. The only difficulty with this set is that rather small batteries are employed to operate it, and these must be renewed at regular intervals even though they are apparently in operating condition.

The problem of maintaining the larger circuits constructed upon steel towers becomes one of distance, sectionalizing switches and insulators. The suspension insulator problem has not as yet been solved by any of the manufacturers, and apparently none of the operating companies have as yet devised any form of testing that can be said to be most satisfactory and reliable. The "megger," the high-frequency oscillator, the induction coil with telephone receiver, and the "buzz stick" all have their several advocates, but as yet no one method apparently answeres all requirements. The suspension insulator apparently deteriorates in the storeroom as readily as on the line; but whatever method is employed for testing maintenance insulators before they are sent out from the storeroom, the tests should be of such nature as not to overstrain and ruin the insulators before they go upon the line.

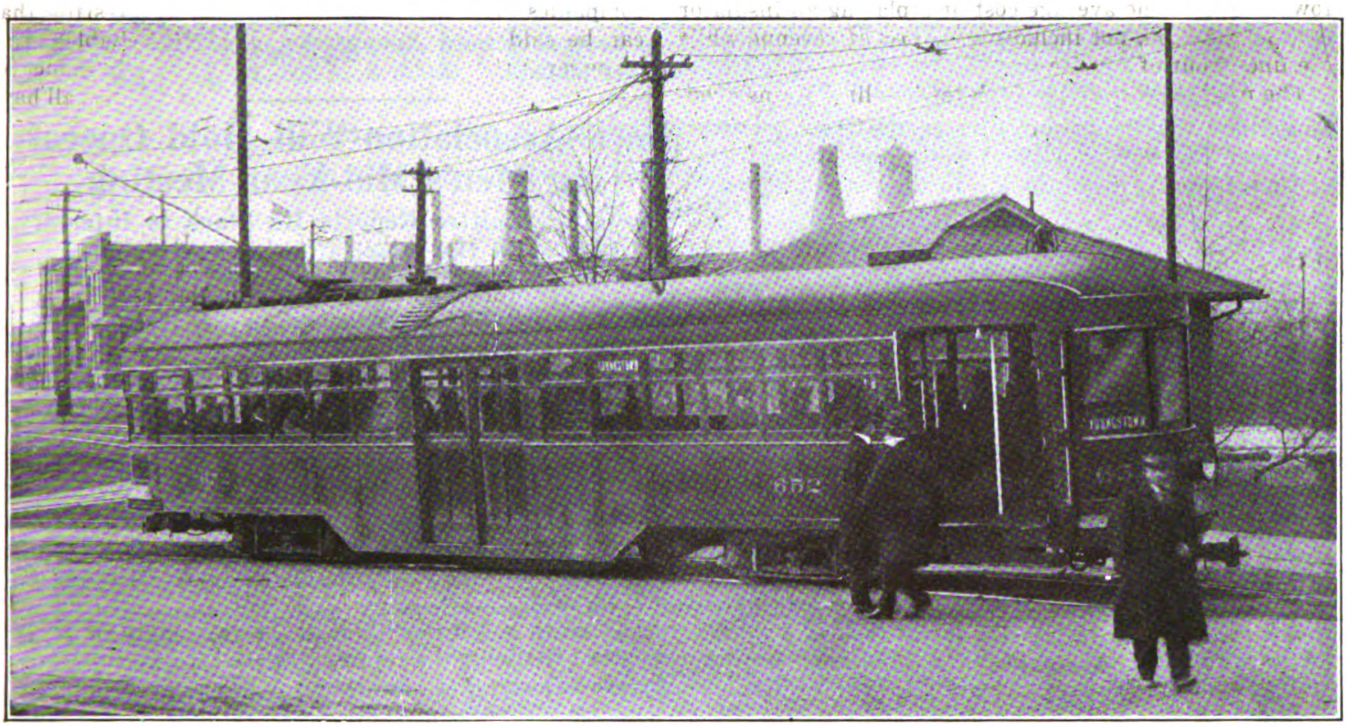
MALICIOUS MISCHIEF IS A FRUITFUL SOURCE OF TROUBLE

Outside of lightning disturbances, frequently surges set up by switching and damage by wind storms the most fruitful source of trouble comes from malicious nuisance. This takes the form of the shooting at insulators by hunters and the throwing of pieces of hay or telephone wire into the transmission line. This form of trouble can only be eliminated by proper laws on the statute books of every state, making the penalty severe enough so that there will be respect for the transmission line. If the penalty made is too severe it would be too difficult to secure conviction before any jury, as corporations never receive kindly consideration. Then, further, a suitable reward must be offered for information leading to the arrest and conviction of the party or parties causing the damage..

Finally, a complete set of rules and instructions should be laid out by each company. The problems are so different and diversified that no detailed statement of them can be made, but in general, they should consist of the following instructions: (a) For patroling and inspecting, (b) for the reporting of trouble, (c) for the distribution of material and scheduled points along the line, (d) for the protection of the men making the repairs, (e) for assembling of the line crews in case of emergency, (f) for proper accounting for time and material.

British Tramways Also Raise Fares

IN A REPORT of the address of the chairman of the British Electric Traction Company given in the London *Electrician* for Aug. 2, a very good idea is given of the difficulties under which private traction undertakings are carried on in Great Britain at the present time. The chairman, Emile Garcke, pointed out that any possible economies would only inadequately compensate for the depreciation in the purchasing value of the penny when applied to the payment of wages and the purchase of materials. Since the war the costs of labor and materials have on the average more than doubled, but it has not been possible to make a proportionate increase in the fares. He complained that under the statutory charges act of last year, private undertakings are not permitted to make such increase as to enable the same return to be obtained on capital as was obtainable before the war; yet local authorities may obtain power to increase fares to an extent sufficient to meet their interest and sinking fund charges. It is, therefore, only natural that the average return on the whole of the capital invested in tramway enterprises is only about 3½ per cent, and on the ordinary stock the return is only about 1¾ per cent. Such a position renders it impossible to attract fresh capital, yet there are many complaints at the present time that fares are too high.



FRONT-ENTRANCE CENTER-EXIT INTERURBAN CAR OF MAHONING & SHENANGO RAILWAY & LIGHT COMPANY

Zone Fare Collection on Front-Entrance Center-Exit Cars

On Interurban Line Between Youngstown and Warren, Ohio, Mahoning & Shenango Railway & Light Company Uses Plan Involving Two Types of Identification Checks

AN IMPORTANT interurban line of the Mahoning & Shenango Railway & Light Company connects Youngstown and Warren, 15 miles apart, passing through Girard and Niles. The line is divided into three overlapping 5-cent zones, as shown in an accompanying diagram, the overlaps being so arranged as to include Girard and Niles, respectively. On this line the cars of the "Peter Witt," or front-entrance, center-exit type, are used, the distinguishing feature of which is that the passengers pay their fares as they pass the conductor. This functionary on the M. & S. cars is stationed opposite the center of the exit door, instead of to the forward side of it as is usual in this type of car.

A COMBINATION FARE-COLLECTION SCHEME WAS EMPLOYED

The system of zones on the Youngstown-Warren line was designed to permit passengers to ride between points in Youngstown west of the Civic Center and Girard, Girard and Niles, or Niles and Warren for 5 cents. The fare-collection plan was designed to permit quick loading at terminals, provide simplicity in identifying passengers as to boarding points, and utilize the Witt scheme of car layout to minimize boarding time. A combination of "pay-leave" and "pay-on-passing-fare-box" collection was therefore devised, and on Feb. 1, 1919, was put into full operation with an equipment of Cleveland fare boxes.

To accomplish the above purposes, first at the line terminals and in the terminal cities, all doors are opened and no attempt is made to collect fares. In fact the conductor covers the fare box to prevent the passengers from dropping fares into the box. No identification checks are given to the passengers in these districts.

Second, passengers boarding in the second and third zones from either end of the line are handed identification slips by the motorman, a pink slip (No. 1) in the second zone or a blue slip (No. 2) in the third zone. Ingress is only by the front doors away from the terminals.

Third, if a passenger who has boarded in the second or third zone desires to pass to the rear of the car he pays a fare of 5 cents or 10 cents, depending upon his boarding point and destination, surrendering the check given him by the motorman and receiving a white slip if he is to alight in the same zone as that in which he boarded or a yellow slip if he is to ride in two zones.

Fourth, on alightening, passengers from the terminal cities, who have no slips, pay the fare corresponding to the alighting zone; those surrendering white slips in the second zone or yellow slips in the third zone pay nothing and those who surrender white slips in the third zone pay 5 cents extra (as they have overridden the zone for which they paid).

PLAN HAS CONSIDERABLE FLEXIBILITY

There may thus be at any time in the front section of the car passengers without slips and those with motorman's slip No. 1 or No. 2. In the rear there may be passengers with no slips or with conductor's white or yellow slips. There is, of course, some disadvantage in having passengers in the rear who have paid no fare but this is more than offset by the speedy terminal loading.

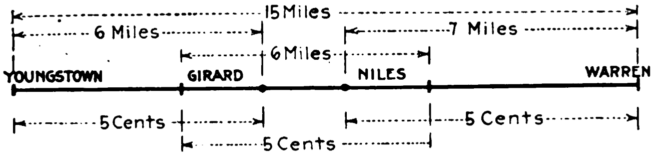
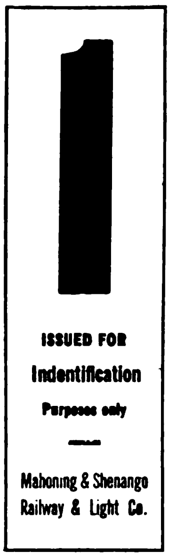


DIAGRAM OF FARE ZONES, M. & S. RY. & LT. CO., YOUNGSTOWN-WARREN LINE

The above is the whole story in condensed form. A couple of examples will serve to illustrate the working of the plan. A passenger boards in Warren and plans to ride to Girard He enters the front end, receives no slip and sits down in the front of the car. A little later he finds it convenient to move to the rear, and passes the conductor without giving or receiving anything. Later he decides to go on to Youngstown. When he leaves he pays 15 cents. It is of no use for him to say that he boarded in the second or third zone or that he paid his fare as he passed the box, for if he had done so he would have had something to show for it. Again, a passenger boards in Girard, gets a pink slip and passes to the rear of the car. He tells the conductor that he is going to Niles, pays 5 cents, surrenders his pink slip and gets a white one. Later he decides to go on to Warren. When he alights he surrenders his white slip and pays 5 cents additional.


ISSUED FOR

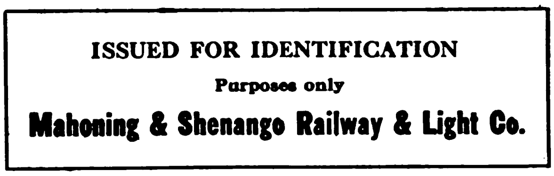
Indentification

Purposes only

Mahoning & Shenango Railway & Light Co.

IDENTIFICATION CHECK ISSUED BY MOTORMAN

In the opinion of C. D. Smith, general superintendent of the company, the following advantages result from the use of the light-weight interurban car of the Peter Witt type, with a fare-collection scheme involving the use of a fare box: (1) Traffic congestion at heavy loading points, such as at the Youngstown terminal, is eliminated. (2) Rapid boarding movements along the line, entirely under the control of the motorman, are provided. This tends to eliminate accidents. (3) The auditing operations are simple. (4) The conductor has full control of the discharge of passengers, tending to reduce the duration of the stop and to eliminate accidents. (5) Efficient fare collection, with minimizing of the danger of missing fares. (6) Plan is adaptable to use of two-car trains between Youngstown and Niles, which is contemplated.


ISSUED FOR IDENTIFICATION

Purposes only

Mahoning & Shenango Railway & Light Co.

SAMPLE IDENTIFICATION CHECK ISSUED BY CONDUCTOR

Iowa Association Will Hold Operating Men's Mid-Year Meeting

Special Committee Reports Its Plans to Intensify Interest in the Association and Attendance at Meetings

IT WAS BRIEFLY announced in the report of the annual meeting of the Iowa Electric Railway Association, on page 1271 of the June 28 issue of the ELECTRIC RAILWAY JOURNAL, that a committee had been appointed to draft a plan to increase attendance at, and interest in the meetings of the association. This committee met in Chicago on July 15 and after a discussion of various plans to accomplish the desired purpose decided to hold a mid-year meeting of operating men of the territory at Davenport, Iowa, on Sept. 17 and 18 next.

To create a greater interest in this meeting it is proposed to divide the representatives into four distinct classes, namely, those interested in way and structures, shops and equipment, transportation and power and distribution. On the morning of the first day one paper of interest to each of these sections will be delivered and followed by discussion from previously assigned individuals. In the afternoon a visit will be made by the various sections to the respective departments of the Tri-City Railway Company.

On the morning of the second day a final discussion of the previously presented papers together with a more detailed discussion of the inspection trips will take place. In the afternoon permanent committees will be appointed to represent each of the four sections, and these committees will immediately meet and later make recommendations for future work. In the evening, after the work is all accomplished, a banquet will be held.

In an effort to secure a large attendance at this mid-year meeting personal letters will be sent by the president of the association to all managers urging them to permit the attendance of their operating men. These letters will be supplemented by personal visits from members of the committee on increased interest.

It was noted in the report of the last annual meeting of the Wisconsin Association, page 688, issue of this paper for April 5, that a similar committee had been appointed by that association. This committee together with the secretary of the association, has been invited to attend the mid-year meeting of the Iowa Association. Both associations are striving for the same result and it is believed that co-operation will be mutually beneficial. A complete program of the Iowa meeting will appear later.

As a result of an accident on the lines of the Roman Tramway Company, Italy, on June 5, in which three persons were killed and many were injured, the prefect of the province of Rome has ordered an official inspection of all the company's rolling stock by government engineers and representatives of the company's employees. The cars and other equipment are largely obsolete in type. During the recent general strike in Naples the tramway employees were the only ones who remained at work.

Federal Hearings Continue

Secretary of War Newton D. Baker, Public Utility Commissioners and Others Conversant with Electric Railway Situation Show Why This Utility Needs Speedy Relief

THE hearings before the Federal Electric Railways Commission on the many aspects of the electric railway situation was resumed on Monday morning, Aug. 11, in the Interstate Commerce Building, Washington, with about fifty men in attendance.

Monday Morning Session

The witnesses on Monday and the respective themes of their testimony were as follows:

Newton D. Baker
Secretary of War
who discussed principally the history of the Cleveland low fare agitation leading up to the Tayler ordinance.

Lieut.-Col. Charles W. Kutz
Engineer-Commissioner of the District of Columbia
who urged the desirability of ownership of electric railway roadbed by the municipalities.

Roger W. Babson
Utility Security Expert, Boston, Mass.
who recommended removal of limitation of railway fare because competition is now a sufficient corrective.

John P. Fox
Transportation Engineer, New York City
who advocated low fares for short hauls.

The first witness to be heard was Hon. Newton D. Baker, Secretary of War, who, because of his intimate association with the working out and putting into effect of the Tayler plan in Cleveland, while he was city solicitor and Mayor, was invited to present to the commission some of the history of that situation.

Mr. Baker dwelt at length upon the successive steps which were taken leading up to the adoption of the present franchise in Cleveland, endeavoring especially to bring out the fact that the final arrangement was a popular one. The people understood the plan and were agreed that it was the proper solution of the problem, the whole theory behind the Cleveland plan being worked up on the basis that the public should understand, and that machinery should be created so that its understanding might be continued and kept up to date. Every month a statement is printed in the Cleveland papers showing the state of the interest fund, so that the people can watch this and know in advance that a change in fare will soon be warranted. Having this understanding, they consequently offer no remonstrance when an increase has been made. The Secretary laid great stress upon the absolute necessity of bringing about an understanding by the people of any such plan if it was to be successful and endure.

Looking back upon the Tayler franchise, the Secretary said that it had two principal defects, both of which had been realized to a certain extent at the time the ordinance was drawn, but for which no satisfactory solution was then determined. The first was the absence of any stimulus to the management for efficient and economical operation. Instead of providing for a flat rate of return on the investment, he said there should have been some provision whereby the company would have realized something over the 6 per cent allowed so long as the rate of fare remained at 3 cents, and that this rate of return should then have decreased as the fare increased. Questioned by one of the commissioners as to what would be the effect of such times as the present when the costs of operation had risen so exceedingly high, despite the most careful management, and which would thus defeat the manner of award which Mr. Baker had suggested, the witness replied that these times were abnormal and that the situation would necessarily have to be taken care of through some such steps as had been actually resorted to in Cleveland, namely, that the company had asked for an increased rate of return on the investment and this was being arbitrated.

The second defect pointed out by the witness was that not sufficient allowance had been made for replacements. It was believed that replacements should be made out of the maintenance fund, but experience had shown that this did not provide a proper apportionment of the replacement to the capital account. In endeavoring to pay the full replacement costs out of the maintenance fund, the amount available for maintenance was so seriously depleted that arbitration had been resorted to in order to secure a sufficient maintenance allowance.

Questioned as to whether he thought it would be possible for the commission to recommend a general adoption of the service-at-cost plan such as is operating in Cleveland, the Secretary said that the street railway problem seemed to him to be a strictly local one. What would be medicine for one community would be poison for another. He did not favor municipal ownership. He said he believed the degree of development of a community was measured by its capacity for co-operation with its utilities. This, he reiterated, was essentially a question of popular education. He believed that the Cleveland plan was the best street railway plan which had been worked out in the country, and believed this chiefly for the reason that it had been so thoroughly understood by the public. He cited as a proof of its excellence the fact that the stock of the company had had a practically uniform value for years despite all of the fluctuating conditions in the industry.

Asked by the commission how it was that to-day the Cleveland railway was able to operate on a satisfactory basis with a 5-cent fare, while practically every other company in the country was facing bankruptcy at that rate of fare, Secretary Baker answered that the reason was that in Cleveland the capitalization had been reduced to an absolutely sound basis, there being practically no capitalization of franchise value in the present valuation, and also because Cleveland had grown very rapidly. Further, lines had been extended solely in the interest of service; in other words, there had been no building of lines for speculative purposes. No railway line had been used as a feeder to a real estate venture, a thing which has happened in many cities if not in Cleveland. He also remarked that the equipment used in Cleveland was of the most admirable type and he thought that undoubtedly the operating costs were lower in Cleveland than in most cities due to the comparatively level topography of the city and the operating economies which had been worked out.

Other questions from the commissioners brought out Mr. Baker's opinion that a true valuation of a property was the first requisite in formulating any plan of agreement between the city and the company. In Cleveland this valuation had been made by the city. As to whether this was more, or less, desirable than a valuation by a state commission, the witness said that that was a matter that could not be generalized upon, but he thought the street railway gave such an intimate public service that the public would have more confidence in the results if the city itself made the appraisal. He said that some commissions would have the confidence of the people, while the results of others would be looked upon with skepticism, and still others would be so slow in making a report that they would lose the co-operation of the people. He said he had once made a calculation of how long it would take the Ohio commission to reach a decision on a case which he had presented to it and he had found that it would take 140 years. As to what the differences were between the Cleveland plan and municipal ownership, and what further advantages the public might derive from municipal ownership, the witness thought that there were no substantial differences and that the public derived practically all of the advantages of municipal ownership under the Tayler plan. It was pointed out, however, that the Cleveland plan has no provision for paying any deficit from operation out of taxation.

VALUE OF CENTRALIZED RESPONSIBILITY

After Secretary Baker had stated his opinion that local control of a street railway was far superior to state control because of the intimacy of the service to the people of the community, one of the commissioners called attention to the complications which arise where a single utility company is serving a number of separately incorporated communities, and asked if under those circumstances it might not be desirable to have a combination of local and state commission control, whereby a company could appeal to the state commission—a higher technical body—from a decision of a local commission. To this Mr. Baker replied that it was his observation that the responsibility for the management of a street railroad made a stronger and more virile people, and that to have the right of appeal to a higher commission would take away this responsibility and it was therefore undesirable.

Questioned on the advisability or desirability of giving labor representation in the management of a utility, the Secretary said that he could imagine that this might be a wise addition to the present Cleveland plan. Later, when asked if he would advise the commission to make any recommendation on that point, he said that he could comment only on the general principle, but he felt that the intelligent co-operation of the workers with the management and the public would bring about better results than the co-operation of any two of these with the third left out. He thought, however, that in this triangle, the vote of the public's representatives ought to be powerful enough to offset the votes of the other two.

Questioned whether he, as a federal official interested in the welfare of the large industries, did not have some suggestion as to a general plan of relief which might be applied to the electric railway field, Mr. Baker replied that there was only one plan which might be permanently helpful, and that was one which cities could work out for themselves. Get the City Council and the board of directors of the railway company in the same room together, with the latter prepared to lay its cards on the table face up. This should be the first step in ascertaining the facts, to be followed by every other possible means of publicity to bring the people to realize that nothing was being withheld. He believed that any community in America would be willing to pay the cost of the transportation as soon as it was convinced that the situation as presented was the true one.

Mr. Baker thought that the companies ought not to be required to pay paving taxes and he thought that the Federal Commission could wisely bring about a public awakening on this matter. He did not believe the people realized generally that this was handed out to the car rider and appeared as a part of the cost of the ride. In this connection, he also stated that the public should be educated to an understanding of the fact that unnecessary rehabilitation, extensions and replacements demanded by it simply resulted in a higher cost of service which the rider must ultimately pay. In connection with all of these items, the value of the referendum vote was referred to, and it was believed by the witness to be not always necessary. and in fact not always possible legally, but was very desirable because of its educational and moral value.

Secretary Baker expressed his belief in a zone plan of fare collection and pointed out that Tom Johnson's principal objection to the plan at the time the Tayler franchise was drawn was that, as he put it, "You would have to have a bookkeeper for each conductor." Mr. Baker did not see any reason why some such plan could not be worked out so that there would be a more nearly equitable basis of payment for the length of ride taken. He pointed out that while there might result, as a first effect of the installation of a zone plan, some tendency on the part of a great many people to move toward the center of the city and thereby increase the congestion slightly, that this would cause the second effect which would follow, namely, a lowering of the rents in the other sections, which would largely correct the first trend. He also pointed out that the experience of the European countries in connection with zone fares was not a reliable example to follow, since the habits of the two peoples are so very different.

Asked if he favored making up operating deficits out of taxation, provided sufficient income were not obtainable to pay the operating expenses and fixed charges, the secretary replied negatively. He did not believe in taxing the people generally to pay for service to those who ride. Asked if he would favor a general fare increase in the interim while a permanent settlement is being worked out, he said that he would if the company showed no returns whatever on its real value, but that he would not favor an increase if the company merely showed insufficient return on its apparent capitalization. He said there were undoubtedly many lines being operated which were a great financial burden and which could better be done way with, giving as an example two lines fairly close together and of a competitive nature, one of which might be done away with to make the other one prosper and to remove the burden of the dual investment. The Secretary then emphasized the point that whether or not a temporary flat increase in fares should be granted must be determined by the people affected, for if the municipal or federal authorities were to install such an increase, it would only act to postpone the permanent settlement.

Speaking of fares higher than 5 cents the Secretary was very doubtful about any increase in revenue to be derived from a fare higher than 5 cents. He thought that a great deal of the short-haul riding, which is the most profitable business (like the ride taken by the man who rides from his office to the bank) would be lost if the fare were 6 cents, regardless of how wealthy the man was. He said it was simply a matter of psychology, that people had been accustomed to thinking in terms of a nickel and when a dime must be broken they preferred to walk. If the fare becomes higher than 5 cents, there will be a strong tendency on the part of a great many people to move to such a locality of the city that they can avoid riding at the higher rate.

Asked his opinion as to what was the most desirable term of a franchise, Mr. Baker replied that the indeterminate franchise with reservation of the right of the city to purchase was very satisfactory and much better than any fixed-term franchise.

Upon the conclusion of the testimony of the Secretary of War, Charlton Ogburn, executive secretary of the Federal Commission, told the commission that there were a number of public service commissioners present who were desirous to be heard on pertinent limited phases of the question, but who desired to be excused from expressing opinion on matters which were now pending their decisions. The first of these the commissioners called to the stand was Lieut.-Col. Charles W. Kutz, chairman of the District of Columbia public utilities commission.

COMPETING COMPANIES MAKE RELIEF PROBLEM DIFFICULT

Colonel Kutz, in his direct testimony, addressed the commission on the rather involved situation which his commission is now endeavoring to solve in connection with the traction facilities of the national capital. The difficulties here arise from the fact that there are two competing companies, one of which is in difficult straits, while the other is prospering. Both companies are carrying about equal numbers of pasengers but one of them, the Capital Traction Company, is doing this on about half the mileage maintained by the Washington Railway & Electric Company. The latter company has a great deal of long suburban haul, and the most logical remedy has seemed to be a zone fare system, but this has met with very violent opposition from the public.

Colonel Kutz pointed out in reply to a previous testimony indicating that the maintenance of paving along street car lines was more logically a charge against general taxation rather than the street car riders, that this might involve a division of responsibility which would result in a great deal of friction. He said that if the company were responsible for the maintenance of the track foundations, which must also form the foundation for the pavement and in large measure be responsible for the condition of the pavement, that it would be extremely difficult to get the necessary co-operation between the city and the company in order properly to maintain the pavement. In view of this, he suggested that it would be better to let the city acquire title to the roadbed and lease its use to the company.

Secretary Baker Thinks Each Community Must Solve Its Own Transportation Problem

In his testimony on Monday, Hon. Newton D. Baker, Secretary of War, said in commenting on the general applicability of the Cleveland plan of conducting its railway business:

The street railway problem is essentially a local problem. The fact is that medicine for one community might be poison for another. It would be a very great mistake to go to public ownership or public control in a community that doesn't want it or understand it.

If the public takes over the street railways because it is mad at them, and then gets mad because it took them over, it has not been a success. The solution of the street railway problem is essentially a problem of education.

At this point Colonel Kutz' testimony was interrupted for the noon recess. He continued Monday afternoon with the following statements:

Monday Afternoon Session

Elaborating his ideas regarding the ownership of the electric railway roadbed by the municipality, Colonel Kutz stated that he favored the relief of the railway from unjust municipal taxes and in general thought that the zone system is a good thing. On account of local conditions, however, it would not be favored in Washington. In answer to a question he said that he could not instance any city in which the roadbed is owned by the municipality, but that to a limited extent the principle is illustrated in the case of the New York subways.

Colonel Kutz gave as two reasons for favoring the plan which he advocated the following: (1) Public ownership of the roadbed would simplify the paving question. Where responsibility for the paving is divided between city and company there is opportunity for constant friction. For example, a city might decide to pave or repave a street in which there existed elertric railway track with considerable remaining life. In the interest of ultimate economy it might be best to relay the track, throwing away or scrapping ties, rails, etc. This would be a considerable loss to the railway, but if the city owned the roadbed there would be no injustice done if the track were replaced. (2) Such ownership would permit extensions to be made as required in the interest of service without reference to the practicability of operating over these extensions at a profit. Colonel Kutz considered that this would not entail an undue charge upon the city, and the fact that the roadbed was being rented to the railway would give the city an opportunity to extend financial assistance to it in case it is desired to hold the fare down to a figure below that at which the railway can operate at a profit. The principle, however, should not be applied to the equipment, in Colonel Kutz' opinion. He did not believe that public operation would be desirable, hence favored the private ownership of rolling stock, power distribution system, etc.

In answer to a question from Commissioner Sweet as to the possibility of securing the same result as he desired by existing means Colonel Kutz said that cities cannot exercise satisfactory control of their railways in regard to extensions, for they cannot order extensions which will not be compensatory. He said that he regards the roadbed of the railway as a special form of roadway, in fact it is the poor man's roadway. Just as the city builds boulevards for the automobile owner it might build car tracks for the man who cannot own an automobile. This he thought to be different from governmental paternalism, which he does not favor. It would permit improvement of service under conditions where a railway extension might not promise any increase in revenue.

PUBLIC DOES NOT REALIZE THE SERIOUSNESS OF THE SITUATION

Commissioner Sweet said at this point that Colonel Kutz' testimony emphasized the fact that there is great need for co-operation between the public and the railway. The needs of both the public and the utility must be recognized. To this the witness agreed, stating that the difficulty is to give the public a realization of the situation. He said that if this were understood the people would be willing to pay a fair price for the service. In this connection, however, he reiterated his belief that it is more economical for the city to own its own tracks rather than allow a rate of return on investment which is sufficient to attract capital, as the city can borrow the money more cheaply. This might not help in the present acute crisis but there is no reason why future track construction cannot be taken care of in this way. Existing track might be appraised and bought by means of bonds at a fair price.

In response to a suggestion from Commissioner Sweet, Colonel Kutz agreed that immediate relief could be secured by amelioration of the present paving tax which throws this cost upon the poor man. Other questions related to the proper line of demarcation between public and private ownership under the plan outlined by Coloned Kutz. He said that in the case of a conduit road the city should own up to and including the contact bar, but not the feeders; nor should it own the overhead in the case of a trolley line. Doing away with divided responsibility, as suggested, would also simplify the accident problem as related to accidents caused by track or paving. The liability in this case would lie with the city.

Finally, Colonel Kutz gave in more detail his ideas on relief of the railway from unjust taxation. Car riders ought not to be taxed indirectly, as for example in paying a share of the cost for traffic-officer service. The District commission, he said, opposes all free railway service on this ground.

Following Colonel Kutz, Roger W. Babson, Boston, Mass., specialist on utility securities, discussed the financial situation of this industry. By way of introduction he said that there are three ways of conducting the electric railway business: (1) The present method of private ownership with public regulation, which has not been able to save the industry from the present catastrophe; (2) municipal ownership, or a service-at-cost plan with a guaranteed return supplied if necessary from the public treasury; (3) private operation, with relief from unjust taxation and permission to charge what the operators deem wise, but with equitable competition with motor buses.

MR. BABSON ADVOCATES A FAIR SHOW FOR THE RAILWAYS

In the end Mr. Babson considered that both the railways and the public would be better off if competitors in transportation service could work out their salvation on a competitive service basis, charging what they can for this service. The mode of transportation which survived in a given case would be the one best fitted for the particular service. If the railways had been obliged to struggle for existence on the basis of giving service, with permission to charge what they thought best, the business would be in better condition to-day. In Massachusetts trouble began when the State stepped in and began to "father" the business. He saw no reason why the service should not determine the fare to be charged. Take the case, he said, of the lines running from Brookline, one of the suburbs of Boston, into the city. These give better service than taxicabs could do and they might therefore very properly be allowed to charge taxicab fares.

Elaborating his idea as to the change in the need for regulation Mr. Babson said that when the electric railway had the monopoly of transportation service in its field, which it did a few years ago, regulation was necessary. As long, however, as there is more than one means for furnishing the same transportation the case is different. Railway difficulties began with the popularization of the automobile. How the matter stands to-day can be realized from the fact that there are now in Massachusetts more than 186,000 automobiles as compared with fewer than 5000 electric cars.

The problem of the railways now, however, said Mr. Babson, is how to get out of the difficulties in which they find themselves. There is no doubt of the nature of these. The first requisite is that the hands of the railways shall not be tied as now. The railways should either sell out or be given a free rein to win out on a service basis. In many places they can do this; in some probably not. But in many cases relief from the paving burden is necessary.

Mr. Babson dwelt at length on the case of the Boston Elevated Railway which, he thought, would have been charging a lower fare to-day if it had had the opportunity to give good service and to charge a reasonable fare for it earlier. He believed this because under the present plan he sees little incentive to interest in the property, on the part either of stockholders or employees. At a recent stockholders' meeting only three out of 3000 attended.

Summing up his line of thought Mr. Babson said that the prosperity of the electric railway system is vital to a community, and any bargain entered into between the two should be profitable to both sides. It may be necessary in some cases to go to extreme measures to conserve the railway service, but before doing so the shackles should be removed from the railway so that it can have a fair chance.

Commissioner Elmquist asked as to Mr. Babson's further views on the jitney problem, and the latter said that there are some places in which the bus affords the most economical and serviceable means of transportation. For example on more than 250 miles of track of the "Bay State" system this is true. Commissioner Sweet also asked as to the extent to which the jitney problem is general, and Mr. Babson said that it is very general. Jitney service, he thought, should be properly regulated to render competition with the electric railways a fair one, but artificial throttling of the jitney is not wise. In the end all forms of transportation will thrive best when they are on a co-operative basis, each giving the service that it is best fitted to give. The emphasis in all cases, he said, should be placed upon the service.

As to the future of electric railway transportation Mr. Babson expressed the conviction that in many communities it will survive and on a substantial footing, especially in conjunction with elevated and subway lines. He felt that, while the war had aggravated conditions, even if there had been no war the conditions would have been substantially the same, although, to be sure the war "broke the camel's back," it hastened the downfall of the railways. Even if the costs of labor and materials should come down the problem would not be solved.

In reply to another question Mr. Babson expressed his approval of the Cleveland plan of operation, with an addition giving more incentive to efficient management. He also agreed with Bentley W. Warren in the contention that the reason for the indifference noted in Boston is the guaranteed return regardless of earnings, which does not obtain in Cleveland. He did not see why the Cleveland plan in its essentials should not work out well in other cities. He also agreed with Commissioner Sweet's suggestion that the abnormal conditions under which the railways are operating now have made this operation extremely difficult.

Commissioner Gadsden asked Mr. Babson to summarize the situation regarding electric railway securities. To this request the latter replied that during ten years, and mostly during the past five years or less, traction bonds have shrunk 25 per cent in value and traction stocks 75 per cent. Some ten years ago in Massachusetts, where great care is exercised in such matters, traction securities were approved as investments for savings banks, thus indicating the esteem in which they were held at the time. Of late there have been many losses of trust funds and savings bank investments due to the shrinkage in value of these securities.

Upon Commissioner Sweet and Mr. Warren pointing out that some of the plans suggested by Mr. Babson would require legislation and so could not be made effective at once, he said that as an immediate step he would urge the removal of fare limitations, although first in ultimate importance he placed relief from unjust burdens. As to the zone system he considered it a good money-making proposition for the railways, but he opposed it on social and economic grounds.

The speakers who completed their testimony at the Tuesday sessions included the following:

Carl H. Mote

Secretary Indiana Public Service Commission

He showed by the experience of the Indiana Commission that a spirit of co-operation between utilities and commission will go far in meeting adverse conditions.

Richard T. Higgins

Chairman Connecticut Public Utilities Commission

His testimony consisted largely of an analysis of the electric railway situation in his state.

F. F. Ingram

Manufacturer, Detroit, Mich.

He favored local municipal ownership of the street railway with a nominal fare supplemented by allowances from the public treasury.

James H. Couzens

Mayor of Detroit

Mr. Couzens strongly urged municipal ownership and operation and explained why, in his opinion, it would be economical and pleasing to the public.

The last witness heard on Monday afternoon was John P. Fox, New York City, who has acted in an advisory capacity in connection with traction matters for many years. He stated that he had visited Europe several times to study electric railway operation there. In Europe, although large - fare increases have been made the railway situation is not as bad as in this country. He said that reports which have just reached this country show phenomenal increases in business and net income for the lines in Berlin. One reason for the better situation abroad he believed to be the lower fixed charges which he understood prevail there. In this country some railways are suffering from the high "overhead," others from difficulty in introducing operating economies.

Referring to the fare question Mr. Fox said that increasing of fares has not proved a success. He thought that lower fares for short hauls would bring in business during the non-rush hours, and advocated a 5-cent fare as a normal charge with, say, a 3-cent fare for short hauls. As examples of special cases where low fares have brought large business on very short hauls, Mr. Fox cited the Williamsburgh Bridge line in New York City, on which 9,000,000 passengers per annum per mile of track are carried, at a fare of 5 cents for three single trips. He also gave some details of the experience of the railway lines in Shanghai, China, where an enormous and profitable business is done at a very low rate of fare. In that city the present management took over the system at a time when it was very difficult to make ends meet, but by the application of merchandising methods has made the property very profitable.

The point which Mr. Fox emphasized particularly was the importance of improving the "load factor," filling in the depressions in the load line. The high flat fare, he said, makes the load factor worse, largely cutting out the slack-hour traffic.

Tuesday Morning Session

Carl H. Mote, secretary of the Indiana Public Service Commission, opened the testimony on Aug. 12 with a written statement regarding the electric railway situation in its jurisdiction, covering slightly less than 2500 miles of track. In this he stated that conditions in Indiana are not identical with those in some of the Eastern states because overhead charges are not excessive, the roads having mostly not been overcapitalized. Formerly the steam roads of the State operated under a limitation of 2 cents a mile, but the electric railways were decided to be utilities and hence were not limited to that rate. The interurban fare was first raised to 2½ cents and later to 2¾ cents, thus keeping a differential of ¼ cent as compared with the present steam road rate. This was maintained to retain a fair share of business for the electric lines.

Mr. Mote stated that the commission makes no rate increases without a tentative valuation, and suggests financial reorganization where such seems necessary to put a road on a substantial basis. In this way the commission has reduced fixed charges by $400,000 per annum, with corresponding reduction in outstanding securities. In making these financial readjustments bond and shareholders are asked to accept new securities of lower face value. The purpose in so doing is to reduce the amount of securities to nearly the actual value of the properties. Other financial changes have been the removal of unreasonable sinking fund charges and stopping the payment of interest on sinking fund accumulations.

By the means outlined Mr. Mote said that it has been possible to keep the Indiana companies solvent and to maintain fair standards of service. As for the Federal Electric Railways Commission, while the Indiana commission will co-operate in every way, there is little locally that a federal commission can do, as the State has the situation well in hand. The Indiana commission, he said, proceeds on the theory that it is an administrative body and that its work to be effective must be done promptly. The endeavor is to act upon petitions within a month.

Mr. Mote said that the commission does not feel called upon to protect securities that have no real value, and he felt that electric railways as a whole had been a disappointment to their promoters. Competition is very severe and the future of the business is far from promising. It is, however, the intention of the Indiana commission to increase fares as needed up to the point where a further increase will not produce a greater income. In the Indiana cities the fare is now on a 5-cent basis and the commission hesitates to go higher at present. The commission has investigated operating conditions on the local properties and found that some could be greatly improved. The companies have suffered financially from claims growing out of accidents, some of which might have been avoided.

In reply to a question by Commissioner Elmquist, Mr. Mote said that the commission has found it desirable and in the public interest to inspect the properties with a view to suggesting improvements, and instanced a recent survey of the power situation on the Union Traction system, where the power supply was found to be inadequate. On other roads improvements in the signals have been found necessary in the same way. The companies have cheerfully co-operated in making the recommended improvements.

The situation in Indiana as regards labor conditions appears to be fairly satisfactory, as there are no strikes and no indications that the workers are dissatisfied.

As to relief for the railways the commission would approve the waiving of paving and other municipal requirements and reduction in taxes, but has taken no steps in this direction as yet. It was felt, however, that the public would resent the relieving of the companies from municipal requirements unless absolutely necessary.

Mr. Mote then went into the matter of franchises and explained that under the law of 1913 the utilities had the right to surrender their old franchises, receiving in return new indeterminate franchises, and leaving the details in the hands of the commission. Provision was also made for emergency relief for the railways. A number of franchises have been surrendered under this law. In administering its work the commission is endeavoring to follow the service-at-cost principle, basing the cost upon a fair tentative valuation. The situation has been complicated somewhat by a recent law which provides that where a company has surrendered its franchise any free service or service at special rates prescribed in the original franchise shall hold. In reply to a question by Mr. Warren, Mr. Mote said that this refers to special service for the municipality or its employees.

Concluding his formal testimony Mr. Mote said that while the Indiana situation may get beyond the control of the commission in the sense that it cannot find a way to increase the incomes of the companies, he felt that the Indiana companies would be among the last to "go upon the rocks."

SOME INFORMAL COMMENT BY MR. MOTE

Mr. Gadsden asked Mr. Mote if on the whole increasing the rate of fare in Indiana had produced a beneficial effect, to which the latter replied in the affirmative. Asked by Mr. Elmquist as to over-capitalization in that State he estimated this at from 15 to 20 per cent. Also he said that the present 5-cent fare represents an actual increase in fare from the fare previously in vogue. The commissioners endeavored to bring out the reasons for the better operating conditions in Indiana than in some other places, and Mr. Mote thought that these were partly due to the reasonable prices for fuel and labor. There is little complication due to the extension of city systems into other communities, as exists in some states.

Mr. Mote stated his belief that the commission form of control is best, but favored municipal control in some respects, such as speed of operation, stops, extensions, etc. Cities and villages have such control in Indiana. He finds that there is little resulting conflict between the State and municipal authority. Asked as to the length of time needed for a tentative valuation such as those mentioned, he stated that ordinarily two weeks would be sufficient after the filing of an inventory, although in one case three months had been required.

Commissioners Sweet and Gadsden asked as to Mr. Mote's ideas on the zone system, to which he replied that the commission had denied petitions for the installation of this plan in Indiana in the belief that it would cause congestion. He believed, however, that it is inevitable in many cities. In addition, the commission thought that the zone plan would be unfair to residents who had invested in suburban homes on the supposition that the flat fare would be permanent.

However, in the event that the zone plan offered the only solution to the electric railway problem as a basis of self-support, the commission in refusing to permit its use would undoubtedly make other provision for the railway income.

At this point Counselor Warren introduced some data as to the effects of wage increases as bearing upon the zone system, and Mr. Mote said that the application of the same costs to the Indianapolis situation might make a zone system necessary. The data related to the census figures which showed that in 1917, with a maximum labor rate of 31½ cents per hour, the labor cost per passenger was 2.36 cents, whereas at the 60-cent rate which now is paid in some cities the cost would have been 4½ cents. In 1918 with a 34-cent maximum the cost was 2.82 cents per passenger, while at the 60-cent rate it would have been 4.98 cents. These amounts check with the experience on the Boston Elevated Railway on which in December, 1917, the rate was 2.20 cents per passenger and in May, 1919, 4.39 cents.

Mayor James H. Couzens Wants Municipal Ownership

In his testimony on Tuesday, Mayor Couzens said: While the main burden of paying for street-car service should be placed on the street-car rider, he did not believe that it all should rest there, but that some of it should be transferred to the shoulders of the manufacturer, the office building owner and others who should help bear the burden of getting the worker to his job. He said municipal ownership would produce this distribution of the burden. He said he believed in putting the responsibility for public service of this kind on public and not on private officials, and that just as cities control and operate their water supplies, their systems of education, their collection of garbage and matters of health, they should have full control of their transportation systems, which he declared are just as essentially a municipal concern.

In concluding his informal testimony Mr. Mote explained what the commission has done to enlist and hold the co-operation of the public. The public has been told the full circumstances in all cases and the reasons for the decisions reached. As a result the public has confidence in the commission. Asked as to the transfer situation he said that transfers are not charged for, and the public did not take kindly to the plan of collecting and rebating for transfers. Again he said that the commission has no jurisdiction over jitneys, that the municipalities are waking up to the necessity for controlling the jitney situation, and that he did not believe the motor bus to be a possible substitute for the electric railway. Regulating rates and improving service are equally important functions of the commissions, and he looked forward to the time when it will be practicable to insist upon higher service standards.

CONNECTICUT COMMISSION HEARD FROM

Richard T. Higgins, chairman of the Connecticut Public Utilities Commission, followed Mr. Mote. He read a brief statistical statement of the electric lines under the jurisdiction of his commission. There are ten operating companies in the State, of which two operate seven-eighths of the 828.7 miles of single track. The fare charged by the Connecticut Company is 6 cents for a single zone, while the Shore Line charges 5 cents in New London and Norwich (being held to this amount by State charter), and 2½ cents per mile outside of the cities.

Mr. Higgins told of the report of the special committee of the State Legislature presented in April, 1919, recommending speedy relief for the railways, but in vain. He said also that the railways serve so many municipalities and the lines are so interconnected that it would be very difficult to administer the requirements of the railways by means of municipal ownership or control. In the early days many lines were extended outside the city limits and these now cannot possibly earn their expenses. Furthermore, the unregulated jitney competition in Connecticut is a very serious matter.

On the general situation Mr. Higgins said that the seriousness of the railway difficulty is now everywhere conceded. The future looks dark unless the states and cities will aid by increasing fares, reducing taxes, reducing municipal requirements, and exerting proper control over competing transportation agencies. He thought that municipal ownership and operation should be avoided. In regard to relief from taxes he thought that there is as good reason for relieving the railways as privately endowed educational institutions. It is very important that commissions should render their decisions promptly and that cordial relations between utilities and the public should be fostered. For some reason the nickel seems to be the favorite rate of fare, and it would be better if possible to retain and give a shorter ride for this sum. Mr. Higgins believed that electric railways under the conditions which he outlined could be self-supporting. The present emergency will not be taken care of, however, by the service-at-cost plan, for if rates were set to give a fair return on investment without other means of relief, such fare would be prohibitive with unlimited and unregulated competition. While the future of the auto bus cannot be predicted, it is true at present that the electric railways are essential. They should, therefore, be protected during the period of transition. If the bus is the coming means of transportation, railway franchises should be amended so that the companies can go into this business and so conserve the investment which has been made in them.

In Connecticut, Mr. Higgins reminded the commission, the companies have the right to set their rates, subject to revision by public appeal on petition, except that the companies cannot change a commission-made rate. All rates now in effect are company-made rates.

Asked by Commissioner Elmquist for more detail as to the procedure in valuations, Mr. Higgins said that the properties had not been appraised in detail, but a tentative valuation of the Connecticut Company's property showed property in excess of outstanding obligations. He said also that one small road had gone to a receivership without raising the fare above 5 cents for the reason that it did not believe the community sentiment would permit the increase. Questioned further as to the jurisdiction of the commission, he said that it controls service but not the issuing of securities, although he thought it should do so. There is some sentiment in favor of giving the commission this power. As to applying the Cleveland plan in Connecticut Mr. Higgins saw some difficulty in this because the railway lines run through so many communities. Thus it would be hard to allocate expenses among them.

Concluding his testimony Mr. Higgins said that the public in Connecticut appears to be satisfied with the commission regulation as a whole, although one city seems to favor taking over the local lines itself. After analyzing briefly the labor and other local conditions, he stated that while it might be practicable to raise the fare to 7 cents and still produce more income, this would be accompanied by increasing competition. The jitney competition is still on the increase, although a law requiring jitney operators to be bonded will go into effect in a few months and may change the situation. At the same time riding on the railways is on the increase. The commission has given some attention to possible economies, and feels especially the need for some plan for insuring that the companies shall get all of the fares to which they are entitled. The one-man car is promising, he said. The public likes it and it produces substantial savings. In response to a suggestion from Mr. Warren, he said that the Connecticut Company, for example, has endeavored to introduce operating economies, and he considers that the personnel of the local utilities compares favorably with that of similar companies elsewhere. Moreover, very cordial relations obtain between the commission and the utilities. Asked by Commissioner Sweet as to the attitude of the public toward the railways, Mr. Higgins said that public sentiment is improving. The people seem to be coming to a realization of their dependence upon transportation facilities. Replying to a question by Commissioner Elmquist he said that relief from tax burdens should be a temporary expedient. The commission has no power to grant such relief. It must come from the Legislature, which in Connecticut grants all franchises.

At this point Mr. Mote was recalled to the stand on request of Counsellor Warren, who desired to ask as to the experience in Indiana with the one-man car. Mr. Mote said that the results there have been very satisfactory, also that the pay-as-you-enter car had helped greatly in preventing loss of fares. The increase in fares previously referred to, combined with a large use of cars of this type, had produced a more than proportional increase in receipts. Mr. Ogburn then reported that there had been expressed a desire to have spread on the record a minute regarding the decision of the New Jersey Board of Public Utility Commissioners to permit the Public Service Railway to inaugurate a zone system in which the initial fare will be 3 cents, and 2 cents a zone thereafter. This action has been taken since Dr. Thomas Conway, Jr., had testified before this commission. The plan for collecting fares for the present is of interest. When the passenger boards the car, which he will do at the front, the motorman will hand him a slip identifying him as to the boarding the zone, and he will pay the conductor the appropriate fare on leaving the car at the rear.

DETROIT SITUATION EXPLAINED BY CITIZEN

F. F. Ingram, a business man and manufacturer of Detroit, Mich., appeared before the commission to give the point of view of the general citizen toward the railway problem. He had held a number of positions qualifying him for this purpose, including membership in the State constitutional convention which provided for municipal ownership of utilities for Detroit, as well as home rule. These changes were favored by him. Mr. Ingram questioned the necessity for electric railways in Detroit and said that during the recent strike there was a demonstration of the possibility of getting along without them. By the provision of free bus service by employers the workers were able to get to work without great difficulty.

In reply to a question by Commissioner Elmquist as to the effect of the good weather which prevailed and the fact that the bus service was free, Mr. Ingram said that undoubtedly these things were factors in producing the unexpected result. Other factors were the presence in Detroit of the Ford factory and particularly the statement by Mr. Sorensen, of the Ford Company, that gasoline-propelled vehicles could supplant the street car, which prejudiced the people against the railway. He said that he could not explain the sentiment of the people of Detroit on the traction matter.

Commissioner Beall asked if the low fares which Detroit had enjoyed were not made possible by taking profit from the company's interurban lines, and Mr. Ingram said that some citizen considered that they were, although others believed the contrary. The commissioner pointed out that the facts were available though the company's reports. Mr. Ingram also said that the use of the city streets by the company's freight cars was objected to, but he admitted also that it would be a great deprivation to the city if the freight service were discontinued.

Tuesday Afternoon Session

Resuming his testimony after the noon recess, Mr. Ingram stated that his suggestion for a solution of the situation in Detroit was to charge a nominal fare of 3 or 4 cents with free transfer, without making any pretense of covering expenses. The deficit would be made up from taxation levied against the land which appreciated in value due to the presence of the railway lines. He could see no reason why the property holder who had thus materially benefited from the street railway should not share some of the burden with the car rider. Questioned if this might not involve a deficit which would be a very heavy burden and thereby prove very unpopular with the voters, he replied that he did not think it would. He cited the plan of assessing the cost of irrigation in California against the property affected as analogous, and said that there had been no objection to this plan out there. He admitted, however, that he did not know how the property owners of Detroit would look upon his plan.

Counsellor Warren questioned the witness as to whether there would not be strenuous objection to a tax for the purpose of keeping up the street railways if they were looked upon by the people as unnecessary, an earlier statement to this effect having been made by Mr. Ingram. As far as the working classes were concerned Mr. Ingram did not think that there would be objection, but he did not know how other classes would feel in regard to the matter. Mr. Warren also questioned about the relative congestion upon the streets during the recent strike while the street cars were not operating as compared with normal conditions, wondering if the congestion might not overcome the advantage of the automobile transportation if street cars were done away with. The witness said that in the downtown section the congestion had been less than normal because the jitneys turned back short of this section in order to avoid the congestion and make better time. In the outer districts of the city, however, the congestion had been noticeably increased, but he did not believe that this would work against the rubber-tired vehicle because it was so much more mobile than the street car and could make use of adjacent parallel streets when too much traffic was concentrated along any one street.

Concluding, Mr. Ingram reiterated that he believed the people of Detroit wanted municipal ownership and he did not see how it was going to be prevented from ultimately being consummated. The principal difficulty seemed to be with the manner of bringing it about.

At this point Mr. Ogburn read into the record a letter by Ole Hanson, Mayor of Seattle, Wash., endeavoring to give the circumstances leading up to the purchase of the street railway system in his city and to show the results which have been obtained during three months of municipal operation. This letter contains tables and will be published next week.

DETROIT MAYOR UNALTERABLY FOR M. O.

Mayor James H. Couzens, of Detroit, former general manager of the Ford Motor Company, followed Mr. Ingram, appearing at the invitation of the commission, and began his testimony by a statement that he was unalterably in favor of municipal ownership of the street railways because this was purely a social problem. As proof that it is a social problem he cited the great pressure which had been brought to bear upon the administration at the time of the local strike in Detroit recently by merchants and manufacturers who have no occasion personally to use the street cars. These business men wanted to have the strike settled in any manner which would bring about a resumption of service and enable the people to get to their work and to the stores. He said that unless the street car question were speedily solved in a manner satisfactory to the people the employer would be obliged to provide transportation for his employees as a permanent proposition.

Mr. Couzens then pointed out some of the difficulties of solving any problem which must be put up to a referendum vote. In Detroit, the people voted down by very large majorities two propositions, to which the Detroit United Railway had agreed in advance, which were so favorable to the interests of the public that the Mayor said they would have carried the company into bankruptcy. Then the city voted five to one for the general principle of municipal ownership and operation in contrast to private ownership and operation of the street railways, and followed this action by rejecting a proposition to purchase the city lines upon a valuation to be made by the six circuit judges, and again voted down a proposition which would have made municipal ownership possible based on a value agreed to in advance.

In trying to explain these various contradictory decisions of the people Mayor Couzens said that it was his opinion that they wanted municipal ownership but did not want to be loaded up with the assets of the old company now on the streets. They also apparently had serious misgivings of the expediency of the steps which were contemplated to bring about municipal ownership and perhaps even distrust of the public officials.

Questioned by the commissioners as to what solution there was for the Detroit situation, the Mayor replied that he knew of only two solutions, both of which involved many difficulties. The first was to proceed to secure the property by condemnation, provision for which had been made by the last State Legislature, but this would require a three-fifths vote of the people and he doubted that it would succeed. The second means was for the city to order the company off the streets on all those lines on which the franchises had expired, and for the city then to proceed to install and operate a system of its own. Under such an action the tracks of the company would have only junk value and the city might then be able to purchase them at very much less than their capital value. Asked if this would not be confiscation he replied that he did not think it would for the company had accepted the franchise with a fixed-term provision and it should therefore have set aside a sinking fund to amortize that property in the life of the franchise. Further questioning brought out that he believed the company had been earning enough to provide for such amortization had it seen fit. One of the difficulties of carrying out this second plan of securing municipal ownership and operation is that it would take several years to complete the plan, during which time there would be competition by the remaining privately-owned lines. It was brought out by Counsellor Warren that the franchises have expired on about three-fourths of the lines in Detroit, so that these are now operating at the caprice and will of the people.

Later when questioned by Counsellor Warren as to whether he meant that the city might force the company to sell its tracks at their scrap value by ordering them off the street, the Mayor explained that he did not mean to do that, but that since such an order would reduce the value of the track to the company to its scrap value, the city and the company could then come to an agreement upon a price somewhere between the capital and the scrap value as a basis of purchase.

Mayor Couzens was of the opinion in connection with municipal ownership that the car rider should pay the cost of the ride up to a certain point, which he said probably was a nickel, beyond which any deficit in operating expenses should be made up from taxation of some kind. Perhaps this would take the form suggested by Mr. Ingram, of a tax upon the appreciated land value, or possibly it should fall upon the merchant and the manufacturer who benefit through the transportation of their customers and employees. As analogies, he cited the health and sanitation service of the city and public playgrounds, to which all persons contribute support although only part of them benefit directly. The street railway service is so intimately associated with the social life of a community that it seemed to him the community should provide this service for itself. While he was not yet ready to advocate free transportation, he did believe that the cost to the rider should not be beyond that figure which would make the utility of maximum service. As soon as the cost rose to the point that it began to drive away much patronage then the excess should be taken up through taxation.

In answer to questions by Commissioner Elmquist the Mayor said he was distinctly opposed to the payment of any street railway deficit out of taxes so long as the service was given by a private corporation. He was opposed to a charge for transfers, believing that the necessity for changing cars was an inconvenience to the passenger who should not be penalized for having to use two lines to get home. As a temporary relief, pending municipal ownership, he thought that taxes upon the street railway might be abolished if it were certain beforehand that the people understood that these would be returned to them in the form of lower fares or better service. He did not think favorably of the service-at-cost franchise, because the incentive to efficient and economical management was either lacking, or if a reward were somehow incorporated then the incentive was realized by curtailing the service and cutting expenses unduly to increase the reward.

Asked if municipal operation would be as efficient and economical as private operation, the Mayor said that it would be so, absolutely. His basis for this contention was the manner in which the water system of the city had been managed. He could see no danger in the large number of employees engaged in the railway service becoming municipal workers, since they represented such a very small proportion of the total population, and also because the administration was likely to make as many enemies as friends among the employees. He said that municipal ownership was not analogous to the federal operation of the telephone and telegraph lines and the railroads, for these had been administered at long range from Washington, whereas the chief executive of a city would be in constant contact with the service being rendered by the railway department. Many of the aims of the federal authorities were lost through their lack of intimate contact with the service they were ultimately controlling.

Another advantage of municipal ownership which Mayor Couzens emphasized was that the city would be able to secure money at about 4½ per cent, whereas it would cost a private corporation about 7 per cent. Even granting a lesser efficiency through municipal operation, there was still a margin of 2½ per cent in the cost of financing which would certainly not be consumed from this cause. Pressed by Commissioner Beall on the point that the cost of money to a city would rise as its bonded indebtedness increased, the Mayor replied that even if the cost of the street car service were greater under municipal operation, it ought nevertheless to be brought about so that the eternal agitation might be stopped and the people be able to specify and get what they wanted in the way of service.

Wednesday's Sessions

W. C. Bliss, chairman, Rhode Island Public Service Commission, began his testimony before the commission near the close of the Tuesday afternoon sitting and continued Wednesday forenoon. He filed as a part of his evidence, the report of the special commission appointed by the Governor, consisting of himself, Zenas W. Bliss, chairman of the State tax commission, and George W. Newhall, chairman of the State bank commission. This commission was charged with the duty of investigating the conditions of the Rhode Island Company and recommending remedies. It presented its findings to the legislature in March, 1918. The contents of this report were frequently referred to and quoted by the witness who began his direct statement by reviewing the circumstances of the last few years, leading up to the present condition of the Rhode Island Company which operates the principal electric railway system of the State.

He pointed out how the Rhode Island commission had encouraged the settlement of as many of the utility problems as possible with the local authorities, advising companies to go to the city first, recognizing the merit of the home-rule contention though the law gave the commission jurisdiction. This had resulted in much less antagonism on the part of the local communities. However, Mr. Bliss stated that there were difficulties in the endeavor to combine state and municipal control, such as the conflicting ordinances of neighboring towns served by the same company, the power of a city to route cars in a way detrimental to the service of suburban localities, etc. In such cases as that of the Rhode Island Company which operates in twenty-six municipalities, there were many problems arising which must be solved from the point of view of the welfare of all of them and not to meet the selfish interests of any one of them. Such problems obviously required State handling. He believed that the State commission should always have the power of revision and over-jurisdiction of local franchises or permits.

Mr. Bliss explained the manner in which it had been planned to secure for the Rhode Island Company the $1,000,000 deficit which it faced as the result of a War Labor Board award. Previously, fares had been increased both on the flat-fare plan and then by several zone-plan rates and it had been found that it would be impossible to derive the whole deficit from fare increases. So the plan drawn up but which could not be carried out because of the failure of the Legislature to supply the enabling acts, was to provide a fare increase which would net $300,000, to abolish exclusive franchise taxes which would save $150,000, to abolish paving taxes thereby saving $90,000, to introduce skip stops and other economies from which it was expected a $200,000 saving would be realized, and finally to secure from direct taxation $240,000, making a total of $980,000.

Mr. Bliss said that the street car service deficit was entirely a matter between the rider and taxpayer, for the latter has an immediate interest in the trolley system represented by the value of his property. Business interests are likewise vitally interested in a car service costing little enough so that it will encourage and not discourage riding.

WAGES AS WELL AS RATES MUST BE REGULATED

Lacking the power to put any part of the burden of the street car service on anyone but the rider, the only recourse left is to increase the fares. Mr. Bliss expressed the opinion that it was utterly impossible to cope with the problem in this way, that liberal increases had been granted in Rhode Island and to increase further was simply suicidal, and there was nothing of consequence to be hoped for from more efficient management for the property had been very ably operated. He said the problem simply cannot be solved as long as there is no restriction on wages. It can never be solved until wages as well as rates are regulated. He thought every company should have the privilege of bidding in the open market for labor and secure it as cheaply as possible. It is now a matter purely at the mercy of the unions. The public is entitled to the transportation service with a rate of wage that is reasonable and it should be free to attract labor into its intimate services on that basis, allowing the laws of supply and demand and conditions of work to determine what wage had to be paid.

RESULTS OF FARE INCREASES AND ZONING

The installation of the first zone plan in Rhode Island, comprising a 5-cent central zone at the traffic center of each municipality and 2-cent zones outside of that, the witness testified had resulted in a revenue increase of $505,000 as compared to an estimated increase of $540,000. The 5-7-9-cent fare had held the traffic and apparently had resulted in no harmful effects. When the central 5-cent zone was shortened and the outer zone increments increased to 5 cents, instead of producing the estimated revenue increase of $2,162,000, it had produced $1,250,000, falling short $912,000. There was a distinct loss of travel in the outer zones. A 1-cent charge for transfers had produced $150,000 a year increase, estimated to produce $172,000, and the general use of transfers was reduced 15 per cent. This charge was received without complaint, Mr. Bliss thought, because the fare for the central zone had been retained at 5 cents.

On the line between Providence and Pawtucket, two cities close together, the effect of the 5-7-9-cent fare has been greatly to stimulate the business of the local merchants in Pawtucket and correspondingly to decrease that of the Providence merchants. Judging from this, Mr. Bliss thought that merchants of the big centers could very well afford to pay taxes to help support the railway, and even further to subsidize them in order to maintain low-fare frequent service. A commissioner suggested that this business of the merchants from out of town had been done at the expense of the trolley company during the last few years, or that this represents the contribution of the utility to the aid of the social problem. Questioned by Commissioner Meeker whether the people would not soon realize that it would pay them to trade with the larger merchant even with the high carfare involved, the witness thought that the fare increase was very plain while the savings from the larger merchant might not be so readily appreciated by the customer.

Asked if it were not possible to educate the public that even with a fare increase, the street car was still the most economical transportation available and it should not be influenced to walk by the slight increase, Mr. Bliss said he had always believed in the fairness of the public. But when it is impossible to get the essential facts clearly in the mind of the business men and professional men, he wondered how it could be expected that the public in general might be made to understand. He said this cannot be accomplished until the press and the public officials are willing to come out and truthfully and clearly state the problem and lead the people.

FUNDAMENTAL CAUSES OF CRITICAL CONDITION

Mr. Bliss then turned his direct testimony to a brief discussion of the causes fundamentally responsible for the plight of the electric railways. The first of these was the enormous increase in the cost of labor and materials. The cost of the latter, he believed, could be satisfactorily coped with by the companies. But he knew of no way to meet the labor costs until the people shall have risen up and educated their legislators to the necessity of providing a tribunal with power to decide what is a fair wage and to punish strikers by law. With the present disorderly demands of labor and the absence of governmental agencies to deal with it, he could see no possible relief. He also pointed out that the street railway was not altogether necessary, since during the eighteen-day strike in Providence, it was possible to operate factories and carry on business in nearly the normal way.

The second cause related by the witness was the excessive franchise taxes and paving obligations. These should be removed by legislation the first thing, he thought, and this would go a long ways toward meeting the emergency. The third cause cited was the competition of jitneys and private automobiles. He believed the jitney supplied a superior service in many cases and that therefore, it could not be abolished, but that it should be put under strict regulation and on a basis comparable with the street cars. Under this regulation, it might survive but it would be a less serious competitor.

The fourth cause assigned for the difficulty of the railways was the tremendous increase of federal taxes upon the utilities. From this burden they should be relieved, for the welfare of the country was dependent, he said, on transportation and the free movement of the people.

FEDERAL INTERVENTION IMPOSES HEAVY BURDEN

The chief reason for the situation the witness stated to be the awards of War Labor Board. It was this cause which, he said, had come very near making the sitting of the Federal Commission a coroners' inquest rather than a consultation of doctors. The War Labor Board had added $1,250,000 to the annual operating costs of the Rhode Island Company, which the latter had not the money to pay, "with the beautiful words of explanation" that the Board was not concerned with the financial condition of companies, but that the award represented a living wage and it must be secured somehow. This decision had apparently been passed out without regard to its effect on the railways and it also put the public service commissioners in a very difficult position for they knew the effects of the award and their duty in behalf of the company and the ultimate benefit of the public but were powerless to act.

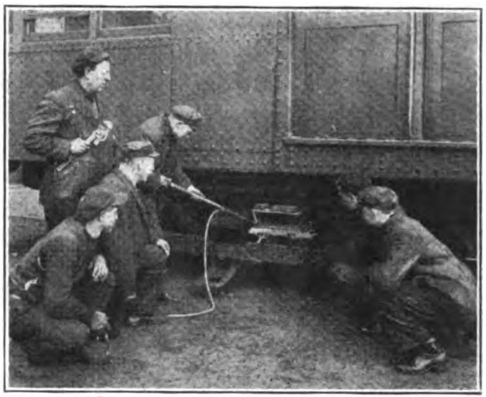
The conclusion of Mr. Bliss' testimony, together with that of Zenas W. Bliss, receiver The Rhode Island Company; Mayor Chas. B. Gillen, of Newark, N. J., and Dr. Delos F. Wilcox, New York City, will be given in next week's issue, together with abstracts of the testimony presented on Thursday and Friday.

Thursday's Sessions

At the three sittings of the commission on Thursday the witnesses who testified were Commissioner Nixon of New York, followed by William P. Burr, corporation counsel, New York City, Prof. Irving Fisher, Greenville S. MacFarland, Thos. L. Hall, chairman Nebraska State Railroad Commission, and Mayor Connell, of Scranton, Pa.

Mayor Thompson of Chicago telegraphed that he would be unable to appear as planned, and Otto Kahn wrote that it would be impossible for him to appear. Chairman William D. B. Ainey, of Pennsylvania Public Service Commission was present Thursday evening and was to be heard at 10 o'clock Friday.

Some Mysterious Car Ailments



Little but Important Troubles That Tend to Keep Equipment Men Interested in Their Work

CONTRIBUTIONS ARE INVITED FROM THE FIELD

How a Remedy for One Trouble Produced Another

A LARGE Eastern rapid transit system operating trains equipped with multiple-unit type of control and electro-pneumatic air brakes experienced considerable trouble from compressor cylinder-head gaskets blowing out. Investigation as to the quality of the gaskets used showed that these were up to the required standard. The foreman of air brakes received instructions to make a thorough investigation of the trouble, in order to determine its cause.

On visiting one of the terminals of the road he found the safety valves "popping off" on all of the cars that came in. His first impression was that the governors were out of adjustment or had purposely been set high by some of the operating men. A train was held out of service for further investigation, and it was found that the air had been cut off from the compressor switches in each case so that they would not cut out the compressor. The compressors were thus running continuously regardless of the air pressure.

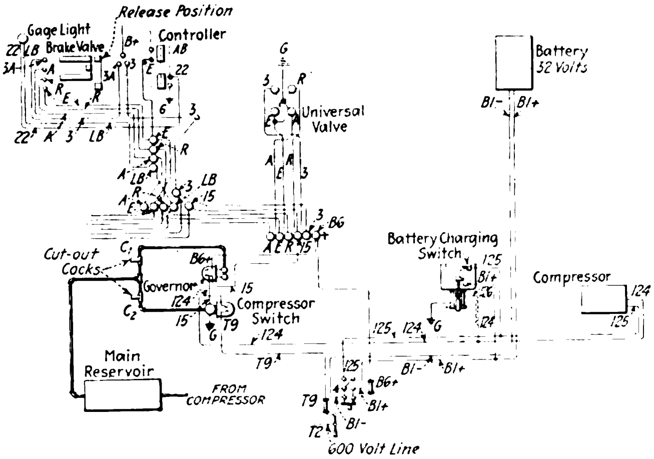


DIAGRAM FOR ELECTRO-PNEUMATIC AIR BRAKES

The accompanying diagram shows the electrical and air connections for this type of equipment. The circuit for operating the compressor starts at the 600-volt line T2, passes through the wire T9 to the compressor switch across this and through the wire 124 to the compressor. From the compressor the current goes through the wire 125 to the battery charging switch, and through this and the batteries to ground. The compressor current is thus seen to be used for charging the batteries.

The low-voltage or battery circuit is used for the control of the governor and compressor switch, of which there is one on each car. The low-voltage circuit for this control starts from the B1 "plus" terminal of the battery switch, passes through the wire B6 "plus" to the governor and across its contact to the No. 15 wire which is a train-line synchronizing wire. All of the compressor switches on the train are in parallel between this No. 15 synchronizing wire and ground, so that any governor cutting in and energizing the synchronizing wire causes all the compressor switches on the train to close. The governor on each car is pneumatically operated and its cutting-in and cutting-out are governed by the main reservoir air pressure. The standard setting for governors is such that they cut in at 85 lb. main reservoir pressure and cut out at 95 lb. The compressor switches are electropneumatically operated. The battery current energizes a magnet valve which in turn admits air for cutting-out the compressor switch. This switch ordinarily is held in by spring pressure.

Referring to the air connection to the governor and compressor switch as shown on the diagram, it will be seen that there are two cut-out cocks provided for cutting off the air pressure to either governor or the compressor switch as desired. The cutting-out-cock marked C2 is the one which had been closed in the present instance and caused the compressors to run continuously. By cutting the air off from the compressor switch this remained closed and the operating circuit through the compressor was thus established.

The cause of the trouble having been located, the next investigation was to determine why the operating men had considered it necessary to cut out the compressor switches on all of the cars. On questioning several of the motormen, the information was furnished that these were being cut-out in order to charge the batteries which were weak. In this particular service it was evident that the compressor current was not sufficient to keep the batteries thoroughly charged, so that after a number of trips the control acted sluggishly and caused faulty operation. As long as the compressors were running the batteries were kept to their full voltage as they were floating across the line. Thus by keeping the compressors running the motormen found that they had no trouble from weak batteries, but the excessive air pressure which was obtained had caused the blowing out of the compressor head gaskets and the large increase in this trouble.

In order to remedy the condition of weak batteries, the charging current was increased by using current from other sources in addition to the compressors to charge the batteries. The permanent handles on the cut-out cocks controlling the air to the governor and compressor switch were removed so that the air could not be shut off from these except by authorized inspectors provided with handles.

Value of Pawl Springs Demonstrated by Excessively Burned Controller Contacts

AN EPIDEMIC of burned contact fingers and contacts on controllers led to an investigation as to the cause of the trouble by the engineering department of a large railway property. It was at first thought that this might be due to improper adjustment of the contact fingers or to their operating with too weak tension. As the trouble was confined to two or three of the depots of the system this assumption appeared to be a reasonable one. Investigation, however, disclosed the fact that while in some cases the tension on the fingers had been decreased by excessive heating from the burning which took the temper out of the finger springs, that in a majority of cases the tension maintained was proper and the contact fingers were properly adjusted.

By operating the controllers on which the most severe cases of burning was found it was discovered that the tension of the pawl springs was very weak, so that the motorman could scarcely feel the controller notches, and the evident cause of the burning was due to the motorman stopping his controller drum movement between notches instead of on the proper contact positions. This led to an investigation of pawl springs. It was found that at the depots where the greatest trouble from burned contacts was experienced, there were also many broken pawl springs. The breaks in the pawl springs occurred at the end which hooks through the pawl, and at the bend where the loop leaves the first turn of the spring. At all of these shops it was found that the practice had been to open the loop of the spring with a pair of pliers or a screwdriver in order to hook the end of the spring to the pawl, and then to close this again slightly to keep it from unhooking after the spring was in place. As all springs were found to be broken at the end where the men had been in the habit of bending them in installing, it was evident that this bending was the cause of their breakage.

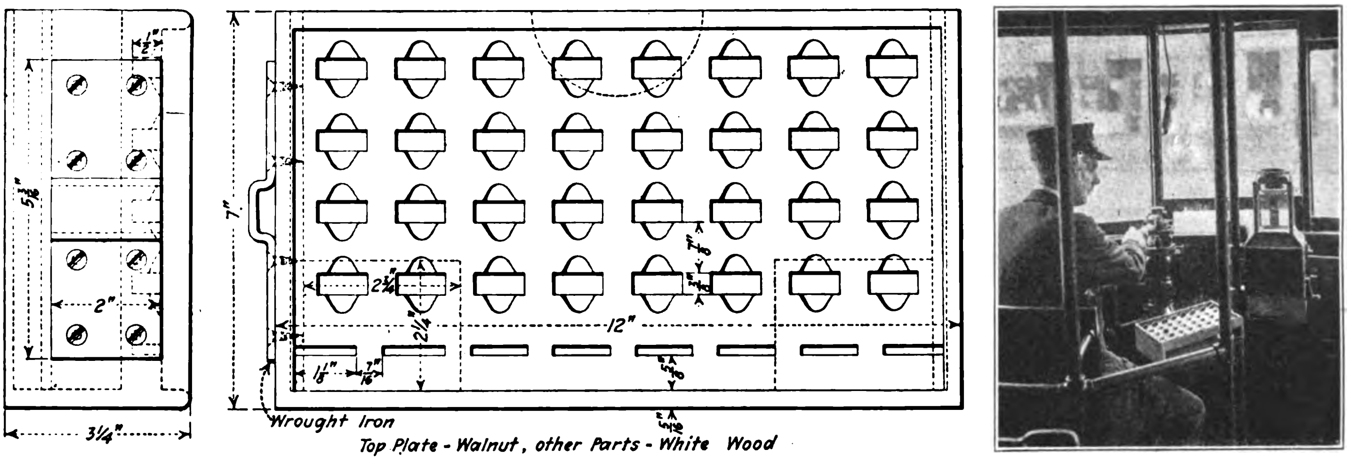
The remainder of the operation of installing a new pawl spring consisted of hooking the other end of the spring over a stationary post. Several different methods were used for this operation. Either a pair of gas pliers to grip around the spring, a pair of pliers to hold the loop, a screwdriver thrust between the turns of the spring, or a piece of wire or cord hooked through the loop of the spring was employed for the purpose. The last of these was found to be the best, as there was no danger of straining the spring. At one shop it was found that the men were cutting off the end of the loop so as to leave a space of about ¼ in. between the first turn and the open end of the loop. This gave sufficient space so that the spring could be easily hooked through the pawl, but there was danger of the spring becoming unhooked in service. In order to facilitate the installation of the springs at some shops it was found that a blow torch had been used to take the temper out of a few turns of the springs at the loop, so that the springs could be more easily stretched and installed. Another method which accomplished the same purpose had been to force a screwdriver between the spirals of the spring and to elongate it so that the tension of the spring would be decreased. While these methods rendered the installing of the springs much easier and also undoubtedly reduced the number of broken springs, it certainly increased the amount of burning at the fingers and contacts, as any decrease in the pawl spring tension permitted the motorman to stop the controller drum between notches.

Another discovery was made which had led to difficulty in installing the pawl springs. This came from the indiscriminate use of two types of K-11 and K-28 pawl springs, which were of different design and dimensions. Some shops had but the one kind of spring which was used on both types of controllers and other shops had both sizes which were used for either type of controller without considering the type to which they rightfully belonged. To decrease the amount of trouble and prevent further irregularity the railway adopted one type of spring for use on the two types of controllers, which it had in service. This spring was made with a longer loop at one end, and with sufficient space at the end of the loop and the first turn of the spring to permit its being hooked into the pawl without bending or closing of the loop. The space between the end of the loop and the first turn of the spring was made ¼ in., and the entire length of the spring was so arranged as to provide sufficient contact after the spring was hooked into the pawl and to prevent its jarring out in service.

Instructions were issued to all shops as to the proper method of installing these springs. These instructions specified that all pawl springs should be installed by using a piece of wire or cord hooked through the end of the spring after the other end had been inserted in the pawl. By the use of this wire or cord the spring could be easily pulled into position and hooked over the stationary post. Definite instructions were also given to the controller inspectors to prevent the use of any methods which would decrease the tension of the spring after its installation.

Jerky Operation Does Not Improve Passengers' Tempers

A MOTORMAN ran his car into the car house and reported that it would not start with the master controller on the first point. The car would start on the second point but the acceleration was so rapid due to the excessive current that the passengers were forced into one end of the car and made very uncomplimentary remarks regarding an inefficient motorman who did not know how to operate the car properly. This car was equipped with electropneumatic switch-group-type control, and the electrician who was called in to locate the trouble found that the first resistor switch, R-1, did not operate. He tried several new valves, coils and contactors in this switch but still it would not pick up. The car was then turned over to the electrical department for more careful examination. An inspection of the relay in the control circuits showed that the upper disk did not come down far enough to make proper contact, and as it was in the operating circuit for the R-1 switch this poor contact was the cause of the improper action. The contacts were raised slightly so that proper connection was established, and the car operated satisfactorily.



DETAILS OF SAFETY-CAR CHANGE BOARD, AND VIEW SHOWING CHANGE BOARD IN PLACE

Change Boards on Safety Cars

Connecticut Company Is Using on Prepayment Cars An Original Device to Facilitate Fare Collection

THE Connecticut Company, on whose system a 6-cent fare is charged, has found very useful a "change board" designed by one of its employees, and now used on pay-as-you-enter cars and safety cars.

When the 6-cent fare became effective, William Landy, a conductor on the New Haven division of the company, noticed how much time was consumed in making change for passengers who would present a dime, or a quarter, or any other single coin of greater value than 6 cents. He gave the matter thought and finally offered to the company the model of a change board which is now in use on all safety cars and which will be used on all pay-as-you-enter cars.

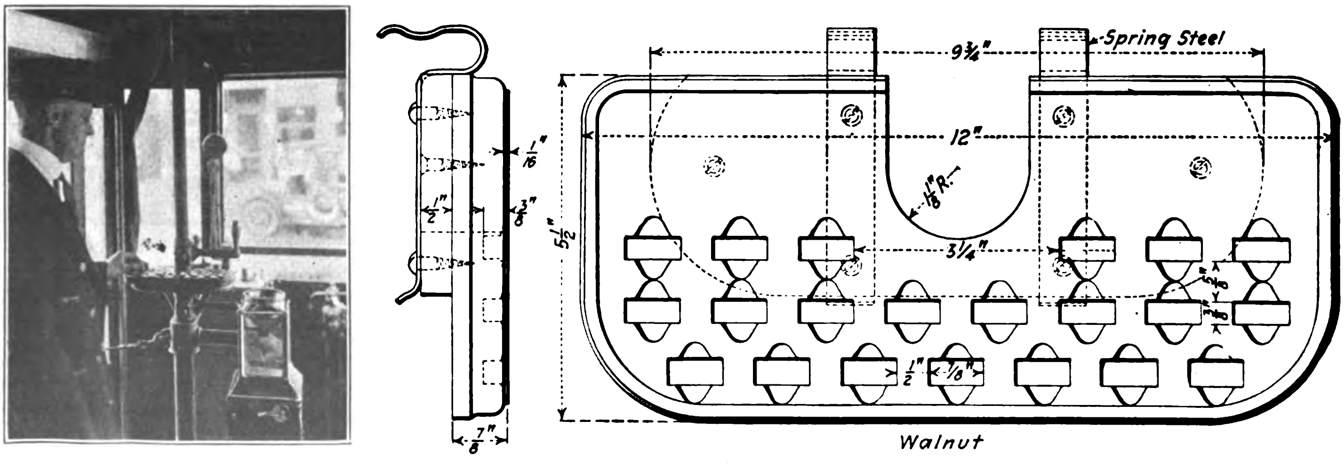
The design used on safety cars consists of what looks like a shallow wooden box, one end of which is fastened by a keystone lock to the post that holds the fare box. There are thirty-two slots on this board, each slot ⅜ in. wide and ⅞ in. long, on each side of which small scallops have been cut out, so that the coins may be easily picked up.

In these slots the operator puts change for 10 cents, usually a nickel and five pennies. At the farther edge of the board are eight slots for larger coins—like quarters or half dollars. When a passenger enters the car and gives the operator a dime, the operator merely picks the change for a dime off his change board and gives it to the passenger who puts 6 cents in the fare box and keeps the change. Much time is saved because the operator does not have to take a handful of change out of his pocket and count out the necessary five pennies. Under the change board proper are two shallow compartments, in one of which the operator keeps his transfers and punch, and the other is large enough for his report slips. The board is 12 in. long, 7 in. wide and 3¼ in. deep.

The change board used on the pay-as-you-enter cars has no compartments for transfers, etc., and the board has rounded corners. It is held to the crown piece of the door-mechanism standard by means of two pieces of spring steel. It is 12 in. long, 5½ in. wide and ⅞ in. thick. There are twenty-two slots for change on this board. The conductor stands directly in front of the board, and as passengers come in he gives them change and they drop the proper fare in the fare box, which is placed just to the left of the change board as the passengers enter.

These boards are being made by the company in its own shops for use in all prepayment cars. The top plate is made of walnut and the other parts are of white wood.

A well-written sketch of the one-man car by Floyd W. Parsons appears in the Aug. 16 issue of the *Saturday Evening Post*. Views are shown of cars in operation in Tampa, Fla., and in Bridgeport, Conn. The article also contains facts about the present financial condition of the electric railways.



CHANGE BOARD FOR TWO-MAN PREPAYMENT CAR, AND DETAILS OF TWO-MAN CAR CHANGE BOARD

Electric Arc Welding Methods

A Description of the Function and Practical Operation of Some Types of Equipment for Carbon and Metal Electrode Welding

By H. L. UNLAND
Power and Mining Engineering Department, General Electric Company, Schenectady, N. Y.

THE principal advantage of the electric arc welding process is that large amounts of energy are transformed into heat in a very small space. Heat is confined to the immediate locality of the weld and accordingly does not spread out over the adjacent space. This reduces materially the expansion and contraction troubles, and at the same time results in a high heat efficiency. A further result of the great concentration of heat is to produce a very high temperature which is sufficient immediately to fuse the metal which it is desired to weld. It is not necessary in starting a weld on steel to preheat or to wait until the metal can be brought to the fusing temperature.

Practically all arc welding is accomplished by either the metallic or the carbon-electrode method. In the former, the electrode consists of a wire or rod held in a suitable holder. In addition to melting a small pool on the work, the heat of the arc melts the electrode away and the current causes the molten metal to be driven, in finely divided particles, against the work. In this manner additional metal is built on or used to join two pieces of metal. By this method metal can be deposited on vertical surfaces and overhead.

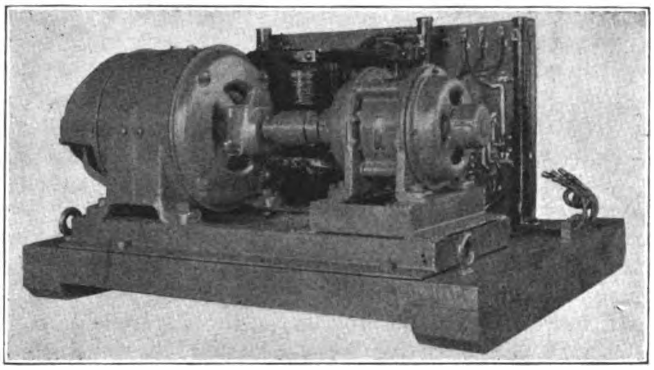
The carbon-electrode method is used for building up metal, plugging holes in castings, welding, and joining parts where strength and appearance are not essential, or where the surface is to be machined off. Since heavy currents can be used, metal can be built on with great rapidity, and where speed is desirable this method is applicable.

In the carbon-electrode method a carbon rod forms one electrode. The arc fuses the metal of the work and additional metal is built on by melting from a rod of filling material in a manner similar to soldering with an iron or welding with a gas torch. For cutting, or melting away excess stock, the carbon electrode is used. In cutting, the arc is held stationary at a point on the work where, when the metal is fused, it is free to flow or run off. As the molten metal runs away the arc is advanced, and in this way a cut is made through the piece.

Welds soft enough to be machined can be made by using either method if reasonable care is taken. The deposited metal should not be chilled and if the carbon electrode is used the arc should be kept long enough to prevent carbon being carried into the weld. From other than the above causes, hard welds are usually due to poor quality of electrode metal or filling metal. The deposited metal is obviously cast steel, since it is merely fused in place and is not ordinarily subjected to any mechanical working afterward. The metal has the coarse crystal structure found in unannealed cast steel and likewise has comparatively low values for reduction in area and elongation when specimens are tested in a tensile testing machine. In some cases the tensile strength of the metal in the weld may be as high as 55,000 to 60,000 lb. A safe figure is 35,000 lb. where the work is done by experienced welders.

The Wirt Jones tests of the research sub-committee on arc welding of the Emergency Fleet Corporation, as reported in a paper before the A. I. E. E., show a range in tensile strength of from 38,600 to 62,600 lb. per square inch in welds made by direct current bare electrode, arc welding. These welds were machined down to the thickness of the plate before the tests were made. The elongation found varied from 4 to 13 per cent.

Welding equipments may be classified as constant energy, constant potential and alternating-current types. Constant-energy equipments use a self-excited generator driven by either a direct or alternating-current motor, or by gas, oil or steam engines. Constant-energy balancer sets are suitable when 110 to 125 volts direct current, is available. Constant-potential generators can be driven the same as constant-energy generators. Alternating-current welders may be used on 60-cycle circuits of 220, 440 or 550 volts maximum. The welder is single-phase but where several are in use on a polyphase system, they may be distributed among the phases to partially balance the load.

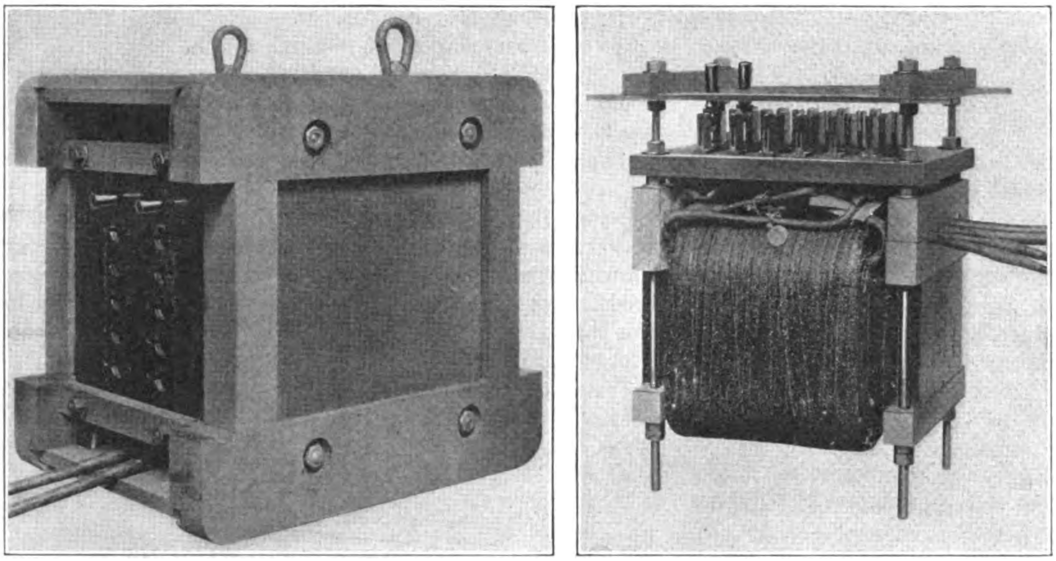


MOTOR-DRIVEN ARC WELDING GENERATOR WITH CONTROL PANELS

Any direct current can be used for welding, but the voltage must be reduced to from twenty to fifty. One method of doing this is by using a constant potential supply circuit and inserting resistance in series with the arc to absorb the excess voltage. With the ordinary supply circuits the voltage absorbed by the rheostats is a large part of the total energy. The amount of power required depends largely on the source of supply.

In order to avoid losses the General Electric Company has developed a line of special, low-voltage generators and a method of control. The generator is wound for a voltage of from 60 to 75 volts, and the control equipment consists of a main generator panel with or without a welding control circuit, with a separate auxiliary panel for each operator. In series with the arc is a grid rheostat for varying the current by means of a dial switch connected to taps in the rheostat.

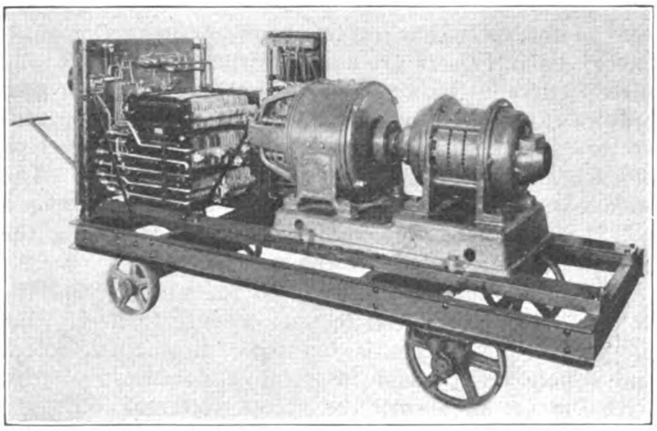
An automatic control equipment is provided to protect the generator without affecting other operators whose welding circuits may be connected to the same generator. It consists of a protective relay controlling a shunt contactor in the welding circuit. The relay is provided with an oil dashpot to prevent operation on momentary fluctuations of current.



ARC WELDING TRANSFORMER, AND TRANSFORMER REMOVED FROM CASING

The setting of the dial switch on the welding panel determines the amount of resistance in series with the arc and therefore controls the current used. Before starting the arc the operator sets the dial switch for the amount of current required for the work.

If, however, the operator leaves the electrode in contact with the work too long, or takes too much current after having drawn the arc, the protective relay opens the exciting coil of the contactor which in turn opens the welding circuit. In order to resume operations it is necessary only for the operator to lift the electrode, thereby breaking the circuit, whereupon the relay drops out, closing the contactor and restoring the circuits to the normal operating condition.



PORTABLE ARC WELDING SET

Where carbon electrode work is to be done light work can be welded by using 150 to 250 amp. Medium welding by this process requires from 250 to 350 amp. and heavy welding 400 to 600 amp. Where cutting is to be done by the carbon arc the capacity of the set depends on the cutting speed required. For light metal and where speed is not important 300 amp. is sufficient, but where the metal is 2 in. thick or more, it is desirable to use heavier currents and for this purpose up to 1000 amp. can be used.

Another type of arc-welding equipment has been developed by the General Electric Company to use alternating current in the arc. It consists of a single-phase transformer provided with taps and connections for obtaining the various values of current and proper voltage required by the bare metallic electrode arc as used in welding. The equipment also operates on a 60-cycle circuit and with supply voltages of 550 or less.

The taps in the transformer winding are connected to terminals on a small switching panel where the proper connections are made by means of a plug switch. Four leads are brought out of the case, two of which are for connection to the supply lines and two for the welding circuit.

The transformer with its panel is mounted in a woden box. The front panel of the box covers the switch panel and is provided with openings through which the plug switch can be inserted in making the connections.

This mounting of the equipment in the box is so arranged that definite air channels of suitable size are provided for the circulation of air by the draft due to the heating of the transformers. The box is approximately 24 in. long by 18 in. wide by 20 in. high over all and the total net weight is approximately 350 lb. I-bolts are provided for lifting by a crane. The box rests on heavy wooden skids so the equipment can be dragged about if required.

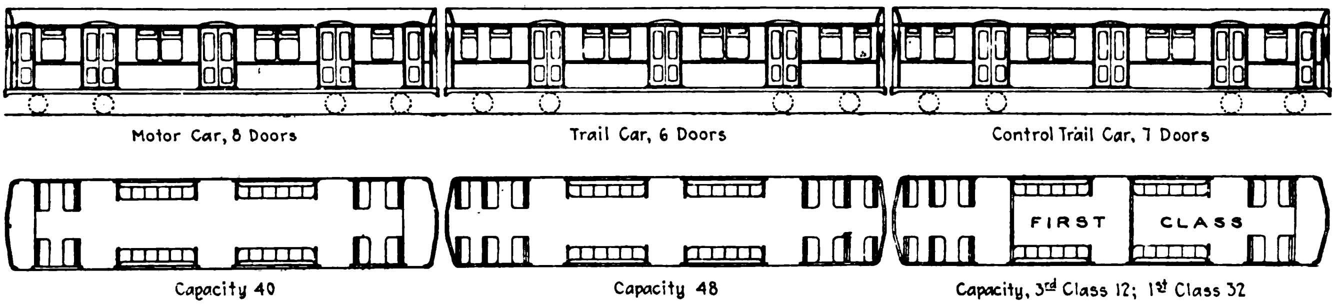
Specifications for Concrete Work

IN THE *Canadian Engineer*, Prof. I. F. Morrison concludes an article on the subject of specifications for concrete by saying that these should call for concrete of a certain strength. This strength should be varied to suit the purposes to which the material will be put and an appropriate factor of safety should be used in the design. Available materials in the locality of the proposed work should be sampled and tested, and the designer should be informed as to the strength available from these materials. In almost any locality tests on 6-in. x 12-in. cylinders can be carried out. Where work is done by contract, the contractor should be required to present his proposed proportions to the inspector sufficiently early to permit a careful checking. The method of specifying concrete according to the strength or any other quality desired has not only become extremely practical but is advantageous from the standpoint of economy.

New Rolling Stock for District Railway, London

Larger Cars for Operation In Longer Trains With Rapid Rates of Acceleration and Retardation Are Needed to Better Conditions

THE Underground Railway authorities of London, England, have now under construction cars of a new type designed to relieve the present overcrowding and provide greater comfort for the passengers. The present needs of the District Railway will be taken care of by the putting into service of 100 cars as soon as these can be delivered. Already the headway in the tunnel section of the railway is so low that it is not practicable to increase the number of trains except to a small degree; hence the alternative adopted is to increase the length of each train to 400 ft., the maximum permitted by the station platforms.

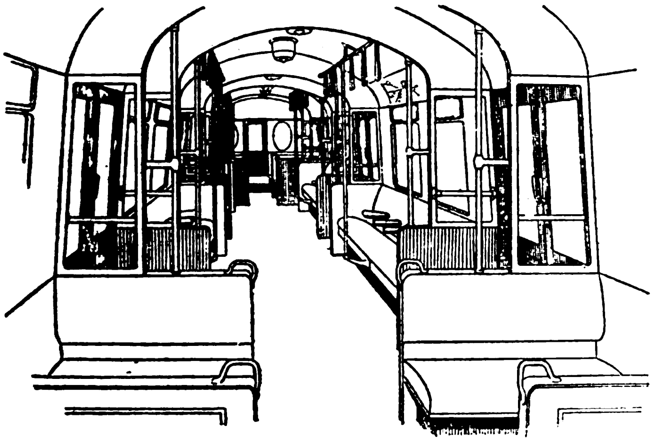


Motor Car, 8 Doors — Trail Car, 6 Doors — Control Trail Car, 7 Doors

Capacity 40 — Capacity 48 — Capacity, 3rd Class 12; 1st Class 32

NEW TYPE THREE-CAR TRAIN UNIT FOR METROPOLITAN DISTRICT RAILWAY

The new District trains will comprise eight cars in all. The cars will be wider than those now in use, the width being extended to about the limit of the present stepboard. The trail cars will be fitted with three double sliding doors, each wide enough to permit two passengers to board or alight at one time. On the motor cars and control trail cars there will in addition be single doors at the ends. These will be available for the use of passengers when not obstructed by the train crews. Thus on an eight-car train there will be the equivalent of fifty-two single doors for the use of passengers. This provision for speedy passenger transfer is expected materially to reduce the time taken in loading and unloading at stations and permit a greater number of trains to pass over the congested sections of the line during rush hours. The present type of end vestibule will be dispensed with in the new design and the doors will be equally spaced along the side. Thus wherever in the car a passenger may be seated he will find an exit conveniently accessible.



INTERIOR OF NEW LONDON "UNDERGROUND" CAR

In appearance the new trains will not differ very materially from the latest pattern District trains now running except that the sides of the coaches will be slightly curved instead of straight. The cars will be fitted with larger trucks and wheels and will be higher powered, which will materially improve the running as regards speed and comfort.

As to dimensions, the width will be 9 ft. 6 in. as compared with 8 ft. 6 in. at present, and the length 50 ft. against 49 ft. The new trains will be capable of speeds up to 45 m.p.h. when working on "non-stop" services. Improved acceleration has been brought about by adding motors, and the braking apparatus has been selected to permit quicker stopping.

The eight-car trains will be made up of two self-contained sections with a view to operating five-car trains during the slack hours and eight-car trains during the rush hours. The three-car unit can be utilized during slack hours on certain of the local sections of the line.

As regards the interior arrangements and decorations, special attention has been paid to the design of the seats, to general "roominess" and to ventilation. The upholstery will be in moquette velvet in non-smoking compartments, and in "smokers" in a washable leather or some such material as "pegamoid." At each end of the car there will be large oval plate-glass windows, and the interior metal fittings and door handles will be of a non-oxidizing material. Convenient hand-rails and stanchions will be provided near doorways and in open spaces.

The car is to be constructed of steel throughout except for a small amount of woodwork chemically treated to render it fireproof.

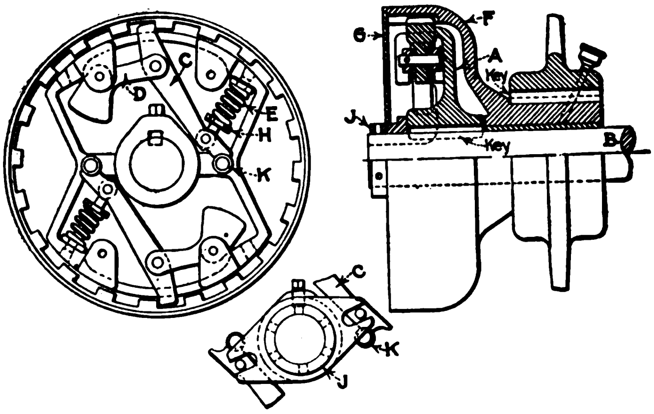
New Type of Bench Jointer

A new type of portable bench jointer has recently been placed on the market by J. T. Wallace & Company, Chicago, Ill. It is equipped with its own motor, lamp cord and plug ready for operating from an ordinary lighting circuit as required. The machine is equipped with a new type of fence that was developed particularly in connection with this machine. This fence is mounted on the motor and slides backward or forward on rods, which has an advantage in that adjustments can be made more quickly than with the ordinary type. To provide for the replacing of the cutter heads these have been specially constructed and the tables are arranged to slide backward to permit the use of these special heads or forward to work with the narrowest possible throat opening. Ball bearings are used throughout in the motor and cutterhead housings.

Mechanical Overload Release for Power-Driven Machines

THE "Lettgo" release is a new device that will automatically disengage the driving power from driven machinery if the load exceeds a predetermined amount, thus allowing the driving motor or other source of power to run free without friction in the release. The device is designed to take care of an overload gradually as well as suddenly applied, and it can be set so as not to trip out from sudden jars or shocks.

The operating principle and details of construction of the device are indicated in the accompanying illustrations. Referring to the drawing it will be noted that a spider *A*, keyed to a shaft *B*, has trigger *C* pivotally mounted on links *D*, with the ends engaging inside notches in the rim of the drum *F* and roller *K*. Springs *E*, regulated to any desired pressure by adjusting nuts *H*, hold the ends of the triggers on rollers *K*, under normal conditions, but when the drive is overstrained the compression of the springs permits the ends of the trigger to drop into the position shown in the detail drawing, releasing connection with the rim *F* and allowing the driven machine to stop immediately.



DETAILS OF CONSTRUCTION OF OVERLOAD RELEASE

DEVICE IN RELEASE POSITION

For use in resetting the driving triggers in the driving position the collar *J* is provided with fingers that engage the pins on the lower ends of triggers *C*. When this collar is turned by means of a spanner wrench, the triggers are moved to the original position and the outer ends at the same time enter notches in the drum *F*, thus renewing the transmission connection. A cover *G*, fits the end of drum *F* and incloses and protects the entire mechanism. The hub of drum *F* may be extended to receive a wheel or gear, with a bushing for running loose on the shaft, or it may be keyed directly to a separate shaft, thus forming a coupling device in which either element may be the driver according to the circumstances.

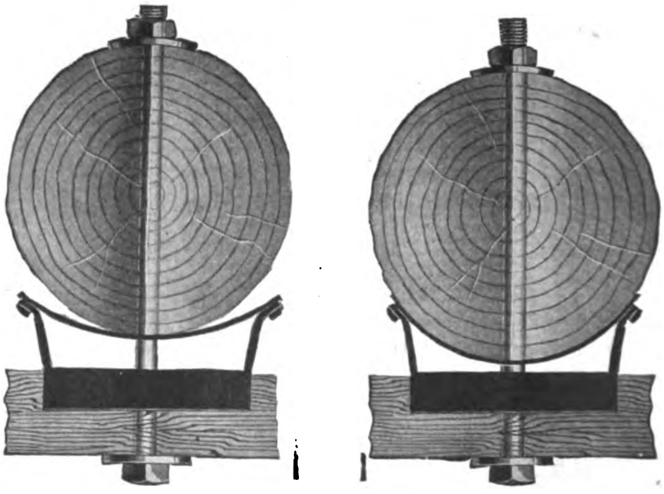
The release can be installed close to the driving machinery so that when it operates there is no inertia force from high-speed moving parts to be overcome. It is made symmetrical and can be assembled to operate in either direction. The springs are arranged to adjust the tension so that the release will operate at the proper load, and no matter how often it operates the proper factor of safety is said to be maintained. The mechanism is entirely inclosed so that it can be packed with grease to insure lubrication for all operating parts.

This device is said to be particularly useful on old conveying machinery which is weakened by long wear, and incapable of carrying any appreciable overload. Other forms have been developed for lighter high-speed service, one in particular being the single trigger release which has been developed for reversible operation and is arranged automatically to reset the driving trigger after being tripped out, if the direction of rotation is reversed.

The device in all its various forms has been patented by Frank E. Aurand, Oak Park, Ill., and is being manufactured in four sizes by the Link Belt Company of Chicago. It is now being made particularly for application to endless-chain conveyor machinery, but can be applied to many kinds of service.

New Steel Gain Saves Poles

THE Hallet improved steel gain has been designed to eliminate the necessity of cutting a gain in a pole for the installation of a crossarm. The steel gain consists of a pole plate with a radius larger than that of the pole and a gain plate of galvanized steel.



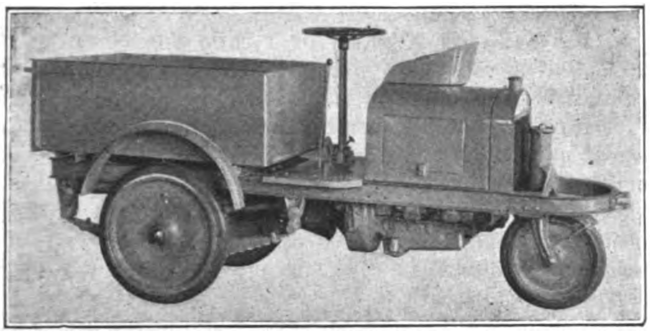
STEEL GAIN BEFORE AND AFTER TIGHTENING INTO POSITION

This gain is placed between the crossarm and the pole. Tightening up the nut on the bolt which passes through the crossarm, gain and pole causes the struts on the gain plate to press against the pole plate in such a manner as to cause the pole plate to shape itself about the pole. It is claimed that the gain grips the pole so firmly as to permit the weight of a lineman at the end of a 5-ft. crossarm without producing any visible sign of deflection in the arm.

The size of the gain depends upon the vertical dimension of the crossarm and the diameter of the pole. They are made in three sizes of pole plate—namely, for pole diameters of 6 to 8 in., 8 to 10 in. and over 10 in. Before the gain is applied the distance between pole plate and gain plate is ¾ in. This gain is manufactured by the Hallet Iron Works, Harvey, Ill.

A Combined Motor Truck and Tractor for Use Around the Shop and Freight House

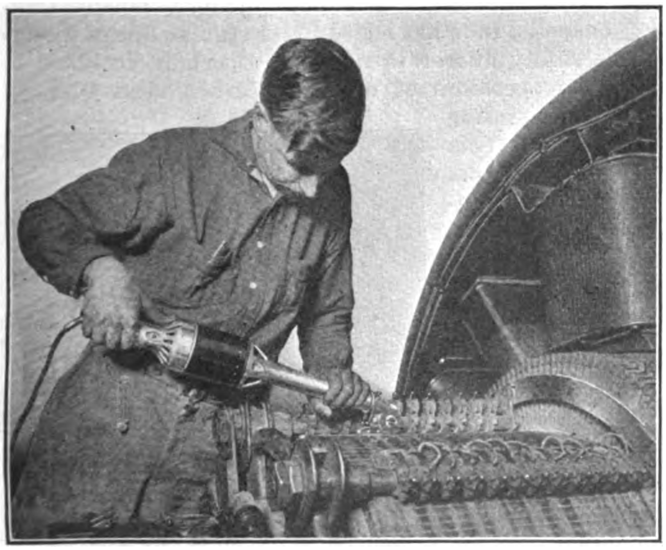
AN EXHIBIT at the Atlantic City convention of the American Railroad Association, mechanical section, which attracted considerable attention, was that of the Motor Products Corporation, which has developed the Clark "Tructractor." Although on the market for but a short time, this machine has already proved to be serviceable in many industrial plants. It has a carrying capacity of 1½ tons and is supplied with either platform, cargo, or dump body, being provided with a drawbar attachment for convenient connection to the trailer. The speed can be varied from ¾ to 15 m.p.h., and in ordinary use the gasoline consumption is 3 gal. per working day. In a recent cross-country test a "Tructractor" made 143 miles in one day, including a number of demonstration stops.



"TRUCTRACTOR" FOR HANDLING MATERIALS AND DRAWING TRAILERS

New Portable Commutator Slotter Has Good Cutting Speed

THE practice of undercutting mica on the commutators of both large and small machines is more or less universal with both manufacturers and users. Conditions have led to the development of a portable motor-driven tool for undercutting the mica which in the case of large machines can be used without removing the brushes. The essential feature of this commutator slotter is a 1½-in. circular saw keyed to a hollow mandrel which in turn carries a worm gear. The hollow handle contains the steel driving shaft with worm and a small universal motor. Immediately behind the saw is a thin metal guide shoe which slides in a slot insuring a straight cut. Adjustments are provided so that the machine is serviceable for any size commutator and will cut to any desired depth.



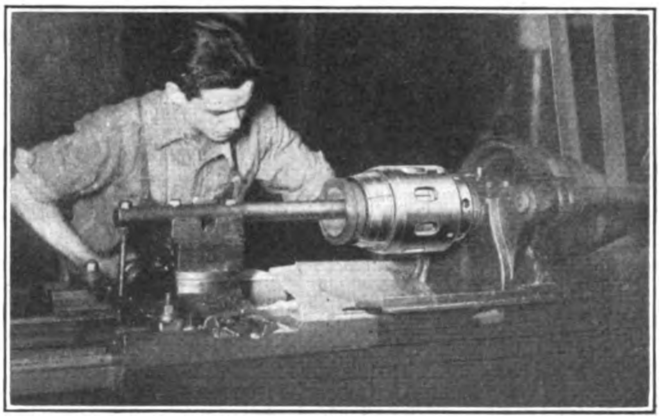
PORTABLE DEVICE FOR SLOTTING COMMUTATORS

The rate of speed at which mica can be cut depends upon the length of commutator, the grade of mica and the operator but it is said that 20 in. to 30 in. per minute on large machines is easily accomplished. The life of the saw depends upon the condition of the mica but is said to average about 150 ft. After the commutator has been undercut the only smoothing operation necessary is to run a piece of fine worn sandpaper over the commutator lengthwise of the slot.

The total weight of the machine is approximately 10 lb. and is borne by the adjustable depth shoe on one side and a small roller on the other. The handle and motor casing are made of polished cast aluminum. The universal type motor is of the definite pole type, series wound and is furnished for either 110 or 220-volt service and will operate at either 25 or 60 cycles. This machine which is known as the Aurand commutator slotter is being placed on the market by J. H. Green & Company, Chicago.

Self-Centering Chuck Facilitates the Boring of Motor Bearings

THE accompanying illustration shows a form of automatic chuck used in the shops of the Third Avenue Railway, New York, for boring railway motor-armature and axle bearings. This chuck is the invention of Harry J. Krombach, assistant general foreman of that company. It is in use on the properties of other large railways.



TURNING AN ARMATURE BEARING

The development of this device has resulted from an effort to reduce the cost of finishing bearings. Various forms of holding devices are used for this work. Some are specially designed and constructed for this purpose, while others use the U-shaped jaws of the regular lathe chuck. Where the regular chuck is used considerable time is consumed in setting up for the boring operation, and as the jaws bear at four points on the circumference of the bearing, there is a tendency to force the bearing out of line if too large a cut is attempted and bearings can be distorted by excess pressure of the jaws. The chuck illustrated consists of two cast-steel parts, the body or jaws of the chuck and the sleeve nut which actuates the jaws. Its weight is 45 lb. and it can be readily adapted to operate satisfactorily on any type of lathe.

In order to eliminate the possibility of an inaccurate fit the chuck is supplied with the spindle end of the body untapped. Experience has shown that sometimes in tapping the casting for the lathe spindle connection there is the liability of this being made "out of true." With the final cut made on the lathe with which the chuck is intended to operate, this risk is avoided.

The inside body or jaw of the chuck provides for a compression of about 5 per cent of the diameter. With a 5-in. maximum-capacity chuck, for instance, it is possible to hold rigidly any bearings having an outside diameter of not less than 4¾ in. and not exceeding 5 in. Where smaller bearings are to be held, it is necessary to introduce a reducing sleeve having slots which form jaws parallel with those in the body of the chuck. By the use of such sleeves small diameter bearings can be held rigidly.

Some of the advantages claimed for this chuck are a saving in time necessary to set up the work and its ready adaptability for use with a low grade of labor. The chuck is manufactured and supplied by J. E. Coonan, New York.

Insulating Varnish Solvent Chart

IN order to prevent or assist in preventing the use of varnishes at wrong gravity, which affects the results obtained, the Dolph Manufacturing Corporation, New York, has just issued a copyrighted "Solvent Chart" showing the percentage of solvents which should be used with its insulating varnish to produce the right specific gravity. The specific gravity shown on the chart is that at which the varnish is shipped; it is given in both the decimal scale and the Beaumé scale. The most suitable gravity for any particular use should be established by trial and endeavor made to keep this constant. The solvent chart indicates the amount of solvent to be added to reduce the varnish to the desired gravity. Benzine is preferable to gasoline as a solvent, but gasoline can be used. The solvent and varnish should be approximately at the same temperature and neither under 60 deg. Fahr. The solvent should be added slowly and stirred thoroughly.

Observed Specific Gravity

Desired Specific Gravity

DEC		0.903	0.897	0.892	0.886	0.881	0.875	0.870	0.864	0.859	0.854	0.849	0.843	0.838	0.833	0.828	0.823
DEC	B	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
0903	25	0															
0897	26	3	0														
0892	27	6½	3½	0													
0886	28	10	7	3½	0												
0881	29	14	10½	7	3½	0											
0875	30	18	14½	11	8	4	0										
0870	31	22	19	15	11½	8	4	0									
0864	32	27	23	19½	15½	11½	8	4	0								
0859	33	32	28	24	20	16	12	8	4	0							
0854	34	37	33	29	25	21	17	12½	8½	4½	0						
0849	35	43	39	35	30	26	22	17½	13½	9	4½	0					
0843	36	50	46	41	36	32	27½	23	18	14	9	5	0				
0838	37	57	53	48	43	38	33	28½	24	19	14½	9½	5	0			
0833	38	65	60	55	50	45	40	35	30	25	20	15	10	5	0		
0828	39	74	69	64	58	53	48	42	37	32	26	21	16	11	5½	0	
0823	40	84	78	73	67	61	56	50	44	39	34	28	22	17	12	6	0

Dec = Decimal Scale
B = Beaumé Scale

With 63° Gasoline use 15% less than shown. With 54° Benzine use approx. 10% more

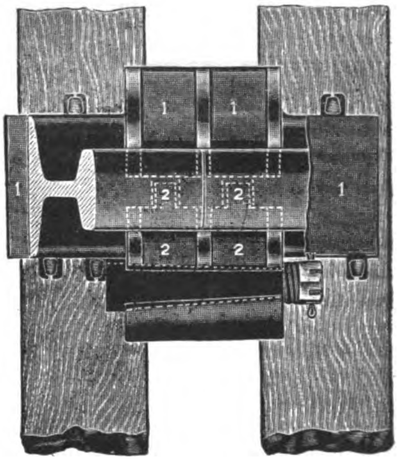
SOLVENT CHART FOR INSULATING VARNISHES

As an example of the use of the chart, if it is desired to reduce from 30 B. to 32 B., the chart shows that 8 gal. of 58-deg. benzine would be necessary for every 100 gal. of varnish. To reduce from 0.864 (decimal scale) to 0.843, 18 gal. of 58-deg. benzine is required.

Rail Joints Made Without Bolts

A NEW TYPE of joint for T-rails developed by the Boltless Self-Tightening Rail Joint Company, Fremont, Ohio, is shown in the accompanying illustration. It is intended to provide a tight joint, and eliminate the use of nuts, bolts and washers. The joint is made in two types, one for a two-tie joint and the other arranged to bear on a single tie.

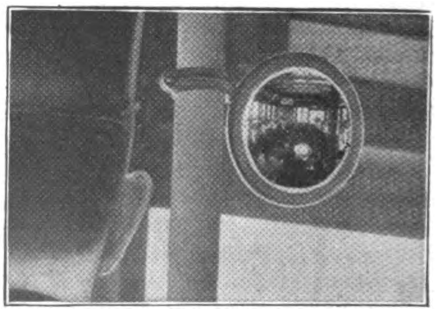
The two-tie joints in which the boltless joint is suspended between the ties consists of a malleable iron or steel rail chair which is spiked to the ties. The rail is held against one side of this rail chair by a reinforced fish-plate bearing on the opposite side of the rail. A tapered hardened steel wedge inserted between this fish-plate and the rail chair, and driven home with a sledgehammer, forces the fish-plate against and under the ball of the rail so as to provide a tight joint. The small end of the wedge is turned down, and a coiled spring provides tension for keeping it tight, and for taking up any wear occasioned by vibration. The spring is held in place by a nut which is slotted and held in place by a cotter pin.



BOLTLESS RAIL JOINT
1—Rail chair. 2—Fishplate.

One-Man Car Mirror for Interior View

THE Drew Electric & Manufacturing Company, Indianapolis, Ind., has added to its regular line of motormen's safety mirrors a new one especially designed to give the operators of one man cars a clear view of the entire inside of the car. This mirror is round, beveled and incased in a substantial bronze frame having a two-way adjustable bracket which permits the device to be attached to each center post at both ends of the car. The diameter of this mirror is 5½ in., and it can be adjusted to suit the particular height of any operator, giving him at all times a full view of the interior of the car.



MIRROR DESIGN FOR ONE-MAN CARS

Letters to the Editors

What Passenger Costs the Most?

BROOKLYN, N. Y., Aug. 11, 1919.

To the Editors:

In the early days of the electric railway industry, both the public and the operator believed that the rush-hour passenger was the most profitable. So far as the operator is concerned, that idea is long since exploded, but the old-time concessions are still in force in many communities. In one form or another, the workman's hours rate is still in use in many cities to plague conductor and auditor with tickets sold at less than the service costs to produce.

To-day we are seeing a curious reversal of this practice in that the person who rides during the off-peak hours is being asked to pay an extra charge unless he provides himself with tickets bought, say, to the number of six. In one instance, five tickets are sold for 30 cents while the individual cash fare is 10 cents. Now it is assumed that the rider who is asked to pay the difference between the cash and the ticket fare is either a local or outside casual who ought to pay a larger standby charge because he is not a regular customer. At the same time, we have the patent fact that most of these casuals board the cars when there are plenty of vacant seats. Is it worth while to charge this higher rate at the very time that it is cheapest to carry the passenger? Cannot we forget theory for a moment and see what can be done to get the largest amount of revenue through the carriage of the greatest number of passengers?

No doubt, the point will at once be made that it is so easy to purchase a mere half-dozen or even a dozen tickets in advance. True, but the greater proportion of the ticket purchasers are exactly the same ones who have had the workman's concession in the past. In other words, it is chiefly the person who must ride twice a day that provides himself with tickets and this riding is rush-hour riding. On the other hand, there are plenty of people who may ride on the cars just as often but at irregular intervals and at different hours of the day. These are the agents, plumbers, carpenters, painters, etc. traveling from one house job to another, shoppers, errand boys and so on. It is admitted that the average off-peak ride is shorter than the average home-factory, rush-hour ride. Since that is the case, it follows that the off-peak rider exercises more option as to whether he will ride or not. For this reason he is less likely to buy a supply of tickets in advance and more likely (because of his shorter rides) to resent a higher rate of fare.

There is, of course, the town visitor who certainly could not lay claim to special consideration on the foregoing grounds. Yet even he has to be considered. A great many people of this type come into the town to spend money for business or pleasure. It is a good thing to make them feel that they are wanted and welcome instead of asking them to pay a 10-cent fare. Many a merchant would prefer to pay the fares of such visitors than to have them stay away from town. The case of the visitor for pleasure stands out in the experience of a town which has always been a center from which summer vacationists made many tours without causing the railway any undue expense for special rolling stock and the like. When fares were increased, a 6-cent ticket rate was made for wholesale riders and a 10-cent cash rate for retail riders. The company, however, gave to the cash passenger a redemption coupon good for 4 cents if turned in the same day. This was not very satisfactory to the non-resident vacationist as the time connections of the day did not usually give him the opportunity to get his money back. He said: "Now isn't that a fine way to be made welcome?" and resolved to take his next vacation elsewhere. He could not understand the contradiction of getting specially low rates on the steam railroad on which he must ride and of paying specially high rates on the electric railway on which he does not have to ride.

The nib of the whole rate-of-fare question is not that of finding what each kind of passenger ought to pay but what he can be made to pay voluntarily. A parallel with the standby charges of gas and electric light companies leads to dangerous conclusions. The purchaser of gas or electricity must commit himself to paying something for a fixed connection, no matter how little gas or electricity he buys. If he has no pipe or wire leading into his house, he cannot get a cubic foot of gas or a kilowatt of energy at any price. But the street railway customer has no fixed connection for which to pay He can take the service or leave it, whether he rides twice a day or twice a month. Attempts to make him pay a higher rate for fewer rides do not fail because they are unjust but because they are impracticable from the very nature of the street railway.

Having pointed out the disadvantages, immediate and remote, of charging a higher fare to certain classes of casual, short, off-peak riders, a constructive suggestion is in order. That suggestion is: "Secure off-peak riding from your present twice-a-day rush-hour riders by giving them all *extra* rides at a lower rate of fare than the standard one-ride fare." To do this, it would be necessary to sell a commutation ticket at a rate equivalent to say three full-price rides a day but good for four rides and possibly for an unlimited number of rides a day. As the holder would already be a rush-hour patron, his additional riding would necessarily be off-peak riding. It would not be necessary to limit the ticket to the buyer because it would not be practicable for him to give the ticket to anyone else except after his return from work in the evening. The tickets would be sold on a weekly or twice-a-month basis in accordance with the wage-paying practices of the principal factories. A monthly basis involves too large a sum for an article purchased a few cents at a time.

Merchants, also, would be delighted to co-operate in selling a ticket that would bring the shoppers downtown every day. This would mean more goods sold, a greater proportion of goods taken home, more satisfaction and therefore less returned goods than with telephone shopping and a better opportunity to learn on what kind of goods to stock up. That merchants would advertise and sell such tickets at cut prices would not harm the electric railway one bit.

In general, I believe that some form of limited or unlimited ride ticket will prove far more satisfactory than any form of reduced-rate ticket for special hours of the day. It reduces instead of increasing platform accounting (mighty important on one-man cars) and gives the reduced rate only to those who are buying more transportation than they have to instead of to any casual who happens to board the car during the off-peak hours. We hope no one will arise to say it can't be done when it is being done abroad under conditions far more strenuous than the average American city. It involves more trouble than one or two rates of fare, but does the merchant shirk selling his goods at different prices according to quantity. quality and day of week just because it makes more work? Hardly. If we are to *merchandise* transportation, we must do all those things, whether troublesome or not, that will bring the greatest revenue through the greatest number of rides and riders. "TRANSPORTATION."

Why Does the Operating Engineer Frown Upon Theoretical Calculations?

NEW YORK CITY, July 26, 1919.

To the Editors:

I read, with much interest, the article by C. W. Squier on "Car Performance from the Engineer's Office to the Track" in the June 21 issue of the ELECTRIC RAILWAY JOURNAL.

Mr. Squier shows that it is possible to obtain a very close agreement between the results from engineer's calculations concerning new motors not yet built and the same motors after they are constructed. My natural deduction from this is that the differences between the plotted results of actual tests conducted on cars fully equipped and the speed-time curve which could be calculated from the characteristic curve of the existing equipment would show an even closer agreement. To show the perfect accord between theory and practice I believe a procedure opposite to that given by Mr. Squier should be followed. In other words, first make the equipment test and plot the results on a speed and current basis. Then calculate the speed-time curve, using the data and conditions found to exist. The reason that such a calculation would show an even closer agreement with the test results is that in any run there are so many variables to take care of that it is seldom possible to have the run performed as specified; on the other hand it is very easy to reproduce on paper any operation which has already been performed in service.

I have met a great many electric railway men who do not believe in speed-time curves, and even among the most progressive operators the tendency appears to resort to a large number of tests, which are frequently extensive and costly, instead of relying upon the work of an engineer which can be performed at a desk.

F. CASTIGLIONI.

[NOTE—Mr. Castiglioni's letter was referred to Mr. Squier, who explains that the fundamental point which was intended to be brought out in his article was the remarkable accuracy with which motors can be produced to perform a given service, and to conform to predetermined characteristics. Of course this emphasizes the close agreement of theory and practice in this case, but the formulas and data used in the calculations were obtained from tests and the logical method of presenting this discussion could seem to be to follow with the results obtained in the design, rather than to show how close a theoretical speed-time curve can be made to conform to one obtained in actual operation.

The closeness of any such calculation will depend entirely on the skill with which the calculator makes his assumptions. If an operating engineer wants to know how much power a certain car takes in a particular service, the simplest and most reliable way of obtaining this information is to put a meter on the car and measure the power consumption. If it is necessary to know how hot the motors become, the operating engineer usually takes some temperature readings.

The conditions which confront the manufacturing engineer are entirely different from those confronting the operating engineer. The operating engineer has the motors all constructed, and the car completely equipped to operate. He also has the service at hand and can make tests very quickly and can be sure that they represent actual conditions. For him this is the simplest and quickest way of securing reliable information. The manufacturers' engineer, however, has to rely almost entirely on theoretical assumptions as the equipment and point of operation are often far removed from his office. Manufacturers seldom find it necessary to carry out the elaborate calculations and tests which were outlined by Mr. Squier in order to decide on the design of the motor equipment. The usual and simplest course is to obtain temperature readings for motors of any type which are operating in the service. The suitability of new equipment is determined by comparison of the motor characteristics of the motors tested with those proposed.

The apparent disregard of theoretical graphs by operating engineers has resulted because such are not necessary in the majority of cases in order to obtain the information desired. Even if theoretical calculations are undertaken the operating engineer feels that it is necessary to make a series of tests in order to check up the accuracy of the calculations, which means doubling the work. The operating engineer, while capable of framing theories, insists that it is the test under actual conditions that influences his opinion and that all the data used are the result of practical tests.—EDS.]

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Addition to Convention Exhibits

Since the publication of the preliminary list of exhibitors at the Atlantic City convention, in the issue of this paper for Aug. 2, space has been assigned to the following:

American Association of Chilled Car Wheel Manufacturers
American Mason Safety Tread Company
American Steel & Wire Company
Bemis Car Truck Company
Cleveland Frog & Crossing Company
Clipper Belt Lacer Company
Barron G. Collier
Economy Electric Devices Company
Gurney Ball Bearing Company
Holden & White
Jennison-Wright Company
Johnson Fare Box Company
Liberty Steel Products Company
Monroe Calculating Machine Company
National Tube Company
National Railway Appliance Company
St. Louis Car Company
Texas Oil Company
Thew Automatic Shovel Company
Tool Steel Gear & Pinion Company
M. Welte
C. H. Wheeler Manufacturing Company
Wilson Welder & Metals Company
Van Dorn Coupler Company

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Birmingham Men's Demands

Eight-Hour Day and Almost 100 Per Cent Advance in Wages Are Asked

Increases in wages amounting in several cases to 100 per cent are demanded by its trainmen from the Birmingham Railway, Light & Power Company, Birmingham, Ala. The contract between the company and the union expires on Aug. 31. A copy of the demands to be made in the new contract were handed to the officials of the company on Aug. 5 by the committee of the men. The demands provide for a minimum of 60 cents an hour with a sliding scale extending as high as 70 cents an hour. The demands also include an eight-hour day with time and a half for all overtime, and provide that this shall apply to national holidays except Christmas, for which day the men shall be paid double time.

The present rate of pay of the men is a minimum of 31 cents an hour with a maximum of 38 cents an hour. The increases in several instances amount to 100 per cent.

No Statement from Receiver

No statement in regard to the demands has been made by the receiver or any of the other officials of the company. A conference will be held, it is stated, with a committee of the men some time next week. The date of this conference has not yet been fixed.

Section 22 of the proposed agreement relates to wages of men and provides that during their first year of service their rate of pay shall be 60 cents an hour, second year, 65 cents an hour; and third year, 70 cents an hour.

Carpenters under the proposed schedule would receive from 68 to 75 cents an hour. Machinists would receive 78 cents an hour. A raise every six months is provided for apprentice boys. Armature winders are rated at 78 cents an hour for first-class winders, 68 cents second class, and repair men 60 cents an hour, and apprentices 35 cents an hour with a 3-cent increase every four months until they become armature winders.

Other wages as proposed in the agreement are: Scrubbers, 42 to 48 cents an hour; painters' helpers, 48 to 55 cents an hour; painters, 68 to 75 cents an hour; truckmen's wages, first three months service, 50 cents an hour; second three months, 57½ cents; third three months, 60 cents; fourth three months, 63½ cents; and a scale of 65 cents thereafter; blacksmiths, 80 cents an hour; pipe fitters, 70 cents; helpers 50 cents with increase of 5 cents an hour each year until they reach the scale.

The proposed agreement provides for recognition of the union and a continuation of the present closed shop policy. It further provides that trainmen shall handle no mail. The men also want extensive improvements carried out at the carhouses and seats on cars for both motorman and conductor.

Face the Facts!

We hear a good deal of talk about prices again becoming "normal." Such talk results from a lack of understanding of what constitutes a "normal" price of a commodity or a "normal" wage of labor. If by "normal" is meant the prices and wages of, say, 1914, I do not believe we shall ever again see such prices and wages, and we should at once begin squarely to face the facts. In my judgment the tendency is toward higher prices and wages.

As I view it, a "normal" price is a price based upon the cost of production, so that what was a fair price for a commodity in 1914 is not a fair price in 1919. The same is true of wages: for "normal" wages in 1919 must be based upon what it costs the worker to live according to American standards and allow a reasonable margin for the inevitable rainy day.

We are entering upon a new era. The future must bring a square deal for labor, a square deal for the public and a square deal for the public service companies, which are now being starved to death for lack of nourishment.

Britton I. Budd
President
Chicago Elevated Lines
Chicago

New York Mayor Suggests City-Owned Bus Lines

The Hylan Administration in New York City has taken steps toward establishment of municipally controlled bus lines in all of the city's five boroughs. Acting upon a suggestion from Mayor Hylan the Board of Estimate has directed the Commissioner of Plant and Structures to make a comprehensive survey of existing transit facilities and to submit recommendations as to the operation of the proposed bus lines.

The city-owned lines, if established, would be run in competition not only with privately-owned bus companies but with the surface railways.

Request for Eight-Hour Day

Milwaukee Men Advance This Plan—Company Lacking Revenue Appeals to Railroad Commission

On July 30 the transportation department labor adjustment committee of the Employees' Mutual Benefit Association sent to Mr. Keummerlein, superintendent of transportation of the Milwaukee Electric Railway & Light Company, a request that the company now consider the desirability of carrying out the provision of the general labor contract of April 10, 1918, providing for an eight-hour day. The committee also requested that the company place the association in a position to procure the services of sufficient trainmen by raising wages to a level that will accomplish this purpose.

On July 31 Superintendent Keummerlein advised that the company was unable to carry out the provision of the general labor contract of April 10, 1918, subject to the limitations therein provided, because it had not yet been provided with sufficient revenues therefor; it was accordingly unable to accede to the request for an eight-hour day in the transportation department and it was also unable to raise the wage levels to a sufficiently high plane to attract the necessary labor properly to man the cars.

Will Petition Conciliation Commission

Mr. Keummerlein stated that the company would, within the next day or so, file a petition with the Board of Conciliation, recently created under the Wisconsin laws by Chapter 530 of the laws of 1919, and ask the Board of Conciliation to make a prompt determination of reasonable wages, hours and working conditions, etc. Under Chapter 530 of the laws of 1919, the Board of Conciliation is required to file its findings with the Railroad Commission of Wisconsin immediately and the Railroad Commission in turn is required to review such findings of the Board of Conciliation and change or approve such findings. The law requires the commission to fix such rates of fare, tariffs, etc., as will provide for the increase in wages, if any are ordered, and will also at the same time produce a reasonable return upon the fair value of the investment in utility property.

On Aug. 1 the company forwarded the petition to the Board of Conciliation at Madison. It is expected that hearings will be held very soon. The company on July 22 petitioned the Railroad Commission for adjustment in fares so as to permit it to meet current wage requirements and produce a reasonable return upon its railway utility capital.

Brooklyn Strike Settled

Receiver Will Deal With Trainmen on Same Basis as He Treats With Railway Brotherhood

The strike of the trainmen of the Brooklyn (N. Y.) Rapid Transit Company was settled late on Saturday, Aug. 9. Service in full was resumed on Sunday morning. The strike was declared on Wednesday morning.

THE UNION THE ISSUE

While questions of wages, terms of service and other issues were involved in the controversy between the company and those of its trainmen who had become affiliated with the Amalgamated Association, the principal issue was the demand for recognition of the union. This matter, under the terms of the adjustment, is to be settled on the basis of the proportion of employees who were members of the Amalgamated Association at midnight on Friday, Aug. 8. If the union included a majority of the employees, the receiver is to recognize it. If it did not include in its membership more than 50 per cent of the employees at that hour, the receiver will not recognize the union. The stand of Mr. Garrison, the receiver of the company, was that he would not negotiate with the organization if it represented only a minority of his employees.

The settlement agreement was signed by Judge Mayer and was witnessed by Mayor Hylan, Corporation Counsel Burr, Public Service Commissioner Nixon, Mr. Rogers, Mr. Garrison, Organizer Shea and Union Counsel Fridiger. The agreement follows in full:

At a conference with Judge Mayer on Aug. 9, 1919, the following is herewith agreed:

That the pending strike be called off at once and the men return to work at once upon the following conditions:

1. That if it is established to the satisfaction of Judge Mayer and Public Service Commissioner Nixon that at midnight, Aug. 8, 1919, employees of the Brooklyn Rapid Transit system eligible to membership in the Amalgamated Association were enrolled members of said association to the extent of more than 50 per cent of such employees so eligible, then the receiver will entertain the grievances presented by the committee headed by E. D. Smith or such substitutes for such committeemen as may be properly substituted in place thereof. according such committee at least the same recognition as is now accorded the Brotherhood of Locomotive Engineers.

2. The receiver will receive the committee presenting the grievances and take the same up with such committee and with such advisers or counsel as such committee selects.

ARBITRATION AS A LAST RESORT

3. In the event that such grievances or any which may hereafter arise cannot be adjusted by and between the receiver and the committee, they will be arbitrated by a board to consist of P. J. Shea, or his nominee, and Lindley M. Garrison, or his nominee, and, if necessary, by a third member to be mutually agreed upon by said Shea and said Garrison; and in the event of said Shea and Garrison being unable to agree upon a third member, and so stating to Mayor Hylan and Commissioner Nixon, the two gentlemen last named shall thereupon designate arbitrators.

4. All parties agree to abide by the decision of the said arbitrators.

Public Service Commissioner Nixon played an important part in bringing about the settlement. It was he who first proposed a scheme of arbitration that won partial support from both sides. As soon as it was evident that the commissioner's proposal contained the basis of a compromise or settlement, the leading factors in the situation adjourned to Judge Mayer's chambers, and after three hours of discussion finally arrived at the basis of settlement that was finally agreed to.

The strikers are asking an eight-hour day, 75 cents an hour and the reinstatement of men said to have been discharged because of their activities in behalf of the union. The question of the preponderance of union men once disposed of, conference over the matters just mentioned will follow with arbitration as the final resort.

For three days and sixteen hours service on the lines of the Brooklyn Rapid Transit Company was practically at a standstill. Some few elevated trains were operated, but very few surface cars were sent out. The contention of the company was to the effect that it had sufficient men, but that surface car operation had not been resumed to any extent because of inadequate police protection. This the police denied. They pointed in turn to the very limited service on the elevated, where by the very nature of the operation of the lines the maximum of protection was afforded. There is undoubtedly a considerable element of truth in both contentions, but it does remain a fact that such service as was operated was wholly inadequate to the transportation needs, even considering the hundreds of thousands transported by private auto, by bus and by truck, a service which sprang up overnight in startling manner.

Tri-City Railway Strike Settled

Wage Dispute of Unusual Interest Because It Involved the Question of Fares

By paying a 60-cent maximum scale to its trainmen the Tri-City Railway, Davenport, Ia., on Aug. 7 ended a strike which for five days tied up all transportation on its lines. Service on all the company's lines in Iowa and Illinois was resumed at once with the exception of the Muscatine city system. Service there will only be resumed, company officials state, when the City Council has agreed to a satisfactory fare increase.

A GENTLEMEN'S AGREEMENT

The company agreed to the new wage scale when a majority of the City Council of Davenport had made a gentlemen's agreement to the effect that the same fare shall prevail in Davenport as the Public Utility Commission of Illinois may award in Illinois. The new wage contract, beginning on Aug. 6 and expiring on June 1, 1920, was signed on Aug. 6.

The Clifton, Davenport & Muscatine Interurban, also affected by the strike, resumed service at the same time as the city lines in Davenport and Bettendorf, Ia., Rock Island, Moline, East Moline, Silvis and Watertown, Ill.

Although the company granted the men a 54-57-60-cent wage scale no increase in fare has yet been given the traction interests. Final testimony in the petition for an increased fare was offered before Examiner H. M. Slater of the Public Utility Commission of Illinois at a hearing held in Moline, Ill., on Aug. 6.

ORDER PREVAILED

No violence occurred during the strike. Jitney bus lines sprang up like magic. Seventy-nine buses were given permits in Davenport and 150 in Rock Island and Moline. Factories organized truck lines to carry workmen to and from industrial plants. Many merchants opened a half hour later in the morning and closed a half hour earlier in the evening. There was no paralysis of business. The comparative compactness of the communities prevented this.

The settlement of the strike by the granting of a 60-cent maximum scale marked a series of concessions by the Tri-City Railway. The full force of civic interests was brought to bear on the company at various times. Early in May the trainmen, then drawing a 40-cent maximum scale, filed notice of a demand for 62 cents an hour. They had been drawing 40 cents since the spring of 1918 when they were advanced from a 33-cent scale by the company without petition.

NINE-HOUR DAY WANTED

The men asked for a nine-hour day and a year's contract, beginning June 1, 1919. The wage question was discussed in the light of expected increases in fare, and an agreement was finally reached by which the men were given 50 cents an hour from June 1 to Aug. 1, with permission to open the wage question on Aug. 1 and the reservation that the scale would revert to 40 cents an hour on that date if the company were not granted a higher fare than 5 cents by the Illinois commission.

Before these negotiations had begun the company had petitioned the Illinois commission for a 7-cent fare.

Then the commission returned a decision turning the company down flat and holding the 5-cent fare to be fair and just. The men were notified that 40 cents an hour was all they could expect after Aug. 1. They passed a strike vote, the walk-out to become effective on that date.

Conferences between the men, the company and city officials were resumed. The company offered first 50 cents, then 55 cents, then 56 cents. The car men in the meantime had raised their wage demands to 75 cents an hour.

A joint conference of men, company and city officials was then held in Chicago and the company offered a 60-cent scale for ten months in Illinois and 60 cents for thirty days in Iowa to run the remaining nine months if at the expiration of thirty days the Councils of Davenport and Muscatine voted a 7-cent fare.

The men turned this proposition down and walked out on Aug. 1. The City Council of Davenport then tied up the situation by passing a resolution referring a fare increase to a special election. The company refused to accept this long-drawn-out possibility of a solution. Then came an all-night conference of trainmen, company heads and city officials in Moline on Aug. 5. Early the following morning a majority of the Council of Davenport agreed to give the company the same fare at Davenport as the Illinois commission may award. Then the company offered the 60-cent scale with no reservations. The men ratified the agreement almost unanimously.

The Rock Island and Moline city authorities fought a fare increase before the commission hearing later in the day. The hearing was adjourned on the afternoon of Aug. 6. Muscatine is still fighting. The Muscatine city lines have been a losing proposition for the local traction system for many years.

War Labor Board Dissolved

Since Armistice It Has Been Acting in Wage Disputes by Special Request of President

The National War Labor Board, meeting in New York on Aug. 12, formally ended its existence after granting increases of 12 per cent in wages in ten different electric railway cases, affecting companies in territory extending from New England to the Pacific, and as far south as the Ohio River. Ex-President William H. Taft and Basil M. Manly, joint chairmen, announced the adoption of a resolution which terminated the board's activities.

The Eastern Massachusetts Street Railway, formerly the Bay State Street Railway, was one of the corporations ordered, on Aug. 12, to pay the increase. The question before the board was a proposed reopening of an award dated Dec. 3, 1918, in which 41 cents minimum and 45 cents maximum for motormen and conductors was made by the board for the period of the war. In June the employees had the case reopened and the company agreed to submit the question to the board. The high cost of living was given as the basis for this and all the other applications. The award dates back to June 3, and the employees will receive the increase as from that time. The awards in all cases were retroactive.

STATEMENT OF CASES SETTLED

Other cases decided were:

Cleveland, Painesville & Eastern Railway and the Cleveland, Painesville & Ashtabula Railway, as of June 12.

Cleveland & Chagrin Falls Railway and the Cleveland & Eastern Traction Company, as of June 12.

Pittsburgh Railway, in the hands of a receiver, as of May 1. This case first will have to be submitted to the court in which the receivership is vested.

Beaver Valley Traction Company and the Pittsburgh & Beaver Valley Street Railway, as of June 12.

Portland Railway, Light & Power Company, Portland, Ore., as of June 25.

East St. Louis, Columbus & Waterloo Railway, as of June 25.

Alton, Granite & St. Louis Traction Company and East St. Louis & Suburban Railway, as of May 1.

East St. Louis Railway and East St. Louis & Suburban Railway, as of May 1.

The War Labor Board was created by an act of the President early in 1918. Since June 30 the board has been acting without compensation. After some correspondence with Secretary of Labor William B. Wilson it decided to dissolve, and a resolution to that effect was unanimously adopted on Aug. 12. The resolution read:

> Whereas, On June 25 the National War Labor Board adopted the following resolution:
>
> Whereas, Members of the National War Labor Board, realizing that the great national emergency which called the board into existence by Executive proclamation has practically terminated, the purpose of its organization has been substantially performed and no provision has been made for its maintenance; and
>
> Whereas, Until final dissolution of the board by Executive proclamation the members of the board are ready at the call of the President to take any action that may be necessary to carry out the purposes for which the board was created. The board, therefore,
>
> Resolves, That the secretary of the board give public notice that no new cases or applications will hereafter be received, and that when the board adjourns during the present week it adjourns indefinitely, subject only to the call of the chairman, pending final dissolution of the board.
>
> It is further resolved that present controversies, jointly submitted, that cannot be considered and concluded prior to June 30 shall be assigned to the joint chairmen or a section of the board for disposition.
>
> The board recommends that with the approval of the President all administrative duties in connection with any such cases, so far as may be, shall be transferred with all necessary formalities to the Department of Labor.
>
> The board further resolves that all records and files of the board be transferred to the Department of Labor, with the request that they be separately stored so as to be convenient of access to all parties interested therein, as well as to the public, and the board takes this action assuming that the Department of Labor will retain for such time as may be necessary such members of the staff of the board as may be required in the administrative duties in connection with the business of the board.
>
> The secretary of the board is hereby directed to do all things necessary and proper to carry into effect the foregoing resolution.
>
> And whereas the board is in receipt of a communication from the Secretary of Labor on July 7, 1919, in which it is stated:
>
> "As the activities of the National War Labor Board, which was created for the war emergency, practically terminated with the close of the fiscal year, I want to take this opportunity of conveying to you, and through you to the members of the employers and the employees groups and to the other officials of the National War Labor Board, my sincere appreciation of the valuable and splendid work accomplished. I feel that the work of the War Labor Board contributed in large measure toward the solution of the economic and industrial problems with which the government was confronted during the world war."
>
> Therefore, be it resolved, that the board receives and accepts this letter of the Secretary of Labor as action by the President dissolving this board, and that in accord therewith the board does now adjourn sine die.

During the fifteen months of its existence the board has handled and adjusted more than 1200 labor disputes. The board has been acting, at the special request of the President, during the period of reconstruction since the signing of the armistice.

Wage Increase in New York

The Interborough Rapid Transit Company on Aug. 13 announced that it had granted an increase in wages of 10 per cent to its operating employees. Job E. Hedges, receiver for the New York Railways, on the same day recommended a similar increase to surface car employees in a letter to Federal Judge Mayer, who took the matter under advisement.

The request for an increase was made to Vice-President Frank Hedley of the Interborough, by M. J. Mangan, president of the brotherhood of employees, which is not affiliated with outside organizations. The request on Receiver Hedges was made by the acting president of the organized employees.

The Interborough Rapid Transit Company in a paid advertisement in the papers of Aug. 10 had said that Manhattan and the Bronx were threatened "with the same transit chaos that exists in Brooklyn." It said that two things could be done by the public authorities to prevent the interruption of subway and elevated service:

1. Immediately authorize an increase in the rate of fare to 8 cents so that wages may be readjusted to the cost of living.
2. Take vigorous and prompt action to prevent disorder and the intimidation of loyal employees.

The company said that its "employees through collective bargaining are under contracts which last until the end of the year, and have declared their intention to live up to their agreements, but they should have more pay to meet the cost of living. We believe that this is the view of the fair and generous public."

Complete Arbitration Award Presented

The full report of the arbitration board which settled the recent strike on the Boston (Mass.) Elevated Railway was presented to a meeting of 2500 employees on July 31. In addition to the wage scale awarded platform men and published in the ELECTRIC RAILWAY JOURNAL of July 26, page 190, a full tabulation of the wage rates awarded so-called miscellaneous employees was submitted.

Des Moines Case Threatening

Court in Allowing Temporary Increase Calls Attention to Higher Fare Need

Although demands and conditions are changing almost daily, Des Moines on Aug. 7 seemed to have secured a respite of at least thirty days in the threatened strike of the union employees of the Des Moines City Railway. In an order of the court issued on Aug. 5 Judge Martin J. Wade, federal judge, made a settlement which will at least be temporary and give the participants in the dispute time to work out a permanent adjustment.

Judge Wade said:

> Under existing conditions the court has no power to take funds already earned, which under the ordinance belong to the bondholders as interest, or held to pay taxes or depreciation and to apply the same in the payment of increased wages.
>
> But under the present emergency, it is ordered and adjudged that the receivers advance from income properly and legally payable upon interest, taxes or depreciation, such amount as may be necessary to pay the wage scales fixed in the report of the arbitrators, for a period commencing Aug. 1, 1919, and up to and including Sept. 1, 1919, the same to be in the nature of a loan from one fund to another. This order is to terminate on Sept. 9, 1919, unless upon proper showing the court is then convinced that it is reasonably certain that provision will be made by advanced fares for reimbursement for such funds.
>
> The receivers in the meantime shall cooperate with the employees and the citizens of Des Moines in bringing about, as early as possible, the passage of an ordinance providing adequate increased fares.
>
> The receivers furthermore will, in the meantime, investigate the question of service, with the view of determining whether the increased wage may be met by an adjustment of service.

After Judge Wade's order it was thought that the strike had been averted, but the employees immediately announced and complained of the fact that the order took no notice of the retroactive wage increase between March 1 and Aug. 1. The men demand that this condition be recognized, and Ben Wiley, business agent of the union, threatened that unless the situation be worked out by Aug. 20 the men would go out. As Aug. 20 is the opening of the Iowa State Fair, which lasts ten days and brings several hundred thousand people to Des Moines who are dependent very largely on the Des Moines City Railway to get to the fair grounds, this threat looms big.

A committee of citizens and city officials is meeting almost daily in an effort to find a solution, but up to Aug. 7 no notice had been published of an election on the franchise to permit of increased fare.

12 Per Cent Advance Awarded Pittsburgh Men

An increase which is less than half what they struck for in the spring was granted the platform employees of the Pittsburgh (Pa.) Railways by the War Labor Board on Aug. 12. Immediately upon the announcement of the award, the leaders of the men expressed emphatic disapproval of the advance. A series of meetings of the men, at which they are expected to pass upon the increase, has been called by the executive committee.

The men asked an increase of 12 cents an hour. They will receive instead, a 12 per cent increase. They are at present being paid 43 cents an hour for the first six months, 46 cents an hour for the next six months and 48 cents an hour after the first year. A 12 per cent increase upon these wages will mean an advance of 5.16 cents for the 43-cent men, 5.52 cents for the 46-cent men, and 5.76 cents for the 48-cent men.

The traction system, being in receivership, is a charge of the United States District Court, and at the time of the short strike last May the court refused to admit that it was bound by any award the War Labor Board might make. The men contested this point bitterly at the time, and it was one of the reasons for the strike. Now they are making ready to take advantage of it, claiming that they likewise are not bound by the award.

It was estimated recently by the receivers that every time the wages of their employees go up 1 cent an hour it costs the company $160,000 a year. They base this on the fact that $90,000 a year is required to give an increase of 1 cent an hour to the platform employees, and that another $70,000 is needed to give a proportionate advance to other employees whose income must rise in company with that of the motormen and conductors.

The award in Pittsburgh is retroactive to May 1.

Radial Railways Urged

A meeting of municipal and board of trade representatives from a number of cities and towns of western Ontario was held at Galt on July 31 to urge the construction of a system of hydro-electric radial railways, of which Galt would be the center.

Sir Adam Beck, chairman of the Ontario Hydro-Electric Commission, outlined the policy of the commission, stating that in order to prevent unnecessary duplication of lines the commission proposed to secure leases on Grand Trunk lines, when they had been taken over by the government. The plan for the district represented at the meeting included the electrification of the Galt & Elmira branch of the Grand Trunk passing through Kitchener, and the line from Fergus to Guelph, and construction of new lines to Hamilton and Toronto.

Sir Adam defended the lack of activity in constructing hydro-electric radial lines during war time and stated that $18,000 had been expended in surveys.

Resolutions were adopted requesting the commission to proceed at once with reports on the construction of an electric railway covering the district between Galt, Elmira, Hamilton and Guelph; setting forth that sixty-two municipalities had carried by-laws for the construction of hydro-electric railways; and urging that the Provincial government authorize the roads.

Massachusetts Increases

Worcester, Springfield and Allied Roads Hard Hit by Finding of Arbitration Board

The arbitration board sitting in the Worcester Consolidated Street Railway, Springfield Street Railway, Milford, Attleboro & Woonsocket Street Railway, Interstate Consolidated Street Railway, and Attleboro Branch Railroad wage and hours of service cases rendered a decision at Boston on Aug. 7 increasing the pay of platform men about 32½ per cent and accepting the eight-hour day as a basis of work.

NINE-HOUR DAY RETAINED

At meetings after the presentation of the award, the employees of both the Springfield and the Worcester companies repudiated the eight-hour day, which carried a provision of twelve hours outside time, and voted to retain the present nine-hour in eleven-hours arrangement. The demand of the eight-hour day appears to have been mere camouflage for a wage increase. The new scale yields a maximum of $5.13 a day for nine hours work, the tabulated rates being:

	Rate Per Day		
	First Three Months	Next Nine Months	Thereafter
Springfield	$3.76	$4.16	$4.56
	Rate Per Hour		
Worcester and other companies	$0.47	$0.52	$0.57

The wages of miscellaneous employees of the company are to be advanced 32½ per cent on all the roads covered by the award.

The award was signed by Henry B. Endicott, chairman, and James H. Vahey, representing the employees. Bentley W. Warren, representative of the companies, declined to sign the award on the ground that the wage increase allowed the men is so great that he feared certain of the companies involved would not be able to meet it out of their present revenues, and that as representative of these companies he did not feel justified in agreeing to anything which would commit them to an increased expense which can be met only by imposing further burdens upon the public.

COST TO ONE ROAD $750,000 A YEAR

C. V. Wood, president of the Springfield Street Railway, called the attention of a representative of the ELECTRIC RAILWAY JOURNAL to the fact that the new wage schedule would cost this road alone $750,000 a year more. Increased revenue, he declared, is an absolute necessity.

The Springfield Street Railway will apply to the Public Service Commission in the near future for permission to establish a new fare schedule. It may be necessary to modify the present zone sytem to secure the necessary revenue. A curtailment of service by the company may be necessary, also, on nonproductive lines.

Power Plant Contract Awarded

The contract for a $15,000,000 power plant at Cheswick, Pa., on the Allegheny River, 15 miles above Pittsburgh, Pa., was let on Aug. 8, by the Duquesne Light Company, to Dwight P. Robinson & Company, New York. The primary purpose of the new plant is to insure an adequate supply of power to the steel industries in and around Pittsburgh which are now beginning to develop a highly increased demand for electric current, but it is also intended to supply current for the operation of the Pittsburgh Railways. The Duquesne Light Company is owned by the same interests that control the railway, and its decision to build the plant was prompted partly by the necessity of securing more steady current supplies for the traction system.

It is expected that the new plant will be completed within a year. While the initial rating of the station will be 60,000 kw., the construction now under way is for 120,000 kw. and the ultimate rating of the plant will be 300,000 kw. The Cheswick plant is within a few miles of a coal mine owned by a subsidiary company, and fuel is transported over a privately operated railroad.

Compromise Ends Muskogee Tie-up

The board of arbitration which has been making an effort to settle the strike that has tied up the lines of the Muskogee (Okla.) Traction Company for several months, has at last come to an understanding with the men. Under the terms of the agreement submitted for ratification by the labor union and the company full seniority rights are granted to the members of the union. A wage scale is fixed from 36 cents to 40 cents an hour, the maximum wage to be paid after four months. All strikers are reinstated in their old jobs. Non-union men employed when the strike was called are to be retained. All differences except discharging employees for "knocking down" are to be settled by arbitration. The men are to be protected from the weather by properly equipped cars.

The men went on strike on May 30. The findings of the board of arbitration as handed down were in the nature of a compromise.

I. T. S. Men Present Demands

A committee representing trainmen of the Illinois Traction System waited upon C. F. Handshy, general manager, to present demands for a new wage scale and better working conditions. Recently, the trainmen voted to withdraw from membership in the Brotherhood of Interurban Trainmen and to become affiliated with the Amalgamated Association.

A demand for increases from 50 cents to 75 cents an hour for motormen and conductors and from 37½ cents to 62 cents an hour and recognition of affiliation with the Amalgamated Association was the substance of the interview with Mr. Handshy, who referred the men to H. E. Chubbuck, vice-president executive of the system at Peoria. The present wage contract with the men does not expire until Dec. 1. The trainmen assert that the increased cost of living makes it impossible for the men to live comfortably on wages which they now receive.

No indication has been given as to when an answer to the demands might be expected from the officials.

Boston Attacks Its Railway

The city of Boston has filed amendment in the Supreme Court to the bill against State Treasurer Burrill and the trustees of the Boston Elevated Railway to prevent payment of $4,000,000 by the State to the trustees. In the amendment, the city attacks the constitutionality of the statute authorizing payment and seeks to prevent the city from being required to pay its proportion of the assessment to the State. The city claims that it is entitled to hold and enjoy in its private or proprietary capacity its own property, all subways and tunnels constructed for the use of the Boston Elevated Railway and receive the rents, income and profit of all now existing leases or contracts without interference by the Commonwealth, except on payment of just compensation. It claims that the statute violates the constitution in that it impairs its contracts and also that the statute contemplates the taking of property without due process of law.

When the act was before the Senate, the judges of the Supreme Court sent an opinion upholding the constitutionality of its provisions. Each of the seven judges signed that opinion. Now the city seeks to have the court reverse its own opinion.

Urbana-Champaign Strike Settled

The strike of trainmen of the Urbana & Champaign Railway, Gas & Electric Company, included in the Illinois Traction System, came to an end on Aug. 8 after five weeks duration. Full normal service was established the morning of Aug. 7. During the five weeks only about one-half the usual number of cars was operated, the union men refusing to work. Members of the local brotherhood manned the cars. The striking employees, who are members of the Amalgamated Association, have been reinstated in their seniority rights and all men returned to their respective positions with the company. The questions of hours and reinstatement of discharged employees, the grievances which brought about the strike, were compromised in a manner satisfactory both to the men and the company. A new wage scale was agreed to which provides for an increase in the rate per hour to be paid to both conductors and motormen after Jan. 1, 1920. This carries with it a maximum of 45 cents an hour, the same rate as that paid by the Bloomington & Normal Railway & Light Company, another subsidiary of the Illinois Traction System. The Urbana & Champaign Company employees have been receiving a wage of 42 cents an hour since Sept. 1, 1918. Otherwise, working conditions contained in the contract under which they were employed when the men left their places remain unchanged and the revised contract is extended over the unexpired term of the old contract. The company also announces that the same working conditions and wage scale agreed to with the Amalgamated Association will apply for members of the Brotherhood.

Holyoke Wage Increase

Henry B. Endicott, Boston, arbitrator in the wage negotiations between the employees of the Holyoke Street Railway and the company, has awarded the following rates of pay to motormen and conductors: First six months, 49 cents an hour; second six months, 50 cents; second year, 51 cents; third year, 53 cents; thereafter, 55 cents. An increase is also recommended for miscellaneous employees. The award also covers rates of pay from Oct. 1, 1918, to June 1, 1919, and specifies from 37 cents an hour for the first six months to a maximum of 43 cents for three-year men and over. The men at Holyoke asked for a wage of $5 a day.

Berkshire Strike Unsettled

About 400 employees of the Berkshire Street Railway, Pittsfield, Mass., quit work on Aug. 8 owing to the failure of the company to increase their wages as demanded to $5 for an eight-hour day. The entire system continues tied up from the New York-Vermont line to the Massachusetts-Connecticut boundary. The power plants of the company at Zylonite and Pittsfield have been shut down. It is expected that a receivership will be sought by the company. Chairman Charles G. Wood of the State Board of Conciliation and Arbitration, spent three days in Pittsfield soon after the strike was declared in an unsuccessful attempt to bring about a resumption of service. Manufacturing industries in the Housatonic Valley are hard hit by the suspension of service. The company's finances are in a precarious condition.

New St. Louis Manager Addresses Men

Col. Albert T. Perkins, general manager of the United Railways, St. Louis, Mo., held an informal conference during the week ended July 19 with division superintendents, supervisors and foremen of the company, soon after he took charge of the company management. More than 100 officers and employees of the company were present at the meeting.

Colonel Perkins was introduced by

Butler, acting superintendent of transportation. He discussed matters concerning the men and the company. Col. Perkins urged the men to insist on co-operation in their departments and declared the one essential for the future success of the company is to give the best possible service to the public. He emphasized courtesy and safety-first methods.

Colonel Perkins has stated as the initial plank of his platform a complete and amicable understanding with the employees of the company. He says he is ready and willing to listen to all demands of the carmen and will go as far as possible to see that all receive a living wage. A demand of the local branch of the union for increased wages is before the Missouri Public Service Commission, and both sides have agreed to abide by its decision.

News Notes

Strike in Olean.—About 150 employees of the Western New York & Pennsylvania Traction Company, Olean, N. Y., went on strike early on Aug. 12, resulting in a complete tie-up of the system. The men demanded recognition of the union and increased wages.

Will Arbitrate Discharge Cases.—Arbitrators have been chosen to hear the cases of the twenty-six conductors of the United Railways, St. Louis, Mo., accused of misappropriation of fares and then discharged. The arbitrators were named after officials of the local union demanded a hearing for the men. Rolla Wells, receiver of the company, assented.

Wage Increase in Harrisburg.—The Harrisburg, (Pa.) Railways has increased the wages of its motormen and conductors 3 cents an hour. The voluntary wage increase is effective from Aug. 15. Under the new wage scale, first-year men, now receiving 40 cents an hour, will get 43 cents; second-year men receiving 41 cents will get 44 cents and third-year men receiving 42 cents will get 45 cents.

Wage Increase in Homestead.—A flat advance in wages of 10 cents an hour has been made to all employees of the Homestead & Mifflin Street Railway, Homestead, Pa., under a plan announced by the company. The wages of the conductors and motormen at present are 48 cents an hour for the first three months and 50 cents an hour thereafter. The increase is the fourth in two years.

Chicago Suburban Strike Settled.—Employees of the Chicago & Joliet Electric Railway on Aug. 13 voted 184 to 6 to return to work. This followed a conference held with Robert Osborne of the State Industrial Board. A compromise offer providing for a 12 to 14-cent increase was made to the men and accepted. Employees of the Aurora, Elgin & Chicago Railway were still out on Aug. 14. No service has been given on that road since July 13. Since the strike began the company has gone into the hands of a receiver.

Minneapolis Franchise Before Council.—It was announced that the amended franchise for the Minneapolis, (Minn.) Street Railway would go before the Council on Aug. 15 for first reading. Horace Lowry, president of the company, has formally waived any claim to guarantee by the city of the 7 per cent return on the value agreed to in the proposed cost-of-service franchise, nor will the company try to collect from the city the deficiency if any exists. Purchase periods will be yearly in the franchise as it is to be submitted to the Council by the committee after daily hearings for some time.

British Investments in Argentina.—Referring to news reports alleging friction between Great Britain and Argentina due to extensive English investments in the latter country, the National Bank of Commerce, New York, N. Y., says that $2,000,000,000 has been considered a conservative estimate of the amount of such investments. The bank says that it is known that British capital in railways alone amounts to $1,138,756,484. This represents about ten times the railway investments of any other foreign country in the Argentine. The amount of British money invested in the tramways alone is $133,434,262.

Decides Against City in Jitney Case.—Supreme Court Justice Swayze has set aside a resolution of the City Commission of Jersey City, N. J., for a day fare of 5 cents and 10-cent night fare on jitneys on Bergen Avenue, Jersey City, from the Summit station of the Hudson & Manhattan Railroad to Seaview Avenue and the old Bergen road. The decision of the court indicated, however, that the situation might be different if the City Commission had fixed the 5-cent fare by ordinance. In consequence the Corporation Counsel promptly arranged to introduce an ordinance fixing the fare on Bergen Avenue at 5 cents.

Guelph Employees Request Wage Increase.—A deputation from the Guelph (Can.) Municipal Railway employees waited on Alderman Westoby, chairman of the railway and manufacturers' committee of the Council, and asked for an increase in wages and shorter hours of work at once. The men are at present receiving 32 cents an hour and working up to as much as seventy hours a week. They now want 44 cents an hour for first three months and 47 cents thereafter, with time and a half for all time over eight hours. Alderman Westoby informed the men that the matter would come up soon before the Council.

Legislative Committee Against M. O. Measure.—The committee on municipal government of the House of the Georgia Legislature has reported against the measure introduced in the Legislature at the request of City Council of Atlanta under which the city of Atlanta would have been authorized to condemn the properties of the Georgia Railway & Power Company in order to acquire them for municipal ownership and operation. Mayor Key and City Attorney James L. Mayson were the only speakers who appeared in behalf of the measure. Those who opposed it included H. M. Atkinson, chairman of the board of directors, and P. S. Arkwright, president, representing the Georgia Railway & Power Company, and others, among them many representatives of Georgia cities.

Wages Before Twin City Directors.—A special meeting of the directors of the Twin City Rapid Transit Company, Minneapolis, Minn., will consider a request made by representatives of the trainmen on Aug. 8 for an increase in wages. Although Horace Lowry, president of the company, said no specific rate of wages had been made in the request, the men left it to Mr. Lowry's judgment for determination on a "live-and-let-live" basis. Trainmen say they want a maximum of 55 cents and a minimum of $4 a day for extra men. The scale now is 40 cents for beginners, 43 for men less than a year in the employ and 45 cents for trainmen in the employ more than a year. The last increase, at the time of the strike last winter, was from 35, 38 and 40 cents.

Wage Scale Discussed at Covington.—The South Covington & Cincinnati Street Railway and the local union are negotiating for an adjustment of a wage scale for another year. The old agreement expired on Aug. 1. The conductors and motormen are seeking the same rate of pay as that received by similar employees of the Cincinnati Traction Company, which is 50 cents an hour. Last year the wage rate was increased from 30 cents to 48 cents an hour, the present scale. The company complied with the request of the War Labor Board in advancing the wages, and holds this fact as an argument to increase the rate of fare. There is an understanding between the men and the company that in the event higher fares are granted the men will be the first to receive the benefit.

Atlantic City Men Present Demands.—The employees of the Atlantic City & Shore Railroad, Atlantic City, N. J., have petitioned A. J. Purinton, receiver for the company, for substantial increases in their wages and a closed shop. The company has until Aug. 25 to sign the new aggreement, the contract becoming operative on Sept. 1. Among the concessions demanded are that all employees join the local three days after employment and that no employee shall be discharged without a hearing. Should a discharged employee be reinstated he is to be paid full time for the period lost. The men ask that the schedule of a day's work shall conform as nearly as possible to an eight-hour day and not in any case to exceed ten consecutive hours. It is also demanded that time a half be paid for all overtime work.

Financial and Corporate

Changes in Holding Company

Properties Under Control of General Gas & Electric Company Are Realigned by Owners

Arrangements have been made for the acquisition by the New England Gas & Electric Company, New York, N. Y., of the Pennsylvania and New England properties formerly owned by the Eastern Power & Light Corporation. This acquisition is a result of plans worked out by the General Gas & Electric Company interests with the various protective committees of the Eastern Power & Light Corporation. They do not include, however, the West Virginia Traction & Electric Company, one of the former Eastern Power & Light Corporation subsidiaries which has just been placed in receiver's hands.

NEW ENGLAND PROPERTIES GROUPED

The New England properties of the Eastern Power & Light Corporation are to be combined with certain of the properties in New England now owned by the General Gas & Electric Company, making a strong power company which will make additional water power developments in Vermont and New Hampshire. Securities of this new company, to be known as the Vermont Hydro-Electric Corporation, have been underwritten by Boston banking houses and application has been made to the State Public Service Commissions of Vermont and New Hampshire for the necessary authority to complete the organization of the company.

The General Gas & Electric Company will acquire the $3,000,000 common stock of the Metropolitan Edison Company, and will acquire $3,100,000 common stock and $1,300,000 of 6 per cent preferred stock of the Reading Transit & Light Company. The acquisition of the common stock of the Metropolitan Edison Company, which owns all the common stock of the Pennsylvania Utilities Company, a former subsidiary of the General Gas & Electric Company, will give the General Gas & Electric Company control of a very important power system in Pennsylvania with combined annual gross earnings of almost $4,000,000.

INTERCONNECTED POWER SUPPLY

The power plants at Easton and Reading are to be connected with a power line which will be extended also to connect with the Dover plant of the New Jersey Power & Light Company. With these extensions completed, the power system controlled by the General Gas & Electric Company will extend from just east of Harrisburg up to the system of the Public Service Corporation of New Jersey with another line extending almost as far as Philadelphia.

Combined gross earnings of all companies to be controlled by the General Gas & Electric Company after this acquisition for twelve months ended May 31, 1919, were $8,478,142. Combined operating income for the twelve months ended May 31, 1919, was $2,361,789, an increase of more than $712,000 over the twelve months preceding. More than 67 per cent of the gross earnings of the General Gas & Electric Company's subsidiaries are from electric light and power and gas.

The directors of the General Gas & Electric Company are to be increased in number to permit of the representation of additional banking interests which have become identified with the company in this transaction.

$193,721 Short of Expenses Under Six-Cent Fare

Col. Albert T. Perkins, general manager of the United Railways, St. Louis, Mo., has issued a chart captioned "Where the 6-Cent Fare Goes." He will submit the chart to members of the Public Service Commission of Missouri, in session in St. Louis. The chart shows that revenue fell $193,721 short of paying operating expenses and fixed charges of the company for the twelve months ended June 30, first year of operation under the 6-cent fare.

The statement lists the receipts and expenses as follows:

Gross operating revenue, $14,811,876; wages, $6,011,359; material and supplies, $3,367,111; taxes, $1,146,246; injuries and damages, $888,712; other operating expenses, $983,499; interest charges, $2,608,669; total expenses, $15,005,597; deficit, $193,721.

This statement does not include back wages of $233,212 paid in July and August for the months of April and May of last year.

The percentage chart lists expenditures of revenue as follows: Wages, 40.59 per cent; material and supplies, 22.73 per cent; taxes, 7.74 per cent; injuries and damages, 6 per cent; other operating expenses, 6.64 per cent; interest charges, 17.61 per cent; deficit, 1.31 per cent. Interest charges amounted really to 17.61 per cent of the gross revenue, but only 16.30 per cent was available. No dividends were paid.

The item of $983,499 for "other operating expenses" includes $750,312 for reserve depreciation and represents the difference between the amount set up for depreciation and the amount actually expended in material and wages for replacements. This reserve is intended to take care of the daily depreciation of cars, tracks and other equipment.

Disagree on Valuation

Board Which Has Been Inquiring Into Pittsburgh Case Will Report Soon

Three separate opinions, each reflecting the views peculiar to the interests from which it sprang, will probably be the outcome of the effort to arrive at an equitable valuation of the properties of the Pittsburgh (Pa.) Railways. For almost a year and a half the investigation had been going on, under the direction of the State Public Service Commission.

FINDINGS ALREADY FILED

The findings of the board were filed at the State Capitol at Harrisburg the first week of August. Nothing was made public by the commission as to the nature of the information tendered it by the valuation board, but reports from Harrisburg indicate a variance of opinion in the board.

The members of the board, it is said, are unanimous as to the value of the tangible assets of the company, but fail to agree on what elements should be included in the valuation in respect of such things as franchises. There is also a lack of unity as to the return security holders should be allowed to earn upon their investments. It is largely upon the basis of the latter that the commission is expected to make its recommendation as to a fair rate of fare, and the whole valuation investigation was designed primarily to determine that, once and for all.

The reports from Harrisburg say there will be one report by the two engineers representing the company, another by the engineers placed on the board to protect the interests of the city of Pittsburgh and the contiguous boroughs, and a third report by the representative of the Public Service Commission, who is the fifth and last man on the board.

This division of opinion puts the final decision upon the Public Service Commission. That body is to meet in Pittsburgh on Aug. 20 to receive the report of the board formally and to make public the engineers' views. At that time the commission will also hear the complaint of the city of Pittsburgh and the boroughs on the new fares—7½ cents when paid by tickets and 10 cents in cash—effective on Aug. 1.

VALUATION COST $600,000

The valuation work in Pittsburgh is estimated to have cost about $600,000. The city and the boroughs assume one-third of the cost.

The valuation board was composed of Dr. F. Herbert Snow, chief of the bureau of engineering of the Public Service Commission; J. A. Emery, New York, and Morris Knowles, Pittsburgh, representing the Pittsburgh Railways and the Philadelphia Company (the holding company), and Robert M. Feustel, Fort Wayne, Ind., and George W. Fuller, Boston, representing the municipalities.

Results at Montgomery

For Second Time the Receiver There Reviews Conditions on Property Intrusted to Him

Ray Rushton, receiver of the Montgomery Light & Traction Company, Montgomery, Ala., has reported to Judge Henry D. Clayton of the United States District Court for the Middle District of Alabama with respect to the affairs of the company. He recommends that the property of the railway be put in the very best condition; that the fare be increased to 7 cents; that the wages of the employees be increased, and that the receivership be continued until the end of 1920.

INCOME MUST BE INCREASED

Notwithstanding the breaking up of the various military camps the receipts of the company are in excess of receipts for any corresponding months of prewar years, according to the report. While the railway has earned a little more than enough to pay operating expenses it has not earned enough to take care of the expensive improvements.

No hope is entertained by the receiver of selling the railway for anything like enough to pay its indebtedness in the near future. Therefore, it is recommended that the receivership be continued until the end of 1920.

According to Mr. Rushton, the income of the railway must be increased in order to meet the increased cost of material and labor. With this end in view, the receiver states that he expects to discontinue a few lines and give a better schedule on other lines in order that each car may carry more passengers per mile.

SEVEN-CENT FARE ASKED

The report recommends that the receiver be authorized to increase the fare to 7 cents, and later, if necessary, even to 8 cents. It further recommends that the wages of employees be increased from 35 to 40 cents an hour and the working hours of the men be reduced to nine hours a day.

Mr. Rushton asks that he be permitted to purchase ten additional safety cars and such other material as may be found necessary.

This is the second report to be made to the court by Mr. Rushton since his appointment. The first was made in February, 1919. It was reviewed very briefly in the ELECTRIC RAILWAY JOURNAL for Feb. 22, page 382.

Memphis Appraisers Confer

Ross W. Harris, expert for the city of Memphis, Tenn., in connection with the proposed appraisal of the property of the Memphis Street Railway, has arrived in Memphis to meet the engineers appointed by the State Public Utility Commission and the receivers of the Memphis Street Railway, for a preliminary conference. Albert S. Richey, Worcester, Mass., is also in Memphis. He was named by the State Commission as its appraiser. J. H. Perkins, New York, named by the receivers of the railway, was expected to arrive from New Orleans in a few days. The three experts will make a physical valuation of the Memphis properties to assist the commission in a final determination of the rate controversy. The appraisers have four months for the work and may make a joint or separate report.

Receiver for West Virginia Company

At the request of the creditors of the West Virginia Traction & Electric Company, Wheeling, W. Va., Judge Dayton of the United States District Court, for the Northern District of West Virginia, on Aug. 4 appointed J. D. Whittemore equity receiver for the company to conserve its assets for the benefit of all concerned. Up to the time of his appointment as receiver Mr. Whittemore was general manager of the company's property, in active charge of operation.

A large proportion of the total income of the company is derived from traction lines and these lines have suffered from war conditions. The high operating cost, due to increased wages to employees and the constantly advancing cost of materials and supplies, in comparison with the increases in rates of fares which the company was able to obtain, has been a principal factor in the inability of the company to meet its obligations.

The officials of the company do not feel that it is possible, at the present time, to make any statement as to possible future plans for the adjustment of the company's affairs.

A protective committee representing the bond secured notes which matured on May 1, 1919, has issued a preliminary plan of reorganization and in the statement accompanying it the committee says it feels encouraged as a result of its investigation of the property. Accordingly the committee purposes:

> 1. To buy in the collateral for the notes (unless outbid by an outside purchaser) at the foreclosure sale which it is expected will take place in about a month. The securities pledged consist of $2,500,000 of the company's twenty-five-year gold bonds of 1917 out of a total of $2,584,000 of such bonds now outstanding.
> 2. Also similarily to buy at foreclosure of the bond mortgage the premises, or such portions thereof as the committee may deem desirable, in case they are not purchased by outside parties.
> 3. Organize a new company to acquire the purchased properties from the committee in exchange for the securities of a new company, of which securities those senior in lien would be exchanged for bonds represented by the committee.
> 4. It will be the policy of the committee to co-operate with the other claimholders and the stockholders, so far as may be consistent with the superior interests and lien represented by the committee.
> 5. To obtain any cash necessary for the acquisition of the pledged bonds and the property securing the same, by pledging therefor the notes and bonds now or hereafter held by it.

Later the committee will announce such amendments or extensions of this plan as may seem to it to be necessary.

New York Traction Report

Engineers Report to Holding Company on Needs of Rapid Transit and Surface Lines

In a preliminary report of their examination of the subway and elevated lines of the Interborough Rapid Transit Company, New York, N. Y., made to the chairman of the protective committee representing the holders of the 4½ per cent collateral trust bonds of the Interborough-Metropolitan Company. Stone & Webster state that nothing short of an 8-cent fare on both the elevated and subway lines will provide for fixed charges and the payments to the city and the company contemplated by the contracts between them. The Interborough-Metropolitan Company is the holding company for the subway and elevated lines and some of the surface roads.

Stone & Webster explain that they have not completed their examination of the surface lines of the New York Railways, but state that their examination has progressed far enough to enable them to ascertain that during the last year the company has been earning nothing toward interest on its first real estate and refunding bonds after paying underlying charges and rentals.

In the judgment of Stone & Webster, the lines cannot earn their fixed charges certainly for many years to come unless there is a substantial increase in the rate of fare.

The engineers say that in their opinion the recent granting by the Public Service Commission of the charge for transfers will not yield sufficient additional revenue materially to improve the security for the 4½ per cent Interborough-Metropolitan bonds. The investigation of Stone & Webster was made in co-operation with Price, Waterhouse & Company, certified public accountants.

Of the general traction situation the engineers say:

> We find that the management of Interborough Rapid Transit Company is able and efficient. The condition of the properties is excellent. They have been thoroughly maintained and are in first-class operating condition, and there is practically no deferred maintenance. We should point out that while expenditures for current maintenance seem to be adequate, the reserves for depreciation and obsolescence heretofore accumulated have been exhausted, and no reserves for that account are being made and none are provided for in the estimates of earnings given below.
>
> To enable it adequately to serve its territory and attain the estimated earnings, we believe it will be necessary for the company to make additional expenditures for capital purposes, chiefly equipment, amounting to approximately $7,400,000 during the next five years. This may be reduced, possibly about $3,000,000, by savings from the construction fund.
>
> It is manifest that a 5-cent fare falls far short of providing the cost of furnishing a ride, and that a considerable increase in fares is necessary to provide for fixed charges and the payments to the city and the company contemplated by the contracts between them. In our opinion, nothing short of an 8-cent fare on both elevated and subway lines will accomplish this purpose.
>
> The financial condition of this company is not unique. Traction properties throughout the country are faced by similar conditions, due to the great increase in the cost of labor and material as the result of the war.

Appeals to Commission for Financial Aid

The Santa Barbara & Suburban Railway, Santa Barbara, Cal., declares, in an application filed with the Railroad Commission, that it has long been sustaining a very heavy financial loss. It asks the commission to investigate the financial affairs of the company and determine what should be done to enable the company to pay legitimate operating expenses without increasing the fare or lowering the standard of service.

Figures submitted by the company show that in 1914 the railway ran behind $28,034. In 1915 the loss was $27,132; 1916, $38,149; 1917, $29,618; 1918, $50,626. Four months of the present year show a total loss of $8,759. The company, which operates buses and street cars, shows that in 1914 the cars carried 1,567,332 passengers. In 1918 it carried 1,471,063 car passengers and 368,194 bus passengers. The operating expense in 1914 was $63,681. In 1918 it was $107,531.

It is asserted by the company that in the last two years wages have increased 40 per cent and the cost of materials from 50 to 200 per cent. The petition says:

> The company desires so to operate its system, if possible, that it will be unnecessary, in order to pay legitimate operating charges, to increase the existing rate of fare or lower the standard of service. The company is uncertain whether such a result can be attained. It is willing to co-operate in making the attempt. Certain economies in operation will be necessary. The company desires the benefit of such advice and recommendation as the Railroad Commission may give after a careful investigation and study by the commission.

12 Per Cent Revenue Increase in Memphis

The extra cent in fare is adding only 12 per cent to the revenue of the Memphis (Tenn.) Street Railway, according to the quarterly report of the corporation lately prepared. If as many persons had ridden on the cars at 6 cents as did at 5 cents, the increase in revenue would of course have been 20 per cent. In general, however, it may be said the public is returning to the cars again. In the nature of things, autumn travel is heavier than the summer travel in Memphis, and a constant improvement in passenger movement is looked for as the summer wanes.

The receivers soon must make a new working contract with the employees, but it is believed a settlement will be made without friction, as all conferences held thus far have been very friendly. Frank S. Elgin, one of the receivers, would make no prediction as to the probable wage under the new contract. T. H. Tutwiler, the other receiver, has been out of the city for several weeks, but is expected to return soon.

City Attorney Livingston seems to think that when the fare hearing is resumed in November by the Public Utilities Commission it can be shown that the need no longer exists for the continuation of the 6-cent fare.

Financial News Notes

Receiver for Chicago Interurban.—Federal Judge Evans on Aug. 9 appointed Joseph K. Choate receiver for the Aurora, Elgin & Chicago Railway, Wheaton, Ill., on petition of the creditors whose claims are said to aggregate $50,000. The principal creditor named in the petition is the General Electric Company with a claim of $3,215.

Receivership Is Denied.—Judge Wagner at Reading, Pa., handed down an opinion on Aug. 11 in which he refuses to grant the petition of John H. Passmore, Philadelphia, and other stockholders of the Kutztown & Fleetwood Street Railway for a receiver for the Allentown & Reading Traction Company, of which the Kutztown & Fleetwood Street Railway is a subsidiary.

Will Sell Mississippi Road.—George P. Money, special commissioner appointed by the Federal Court on July 2 to sell the properties of the Pascagoula Street Railway & Power Company, Pascagoula, Miss., in the mortgage foreclosure suit of the Columbia Finance & Trust Company, has fixed Aug. 18 as the day upon which he will make the sale in front of the courthouse at Pascagoula.

Receiver's Certificate Formally Authorized—Federal Judge Mayer at New York on Aug. 12 signed a decree authorizing Lindley M. Garrison, receiver of the Brooklyn Rapid Transit Company, to sell $18,000,000 of receiver's certificates at 95. The decree provides that they shall be dated Aug. 1, 1919, and shall mature in two years. The proceeds are to be used for the completion of the rapid transit lines.

Receiver Sells $2,300,000 of Certificates.—Rolla Wells, receiver of the United Railways, St. Louis, Mo., announced on Aug. 4 that a syndicate of St. Louis bankers had purchased the issue of $2,300,000 of receiver's certificates recently authorized by Special Master Lamm. This issue will enable the receiver to take up the loan of that amount made fourteen months ago by the War Finance Corporation. The certificates will bear interest at 6 per cent and will mature in one year.

Plan to Discontinue Reported.—The Walla Walla Valley Railway, Walla Walla, Wash., it is reported, will discontinue its city lines. The East Walla Walla line and the Prospect Heights line, the two lines making 6 miles of railway, will be discontinued on Dec. 1. The remainder of the city lines will be discontinued about the first of the year, or as soon as the rolling stock can be sold. The company has been losing money for five years. An increase in fares was announced recently, but that did not help.

New York City Companies Would Abandon Lines.—Commissioner Lewis Nixon of the Public Service Commission for the First District of New York has held a hearing in reference to the proposal of the Pelham Park & City Island Railway, Inc., operating from City Island Station through Pelham Park to City Island; the Mid-Crosstown Line, and the Third Avenue Bridge Company, whose line operates across the Queensboro Bridge, to cease operation forthwith. The companies state that the deficits through operation for the last fiscal year were for the Pelham Park & City Island Railway, $17,740; for the Mid-Crosstown Railway, $34,138; and for the Third Avenue Bridge Company, approximately $25,000. The letter adds that whatever need may have existed in the past for the operation of these lines seems to have disappeared with shifting conditions of traffic. Commissioner Nixon has held he has no power to force the lines to continue operation. Sale of the roads to the city is suggested.

Consolidation Awaits Foreclosure Sale.—Until the future ownership of the Inland Empire Railroad is determined by court sale nothing can be done toward merging the city lines of the Washington Water Power Company and the Tacoma City lines of the Inland. The date of the sale has not yet been set. The validity and priority of claims is yet to be passed upon by the master in chancery and approved by the court, after which an upset price is fixed by the court preliminary to a sale. Officials of the Inland believe the property will be bought by the bondholders or the Hill interests. The bondholders have approximately $4,250,000 invested while the Great Northern and Northern Pacific have invested in common stock or advanced for the operation of the system between $8,000,000 and $10,000,000. Representatives of the bondholders have indicated their approval of the proposed merger, but the attitude of the Hill interests is unknown.

Modification of Reorganization Plan Reported.—It was stated in San Francisco, Cal., on Aug. 1 that announcement of the details of the amended reorganization plan for the United Railroads was expected within a few days. In the meantime probable changes from the plan as originally proposed by the reorganization committee are being discussed in financial circles. The plan about to be announced, it is understood, proposes a different exchange arrangement for the United Railroads 4's than that reported at first. Instead of giving new securities to the extent of a little more than 70 per cent of the par value of these bonds, it is said that 100 per cent of par will be offered, but with a reduced proportion of Market Street Railway bonds—20 per cent being the amount quoted in these reports—and the balance made up in stock of all three issues, first preferred, second preferred, and common. The provision for the underlying bonds has also been charged. These issues have matured.

Traffic and Transportation

Jitneys Ruled Out of Portland

Maine Cities Conclude That Competition of Buses With Electric Railways Is Undesirable

The jitneys have been ruled off the streets of Portland, Saco and Old Orchard, Me., where the conclusion has recently been reached by the cities that buses that compete with the electric railway are a nuisance and should be restrained. These cities were introduced to the jitneys or the jitneys were introduced to the cities during the spread of the jitney idea following the unemployment period at the start of the war. Like most other cities, Portland and the other places mentioned hesitated at the start as to what was best to be done about regulation.

FIRST LEGISLATION IN 1915

In 1915 an ordinance was passed in Portland providing that all applications for licenses to operate motor vehicles as common carriers must be filed with the city clerk. Such applications were required to show the route and the schedule to be maintained, and also be accompanied by a bond depending upon the size of the car. Applications had to be filed with the city clerk, who in turn referred them to the Board of Aldermen and Mayor for final disposition. The bond requirements of the ordinance were $3,000 for a five-passenger car and $6,000 for cars of greater seating capacity. In addition a city license was necessary, this being $20 a year for the smaller cars and $30 a year for cars seating more than five passengers.

Soon after the Cumberland County Power & Light Company, operating the Portland Railroad, increased its fares to approximately 3 cents a mile, several buses were put into competition with the company between Portland and Saco, without securing the proper licenses. The drivers were arrested for not complying with the requirements of the city of Portland. In the State Supreme Court before Judge Wilson the jitney men got a temporary injunction for one week instead of two months, as asked for by the Council. They claimed the jitney regulatory ordinance was too drastic and made without authority of the State. Judge Wilson, however, after hearing the case, refused to continue the injunction.

LICENSES REFUSED

The Mayor and the Board of Alderman of Portland then refused to grant the licenses under the ordinance of 1915, claiming they would use their own discretion, in as much as the ordinance provided that they might grant the licenses if the requirements of the ordinance was fulfilled. The city had come to the conclusion that there was not room enough in Portland for two forms of transportation, and that inasmuch as the railway was already on the ground it should have the sole right to transport passengers.

In Saco a similar ordinance has been passed and became effective on Aug. 1, 1919. The town of Scarboro declared motor bus competition with the electric railways a nuisance and prohibited the buses from using the streets. As a result of all this no jitneys are running in Portland, Saco and Old Orchard.

The Cumberland Power & Light Company feels that this outcome is but one of the aftermaths of the several community meetings held in the territory throughout which it operates, when fares were recently increased, at which time every effort was made to put before its patrons the facts as to the financial status of the company.

Temporary Fare Increase at Lincoln

Following presentation of the report of Dean Raymond of the school of engineering of Iowa State University, named by the Federal Court to investigate the condition of the Lincoln (Neb.) Traction Company, the court has ordered an increase in fare to 6 cents in the city of Lincoln and to 7 cents to points in the suburbs. The company has also been granted a temporary injunction restraining the Railway Commission of Nebraska from enforcing rates heretofore existing.

The action of the court is temporary in its nature, the increased rates to apply until final determination occurs. The court order declares that "the parties will understand that we are not fixing a rate. We are merely, as a condition of the injunction issued, fixing the maximum charge that shall not be exceeded by the plaintiff during the pendency of further proceedings or until further orders herein."

The company is required to file a bond for $50,000 to insure repayment of all amounts collected from car riders in excess of the rate ultimately fixed as equitable.

The company, more than two years ago, applied to the State Commission for permission to install emergency rates. The commission refused, whereupon the matter was presented to the Supreme Court of Nebraska, which remanded the case to the commission, which still refused an increase. The company then applied to the Federal Court for an injunction against enforcement of existing rates by the commission.

Michigan Interurban Fares Up

Rates Advanced Under New Law Permitting Charges of 2½ Cents Per Mile

The Detroit (Mich.) United Railway, on Aug. 2 filed a schedule of increased passenger rates on its interurban lines to be effective on Aug. 14. The schedule was presented to the Public Utilities Commission of the State, but that body has no power to prevent collection of the new rates, which are promulgated under the provisions of the Smith rate act passed by the 1919 Legislature.

MANY LINES AFFECTED

This act permits collection of 2½ cents a mile by interurban roads, but the new schedule is based on a general increase to a 2-cent rate. This makes the new fare 25 per cent more than the present fare from Detroit to Flint and 155 per cent more than the present fare from Detroit to Pontiac. Fares are computed from the Detroit city line.

Action of the company in establishing the new schedule has opened a controversy that will probably lead to a suit in the Supreme Court of the State to test the validity of the Smith law. The act is so burdened with provisos that its meaning is obscure.

One of the qualifying clauses that would seem to apply to the Detroit United Railway in so far as interurban fares are concerned is as follows:

> Provided further, that these rates shall not apply to electric suburban or interurban railroads whose gross passenger earnings as reported to the Railway Commission of Michigan for 1918 exceeded $8,000 per mile for each mile of road operated by said company, including all branch roads owned, leased, controlled or occupied by said company.

It now appears from a cursory examination of the record of the commission that the company's interurban income is so close to $8,000 a mile that legal definition of the term "gross earnings" will be necessary in order to determine whether the lines fall within the terms of the proviso. If these lines receive less than $8,000 a mile from passenger traffic, the Utilities Commission has no power to prevent collection of the 2-cent fare. Under the terms of the Smith act the company could go further and charge 2½ cents a mile, for this is the rate the law allows to interurban lines earning less than $8,000 a mile.

COURT ACTION LIKELY

The commission has ruled that it will not consider the Smith act as abridging its right under the general railroad law to make an investigation into the propriety of the proposed rates. Inasmuch as the company filed its schedule ten days in advance, as required by the old law, the commission has assumed that it will be willing to proceed farther under the general railroad law, and permit the commission to suspend the rates, if application for suspension is made by the public, for forty-five days pending investigation.

Chicago Fares Go to Seven and Eight Cents

Commission Granted Seven-Cent Fare to Surface Lines and Eight Cents to Elevated, Waiving Customary Notice

After hearings of three days duration during the week ended Aug. 9, before the Public Utilities Commission of Illinois, the commission rendered its decision on Aug. 6, effective at midnight on Aug. 7, increasing the fares of the Chicago Surface Lines from 5 cents to 7 cents and of the Chicago Elevated Lines from 6 cents to 8 cents.

Assistant Corporation Counsel Cleveland demanded a subpœna for the companies to produce their books as far back as 1907. This demand was denied by the commission on the grounds that the petitions for increased fares sought emergency relief, and that such an examination would consume too much time and in effect deny the petition. The city also contended that the commission could not properly render a decision as it had acted as investigator and arbiter during the strike and had agreed to increase fares to cover the increase in wages. This was denied by the railways.

The decision of the commission affirmed that an emergency existed and therefore precluded the necessity of the usual thirty-day notice to the public of a change in rates. The commission said:

> The city of Chicago has entered its appearance in this proceeding and denies the authority of the commission to make an order allowing fares in excess of those prescribed in the ordinances under which the companies derive their rights to use the city streets. The city also asserts that the commission should not permit increased rates to go into effect until there has been a complete hearing for the purpose of determining the value of the property used in the public service.
>
> The question of the power of the commission to entertain this application was considered in a previous case and the decision was adverse to the contention of the city. We adhere to the conclusions there announced and overrule the motion for a dismissal of the proceedings for want of jurisdiction.
>
> We think that the applicants have made a case which entitles them to an order allowing changes in rates without requiring the thirty days notice specified in Section 36 of the public utilities act.

In regard to the Chicago Surface Lines, the commission stated that at the time of the previous petition of the company for relief the commission found that the requirements of reasonable return upon the fair value of the property of the company actually used in the public service would be satisfied if the net earnings of the properties reached the sum of $8,600,000. The evidence presented before the commission showed that the net earnings for the twelve-month period ended July 31, 1919, were approximately $8,200,000. The companies have therefore fallen about $400,000 short of the amount to which the commission found they were entitled.

It was estimated that to this must be added approximately $7,800,000 increased expenses due to the wage advance, and at least another $1,000,000 due to the enhanced cost of materials and supplies for maintenance, to probable increased taxes, and to the loss sustained by the companies during the recent strike. The commission said, further:

> The present rates of fare now charged by the petitioners are insufficient, and the rates hereinafter authorized are just and reasonable rates and are no more than are necessary to enable the company to earn a fair return upon the fair value of their property actually employed in the public service.

The following rates of fares on the surface lines were then authorized:

> For a continuous trip in one general direction within the present or future limits of the city of Chicago over the street railways operated by the Chicago Railways Company, Chicago City Railway, Calumet & South Chicago Railway and the Southern Street Railway, operating under the designation of Chicago Surface Lines, a sum of 7 cents for each passenger twelve years of age or over and 4 cents for each passenger under twelve years of age: Provided that children under seven years of age accompanied by a person paying fare, shall be permitted to ride free. The provisions as to transfers as they now exist shall continue until the further order of the commission.

In referring to the Elevated Lines, the commission said:

> Petitioners have shown good cause for allowing increases in their rates of fare without requiring the thirty days notice provided in Section 6 of the public utilities act. The operating expenses of the petitioners have been largely increased by advances in wages which are now effective and by increased cost of supplies and materials and they will be unable to obtain money with which to operate their lines unless prompt relief is granted.
>
> The annual increase in operating expenses due to advanced wages and other causes shown by the evidence will amount to more than $2,400,000. The rates of fare at present charged by the petitioners are insufficient. and the rates hereinafter authorized are just and reasonable rates and are no more than are necessary to enable the companies to earn a fair return upon the fair value of their property actually employed in the public service.

The commission then authorized the following rates on the Elevated Lines:

> Adult fare between all points upon the lines of the several companies, namely, the Metropolitan West Side Elevated Railway, Northwestern Elevated Railway, South Side Elevated Railroad, and Chicago & Oak Park Elevated Railroad, where a 6-cent fare is now charged shall be 8 cents; for that portion of the Northwestern Elevated Railroad north of Howard Street, 6 cents. The above fares from points north of Howard Street to points in the city of Chicago shall be the sum of the two rates above mentioned.

Unless otherwise ordered by the commission the rates will be effective until and not after Feb. 1, 1920, but the commission reserves the right to extend the effective period of the rates beyond Feb. 1, 1920, or to order the discontinuance of the rates at any time prior to that date.

The commission also retains jurisdiction of the cases and reserves the right to investigate the rates authorized or the service rendered, make further findings and issue such further orders as may be justified by the facts determined at subsequent hearings as to the rates for railway service furnished by both the elevated and surface lines in the city of Chicago.

The application for hearing and investigation for the determination of the value of the property of both companies, and the establishment of permanent rates, was granted. The appeal of the Chicago Surface Lines, in this connection, is set for hearing on Sept. 8, and that of the Chicago Elevated Railways for hearing on Sept. 17.

Mayor Thompson immediately announced that he would "fight to the last ditch" the increase in fares. He characterizes the award of the commission as a "vicious public hold-up," and states that the fares are the result of a "long contemplated and adroitly executed plan of the traction bosses." Last reports were that an application for a writ suspending the order of the Public Utilities Commission pending the city's appeal of the order was to be made in the near future to the Sangamon County Circuit Court. This announcement was made in the form of a letter to the clerk of the court. The court is not now in session, but is expected to convene on Sept. 2.

Seeks to Correct Abuse of Transfers

The Kansas City (Mo.) Railways has saved around $200 a day during the past few weeks, through a change in its method of handling transfers. A new transfer put out by the company several months ago had been seriously abused. A passenger giving a transfer and wishing to use still another car on his trip, received a second transfer —and with this second transfer, was frequently able to double back to a point near the origin of his trip.

The company's order that the original transfer should be punched, and no new transfer given, has prevented the doubling back; and has also eliminated the practice of overstaying a reasonable time, since the time limit is punched on such original transfer, and there is no chance for a passenger to get a new transfer with later hour punched, or no hour punched.

The company has saved many dollars by the simple process of abolishing the transfer privilege at the Union Station. Hundreds of transfers were exchanged or given away—many sold for 1 or 2 cents apiece—at the Union Station, the traffic having developed for the benefit of passengers leaving town, or arriving, or going to and from work in the station district. The greatest abuse of the assumed stopover privilege existed at the Union Station transfer point.

The company will soon issue a new transfer, with two coupons for each retransfer, and passengers may therefore ride on only two lines in addition to the one on which the trip was begun.

The City Council has passed an ordinance which if enforced will materially assist the Kansas City Railways in combating the abuse of transfer privileges. This measure carefully prescribes the conditions under which transfers shall be used, provides against traffic in transfers by barter or exchange, and fixes a penalty of not less than $1, nor more than $100 for violation of any provision of the ordinance.

Omaha Charging Seven Cents

Fares were advanced from 5 cents to 7 cents, on Aug. 10, on the lines of the Omaha & Council Bluffs Street Railway, Omaha, Neb., following conferences between officers of the company, a committee of the carmen's union and city officials.

Three weeks ago the union made a demand upon the company for an increase from the then existing scale of 41 cents to 45 cents an hour, to 65-75 cents. That demand was reduced to a maximum of 60 cents, and the final compromise was effected on the basis of a maximum of 55 cents. It is agreed that the matter may be reopened by the carmen ninety days from the date of the establishment of the 7-cent fare.

The new rate of fare carries with it the sale of four tickets for 25 cents, 3-cent tickets for children five to twelve years of age, and 5-cent tickets for school children. The company has installed a new type of pay-as-you-enter fare boxes which receive and register pennies.

The company applied last year to the State Railway Commission for a 7-cent rate. The commission denied the application, whereupon the company appealed to the State Supreme Court of Nebraska, which in a recent decision (ELECTRIC RAILWAY JOURNAL for July 26, page 199) directed the commission to order an increase of rates. The commission during the week ended Aug. 9, issued such an order. Representatives of the city and the company sent a stipulation, waiving the right of a rehearing before the Supreme Court.

In the temporary settlement of this controversy the men agreed to waive their demand for a "closed shop" and recognition of their union.

A Muss in Muskegon

The man who put the "mus" in Muskegon, Mich., builded better than he knew. No other word in the English language, perhaps, so fittingly describes the condition in which that city finds itself. Muskegon is in an awful muss. There was an electric railway in Muskegon, but there isn't any more. Muskegon kicked when it had service and now it kicks that it hasn't any service. As a matter of fact, Muskegon destroyed the service as a protest against a 7-cent fare and now, like all iconoclasts, having deliberately set about destruction, stands aghast amid the ruin that has followed.

The local railway at Muskegon, like other roads in other cities, needed more revenue. Unlike some others, however, it was unhampered by franchise provisions limiting the fare. Its frachise expired several years ago and has not been renewed. On Aug. 1 the company annuonced an increase in fare from 6 cents to 7 cents. This become a signal for a warm, if not gleeful, response on the part of the public, punctuated by riot and disorder.

Now the cars of the railway in Muskegon are in the carhouse, there to remain until the town has returned to its sober senses. There is some evidence even now that common sense will again prevail, but until it does there will be nothing doing on railway service. On this the owners of the property, the American Light & Traction Company, are determined.

This is the price that Muskegon is paying for mob rule. Yes! mob rule. Just because it was disgruntled at a change in fares the hoodlum element in Muskegon rose up and not satisfied with orderly protest took things into its own hands and battered and banged the cars until they limped back to the carhouse, mere shadows of their former selves. In consequence service has been entirely suspended and the prospects are that the city itself may have to reimburse the company for damage done to railway property. Muskegon had a gala moment during the destruction. Now it has fallen upon sober days, with plenty of time to think things over while it walks to and from work.

Zones the Service, Not the Fares

The Kansas City (Mo.) Railways is installing short-line schedules, with cars serving congested and business districts turning back at convenient intermediate points on the lines, and stub lines operating to serve the more thinly-settled suburban districts. Two of these readjustments have been made, and others will follow.

While the outer and inner terminals of the readjusted routes have no direct relation with jitney routes as established by a pending city ordinance, in some instances the terminals of the electric railway and the jitney routes are about the same. After a week of service over the shortened routes for congested districts on two lines, the public, the company and the city officials seem satisfied to extend the readjustment.

There has been much discussion in Kansas City of the feasibility of zone fares, the suggestion being made frequently in connection with plans to overcome the competition of jitneys. The Kansas City Railways, however, has decided that zone fares are not practical or fair; but that zoning of service will meet both the jitney competition, and the problem of adequate service.

In stating its case for the zoning of service the company says in part:

> The only solution possible is to reduce the suburban non-paying service and to give more cars and more car-miles to the portions of the city which are thickly populated and where they are needed. This means that new transfer points will have to be made and many lines which now have through service will have to be shortened and the outlying districts served by their own lines, on which will be given service adequate to the traffic possibilities and needs of these districts.
>
> A system of turn-backs will have to be inaugurated by which cars during the rush hours will cover only a certain part of their route and be turned back and sent downtown to take care of the people waiting for transportation, instead of continuing on to the end of the line with no patronage.

Transportation News Notes

Cuts Operating Expenses.—Unable to obtain a higher fare the Louisville (Ky.) Railway has rerouted many of its cars as a means of curtailing operating expense. One new line has been opened.

Limited Service Planned.—Responding to a demand for quicker service between Los Angeles and San Bernardino, Cal., the Pacific Electric Railway is planning to run limited trains between the two cities. At present the cars make all local stops.

Metal Tokens in New Orleans.—Metal tokens worth 6 cents each will be used by the New Orleans Railway & Light Company, New Orleans, La., to obviate the need for great numbers of pennies in the hands of conductors, according to Nelson H. Brown, general manager.

Jitney operators of Kansas City have recently conceded all but one of the requirements in pending ordinances, this one being the bond of $5,000. Difficulty has been encountered in securing such a bond and they may have to suspend operation.

Interurban Rate Increased.—The East St. Louis & Suburban Railway, East St. Louis, Ill., gave notice to the Public Service Commission of Illinois on Aug. 1 of an increase in fare between East St. Louis to Edwardsville, Ill., from 40 cents to 46 cents. The rate from Collinsville to Maryville is reduced 2 cents.

Homestead Company Increases Fare.—The Homestead & Mifflin Street Railway, Homestead, Pa., has announced an increase in fare to care for the wage raise, noted elsewhere in this issue. The fare will go up on Sept. 1. The present charge is 5 cents. The new rate will be 6½ cents by ticket and 7 cents when paid in cash.

Illinois Company Wants More.—Hearings on the petition of the Chicago & Joliet Railway for authority to increase fares within the corporate limits of Joliet, Rockdale and Lockport, Ill., have been begun before the Public Utilities Commission of Illinois. The company has applied for a fare increase to meet demands of its employees for higher wages.

Seven Cents Asked by Sedalia Company.—The City Light & Traction Company, Sedalia, Mo., has applied to the State Public Service Commission for a fare increase from the present 5-cent rate. The company asks that it be allowed to charge 7 cents for an adult ticket, and 5 cents for a child's half-fare ticket with six half-fare tickets for 25 cents. Hearings were to start on Aug. 11.

Reducing Accidents in Kansas City.—Co-operating with the local Traffic Safety League in its campaign to reduce the number of street accidents, the Kansas City (Mo.) Railways is collecting detailed information regarding all accidents in which its cars are involved. Daily reports are made to D. L. Fennell, superintendent of transportation, who publishes a daily bulletin summarizing the data.

Seven-Cent Fare for Illinois Interurban.—The Public Service Commission of Illinois on July 30 ordered a 7-cent cash fare for the Alton, Granite City & St. Louis Traction Company, Alton, Ill., and a 6-cent fare in East St. Louis, Ill. This schedule will continue effective until Oct. 31, 1919. The commission several months ago denied the company's application for an 8-cent fare on the Alton city line.

Trenton Hearings Sept. 16.—The State Board of Public Utility Commissioners has set Sept. 16 as the date for the hearing at the State House on the application of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for another increase in fares in Trenton and suburban territory. The company wants to charge 1 cent for transfers and create four new zones on the suburban lines.

I. T. S. Sleeper Service.—The Illinois Traction System has announced a new schedule of parlor car and sleeper service out of St. Louis. The new parlor car limited leaves St. Louis at 8.30 a. m., arrives at Springfield at 12.01 p. m. and arrives at Peoria at 2.30 p. m. Another parlor car limited leaves St. Louis at 2.30 p. m. and the sleeper leaves St. Louis at 11.45 p. m. and arrives in Peoria at 6.45 a. m.

Jitney Men See Their Doom Sealed.—Owners of jitneys in Camden, N. J., announce that if the Public Service Railway zone system goes into effect they will not be able to compete with the company on its 3-cent city fares and will transfer their activities to the suburbs. The jitney men now charge a 7-cent fare in the city. The jitney men in Newark are said to be less pessimistic about the future.

Higher Fares on Suburban Road.—The Public Utilities Commission of Illinois has approved the application of the Chicago & West Towns Railway, operating lines in Oak Park and neighboring towns, for an increase in fares. Cash fares between the towns are raised from 7 cents to 10 cents. Within the towns the rate is 7 cents or four tickets for 25 cents. The commission's order is effective until June 1, 1920.

Eight Cents on Alabama Road.—The Public Service Commission of Alabama has issued an order permitting the Sheffield Company, which operates in Sheffield, Florence and Tuscumbia, to raise fares from 5 cents to 8 cents. The company had asked for a 10-cent fare. The company's application for a revision in fare zones was denied. When tickets are furnished in books of fifty a discount of 20 per cent is made, making the ticket rate 6.4 cents.

Rhode Island Company Asks More.—The receivers of the Rhode Island Company, Providence, R. I., on Aug. 7 filed a petition with the Public Utilities Commission of Rhode Island for authority to put into effect a new schedule of fares so designed as to increase the revenue to meet the requirements imposed upon the company by the advance in wages to its trainmen under the strike settlement terms outlined in the ELECTRIC RAILWAY JOURNAL for Aug. 9, page 295.

Detroit Fare Ordinance Re-enacted.—The Council of Detroit, Mich., has re-enacted the Kronk ordinance, passed by the aldermanic body a year ago, fixing 5 cents as the maximum rate of fare to be charged by the Detroit United Railway. Suit to test the validity of the measure was brought by the Detroit United Railway and carried to the United States Supreme Court, from which it has been sent back and is awaiting a rehearing before the Federal Court at Detroit.

Fare Ordinances Submitted in Portsmouth.—Another overture for increased fares has been made to the City Council of Portsmouth, Va., by the Virginia Railway & Power Company. The new proposition comes from W. H. Venable, who is the general attorney for the company. With Mr. Venable's letter were two ordinances, either of which may be adopted. One provides for a 6-cent fare within the city limits with a 2-cent charge for transfers. The other provides for a 7-cent fare within the city without charge for transfers.

New Jersey Hearing Put Over Until Sept. 17.—With the conclusion of the cross-examination of Charles K. Mohler, witness for the League of Municipalities in the zone fare hearing for the Public Service Railway at Newark, N. J., on Aug. 5 the Board of Public Utility Commissioners announced a recess until Sept. 17. Both Frank H. Sommer, counsel for the league, and Edmund W. Wakelee, vice-president of the Public Service Railway, agreed that the hearings could be more rapidly disposed of in the fall after the mass of evidence had been examined.

Six Cents in Lake Charles.—Fares in Lake Charles, La., were placed at 6 cents beginning Aug. 1, under the terms of an ordinance passed by the City Council granting an increase to the Lake Charles Railway, Light & Waterworks Company. The company was also permitted to make a 1-cent charge for transfers. Passage of the ordinance followed a compromise effected in the district court in the city's suit against the railway to restrain the latter from putting a 7-cent fare into effect. Some months ago the company established a 7-cent fare, whereupon the city secured a temporary injunction which was later dissolved.

Three-Cent Fare Will Stand.—The application of the Van Brunt Street & Erie Basin Railroad, Brooklyn, N. Y., for permission to increase its fares from 3 cents to 4 cents, has been denied by Deputy Public Service Commissioner Barrett of the First District on the ground that there is no necessity for the change. The company's line is a little more than a mile long. Its power is furnished by the Brooklyn Rapid Transit Company, which also cares for the street between the tracks. Commissioner Barrett pointed out that the company's net corporate income has increased from $8,248 for 1914 to $12,012 for the year ended June 30, 1919.

Hearings Concluded in Mississippi Dispute.—Arguments in the hearings before Special Master Terrall, appointed by Judge Holmes of the Mississippi Federal Court to take evidence in the dispute between the city of Meridian, Miss., and the Meridian Light & Railway Company, were recently concluded. Mr. Terrall will present his report at the September term of the court. The controversy grew out of the increased railway rates from 5 cents to 7 cents. The city contends that charter provisions were violated, while the company asserts that under charter provision dating back to 1884 it has the right to increase fares to as much as 10 cents. The 7-cent fare was established more than a year ago.

Express Service Extended.—The Chicago, Ottawa & Peoria Railway, Ottawa, Ill., included in the Illinois Traction System, has installed express service between Chicago and stations on that line, insuring quick deliveries and low rates. Service will be routed via Chicago & Joliet Electric Railway and the Interurban Motor Despatch line. Pick up and delivery service will be furnished at Chicago on first-class express at 80 cents per hundredweight and on second-class express at 60 cents per hundredweight within the district bounded on the north by Chicago Street, on the west by Halstead Street, on the south by Eighteenth Street and on the east by Lake Michigan.

Fare Controversy Still on in Columbia.—The City Council of Columbia, S. C., has passed on its first reading an ordinance to amend the franchise of the Columbia Railway, Gas & Electric Company, so as to allow the city to fix rates of fare. The Council's action comes as the result of opposition to the 7-cent fare established by the company on July 1 to cover a 10 per cent wage increase to its men. Citizens attempted to secure an injunction restraining the company from putting the higher rates into effect, but their application was refused. The events leading up to the present situation were referred to at length in the issue of this paper for July 19, page 142.

City Holds Out for Five-Cent Fare.—The City Council of Spokane, Wash., by unanimous vote has reaffirmed its belief in 5-cent fares on the railway lines of the city and asked the State Public Service Commission to restore the old fare notwithstanding the order of the commission to continue the 6-cent fare for another period of sixty days. The resolution was presented by Commissioner John H. Tilsley and passed by the City Council. In consideration of returning to the 5-cent fare the City Council agrees to continue the policy of keeping jitneys in check as it has for the past three months. The resolution cites that the city opposed the increase of fares in the beginning and that results have shown that the companies would have done as well under a normal increase in business, if the 5-cent fare had been retained. A larger net revenue will be obtained by the companies at 5 cents, the resolution states, than by continuing the fare at 6 cents.

New Publications

Spacing and Depth of Laterals in Under-drainage Systems

By W. J. Schlick. Bulletin No. 52, Engineering Experiment Station, Iowa State College, Ames, Iowa.

This bulletin on the spacing and depth of laterals in Ohio under-drainage systems and the rate of runoff from them, with data from investigations, while primarily of interest in connection with farms, has reference value to railway men who have problems to solve in connection with the drainage of moist areas.

Government Ownership of Railroads—Vol. 2

Compiled by Edith M. Phelps. H. W. Wilson Company, New York. 200 pages. Price $1.50.

This is one of the "Debater's Handbook Series" of the publisher. It should be explained at the outset that this volume is not a new edition of the former handbook on this subject, but is an entirely new publication, based on railroad conditions as they exist at the present time. Vol. 1, published originally in 1912, has been through three editions. As the publishers explain, the various arguments for and against government ownership of the railroads are brought out in the affirmative and negative discussions. A selected bibliography is included, limited chiefly to the literature of the last two years, although earlier standard works have been added, together with a list of bibliographies, which point the way to other material on the subject. The contents is divided into General Discussion, Affirmative Discussion, and Negative Discussion.

The volume deserves the careful attention of the student, the investor, and the operator. The proponents of government ownership should be acquainted with what the opponents are thinking and saying, and the opponents of government ownership of course should know what the proponents are thinking and saying. "Government Ownership of Railroads" make this comparatively simple. The publisher and the compiler are to be congratulated on the work they have done at this time in making reference easy to the best that is available on this subject.

Personal Mention

Edward Dana, Acting Manager

Well-Known Transportation Authority Selected to Head Boston Elevated Railway

Edward Dana, Belmont, Mass., has been appointed acting general manager of the Boston (Mass.) Elevated Railway, succeeding C. D. Emmons, who resigned recently to become president of the United Railways & Electric Company, Baltimore, Md. Mr. Dana is widely known in the electric railway field as a specialist in transportation practice. He was born in Bernardston, Mass., thirty-five years ago, and was graduated from Harvard College in 1907, completing the four-year course in three years.

EDWARD DANA

Mr. Dana entered the employ of the Boston company soon after receiving his degree. From a post as conductor he has advanced rapidly through various departments of the company to the position of manager of transportation, which he held at the time of his latest promotion. He became interested in the scientific aspects of traffic handling early in his career with the Boston company, and has written numerous articles for the ELECTRIC RAILWAY JOURNAL and other publications upon transportation matters. Among these have been extended analyses of schedule-making problems, the organization of snow-fighting forces, maintenance of service under adverse conditions, telephone adjuncts to electric railway operation, traffic counts and their interpretation, and many others.

Mr. Dana has been active for some years in the work of the American Electric Railway Traffic & Transportation Association, and has appeared as an expert in numerous commission proceedings. Since the establishment of public control on the Boston system, he has been at the head of the transportation department, reporting to the general manager. In the affairs of his home town Mr. Dana is unusually prominent, being a member of the finance committee, treasurer of the War Chest, and active in the publicity work of the municipality during the war. He has traveled widely in the interest of electric transportation work. Mr. Dana is a member of the New England Street Railway Club and of the Boston City Club.

Organized for Separate Operation

The Eighth Avenue Railroad, New York, N. Y., segregated from the New York Railways and operated separately under W. B. Yereance as general manager and chief engineer, has announced in a general order the appointment as department heads of the company's organization developed for the direct operation of its railroad the following officers:

H. S. McGinness, supervisor of transportation.

J. D. Kent, supervisor of way and structures.

R. H. Waldo, acting supervisor of equipment.

E. T. Baker, auditor.

W. G. Wheeler, special (claim) agent.

E. M. Musier, paymaster.

S. L. Shuffleton, formerly chief of construction for Stone & Webster in the Seattle district, is now Western Manager for Stone & Webster at San Francisco.

Capt. James H. McLaughlin, formerly connected with the Baton Rouge (La.) Electric Company, has gone to Houston, Tex., as secretary to L. C. Bradley, vice-president of the Houston Electric Company.

Calvert Townley, president of the American Institute of Electrical Engineers, is the subject of an extended and sympathetic personal article by Lewis B. Stillwell in the July issue of the *Electric Journal.*

Melnotte McCants, who has been assistant to the general manager of the United Railroads, San Francisco, Cal., for the last twelve years, has been given the title of assistant general manager of the company.

G. A. Webb, who has been acting as superintendent of transportation of the Savannah (Ga.) Electric Company for several months, has been appointed to that position permanently. Mr. Webb was formerly traffic manager of the Tampa (Fla.) Electric Company.

E. J. McIlraith, formerly superintendent of ways and structures with the Puget Sound Traction, Light & Power Company, at Seattle, Wash., has been appointed to the position of engineer in charge of maintenance with the Philadelphia (Pa.) Rapid Transit Company.

R. M. Read, superintendent of the Quebec Railway, Light, Heat & Power Company, Quebec, Que., and chairman of the outside industries committee of the Quebec Board of Trade, is the author of an article "For a Greater Quebec," in the bulletin of the Quebec Board for June 16.

John W. Greer, Edgewater, N. J., has been appointed superintendent of the Hudson River division of the Public Service Railway, Newark, N. J. Mr. Greer has been with the Hudson River line for many years and was connected with it before it was taken over by the Public Service Corporation.

C. B. Booth, for a number of years commercial manager and claim agent of the Vicksburg Light & Traction Company, Vicksburg, Miss., severed his connection with that company on Aug. 1 to become the business manager of a Mississippi electrical concern. Mr. Booth joined the traction company more than eighteen years ago.

H. F. Cameron of the Lake Charles Railway, Light & Power Company, Lake Charles, La. has been appointed vice-president and general manager of the Texas Gas & Electric Company, with headquarters in Houston, Tex., succeeding A. W. Houston, whose appointment to the Southern Utilities Company is noted elsewhere in this department.

A. W. Houston has resigned as vice-president and general manager of the Texas Gas & Electric Company, Houston, Tex., to accept a similar position with the Southern Utilities Company. Mr. Houston will have his headquarters in Palatka, Fla., and will have supervision of plants of the Southern Utilities Company, in the states of Florida and Georgia.

Charles S. Ruffner, vice-president of the Union Electric Light & Power Company, St. Louis, Mo., has been elected a vice-president of the North American Company, which owes the Union Company and whose common stock ownership in the United Railways, St. Louis, controls that company. Mr. Ruffner will spend half his time in St. Louis and half in New York.

I. M. Stover, for the last two and one-half years manager of the Baton Rouge (La.) Electric Company, a Stone & Webster property, has been transferred to the general office of the latter company in Boston, Mass. Before leaving Baton Rouge he was presented with a handsome silver water pitcher and tray by the company's employees. Mr. Stover was formerly connected with the Key West (Fla.) Electric Company as manager.

H. R. Sharpless has been appointed chief engineer for the Pensacola (Fla.) Electric Company. Mr. Sharpless was until recently chief engineer for the power station of the Baton Rouge (La.) Electric Company. At the same time E. L. Bancroft was appointed assistant chief engineer. L. P. Chaney, formerly chief engineer of the power station of the Pensacola Electric Company, has been transferred to the Blackstone Valley Gas & Electric Company, Pawtucket, R. I.

F. C. Chamberlain, for the last six years district engineer of electric operation for the properties of Henry L. Doherty & Company in the Western District, has been appointed general manager of the Richland Public Service Company, Mansfield, Ohio, succeeding R. E. Burger. Prior to his connection with the Doherty organization, Mr. Chamberlain was with the American Gas & Electric Company at Wheeling, W. Va., and for about four years previous to that time he had been in the New York office.

Robert L. Warner, who was vice-president of the United Railways, St. Louis, Mo., severed his connection with that company on Aug. 1 and returned to New Hampshire. Mr. Warner was elected to the company at St. Louis last fall to represent Eastern interests and to attempt to save the United Railways from a receivership. He will return to St. Louis soon, he announced, as a representative of the North American Company, which controls the United Railways through ownership of practically all the common stock of the company.

Augustus E. Haar has been appointed master mechanic for the Trenton & Mercer County Traction Corporation, Trenton, N. J. Mr. Haar spent nineteen years in the employ of the Washington Railway & Electric Company, Washington, D. C., resigning a short time ago to join the Trenton company. Joining the Washington company in 1900 as an apprentice machinist he gradually worked himself up to the position of master mechanic. Mr. Haar was born in Philadelphia in 1883. In 1908 he was appointed foreman of the company's machine shop and in 1914 was promoted to the position of general shop forman. Two years later he was made master mechanic.

Louis Resnick has resigned as general manager of the Associated Trade Press at St. Louis, Mo., to become director of publicity for the National Safety Council, which has a section operating in the electric railway industry. He will, however, continue with the press association in an advisory capacity as a member of the board. Mr. Resnick was formerly the resident news correspondent in St. Louis for the ELECTRIC RAILWAY JOURNAL. He received his preliminary newspaper training at the School of Journalism, University of Missouri. He has been engaged in newspaper work for nine years, four years of which he was with the Associated Press, and two years with the Associated Trade Press in St. Louis.

J. D. Whittemore, who has been appointed receiver of the West Virginia Traction & Electric Company, Wheeling, W. Va., is general manager of the company in active charge of operation. Before becoming connected with the West Virginia Traction & Electric Company Mr. Whittemore was general manager of the Claremont Railway & Lighting Company, Claremont, N. H. He was at one time employed by the General Electric Company at Schenectady, N. Y., and later was transferred to Boston, working in the construction department. He subsequently entered the industrial engineering department of the Rochester Railway & Light Company, Rochester, N. Y. Prior to his connection with the Claremont Railway & Lighting Company. Mr. Whittemore was manager of the Gardner (Mass.) Electric Light Company.

Obituary

Patrick D. Fox, seventy-three years old, manager of the old Elizabeth, (N. J.) Horse Railway before it was absorbed by the North Jersey Street Railway, now the Public Service Railway, died recently at his home in Elizabeth. Mr. Fox was born in Ireland and lived in Elizabeth for fifty years.

John W. Marsh, superintendent of the Steubenville division of the Wheeling (W. Va.) Traction Company, died on Aug. 4 at Denver, Col., at the age of fifty-six years. Mr. Marsh entered railway work in July, 1888, as a motorman on the lines of the Wheeling Traction Company. In 1900 he was promoted to dispatcher and in 1902 he was made assistant superintendent of the Wheeling lines. When the Wheeling Traction Company took over the lines of the Steubenville, Mingo & Ohio Valley Traction Company in 1903, Mr. Marsh was appointed superintendent of that division which position he held until his death, being located in Steubenville.

George R. Webb, capitalist and organizer of electric railways and telephone companies, died at Baltimore, Md., on July 7 of heart disease at the age of sixty. Mr. Webb began his business career with the Baltimore & Ohio Railroad. Subsequently in connection with Harry Parr he constructed the Baltimore & Northern Railroad. Then with Alexander Brown & Sons, bankers, he consolidated the street railways of Baltimore, and for a short time he was the president of the amalgamated companies. Mr. Webb's activities rapidly broadened. He organized the Maryland Telephone Company, the Pittsburgh & Alleghany Telephone Company, Wilmington Light & Power Company and the Duquesne Light Company, Pittsburgh. At a later period, with Baltimore associates, he assisted in consolidating the electric railways of San Francisco, and with Pierre S. du Pont and Harry P. Scott he carried through to a successful conclusion the electric railways and light and telephone system of Wilmington, under the name of the Wilmington & Philadelphia Traction Company.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Better Ordering of Rails For Fall Delivery

Traction Companies in the Market for Small Amounts—Government and Foreign Inquiries

Orders from traction companies for rails have been coming in in better volume recently. Truly, these orders have not been for normal amounts, but, although they are small in size, they are coming in from an increasing number of companies. Heavy T as well as girder rails are included in the ordering.

Fall demands are being considered, and at the present rate of shipments it is none too early, according to manufacturers, to place orders for delivery so the rails can be placed before winter. Inquiries too have been received in larger quantity for girder rails.

Some rail mills are not operating or operating on very small capacity. Depending on the section required, shipments run from sixty to ninety days. With the mill for a certain section of rail not running when the order for that rail is received, it is probable that the rolling will be held up maybe 60 days awaiting sufficient orders for that size to make a fair sized rolling. Orders coming in near the end of this waiting period could be shipped in rather quick time.

The Railroad Administration has asked for bids on 100,000 tons of heavy rails, and Uruguay has been inquiring for about 1800 tons of traction rails. Buying of light rails for mining and industrial work is also on the increase, and has a slight effect on shipments of traction rails.

Advance in Uniforms, Insignia and Equipment

Demands for Punches and Badges and Buttons Growing—Deliveries Reported to Be Lengthening

Orders for punches during the past month have been so large in volume that the demands cannot be supplied. The orders are constantly increasing and the sales are very heavy compared with previous months, regardless of the 10 per cent advance which has taken effect during the past six weeks. The rise in prices was necessary on account of wage increases that have been granted the punch makers. Although their demands for increases have been met and there has been no interruption owing to strikes, punch makers are from four to six weeks behind on orders.

The market is not strong in regard to uniform caps. Sales are only normal and deliveries are hard to make on account of labor difficulties. Caps are up approximately 25 per cent during the past month. Labor charges are higher, but leather visors, formerly quoted at $14 per gross, have risen to $20 per gross, and are chiefly the cause of the 25 per cent advance just announced. Uniforms have also advanced and one manufacturer advises that a new price list is out this week. The advance amounts to practically 5 per cent on both single and double breasted styles, which in the medium weight melton suits are quoted at $25 to $26. Further increases are dependent upon labor conditions. All demands are being supplied and deliveries range from two to three weeks.

Large Sales of High-Tension Insulators Made

Price Advance of 10 Per Cent in Effect—Export Business Growing But Competition Expected

Excellent sales are reported in the high-tension insulator market for the past week. One company received an order for 75,000 units for new construction work, and several large orders for stock or renewals approximating that number have been received. Still another manufacturer advises that an order for 60,000 units was just closed.

Foreign sales are increasing, the demand in Sweden being greater than in Spain and Italy, while those of South America remain normal. It is expected that with conditions becoming normal in England, competition may result in a decrease in exports of certain types of insulators, especially those of medium voltages. Ball-clay and China-clay, largely imported from England, are ingredients which American manufacturers must have. It is therefore necessary to import the raw material, manufacture the insulator and then compete with manufacturers in England who have the advantage of position relative to shipping, and also have the raw materials right at hand. During a recent interview with an English manufacturer's agent who was in the United States, the fact was brought out that the British are not now in a position to manufacture high-tension insulators.

The price advance which was predicted in last week's issue was made effective Aug. 11 and amounts to 10 per cent. Further increases depend upon the molders and the uncertain conditions in malleables which are now behind in deliveries.

Improvement Shown in Steam-Turbine Sales

Factory of One Large Company Working to Capacity on Units Up to 10,000 Kw.

With the resumption of peace conditions there has been a return of steam-turbine business which, according to one of the more prominent manufacturers, shows a healthy growth throughout the country. The Western, Middle Western and Southern sections, however, give evidence of quicker return to normal commercial conditions than the remainder of the country.

Steam turbines in sizes up to, say, 10,000 kw. are running in better volume than those of larger size, and orders are coming through in a satisfactory manner. The volume of ordering for units up through 10,000 kw. is such that a comfortable capacity is now being maintained in the shops, and the general growth of sales is continuing in a normal manner.

During the war many potential customers for these nominally smaller sizes were kept out of the market because they could not get priorities to enable them to increase their power-generating capacity. These orders are now being handled by the manufacturers. Customers who have need for units of larger sizes have been able to have their wants filled, and manufacturers are about cleaned up on these back orders.

SMALLER SIZES ACTIVE

Turbine prices are holding steady, and there is no evidence that there will be any downward revision. The industrials and central stations have come to realize this condition, and where the smaller sized units are required, as well as where their need can be anticipated in the near future, orders are being placed in good volume. Shipments for these sizes are in the neighborhood of six to eight months, and this is one determining factor in the decision to order.

As regards the larger sizes, it seems to take longer for customers to come to the realization that there is no downward tendency of prices and to get under way in their orders for turbines. Shipments are about ten months; so it would appear that in order to get into operation by next summer it is about time to consider the placing of orders. On these larger sizes over 10,000 kw. the factories are not working to capacity. There is, however, much proposition work on the boards. Foreign orders are being received in pretty fair shape.

A report from another prominent turbine manufacturing company is to the effect that its business in that line is less than before the war but that present prospects point to a large business in the near future.

Rolling Stock

Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Can., has ordered for the City Street Railway division ten new pay-as-you-enter cars. Five of these cars have been ordered from the Preston Car & Coach Company, Ltd., Preston, Ont., and five from the Ahearn & Soper Company, Ltd., Ottawa, Ont. Delivery is expected early in September. Prices were requested in these columns June 14. The following specifications apply to the new cars:

Number of cars	10
Type of car	Pay-as-you-enter
Seating capacity	42
Weight (total)	36,000 lb.
Length over bumpers	41 ft. 2 in.
Length of car body	29 ft. 8 in.
Width of roof	7 ft. 8 in.
Width at belt rail	8 ft. 0 in.
Length over all not to exceed	41 ft. 2 in.
Height, rail to trolley base	11 ft. 7½ in.
Body (type)	Semi-convertible
Interior trim	Mahogany
Roof	Single arch
Air brakes	Westinghouse SME
Axles	Brill 4½ in.
Bumpers	Channel iron bent to shape
Buzzers	Faraday System
Car trimmings	Car Builders
Conduits and junction boxes	Crouse-Hinds
Control (type)	Single-end West. K-35-D
Couplers and drawbars	Builders radial
Curtain fixtures	National Lock Washer Company
Curtain material	Fabrikold
Destination signs	Craighead
Door-operating mechanism. Front only	National Pneumatic Company, hand operated.
Fare boxes	Coleman No. 5 stationary
Fenders	H. B. Lifeguards
Gears and pinions	Nuttal B. P.
Hand brakes	Peacock
Heaters	Consolidated Car Heating Company
Headlights	Crouse-Hinds
Headlining	Agasote
Journal boxes	Brill
Motors	West. quadruple No. 533
Paint	Holland Varnish Company
Sanders	Brill "Dumpit"
Sash fixtures	National Lock Washer Company
Seats	Hale & Kilburn
Seating material	Rattan
Side and center bearings	Perry-Hartman
Track scrapers	Root
Trolley base	Nuttal No. 11
Trucks (type)	Brill 76-E-2
Ventilators	Utility "Honeycomb"
Wheels	Rolled steel
Miscellaneous	Conductors' and motormen's seats

Nipissing Central Railway, North Cobalt, Ont., has received two electric car bodies from the Preston Car & Coach Company.

The City of Saskatoon, Sask., has asked tenders to be sent in by Aug. 20 for five fully equipped one-man safety cars to be delivered before Dec. 1.

Montgomery Light & Traction Company, Montgomery, Ala., through its receiver R. Rushton, has asked the court for authorization to purchase ten additional safety cars.

Nova Scotia Tramway & Power Company, Halifax, N. S., according to a report of July 14, expects to buy shortly twelve or perhaps twenty new cars for its electric properties in Halifax.

Public Service Railway, Newark, N. J., on Aug. 13 lost eighteen cars in a fire which destroyed a carhouse at Camden, N. J. The loss is estimated at between $100,000 and $150,000. The cars, it is stated, must be replaced immediately.

Schuylkill Railways Company, Girardville, Pa., through its general manager, C. S. Bailey, has ordered three cars for this company instead of for the Morgantown-Wheeling Railway, Morgantown, W. Va., as was reported in these columns on Aug. 2. The equipment ordered for them was three Westinghouse 532-B. motors, five airbrake equipments and one 500-kw. rotary.

Track and Roadway

British Columbia Electric Railway, Vancouver, B. C.—Work has been begun by the British Columbia Electric Railway on the reconstruction of 5 miles of track in District 2, south of Tucks on Lulu Island. The work will cost about $25,000.

Pacific Electric Railway, Los Angeles, Cal.—Standard girder rails will be laid by the Pacific Electric Railway on East Colorado Street, Los Angeles. The company will lay the new rails from Broadway to Lake Avenue this fall and next year will continue the improvement from Lake Avenue to Allen Avenue, the east city limits. The total cost of the proposed improvement will be about $100,000.

Cripple Creek Short Line Railroad, Colorado Springs, Col.—It is expected that work will be begun early in September on the electrification of the Cripple Creek Short Line Railroad, which operates between Colorado Springs, and the gold mining camps in that section. Electric power for

NEW YORK METAL MARKET PRICES

	July 31	Aug. 12
Copper, ingots, cents per lb	22.75 to 23.50	21.50
Copper wire base, cents per lb	26.00	26.00
Lead, cents per lb	6.00	6.00
Nickel, cents per lb	40.00	40 00
Spelter, cents per lb	7.90	7.65
Tin, cents per lb	70.00 to 71.50	70.00
Aluminum, 98 to 99 per cent, cents per lb	32.00 to 33.00	31.00 to 33.00

OLD METAL PRICES—NEW YORK

	July 31	Aug. 12
Heavy copper, cents per lb	20.50 to 21.00	18.00 to 19.00
Light copper, cents per lb	15.50 to 16.00	15.00 to 15.50
Heavy brass, cents per lb	11.00 to 11.50	10.00 to 10.50
Zinc, cents per lb	5.25 to 5.50	5.00 to 5.25
Yellow brass, cents per lb	9.50 to 9.75	9.00 to 9.50
Lead, heavy, cents per lb	5.50 to 5.62½	5.12½ to 5 25
Steel car axles, Chicago, per net ton	$28.00 to $29.00	$29.00 to $30.00
Old carwheels, Chicago, per gross ton	$26.00 to $27.00	$26.00 to $27.00
Steel rails (scrap), Chicago, per gross ton	$25.00 to $26.00	$25.00 to $26.00
Steel rails (relaying), Chicago, gross ton	$29.00 to $30.00	$29.00 to $30.00
Machine shop turnings, Chicago, net ton	$9.50 to $10.50	$10.00 to $11.00

ELECTRIC RAILWAY MATERIAL PRICES

	July 31	Aug. 12
Rubber-covered wire base, New York, cents per lb	28	30
Weatherproof wire (100 lb. lots), cents per lb., New York	30	33
Weatherproof wire (100 lb. lots), cents per lb., Chicago	30.75	30.75
T rails (A. S. C. E. standard), per gross ton	$49.00 to $51.00	49.00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47.00 to $49 00	47.00 to 49.00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45.00 to $47.00	45.00 to 47.00
T rail, high (Shanghai), cents per lb	3	3
Rails, girder (grooved), cents per lb	3	3
Wire nails, Pittsburgh, cents per lb	3.25	3.25
Railroad spikes, drive, Pittsburgh base, cents per lb	3.35	3.35
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	2.75	2.75
Tie plates (brace type), cents per lb	2.75	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb	3	3
Angle plates, cents per lb	3.90	3.90
Angle bars, cents per lb	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb	4 35	4.35
Steel bars, Pittsburgh, cents per lb	2.35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.25	5.25
Galvanized barbed wire, Pittsburgh, cents per lb	4.10	4.10 to 4.20
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70 to 3.80	3.70 to 3.80
Car window glass (single strength), first three brackets, A quality, New York, discount †	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	81%	81%
Waste, wool (according to grade), cents per lb	14 to 17	14 to 17
Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	8 to 12½
Asphalt, hot (150 tons minimum), per ton delivered	.....	.....
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton		
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl	$2.90	$2.90
Cement (carload lots), Chicago, per bbl.	$3.05	$3.05
Cement (carload lots), Seattle, per bbl.	$3.13	$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal	$2.20	$2.25
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$2.22	$2.27
White lead (100 lb. keg), New York, cents per lb	13	13
Turpentine (bbl. lots), New York, cents per gal	1.35	$1.80

---

† These prices are f. o. b. works, with boxing charges extra.

the operation of the road will be purchased from two central station companies, one of which will be the Arkansas Valley Railway, Light & Power Company.

Chicago, North Shore & Milwaukee Traction Company, Highwood, Ill.—A new extension will be built by the Chicago North Shore & Milwaukee Traction Company down the Finer Road to the manufacturing region known as "the Flats" in order to accomodate the employees of the tannery of Johns-Manville Company, the Warden-Allen Company and other industries.

Baltimore & Ohio Railroad, Baltimore, Md.—It is reported that the Baltimore & Ohio Railroad is considering plans for the complete electrification of its system over the Seventeen-Mile Grade District.

Tampico, Mexico.—The Mexican Government has granted a concession to the National Norwegian Company for the construction of an interurban electric railway between Tampico and Tuxpam, about 120 miles, with branch lines to several smaller towns in the oil producing territory. The route of the proposed main line will closely follow the Tampico-Tuxpam intercoastal canal. The National Norwegian Company is composed of large banking interests in Copenhagen. It was organized under the laws of Mexico only a few months ago for the purpose of operating in the oil fields of the Gulf Coast region. It has established its principal office in Tampico.

Jersey Central Traction Company, Keyport, N. J.—The Board of Public Utility Commissioners of New Jersey has ordered the Jersey Central Traction Company to make improvements and extensions in its plant and system for general betterment in service. The work includes improvements on the Keyport-Perth Amboy Division, the Matawan-Keyport division and at Atlantic Highlands.

Brooklyn (N. Y.) Rapid Transit Company.—Bids will be received by J. H. Delaney, commissioner of transit construction, 49 Lafayette Street, New York City, until Aug. 19, for furnishing and installing tracks for a portion of the Culver Rapid Transit Railroad extending over and along Shell Road and West Sixth Street from a point near Avenue X to Sheepshead Bay Road.

Cincinnati (Ohio) Traction Company.—Street Railroad Director W. C. Culkins has ordered the Cincinnati Traction Company to extend the Sixth Street line over to Hopple Street viaduct to Beekman Street in order to relieve the congestion of the Clark Street and College Hill lines.

Sand Springs Railway, Tulsa, Okla.—A report from the Sand Springs Railway states that it is now building about 1 mile of sidings and industrial tracks.

Toronto (Ont.) Suburban Railway.—Plans are being made by the Dominion government for the extension of the Toronto Suburban Railway from Guelph to Kitchener, Stratford and London and perhaps on to Windsor or Sarnia, as one of the links of the new Canadian National Railways system.

Portland & Southeastern Railway, Bend, Ore.—J. W. Foster, Portland, construction engineer for the Myler Construction Company, states that his concern will handle construction work for the newly incorporated Portland & Southeastern Railway Company, who will build from Mount Angel on the west side of the Cascades, to Bend, by way of Sisters. While no definite announcement has been made, it is authoritatively stated that the new road will employ electricity for its motive power. Leases have been obtained for power site purposes on Marion Lake in the Santiam National Forest in Curry County. This lake is said to have a capacity of 30,000 to 40,000 hp. The distance from the lake to Portland is approximately 100 miles. In regard to further surveys and construction after Bend is reached, Mr. Foster declared that construction from the summit of the Cascades to Bend by way of Sisters would be the first work to be undertaken.

Dallas (Tex.) Railway.—Improvements will be made within the next two to five years by the Dallas Railway under the Hobson-Strickland service-at-cost franchise that will represent an outlay of $1,000,000 to $1,500,000, according to Richard Meriweather, vice-president and general manager of the company. This expenditure will be absolutely necessary, Mr. Meriweather said, if the company is to continue to give the class of service now given and the kind of service demanded by the Dallas patrons.

Power Houses, Shops and Buildings

Los Angeles, (Cal.) Railway.—Plans have been prepared by the Los Angeles Railway for the construction of an office building on the northeast corner of Eleventh Street and Broadway. The structure will be 176 ft. x 65 ft., ten stories, and will be of reinforced concrete. The cost is estimated at $400,000.

New Orleans Railway & Light Company, New Orleans, La.—A new carhouse will be erected by the New Orleans Railway & Light Company on Canal Street, New Orleans.

Cumberland County Power & Light Company, Portland, Me.—The Public Utilities Commission of Maine has issued an order that the Cumberland County Power & Light Company extend its transmission lines from the end of its present line near Gray Corner along the Poland Spring Road and through the Dry Mills settlement.

Public Service Railway, Newark, N. J.—The carhouse of the Public Service Railway at Newton Avenue near Haddon Avenue, Camden, together with twenty-one cars, was destroyed by fire on Aug. 12. The loss is estimated at $150,000.

Trade Notes

Harry K. Hauck, formerly connected with the Bethlehem Steel Company, has been appointed general manager of the G. C. Kuhlman Car Compay, Cleveland, Ohio, effective July 10.

Perley A. Thomas Car Works, High Point, N. C., announces that it is now moving its machinery into a new mill and is in position to give prompt attention to all new work and to repair work.

Harry G. Steele, director, vice-president and manager and one of the founders of the Pittsburgh (Pa.) Transformer Company, has sold his interests in and resigned from that concern. For twenty years Mr. Steele has been active in the electrical manufacturing industry, and it is understood that he will continue in the electrical manufacturing business.

French Insulator Factory Resumes.—Etablissement Charbonneaux et Cie., glass manufacturers at Rheims, on April 25 announced that they had restored to operation one oven for the manufacture of glass electrical insulators. This concern expected, if sufficient supplies of coal should be received, to be able to put a second oven in operation by Aug. 1 and a third about October.

M. B. Austin Company, Chicago, makes the following special announcement: "Trico renewable cartridge fuses have been regularly tested by the Underwriters' Laboratories and comply with all the necessary requirements up to and including 600 amp. in both the 250-volt and 600-volt classification."

Inquiry No. 30,051.—A general agency and eventually purchase of all articles for electricity, such as generators, motors, switches, commutators, small material such as wires and cables, insulating material for motors and generators, material for electric railways, rolling bridges, and measuring instruments of precision, are desired by a company in Belgium. Correspondence should be in French. Quotations should be given c. i. f. Antwerp. Payment, cash and credit.

New Advertising Literature

Black & Decker Manufacturing Company, 105-115 South Calvert Street, Baltimore, Md.: Attractively printed and illustrated catalog of its electric air compressors, portable electric drills and electrically driven valve grinders.

Bridgeport (Conn.) district salvage board, Ordnance Department: A weekly bulletin containing a list of all government property within the Bridgeport district available for sale. This property comprises buildings, building equipment, power equipment, materials, factory supplies, tools, machinery, etc. Communications should be mailed to chairman Bridgeport District Salvage Board, 945 Main Street, Bridgeport, Conn.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, August 23, 1919 *Number 8*

Hearings on Mail Carrying Compensation Should Bring Good Results

NO MATTER what the outcome may be of the electric railway mail pay hearings concluded early this month, and we believe it will be favorable to the railways, the fact remains that the American Association did a good job in systematizing the presentation of the testimony of the electric railways at the several centers. The use of a simple but comprehensive program enabled the federal authorities to comprehend the actual conditions with a minimum of effort. Inside of two months nineteen hearings were held in widely scattered sections of the country and probably 300 witnesses were heard, of whom one-half presented exhibits. The physical effort involved on the part of those who personally participated in the hearings is in itself worthy of comment. There are many matters of countrywide scope like this which can best be handled by a national organization. The electric railway investigation now before the Federal Electric Railways Commission is another case in point. The electric railway business is emerging from its isolation in local communities to take its place as a national problem. To the American Electric Railway Association is offered a wonderful opportunity in this connection.

Don't Forget the Track Department

IN THESE days, when we are getting so many encouraging reports about the wonderful records of lower costs and better business due to the installation of safety cars, we are likely to forget that the way department can help a bit, too, if given the opportunity. To talk about the bigger opportunity first, there is the matter of rerouting. The suggestion for rerouting may come from the transportation department, but it is the way department that ought to be given a chance to prove whether the relocations are going to cost quite as much as the transportation department supposes. Perhaps a little study will demonstrate that a few cars less would do the same work and as effectively if the routes and special work were laid out differently to meet changed traffic conditions.

As for smaller opportunities for improvement, we have in mind a town where cars going from storage into service for the day have to back up once or twice every time they want to get in the direction of the main traffic, and in some instance the cars have to run opposed to traffic for several hundred feet before they can get over to the track on which they belong. These layouts were made many years ago, when, it is to be assumed, the traffic conditions were different. They do not meet the needs of to-day and thereby impose delays and possibility of accidents upon the transportation department and unjust blame upon the way department.

Then, too, it is not unusual to find single-track towns where the crew of one car cannot see the other because of breaks in grade, curves, foliage and the like. It is not fair to the cause of good service to allow such conditions to continue without either signal protection or double-tracking. A general conference may show that the cost of but one new car if applied to way and line improvements would be justified by the fact that it would speed up the schedule to an extent otherwise impossible. The problem before the general manager, therefore, is the old but sometimes forgotten one of spending each available dollar where it will do the most good to the system as a whole. Track switches are less sensational than cars, but they are also entitled to a hearing before the board of disbursement.

Differences Are Not Insurmountable

THE week of hearings for the public side before the Federal Electric Railways Commission has developed the significant impression among those who have sat through all the sessions that the railways and the public are not so far apart as has generally been supposed. It might almost be possible to argue the railway case on the testimony of any ten consecutive witnesses, regardless of which side the evidence presented by them was intended to support. Even on the question of municipal ownership, while believing that municipal operation would be less efficient, many of the railway men would accept this plan as a last resort if they could see that the municipalities had the power and the means to effect a purchase quickly. But this seems to be a step of distant possibility, and the industry is concerned with an immediate remedy. Another often-repeated contention of the public's witnesses was the over-capitalization of the street railways, but this is not a factor in the settlement the railway men are seeking, for they have expressed their willingness to base a permanent settlement on a fair valuation of their properties.

Aside from these two points, there has been a marked unanimity of thought as to the general principles, though naturally a wide divergence of views as to the details of effecting the adoption of these principles. All are agreed that the industry is in a serious condition and that a new order of relations between the public and companies must be effected. All are agreed that the first step in bringing about a permanent settlement is an evaluation satisfactory to both parties. This is the starting point. As to what theory shall form the basis of the appraisal is a matter of detail on which there are as many opinions as there are experts. Practically all are agreed that in the interim, while a permanent settlement is being worked out, almost the only practical relief is a temporary flat fare increase. Where there are constitutional grants specifying a maximum fare, the city is in a position to exact its pound of flesh if it chooses, but almost every witness has expressed his faith in the fair mindedness of the American public if it is possessed of the whole truth, and this attribute must be relied upon to bring about a fair solution in such cities. There is no other solution under those conditions.

There was practically an agreement that the indeterminate franchise is more satisfactory, provided the reservation of purchase by the city is clearly set forth and made actually possible. There was almost unanimity of opinion that under private operation some service-at-cost plan is the best arrangement. There was almost no objection to the contention that paving taxes should be abolished as a charge against the car riders. There was also agreement that on a sound valuation the rate of return which a company should be allowed to earn should be enough to attract capital and to set aside a sinking fund for depreciation, renewals and replacements. It was generally felt that the jitneys could not supply adequate service if the transportation needs of the communities were dependent on them alone, except perhaps in small towns.

What the final outcome may be is entirely beyond the intent of this editorial to predict or even indicate, but the absence of any striking or insurmountable differences appeals to us as being an omen that the recommendations from the commission will have a far-reaching effect in bringing about a distinct improvement in the public attitude with the result that a revenue increase will be indorsed. By virtue of such a result, the railways will be put in a position to give the cities the service they need and want.

The (Nearly) Automatic Power Plant

WHILE the automatic or semi-automatic substation has deservedly had a great deal of publicity of late, one should not overlook the progress that has been made in the direction of automatizing the power plant itself. As compared with one of twenty years ago the present-day plant is operated with a very small labor force, a force of a character much more highly skilled than formerly. B. J. Arnold, the original inspiration of the automatic control of substation, was also a pioneer in the same direction in the power plant field, as reference to his Grand Trunk Railway Sarnia tunnel plant will show. That plant, it will be remembered, was originally needed only for short periods at long intervals, and conditions favored a then unusual amount of automatic control through variation in boiler steam pressure. Due to the necessity for cutting out labor costs and eliminating "the personal equation" in the power plant. the principles illustrated in the Sarnia tunnel plant are now widely applied. This process has been aided by the increase in size of prime mover units and the simplification of operating procedure of the turbine, boiler and pump rooms. Furthermore, much attention has been given to the mechanical handling of power plant materials—fuel, ashes, water and parts of the equipment, which formerly required the services of a large part of the station force.

There is wide opportunity, particularly in the older plants, for further reduction in labor cost, and for increase in reliability, by making these plants more nearly automatic.

There Is No Money for Superfluous Labor

IN ALL the speeches and writings about the high cost of electric railway operation, it is remarkable how little is said about the question of superfluous labor on the car platform. No manufacturer would dream of having two men operate a machine when one would be enough, whereas in the electric railway business too many companies and too many employees take it for granted that there should always be two men to the mileage-producing machine, the car. Talk to an electric railway manager, who is faced by another strike for higher wages and ask him why he doesn't go to one-man car operation for the smaller cars at least. With a sigh, he says that he does not dare to raise the question, that labor is powerful in his town, that the public would never stand for it, etc. Ah, yes, but does the public welcome the higher fares and the poorer service that high platform costs are leading to? Assuredly, it does not.

Why not, then, go frankly before the public and say that the retention of lower fares and frequent service is simply impossible if the electric railway must continue to employ men in positions which have been made obsolete by the progress of invention. Nobody sees bus operators ruled off the street or boycotted by the public because the driver also collects the fare; yet there is no comparison between the safety of the bus and of the new or the modernized one-man car.

When the wages of the conductor and motorman alone amount to $1 per car-hour out of $3 gross earnings it is surely time to have a show-down. In a recent case, the platform men alone asked for a wage that would have equaled about one-half of the revenue. Obviously, such a demand leaves the railway in a despairing, desperate position unless it has the courage to put up its back and fight in the open with the public as referee.

We certainly are not questioning the justice of any particular rate of pay requested by the men, but they must understand that electric railway service is not a sinecure. To-day every employee on the car platform must be a producer, not a spectator. Could anything be more absurd than for an electric railway to spend vast sums for prepayment areas and yet retain the conductor to stand in the way of boarding passengers? Or to spend large amounts on automatizing the car without combining the greatly decreased duties of motorman and conductor in one individual? What makes the situation still more intolerable is that all the railway would ask would be to turn most of the superfluous men into operators of additional cars. Heaven knows that plenty of electric railways could double their service if only to recapture the traffic that the jitney has taken away from them, but they cannot do it at a cost of $1 to $1.50 per car-hour for the wages of two men. Let us repeat that it is more than high time for electric railway men to face the music in this matter, for they have found to their sorrow that it is not so easy to pass-on this wastage to the public. If electric railways are being run to keep superfluous men in their jobs, let that fact be known and the laborite defenders of the practice put on the defensive.

The New York Strike and the Future

NEW YORK experienced this week a "rapid-transitless" Monday and will not want to repeat the experience. Mayor Hylan has had a good deal to say during the past month as to the great merits of bus transportation, but the public prefers the subway and elevated. The dispute has been settled temporarily, largely through the efforts of Public Service Commissioner Nixon, but the fundamental trouble still remains—*i.e.*, that of fare. Until an increase is granted the company cannot give the service which the city ought to have. Mayor Hylan has had much to say in the past about profiteering landlords. Why does he not become equally indignant at city officials who are taking advantage of the extraordinary conditions brought about by the war to compel railway companies to carry passengers at less than cost? New York City stands practically alone among the large cities of the country as being unwilling to grant a petition for fare increase. In some of the other cities the increase has not been as large as the companies need, but the New York municipal authorities permit nothing and do nothing but vituperate. This is all the more noticeable because of the fact that New York is a partner in the rapid transit development. Now that the Interborough has granted an increase in wages of 25 per cent to its men, the fact must be more than ever patent that its income should be increased.

Why Not Get New Money at Home?

RECENTLY there came to hand a letter saying: "In spite of the increased costs, we declared the usual semi-annual dividend of 3½ per cent on our preferred stock." The manager who sent this cheerful news operates a combination light and railway plant in a small Southern town with few of those industrial advantages that a public utility needs to grow and prosper. But this man believed in the town, and he made the townspeople believe in it, too, by the most substantial token possible—the investment of their own money in the home utility. His methods and his success offer a genuine inspiration to other operators who have been turned down heartlessly when they have sought new money in the usual financial quarters.

On taking over the property in its original run-down condition, our Southern friend minced no words in telling the public that the remedy lay with them quite as much as it did with him. If they had as much faith in their home town as in some gas or oil well that they had never seen, he would expect them to subscribe for the funds necessary to make their community a better place to live in. How could he be expected to get money from Wall Street if they were not willing to take a chance on providing better light and railway service aside from dividends? Through his absolute frankness and hard work, the money was raised and the dividends have been coming regularly for the last four years. It goes without saying that this plan insured the friendship of almost every substantial citizen in the community, and the public as a whole was made to feel that this was in a very real sense their lighting company and their railway.

This true story is worth retelling by many a manager who knows that there is plenty of money in his town to finance any required modernization of the system. Surely any community which is live enough to raise several hundred thousand dollars as an outright gift for some one welfare purpose, because that gift will make life in their town more agreeable, ought to be willing to lend, at a fair rate of interest, similar amounts for the betterment of a utility whose improved service means enhancement of property values and improved conditions of living for practically everybody. In the purchase of new cars, especially, it is very appropriate to solicit local loans because the risk when standard cars are purchased is practically nil. Anyway, what better answer can be given to the Boosters' Club than to ask them to prove their faith by their works?

Information for the Passenger

WHEN a group of men are operating the same railway system day in and day out, it is hard for them to realize how little many of the riders know about the routes, the streets, the hotels, the business buildings and other traffic-making features of the community. You ask a conductor where so and so is, and if he hasn't just been taken on from a country-store apprenticeship he may know enough to say something like: "It's in the Nineteenth National Bank Building," or "Just turn off in front of the Post Office, walk three blocks to the right and then two to the left." The most puzzling direction, however, is to be told to go in some direction of the compass when we have carelessly left our compass at home and there is no sun or star to guide us. Some day a lot of railways will follow the example of Philadelphia and get out a route guide, or of St. Louis in telling where the important places are and how to reach them.

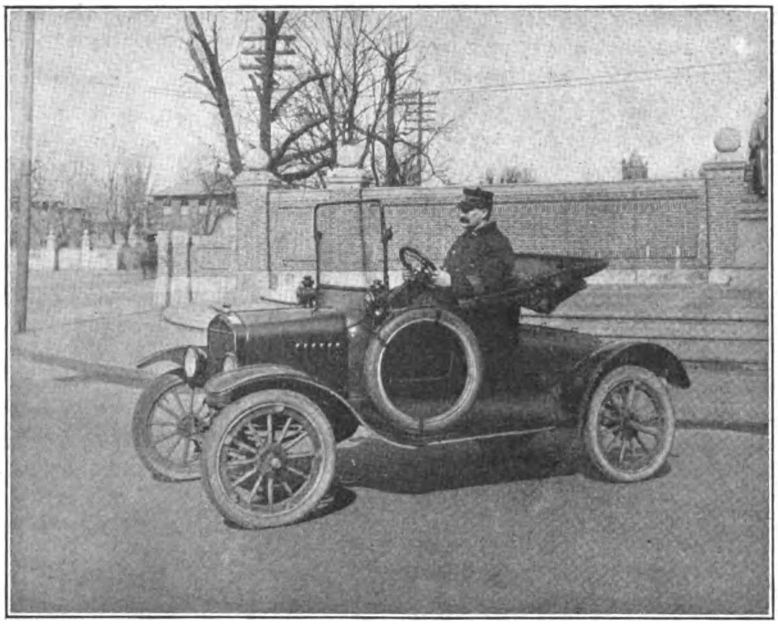
Almost everybody will admit that the stranger within the gates needs help, but so does the native who has wandered into some other part of town. He may know the schedules and destinations of his own route perfectly, yet when out of his own neighborhood be just as helpless as a stranger. How is he to know, for example, that on Sundays and holidays some cars are rerouted and that others do not go to the end of the line unless there is a card of some kind in the cars, in waiting rooms or at transfer points. We wonder, also, how many rides have been lost because a stranger had no schedule boards to advise him when cars passed certain corners. Still another kind of information which is of great help to the stranger, and even to the native, is about the stopping points of cars, particularly at places where the usual near-side or far-side stop is not observed. In every city there are exceptions to the usual rule on stops, and these exceptions should be clearly marked by street signs. A man who has already walked ten to twenty minutes is generally sore enough to continue walking, because he feels that he would be handing the railway something by paying full fare for part ride.

We hope that renewed attention will be given to this subject wherever zone fares are installed. Every zone boundary ought to be an information point as regards headways and, possibly, as regards places reached. It would be poor business policy to let people cut off a zone or two from their fares when a little information would tend to keep them waiting for the car. Always sell the customer the largest piece of transportation he really ought to have!

The Street Inspector as He Was and Is to Be

He Once Occupied a Most Responsible Position—Then Changes in. Practice Rendered Him Less Important — Now Conditions Are Reinstating Him as an Essential Railway Official

By EDWARD DANA
Acting General Manager Boston Elevated Railway



THE MODERN STREET INSPECTOR READY TO ANSWER ANY CALL

IN EARLY DAYS, the street railway consisted of a few tracks on main thoroughfares, extending a relatively short distance from the central business section, and in many cases the routes operated on these tracks all started from a single carhouse. Here was located the official usually known as foreman, station master or starter, who was responsible for the dispatching of the cars on the several lines on schedule time and who also recorded the hours of work of the men who operated the cars.

It was necessary to provide a responsible official at the central business terminus to supervise car operation, and as the system extended over larger and larger areas this official developed into the "street aide," "traffic aide" or "street inspector," so-called. In those days when the tracks were laid but a short distance from the center of the city this official was almost always located in one spot and knew the patrons as well as the car crews individually. As the systems developed and consolidations occurred, divisions were created, and these in turn subdivided into districts which were patrolled by these street inspectors. The ever-increasing number of routes and more frequent operation of cars added to the responsibilities of these officials and their duties became much more complicated. They represented the division superintendent within their district. They were expected to observe and report defects of service, tracks, trolley and equipment. They took charge in case of accidents and diversions of cars and were expected to supervise the appearance, conduct and efficiency of the men operating the cars as well as regulate the spacing of cars within their district. As it frequently occurred that lines operated by several divisions passed through one inspector's district and as the number of trips operated each day increased, the inspector was no longer personally in as close touch as formerly with either the patrons or the men on the cars over whom he had jurisdiction.

In those days, managements looked upon the transportation department as a fertile field from which to call for operating economies, but unlike the technical departments it was not appreciated that sometimes substantial expenditures are necessary to secure greater economies. The transportation departments have therefore been called upon to work at top speed and at all hours of the day and night. This was one of the causes of the deterioration of the efficiency of the street inspector. Districts remained approximately as large as originally, yet these officials were called upon to be "jacks of all trades," and the hopelessness of showing the concrete efficiency of their efforts resulted very soon in a lack of aggressiveness and an appreciation of the fact that they had been spread over their districts so thin that the division executive had considerable difficulty in holding them strictly to account. The public soon became acquainted with the situation, for as criticism of service became more and more acute, reference was often made to the fact that the company could not expect service when its officials in the person of street inspectors could be observed any day wasting valuable time and apparently indifferent as to their duties.

It is a well-known fact in any industry that a man charged with more work than he can properly perform and whose duties are so broad and distributed that he has no opportunity to show the direct results of his ability, will, as he remains on the same work over any extended period of time, gradually and consistently deteriorate.

The work of these men often reminds one of the various drives which we have experienced for war activities. If the management received complaint of certain conditions, a drive was made by the operating department and street inspectors would for several days be directed to concentrate so far as possible on careless operation at street intersections or the proper starting of cars or the appearance of the men and so on. Their official life has in a way been a series of efforts in cycles.

As time went on, another factor entered into the operation of street railways which had a very decided effect upon the activity of the street inspection, and that was the labor organization. It is believed that some of these inspectors had always had a misconception of their proper relationship and attitude toward the platform employees and often it is said employed unfair methods in their efforts to ascertain the shortcomings of these men. Consequently this was not forgotten when conditions changed, and some employees when they became affiliated with a large labor organization made it disagreeable for street inspectors with the general result of lowered efficiency for these officials as a class. When this time arrived, in addition to the internal deterioration previously outlined, the usefulness of a street inspector in his former status became decidedly less.

THE INSPECTOR AGAIN BECOMES AN IMPORTANT OFFICIAL

Under modern conditions, the instruction and reinstruction of car and train men both old and new can best be carried out with the aid of the instruction school through which the spirit of instruction rather than criticism can be fostered, since the department which first initiates the individual into the business can in his eyes always exercise a more effective corrective pressure than an official whom he does not know or come intimately in contact with, except as the official happens to get upon the individual's car to instruct or correct him. Of course this requires a highly competent instruction organization capable of adequate follow-up work, among all employees, and the keeping of accurate and valuable records which has as yet not been developed as thoroughly as it should be.

The consistent improvement of the engineering departments having to do with equipment, line and track has relieved the street inspector from many former duties in connection therewith. Relieved therefore, to a large extent, of the matters referred to, the modern inspector can be charged with the specific responsibility of supervising the operation of the cars more nearly according to schedule and handling irregularities in a more up-to-date manner. Inconsistent as it may appear, when this is done his district may be enlarged rather than contracted. This can be brought about by utilizing the automobile.

As most street railway operating divisions on large properties spread out over quite a large territory, it can readily be seen that anything which reduces the idle time of an inspector in getting about increases his efficiency. The automobile, which annihilates distance greatly reduces traveling time and permits an inspector to cover the territory of his cars at various points more frequently. He can be of great service during the comparatively restricted rush hour by covering two points where congestion varies by a period possibly of less than a half hour, by the use of the automobile, whereas it would be impossible for him to do this in any other way. When emergencies arise, he can get to the scene in the shortest space of time when he is not confined to a route followed by the car tracks but is free to go across country. He is likewise relieved from exasperating loss of time as, for example, when obliged to wait ten or fifteen minutes before getting started on an emergency call because of the headway of the particular line of cars upon which he may be located.

The number of inspectors maintained in a division would determine the frequency with which they could be required to call the division headquarters, but under any circumstances it would be possible to be in touch with an inspector with an automobile every ten or fifteen minutes, who could reach any point of a division in a very short time and be followed by others as they called in.

It requires but a very little imagination to one familiar with the increasing use of the automobile and its proved efficiency in other lines of business in which time is such an important factor, to picture any number of advantages which may be secured by motoring the inspectors not only as regards economies but also, which is to-day so important, that of providing efficient up-to-the-minute service.

By using an automobile, inspectors can not only decrease the cost of operation but, what is more important, improve the character of the service rendered. Some of the most bitter criticism of street railways is voiced by people who are inconvenienced when the service breaks down, yet often the officials have been doing their utmost to relieve the situation but have not had the wherewithal to make their efforts count to the fullest extent. Evidence of modern methods and a spirit of hustle when there is a failure will quiet many a disgruntled patron, for he need then but ask himself whether he could have done the job more quickly or in a more up-to-date manner. If he waits in a block of cars many minutes for an official to arrive and if when he does arrive the wrecking utensils are still a quarter of a mile away in a wrecking car rather than brought directly to the location in an automobile and the man on the job shows evident discouragement because of valuable time lost and inadequate provisions, he may well be justified in criticising such antiquated methods.

Today many influences are at work to make the electric railway situation much different than it was of old. Electric railway operators, be they private or public, must think along new lines and give evidence of modern practices if they hope to meet and satisfy the wants of the patrons whom they handle.

One large urban property recently took the initial step in experimenting with this method of automobile supervision and has already received satisfactory results.

Increasing Power Supply in Great Britain

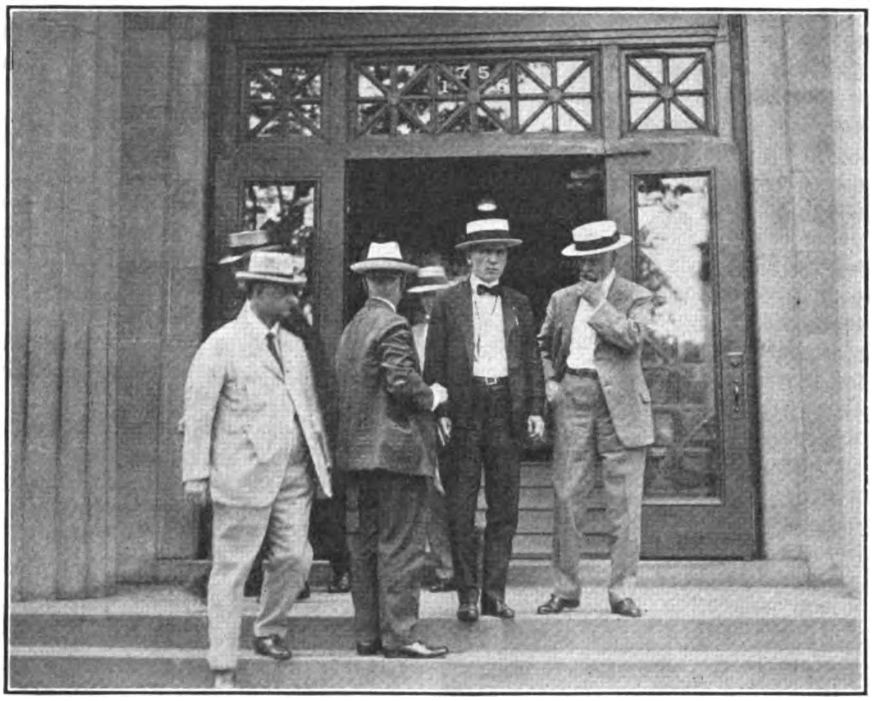
In a recent address before the Association of British Chambers of Commerce, Major Philip Dawson expressed the belief that general embarkation in the construction of super-power stations in Great Britain would be a mistake. The effort first should be to increase small capacities, especially in those districts where there was a demand for power, at the same time encouraging the co-ordinated extension of existing supply plants. There should also be a removal of restrictive legislation and a serious effort should be made to build up the load factor of existing properties. There were undeveloped opportunities for hydro-electric development, particularly in Scotland.

Among the immediate possibilities of the use of electric power from such super-stations, he mentioned, in particular, greater railway electrification. The London, Brighton & South Coast Railway, for instance, one of the pioneers in electrification, is well satisfied with the results of the last ten years. During this time the receipts of its electrified lines have more than doubled, and but for the war the whole of the suburban lines, amounting to more than 150 miles of track, would now be electrically operated. The electrification of the suburban system of this company would demand and justify the creation of a super-power station.

Hearings for the Public Side Concluded

Federal Commission Testimony Reflects Impression of Gross Over-Capitalization Held by the Public as Principal Cause of Antipathy — General Acknowledgment of Need for New Relations — Detailed Proceedings from Wednesday Noon Through Adjournment, Friday Night

THE hearings of the Federal Electric Railways Commission on the public side of the electric railway situation were concluded last Friday night, Aug. 15, having continued from Monday morning throughout the week, with evening sittings the last three days. Adjournment was made until about the second or third week of September when the third interested party, labor, will present its case. The Amalgamated Association of Street and Electric Railway Employees of America, whose president is a member of the commission, will have charge of the presentation of this program, through counsel and economists especially employed for that purpose. The testimony is being very carefully prepared and will deal with such questions as the need of a minimum living wage, the relation of labor to the operation of street railways, etc.



Caught unaware, their faces register how earnestly they have sought the fundamental difficulties. Chairman Elmquist has exposed a back that looks capable of carrying the railways' burden. The other gentlemen are Commissioners Beall, Gadsden and Sweet.

The report of the Federal Commission hearings which appeared in last week's issue carried through part of the Wednesday morning sitting, and gave part of the testimony of William C. Bliss, chairman Rhode Island Public Utilities Commission. Mr. Bliss had pointed out the great difficulties which had been brought about through the awards of the War Labor Board without regard to the ability of the company to pay. He felt that this attitude of the War Labor Board was entirely unjustified.

Questioned if the failure to secure an increase in wages would not have acted anyway to drive the employees to other lines and have killed the utility from lack of help, Mr. Bliss stated that the federal authorities should have endeavored to revive the patient first and granted the increase when it could be borne. If they were going to kill the patient they should at least have done it mercifully, and not tortured him to death. He could not reconcile an award which granted not only a $1,250,000 per annum increase, but also back pay in the sum of $300,000, and this when the company did not have any money with which to meet it. He said that the only way the Rhode Island Company has continued to operate was by not paying its State and municipal taxes.

Mr. Bliss pointed out that federal intervention in the affairs of the Rhode Island Company through labor awards, fixing of coal and freight rates, etc, had imposed an increase in the 1918 operating costs of $1,605,959 out of a total increase from all causes of $2,190,978. The company now faced a deficit in 1919 of $2,111,578 short of paying operating expenses and taxes. The limit of remedy which may be derived from increasing rates will soon be reached if it has not been already. The witness further reflected that it is unfair to make the man on the car contribute all of the increased operating cost. This policy he thought was driving patronage away from the trolley, and permanently, for it was finding other expendients of transportation and not returning. He thought the eighteen-day strike had had a permanent effect of this nature.

Zenas W. Bliss, receiver Rhode Island Company and chairman of the State tax commission, took the stand at this time and very briefly told the commission of the tax laws in Rhode Island. He said that the combination of city, county and State taxes in Providence made an assessment of 12½ per cent of the gross receipts of the traction company. The tax commission had recommended the elimination of franchise and paving taxes, but having only advisory power, this had not been accomplished. This commission believed the property tax should be retained as this relieved the security holders of the necessity to pay a tax and increased the value of the securities. Some improvement could be expected if a central tax authority were provided to have jurisdiction over, for instance, the determination of the tax on the Rhode Island Company in the twenty-six municipalities in which it operates. Some equalizing influence was needed on the tax appraisals.

Mayor Charles B. Gillen of Newark then took the stand and testified briefly about the jitney service in his city, stating that the car service had become so poor that the introduction of some other form of transportation was necessary. He said the trouble with the street car problem was the large amount of water in the capitalization and that the Public Service railway system had $100,000,000 of water and only $60,000,000 of real value. Newark lines were profitable, he said, but they had to help pay the cost of operating all of the unprofitable lines running all over the State, for which the company was paying high rentals. The value of $60,000,000 was the figure arrived at by Delos F. Wilcox and Mark Wolff, he testified upon cross-examination.

Delos F. Wilcox, who followed the Mayor, occupied the stand from about 11.30 a. m. through the afternoon and evening sittings and until 11 p. m. He began his testimony by pointing out the contrast in financial conditions between the municipally-owned tramways of Britain and the privately-owned properties of the United States. The only cities of any considerable size in Britain which do not have municipally-owned tramways, are Bristol and Dublin, and the London bus line and London underground, these being private corporations. It was pointed out that one of the principal distinguishing points between the British properties and the American companies was that the process of electrification of the tramways in Britain had been done subject to the dictation of public policy rather than in the interests of private corporations. In this country the bankers and syndicates which got control of the street railway utilities, in 90 per cent of the cases,

Registration at the Federal Electric Railways Commission Hearings for the Public Side

William D. B. Ainey, chairman Public Service Commission of Pennsylvania, Harrisburg, Pa.; Aug. 14, 15.
W. R. Alberger, vice-president and general manager, San Francisco-Oakland Terminal Railways Company, Oakland, Cal.; Aug. 11, 14.
J. H. Alexander, vice-president Cleveland (Ohio) Railway; Aug. 13.
J. R. Alpine; Aug. 13.
P. S. Arkwright, president Georgia Railway, Light & Power Company, Atlanta, Ga.; Aug. 14, 15.
Perry Arnold, A. E. R. A., New York, N. Y.; Aug. 14.
S. S. Ashbaugh, attorney, counsel for American Association in mail pay case, Washington, D. C.; Aug. 11.
W. A. Ayse, Congressman, Washington, D. C.; Aug. 15.
Rodger W. Babson, statistician, Boston, Mass.; Aug. 11.
A. N. Barber, secretary Board of Public Utility Commissioners of New Jersey, Trenton, N. J.; Aug. 11.
H. W. Barnum, general counsel Boston (Mass.) Elevated Railway; Aug. 13, 14, 15.
A. C. Beck, Columbus Railway, Light & Power Company, Columbus, Ohio; Aug. 14, 15.
L. J. Beecher, *Detroit Journal*, Detroit, Mich.; Aug. 12, 13.
J. E. Benton, solicitor Interstate Commerce Commission, Washington, D. C.; Aug. 14.
C. P. Berms, Washington, D. C.; Aug. 12.
William C. Bliss, chairman, Public Utilities Commission of Rhode Island, Providence, R. I.; Aug. 12, 13.
Zenas W. Bliss, receiver Rhode Island Company, Providence, R. I.; Aug. 12, 13.
S. R. Bowen, vice-president Washington Railway & Electric Company, Washington, D. C.; Aug. 11.
A. W. Brady, president Union Traction Company of Indiana, Anderson, Ind.; Aug. 13, 14.
W. G. Brasher, chairman Railroad Commission of Arkansas, Little Rock, Ark.; Aug. 11, 12.
Harry L. Brown, Electric Railway Journal, New York, N. Y.; Aug. 11, 12, 13, 14, 15.
J. D. Burks, National Industrial Conference Board, Boston, Mass.; Aug. 12.
William P. Burr, corporation counsel, City of New York; Aug. 14.
E. B. Burritt, secretary American Electric Railway Association, New York, N. Y.; Aug. 11, 12, 13, 14, 15.
P. P. Campbell; Aug. 15.
R. F. Carbutt, engineer Henry L. Doherty & Company, New York, N. Y.; Aug. 14, 15.
D. S. Carll, vice-president Capital Traction Company, Washington, D. C.; Aug. 11.
M. J. Chiesa, Rome, Italy; Aug. 12, 15.
Harlow C. Clark, A. E. R. A., New York, N. Y.; Aug. 11, 12, 13, 14, 15.
William L. Clarke, assistant secretary and treasurer Washington Railway & Electric Company, Washington, D. C.; Aug. 11.
W. M. Clayton, attorney, Washington, D. C.; Aug. 12, 13.
B. C. Cobb, vice-president Hodenpyl, Hardy & Company, New York, N. Y.; Aug. 11.
H. L. Cobb, United Press; Aug. 14.
H. A. Cobb, Captain U. S. A., Scranton, Pa.; Aug. 14.
A. T. Connell, Mayor, Scranton, Pa.; Aug. 14.
Thomas Cooper, Westinghouse Electric & Manufacturing Company, Philadelphia, Pa.; Aug. 11, 12.
A. F. Couvier; Aug. 12.
James Couzens, Mayor, Detroit, Mich.; Aug. 12, 13.
Robert Dougan, Press; Aug. 11, 12, 13, 14, 15.
A. H. Ferrandou, Washington Railway & Electric Company, Washington, D. C.; Aug. 11, 12, 14, 15.
Irving Fisher, professor of economics, Yale University, New Haven, Conn.; Aug. 14.
W. J. Flickinger, assistant to president The Connecticut Company, New Haven, Conn.; Aug. 12, 13.
John P. Fox, transit expert, New York, N. Y.; Aug. 11, 12, 13, 15.
C. P. Gillen, Mayor, Newark, N. J.; Aug. 13.
M. H. Glazer, Electric Railway Journal, Washington, D. C.; Aug. 11.
L. L. Goodman, *Detroit News*, Detroit, Mich.; Aug. 12, 13.
C. A. Greenridge, chief engineer The J. G. White Management Corporation, New York, N. Y.; Aug. 14.
T. L. Hall, chairman Nebraska State Railway Commission, Lincoln, Neb.; Aug. 13, 14.
E. K. Hall, Electric Bond & Share Company, New York, N. Y.; Aug. 15.
J. H. Hanna, vice-president Capital Traction Company, Washington, D. C.; Aug. 11, 15.
A. E. Helm, counsel Public Utilities Commission of Kansas, Topeka, Kan.; Aug. 15.
R. T. Higgins, chairman Public Utilities Commission of Connecticut, Hartford, Conn.; Aug. 12.
W. V. Hill, manager Washington office A. E. R. A., Washington, D. C.; Aug. 11, 12, 13, 14, 15.
A. S. Hills, secretary Utilities Publication Committee, Washington, D. C.; Aug. 11, 12, 13.
W. Huggins, commissioner Public Utilities Commission of Kansas, Topeka, Kan.; Aug. 15.
F. F. Ingram, manufacturer, Detroit, Mich.; Aug. 12, 13.
Dugald C. Jackson, professor of electrical engineering, Massachusetts Institute of Technology, Boston, Mass.; Aug. 14.
M. M. Jackson, attorney representing Mayor Key of Atlanta, Ga.; Aug. 14, 15.
S. P. Jones, Minneapolis, Minn.; Aug. 11, 12, 13.
C. J. Joyce, Philadelphia (Pa.) Rapid Transit Company; Aug. 14, 15.
C. S. Kimball, engineer of way and structures Washington Railway & Electric Company, Washington, D. C.; Aug. 11.
C. W. Kutz, lieutenant-colonel of Engineers, engineer-commissioner, Public Service Commission, District of Columbia; Aug. 11.
W. R. McCallum, *The Evening Star*, Washington, D. C.; Aug. 11, 12.
Grenville S. MacFarland, lawyer, Boston, Mass.; Aug. 14.
Fred J. MacLeod, chairman Public Service Commission of Massachusetts, Boston, Mass.; Aug. 15.
F. W. Marvel, sales engineer the Buda Company, New York, N. Y.; Aug. 12, 13.
T. A. Mellen, manager of transportation United States Housing Corporation, Washington, D. C.; Aug. 12.
D. M. Moore, assistant engineer Washington Railway & Electric Company, Washington, D. C.; Aug. 11.
Carl H. Mote, secretary Public Service Commission of Indiana, Indianapolis, Ind.; Aug. 12.
F. B. Musser, president Harrisburg (Pa.) Railways; Aug. 15.
Lewis Nixon, Public Service Commissioner of New York, New York, N. Y.; Aug. 14.
H. H. Norris, associate editor, Electric Railway Journal, New York, N. Y.; Aug. 11, 12.
R. L. Norton, *Boston Post*, Washington, D. C.; Aug. 15.
John H. Pardee, president American Electric Railway Association, New York, N. Y.; Aug. 11, 14, 15.
A. W. Payne, *Washington Times*, Washington, D. C.; Aug. 11.
J. W. S. Peters, lawyer, Washington, D. C.; Aug. 13.
Garfield J. Phillips, examiner Public Service Commission of Pennsylvania, Harrisburg, Pa.; Aug. 14, 15.
H. B. Potter, assistant general manager Boston (Mass.) Elevated Railway Company; Aug. 11, 12, 13, 14.
William F. Rhea, State Corporation of Virginia, Richmond, Va.; Aug. 11.
Lobert St. Clair, Barron G. Collier, Inc., New York, N. Y.; Aug. 12, 13, 14, 15.
Fielder Sanders, city street railroad commissioner, Cleveland, Ohio; Aug. 15.
T. H. Saville, city councilman, Scranton, Pa.; Aug. 13.
J. N. Shannahan, president Newport News & Hampton Railway, Gas & Electric Company, Newport News, Va.; Aug. 12.
R. D. Simms, Capital Traction Company, Washington, D. C.; Aug. 14, 15.
A. J. Simmott, *Newark News*, Newark, N. J.; Aug. 13.
K. K. Simpson, Associated Press; Aug. 11.
Charles P. Swope, secretary to Senator Bois Penrose, Washington, D. C.; Aug. 15.
C. L. S. Tingley, vice-president American Railways Company, Philadelphia, Pa.; Aug. 11, 12, 14.
John J. Walsh, lawyer and State Senator (member of street railways committee), Boston, Mass.; Aug. 15.
Bentley W. Warren, counsel A. E. R. A., Boston, Mass.; Aug. 11, 12, 13, 14, 15.
B. T. Weadock, attorney Detroit (Mich.) United Railways; Aug. 12.
J. W. Welsh, statistician A. E. R. A., New York, N. Y.; Aug. 11, 12, 13, 14, 15.
R. W. Westcott, Camden, N. J.; Aug. 14.
George Weston, consulting engineer Philadelphia (Pa.) Rapid Transit Company; Aug. 13, 14.
T. S. Wheelwright, president Virginia Railway & Power Company, Richmond, Va.; Aug. 11.
William Wierth, city councilman, Scranton, Pa.; Aug. 13.
Delos F. Wilcox, public utility expert, New York, N. Y.; Aug. 13.
S. E. Wolff, Hodenpyl, Hardy & Company, New York, N. Y.; Aug. 11.

made electrification the excuse for doing all they could to wreck the street railway business. The result is that the only way out of the difficulty to-day is to bring about an almost universal "housecleaning" in order to get the industry down to a sound basis of capitalization.

Glasgow, the witness pointed out, has paid off every dollar invested in the property, so that the transportation system has no fixed charges, and in addition a large amount has been set aside for depreciation each year. The Liverpool system has paid off about one-half of its debt, and in addition has accumulated a 60 per cent depreciation fund. This policy of the British tramways was contrasted with that prevalent in the United States where, the witness said, the rule seems to be that there should be no reduction in capitalization except that forced. The capital account is kept as large as it can be and still worry along. Under state regulation, even, the capital account has been increased rather than decreased, the difficulty here being that the state commissions have had jurisdiction over future securities and not over past issues. Another reason has been that the commissions have had no jurisdiction over the holding companies which have sprung up everywhere to finance the utilities. So the process of piling up capital has gone on. The stocks of the controlling companies, if not of the operating companies, have been sold, but the effect has been the same.

FARE COLLECTION SYSTEMS COMPARED

The second characteristic distinguishing the British tramways from the American street railways, the witness pointed out, was the system of fares adopted. In Great Britain the fares are arranged according to the distance traveled. Low fares are charged for short rides, while the fares for long rides are not high because of the low initial charge. This was contrasted with the flat fare scheme which has been cultivated in this country. In this connection it was pointed out that in Glasgow for the year ending March 31, 1918, the tramways had received more than 40 per cent of all the revenue collected, from passengers who paid 1 cent, and only between 2 and 3 per cent of the passengers paid as much as 5 cents of our money. A similar showing had been made in Liverpool.

The witness then pointed out the disappointing results which have been obtained from increases in the flat fare in this country, and stated that in many instances the companies have been so hard pressed for funds that they would adopt any means offered for increasing the revenue even if it meant that 50 per cent of the passengers would be lost, and irrespective of the ultimate effect.

To make more clear these comparisons of the British and American street railways, Mr. Wilcox presented the accompanying table comparing the operating results of the Glasgow tramway system with the Public Service Railway of New Jersey, making numerous allowances in order to reduce the two widely different properties to an approximately equal basis. Commissioner Beall interrupted the direct statement of the witness to question the reasonableness of the comparison, with such widely differing properties. Mr. Wilcox agreed that even with the adjustment he had made, it would still be necessary to make very large allowances or mental reservations, when looking at the apparent advantages indicated by the Glasgow system. Even with these allowances in mind, he thought that the results pictured by the table were most enlightening, and would have to be discounted tremendously to explain away the better showing of the foreign company.

Chairman Elmquist asked the witness if it were not true that the labor cost in Glasgow was very much less than here. Mr. Wilcox replied that the British labor rates generally were now about where ours were at the beginning of the war, and Commissioner Gadsden asked if it were not true that up until almost one year ago the British rate was about 15 cents an hour as compared with our maximum of 38 cents, to which the witness agreed. Asked about the night and Sunday service, Mr. Wilcox said he was unable to answer about the details entering into these results, having never been to Glasgow and having based his statement entirely upon the studies made by Walter Jackson for the ELECTRIC RAILWAY JOURNAL.

The witness then pointed out that the Liverpool system had also been prosperous and that it had carried 130,000,000 passengers per year at the beginning of the war, and 195,000,000 during last year. The average revenue per passenger was 2.37 cents and only 2.2 per cent of the passengers paid a fare as high as 5 cents or more. The number of passengers per car-mile was 15.98, and the total track mileage of the system was 124. The net debt of the company still outstanding is $18,667 per mile of track.

Questioned if the people of this country would tolerate such small mileage, the witness said that conditions in the two countries perhaps represented the two extremes, but he thought that the small mileage was not necessarily an attribute of municipal ownership and called attention to the extent to which the San Francisco municipal railway is being built up.

GLASGOW MUNICIPAL TRAMWAYS COMPARED WITH PUBLIC SERVICE RAILWAY SYSTEM WITH RESPECT TO TRAFFIC, REVENUES, CAPITALIZATION, ETC.

Glasgow data taken from annual report for year ended May 31, 1918. Public Service railway data taken from annual report filed with Board of Public Utility Commissioners for calendar year, 1918, and other exhibits in the Public Service Railway rate case.

Item	Glasgow	Public Service Railway
Population served	1,150,000	2,111,955 (1915)
Passengers carried	430,946,566	404,991,768 (1)
Rides per capita	375	192
Total passenger revenue	$6,833,102	$19,102,346
Average fare paid by passengers, cents	1.56	4.72
Proportion of passengers paying 5 cents or more, per cent	2.25	76.22
Car-miles run	26,261,231	53,250,832
Passengers per car-mile	16.41	7.61
Kilowatt-hours per car-mile	1.56	3.73
Mileage of main track	198.25	790.23
Net debt per mile	Zero (2)	$105,367 (3)
Net capital stock per mile	Zero (2)	$97,756 (4)
Passengers per mile, main track	2,173,753	512,498
Passenger receipts per mile of main track	$34,416.60	$24,173.15

Construction cost of Glasgow system, including power plant, shops and everything complete	$18,798,968
Capitalization of Public Service Railway system	$160,514,150
Construction cost, Glasgow system, per mile of main track	$94,825
Capitalization, Public Service Railway system per mile of main track	$203,123
Construction cost, Glasgow system, per passenger carried (in a year), cents	4.36
Capitalization, Public Service Railway system per passenger carried (in a year), cents	39.67

1. This is the number of passengers paying initial fares as estimated by the company in its zone report (Exhibit P-316, page 145), plus the number of transfer passengers. In Glasgow, where the zone system is in effect, no transfers are given. Thus the number of passengers carried means in each city the number of separate car rides given to passengers other than "deadheads."

2. The Glasgow tramways were acquired by the city in 1894, and were soon thereafter electrified. The entire bonded indebtedness was paid off out of earnings by 1917, and up to May 31, 1918, the tramways had contributed $4.781,000 to the "common good" for the relief of taxation. Of this amount $864,000 was contributed in 1918. The tramways also pay taxes directly, which in 1918 amounted to $380,867, the equivalent of 5.57 per cent of gross receipts, as compared with 8 per cent paid by the Public Service Railway.

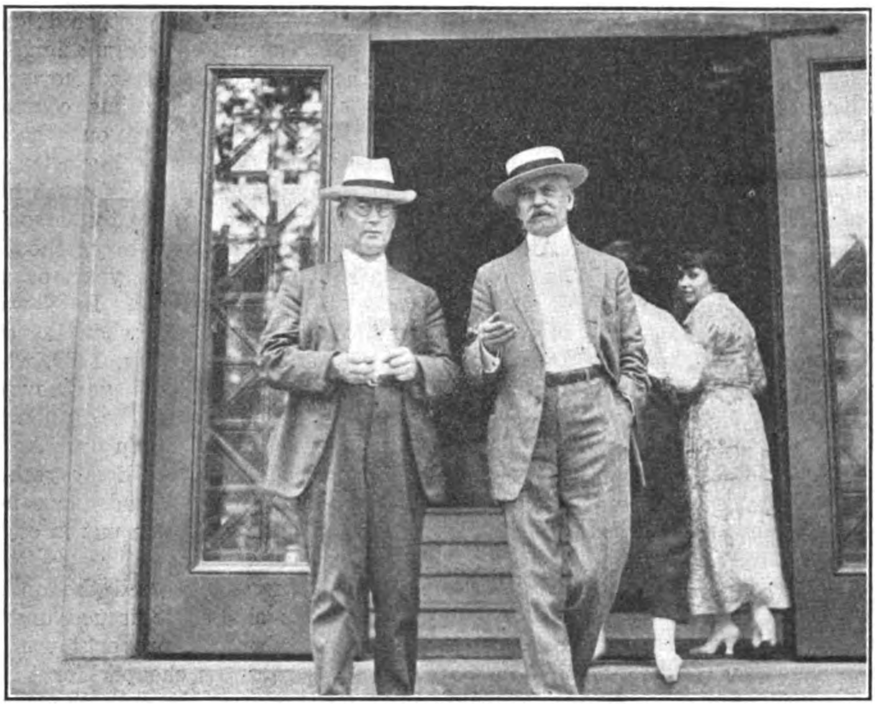
3. Includes with bonds the sum of $1,169,118 advanced by the United States Shipping Board for extensions and additions in 1918; also $150,000 bonds of Paterson State Line Traction Company, a subsidiary whose trackage is included in the Public Service Railway system.

4. Includes with capital stock, $3,475,347 of capital supplied by Public Service Electric Company, upon which the Public Service Railway pays a fixed charge of 6 per cent per annum.

Turning his talk to the subject of over-capitalization and intercorporate complexities, Mr. Wilcox cited the detail history in these respects of several companies. He believed that the hatred of the public toward the street railway companies was the result very largely of stock manipulations.

He thought there was no other way to overcome this public attitude and continue private operation and ownership except to reduce the business to a sound financial basis. Even that may fail, he thought, for transportation is so much a public function and in such a vital way that any private company producing this service is likely to be looked upon as a great source of corruption.

Despite this feeling of the public, Mr. Wilcox said that the companies should not be "soaked" with taxes, that the mischief had been done and it was difficult to undo, and heaping on taxes would not solve the situation. While the witness said he did not criticise state regulation, he thought that the setting up of state commissions had brought about two conflicting forces acting upon the street railways in many cities, resulting in a bad conflict between city and state bodies which was not getting anywhere. Contracts and settlements entered into by the city were not permanent in view of the power of the state commission to interfere. He believed that in general it was desirable that the state commission should control the issuance of securities, the accounting methods and reports, and those car lines not subject to municipal control. But he was very strongly of the opinion that the urban community should have absolute control of the service and rates, and whether there should be a flat fare, a zone fare system, a subsidy, etc. He answered in the affirmative a question from the commission as to whether the state commission should have appellate jurisdiction over the valuation of a property, but he thought that the city should also have the privilege of contesting the value with the company, before the commission.



Just emerging from a hearing, Chairman Elmquist and Vice-Chairman Sweet are seen in characteristic attitude, talking over some point. The camera has also registered the presence of beautiful background.

FOUR FUNDAMENTAL PROBLEMS

Mr. Wilcox was of the opinion that the difficulties of the industry could be reduced to four fundamental questions as follows:

1. Should the character of street railway investment be speculative or non-speculative?
2. Should the business be conducted primarily for profit or primarily for service; which motive should predominate?
3. Should continuity of service obtain?
4. Shall the business be conducted by the public or by private interests?

On the first question, Mr. Wilcox thought that the investment should be non-speculative. This meant that the first step in bringing about such a condition would be to determine a sound valuation and then adopt a system of fares which would be flexible in order to permit of the permanent integrity of the investment. The plan must involve the physical upkeep of the property and insure against ruinous competition. It requires that the investment shall continue in service until paid off and involves the necessity to amortize at least a part of the capitalization in order to keep the capital account well within the present physical value at all times. If the rate of return is fixed, the witness thought that this rate need be only relatively low and that the rate of return did not need to be changed on money once invested. It might, however, be necessary to vary the rate for new capital in order to meet the conditions of the money market. If it is necessary for a company to sell its securities at a discount, he thought allowance should be made for this discount, but it should be done by amortization and not by putting it into the capital account.

On question 2 Mr. Wilcox said that service should be the controlling motive at all times and that the exigencies of profit should not in any event determine the policy. The rate of fare should be determined by the best interests of the community from the social point of view, if necessary making up deficit out of taxes rather than to prescribe rates which would work to preclude the use of the transportation for some people.

On question 3, as to the continuity of service, Mr. Wilcox stated that some means must be devised to prohibit strikes, and that effective arrangements for bringing about a settlement without a strike must also be provided. He thought that employees should be encouraged to organize and that public utility operatives would get along better if they were permitted to participate in the active management of the utilities. The responsibility for hours, wages and conditions of labor must be fixed by the public, for the public has such a primary and responsible interest in these things that it must have control.

On the question of public or private operation, the witness had come to the conclusion that no solution of the present difficulty was possible unless we turn to public ownership and operation, for the industry was essentially a public function. The irreconcilable conflict between company and public interests tends toward corruption, and he thought that the public would not stand for the tax exemptions and other conditions necessary to permit the private company to operate at a profit. He thought that state regulations had in large measure broken down, the present condition of the industry being proof of that, and that this had resulted in increasing the differences in the conflict between municipal and state jurisdiction. The cost of new capital under private ownership is becoming prohibitive. Greater risk must necessarily involve a higher rate of return. Mr. Wilcox said that even if 8 per cent were allowed on the present capitalization of private companies, the cost of new money would be at least double what it would be under public ownership. Referring to profit sharing and service-at-cost franchises under private ownership and operation, Mr. Wilcox believed these resulted in the loss of the good features of private ownership without gaining the advantages of municipal operation.

In the New York situation, he said that the preliminary requirements would be the pooling of all companies into a single interest in order to make effective an increase in fare to any of them, but such an increase in fare is distinctly contrary to the policy to which the city has committed itself. It has spent $250,000,000 of its own money to insure the 5-cent fare and has nearly broken its back financially as a result. To grant an increase in flat fare would be a reversal of policy. Asked by Commissioner Gadsden if the city could not mend its back and its policy at the same time by granting an increase in fares, Mr. Wilcox replied that he was not sure for before the city could receive any benefits from the increased fares, the Interborough Company's preferential contracts would absorb all of the increase in revenue for a long time to come.

MR. WILCOX'S SOLUTION

Asked by the commission what recommendations he would make then, for the solution of the difficulty, Mr. Wilcox said he would first clear the air by a plain declaration for municipal ownership. He would have all of the states enact the necessary constitutional amendments to provide the power to the municipalities. He would likewise have legislation providing power to the municipalities to realize their own full power of credit. Commenting on how Seattle purchased its street railway system, the witness pointed out that the Washington law not only permitted acquisition, but provided for the issuance of bonds outside of the debt limit by securing these bonds by a first lien on the gross earnings rather than on the property itself. That is reversing the usual process of dividing the gross earnings. On this basis the City of Seattle has issued 5 per cent bonds, but Commissioner Beall interjected that he understood that these bonds could not be sold.

Mr. Wilcox would also have a law to provide that the property be acquired at a price fixed by an intelligent tribunal which would give due regard to the franchise obligations. He said the people were averse to condemnation proceedings. In carrying out the plan to acquire for municipal ownership and operation, the witness said he would be very careful that the right procedure was being followed, but that in any event the plan should be carried out. He added that legislation creating state commissions where they did not now exist was also desirable and that the zoning plan of fare collection might well be adopted.

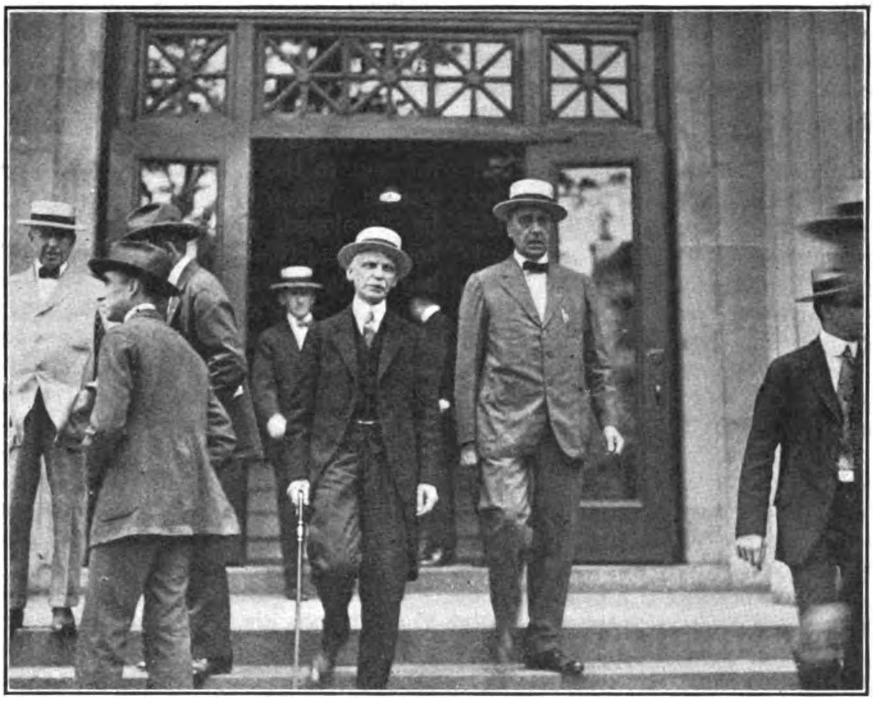
He would install a zone system where the 5-cent flat fare is not adequate. He would operate motor buses as feeders to the electric lines, but not as a complete system in themselves, citing that this feeder plan was now being utilized in San Francisco. It forms an admirable way of handling the outlying thin traffic.

Speaking of the jitneys, Mr. Wilcox said that it was very difficult to regulate them because public sentiment favored their operation, particularly where they were willing to carry people for 5 cents, with higher street car fares. While he did not believe in competitive systems, he did not think that the people would stand for such rigid regulations as would force them off the streets. He agreed, however, that under municipal ownership jitney bus competition would not be permitted. He pointed out that in New Jersey the jitneys seem to be carrying a larger proportion of non-rush-hour traffic than of rush-hour traffic, and that they were therefore deadly competitors. In the Public Service Railway territory, the jitneys are carrying 80,000,000 pasengers a year, or approximately 20 per cent of the total traffic. In Newark the returns show that from May, 1918, when the company had a 5-cent fare in effect, until May, 1919, when a 7-cent fare was being collected, the jitneys showed a 107 per cent increase in traffic, while the Public Service traffic fell off 7 per cent. As to the future, the witness believed that both methods could not live together and that the jitney system could never be adequate in large cities, though it might suffice and win out in cities of 100,000 population or less.

The witness expressed the opinion that street railway stocks should be issued under a municipal guarantee, whether the property was municipally operated or not, for it was cheaper for the city to do this than to have some one else take the risk. He said the public would probably not make such a contract unless with a service-at-cost franchise it could be sure of a corresponding reduction in the cost of the service. Municipal contracts should not be abrogated until the value of the property has been fairly determined, subject to the terms of the contract. He pointed out that franchises are now a liability and not an asset as they had been in years before. This fact should be considered to the advantage of the city in arriving at any valuation. In other words, the municipality should hold to its bargain, perhaps tempered somewhat. What was a good franchise to sell the city, should now be a good liability to trade on.

Discussing the rate of fare, the witness stated that it should never be increased to the point of driving away traffic. Questioned about transfers, he said that the free transfer was part of the theory of the flat fare, but that with a properly worked out zone system he believed no transfer was necessary. He then discussed the plan of the zone system which is about to be carried out by the Public Service Railway of New Jersey (fully described in the ELECTRIC RAILWAY JOURNAL for Aug. 9, 1919) and mentioned how this company had considered a stand-by charge and a movement charge in arriving at the proper rate. He said he could justify a stand-by charge for such utilities as supply water, gas, electric light, telephone, etc., but he could not for street railway service. The difficulty here was that the same passengers continued to pay the stand-by charge over and over again, while the person who very rarely used the service, and for whom the stand-by charge was justified, paid this charge only on rare occasions. When it was brought out that 3 cents was to be the initial charge in the Public Service zone plan, and that this covered a ride of one mile, Dr. Meeker of the commission expressed the belief that this charge was so high for the length of ride that very few people would ride.

Asked about the applicability of one-man cars, Mr. Wilcox said that he believed they could be used to great advantage on 65 to 70 per cent of the trackage of the country. Questioned on the value of the skip stop, he said that it did not warrant much consideration in the general solution of the difficulties, for in the smaller towns where the service is comparatively infrequent, a skip stop would tend to make the service more inconvenient and would thereby lose traffic. He conceded the skip stop to have some value in large cities, but said he believed it could easily be overdone. In reply to a question from the commission, Mr. Wilcox said that he did not know how the "housecleaning" of which he had spoken could be brought about except through receiverships, and this would only bring the desired result provided a plan beyond the receivership was well worked out in advance. He thought that municipal ownership could be brought about quite soon, but that the question was as to whether it would be brought about right. Dr. Meeker asked if a receivership was not a very expensive procedure, like burning down a barn to get rid of the rats. Mr. Wilcox answered that it might be made the agent to bring about a proper basis of capitalization on which to permit the company, through a service-at-cost franchise, to earn a reasonable return.


Hon. Wm. D. B. Ainey, who gave the Commission much food for thought, and his friend Frank B. Musser, president of the railway in Pennsylvania's capital, occupied our impromptu stage at the moment we signalled the camera man to "shoot" this picture.

In answer to further questioning from the commissioners, it was brought out that Mr. Wilcox favored the indeterminate permit, provided that a plan of amortization of capital out of earnings was included as a condition. He said he could not get away from the conviction that ultimately the ownership of the street railways must be vested in the public, and if that were true, any policy which prevented the city from making a start should not be entered into. As to the best solution possible under private ownership, the witness said that this was undoubtedly the service-at-cost franchise with a provision for purchase by the city provided that the state legislature supplied the enabling acts to make this actually possible at any time the city found it necessary to take over the property.

He then mentioned again the difficulty which the holding companies placed in the way of consummation of such a plan. He said that these holding companies enter into arrangements which are not binding upon the operating company, yet form a hidden control which does not leave the operating company a free agent to carry out what is best for the city in the way of service. Municipal authorities are not permitted to look at the books of the holding company, so that there exists a hidden power which cannot be investigated. This same situation exists when a utility is owned by an individual, it was pointed out by Commissioner Gadsden. Referring to the statement of the witness on the continuity of service, one of the commissioners asked him to explain further how he would prevent strikes. He said that he thought it would be possible to provide a law which would make it a penal offense for the employees of any essential industry to conspire to stop the work. This would not in any sense take away the right of the individual to resign. Mr. Wilcox pointed out that the real problem was to get a plan which would remove the legitimate cause for the strike, so that labor would feel that it was properly taken care of in the public estimation.

Asked by Commissioner Sweet whether in his opinion it would not be better for the commission to recommend a general adoption of the Cleveland plan, assuming that a satisfactory appraisal would be made and the necessary enabling legislation provided to make purchase possible, than to attempt now to secure municipal ownership at one jump, the witness replied in the affirmative. He said the preparation for municipal ownership cannot be done overnight, and that meantime the service must be continued and that the service-at-cost plan probably offered the best intermediate procedure.

Thursday's Sessions

Commissioner Lewis Nixon of New York was the first witness to take the stand Thursday morning. He declared it to be his belief that municipal ownership would come in the fullness of time in New York. He said it would be extremely difficult to take over the property at this time and that legislation was necessary in order to clarify what the city could do. The contracts between the companies and the city are very clear, he said, and while the city authorities think that the companies should retire if they find it impossible to live up to their contracts, any such voluntary arrangement is impossible because if it were undertaken the stockholders would immediately bring about a receivership. Commissioner Nixon pointed out also that any plan of relief for the companies which involved an increase in fare could only be brought about by the companies relinquishing the contracts which they now hold and which are for a perpetual grant, and accepting in lieu thereof a new grant with a definite term. This is necessary because of the new city charter, which makes the granting of perpetual contracts an impossibility.

Mr. Nixon began his testimony by a brief review of local conditions in New York, touching upon the recent Brooklyn strike and the efforts which had been made toward securing relief for the surface lines by the granting of a transfer charge. He also mentioned the extreme congestion which is suffered in New York and said that the demands for transportation were far in excess of any engineering ability to meet them. He pointed out that the prime reason for the present difficulty was because of the high costs of labor and material and that the limiting of fares by franchise had made it impossible for the companies to meet the situation. Asked if the New York companies could operate on a 5-cent fare if they were all consolidated, he answered in the negative. It would simply save a few large salaries but these form such a trifling part of the several hundred millions of annual revenue involved that the saving is insignificant.

Commenting upon the great need for a sound valuation of all the transportation utilities in New York, Mr. Nixon said that he would like to see a board made up of members of such unquestioned integrity that when they had completed any valuation, the results would be acceptable to all, and would thereby provide a remedy for the present status of appraisals, adding that such a thing as an unquestioned valuation had never been made.

Asked if there was any jitney competition in New York, Mr. Nixon said that it had been carefully estimated that the companies lost about $12,000,000 a year in revenue to the jitneys, which operated in some suburbs. He said, however, that this was rather welcomed for the volume of traffic was so great that the demand on all systems of transportation was overwhelming.

ZONE FARE PLAN POLITICALLY BARRED IN NEW YORK

In reference to the application to New York of the zone fare system, Mr. Nixon said that the present contract prevented its adoption. He said that he had studied it thoroughly and that it seemed to be the most equitable and logical way of collecting fares, but at the same time he hoped to see it possible to maintain the 5-cent flat fare. He could not defend the justice of the 5-cent fare, he said, but there is so much staked on the plan of the flat fare in New York that he did not believe it was possible to bring about a zone system. He then made the statement that with the return of normal times and the completion of the great subway system, and with the vast volume of business increasing with the age of the system and the perfection of operation, that increases of earnings will come into play to such an extent as to make possible a fare of less than five cents. He anticipated that it would be possible to sell 12 tickets for 50 cents, with free transfers, in three to four years, provided that a give and take settlement was brought about. He said, however, that under present conditions of strife he was unable to look forward to any reduction in fares.

In answer to a question from one of the commissioners, Mr. Nixon said that he believed the Cleveland plan, with some modifications, could be applied in New York, and that he looked upon it as the most hopeful solution he could see. Such a plan would have to be based on a unit corporation basis, and he believed that consolidation would come about in time as a matter of common sense. Such a step would hurt some of the companies and help others. In speaking of the service-at-cost plan, he said that he favored it without any hostility to municipal ownership, this latter plan being simply impossible now.

Transportation is a public service of such deep vital interest to the public that it must not be held up by strikes. Some practical way of preventing them must be developed, and in this respect, Mr. Nixon saw better conditions ahead for he believed that labor was beginning to assume a better attitude toward its responsibility as evidenced by the recent strike on Staten Island where the union leaders refused to permit the men to strike since they would violate a contract in so doing. He thought that if the labor organizations were brought into a full understanding of the vital necessity for continuity of such services to the public, they would not take advantage of their power and would live up to contracts entered into.

NEW YORK WILL FIGHT TO THE LAST INCREASE IN FARES

William P. Burr, corporation counsel, city of New York, began his testimony by asserting that the city had never been able to secure the complete financial history of the traction interests in New York and that complete data were necessary before any progress toward a solution could be made. He said that Stone & Webster had been employed to make a complete appraisal as a first step toward arriving at some basis of settlement between the city and the companies. He then gave extensive figures showing the profits, rates of return, etc., of the New York companies and complained of the unwillingness of the Interborough Company to retract one iota from the terms of its preferential contracts with the city.

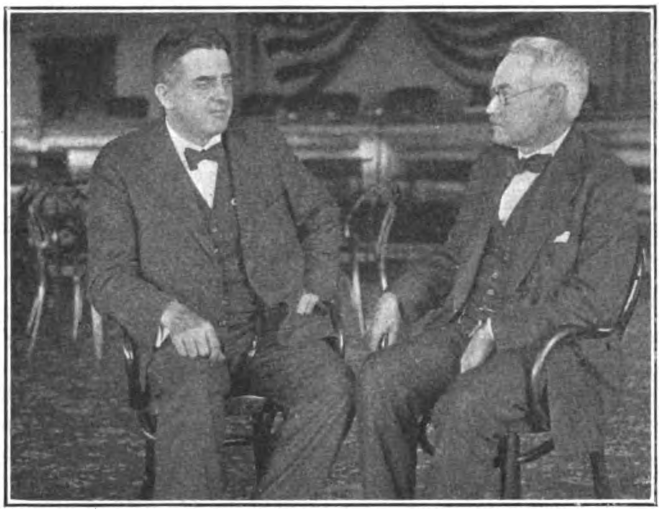
Mr. Burr spoke of the necessity which Mr. Nixon had discussed, of the companies' relinquishing their perpetual contracts and accepting fixed term contracts before any assistance could be secured in the way of increased fares. And in this connection he said that the city would fight to the last any change in the contracts now in force. He said it would pay a large city to operate its transportation system at a loss, if necessary, in order to give the people an opportunity to spread out and lessen the congestion which would result from high flat fares or from zone fares. He said that the final solution was not easy because of the difficulties of the law involved, but that ways and means could be devised to make municipal ownership possible. He spoke of the great success with which the City of New York has operated its water system and from this drew the conclusion that the transportation system might be operated with equal efficiency and economy.

He remarked that "the fact that the New York Railways Company has twice been in bankruptcy does not speak well for the great men who have managed its affairs."

Mr. Burr also commented upon the set policy in New York to maintain the 5-cent fare and the $200,000,000 investment of the city put behind that rate. He also referred to the broad development of the city based on the flat fare idea and emphasized the reticence the city had toward any change of policy.

GETTING AT THE BASIS OF THE TROUBLE

Irving Fisher, professor of economics, Yale University, was the next witness to be heard. He said that he assumed the commission was interested in getting at the fundamental reasons for the present conditions, not only in the electric railway industry, but in every other business, and asserted that the inflation of our money was the prime reason. He said that the war was only indirectly the cause of present high prices through the influence it had had in causing a flow of gold to this country. He showed a series of charts which pictured the trend of prices after all of the previous wars of history and brought out that not every war raises prices, nor do prices fall after every war. He was of the opinion that no downward trend of prices could be anticipated for a long time to come.



William C. and Zenas W. Bliss, not brothers, but both Rhode Islanders and closely associated for many years. William is chairman of the Rhode Island Commission and as such has a finger on what Zenas does as receiver for the Rhode Island Company. Zenas is also chairman of the State Tax Board, so he must have to be Dr. Jeckyl and Mr. Hyde in handling the tax of the R. I. Co. Photo by Harris & Ewing, Washington, D. C.

During a very interesting discourse on the unwholesome effect of our present money basis, he told of his plan for stabilizing the dollar by creating a dollar of variable weight and fixed value as a substitute for the present dollar of fixed weight and variable value. This plan was presented in the ELECTRIC RAILWAY JOURNAL for April 19, 1919, p. 780.

He pointed out that the evil of the fixed weight dollar was that many things, like the fixed street car fare, the wages of government employees and the salaried man in general, did not increase as the purchasing power of money decreased. He declared that 80 per cent of the unrest of the country is due to the depreciated value of money. The populism agitation back about 1890 was due to the appreciation of money which was forcing the farmers who had mortgages against their farms into bankruptcy, and that it had disappeared as soon as money began to change its upward trend. To-day the opposite condition exists and Prof. Fisher prophesied that the bolshevism movement, which is the outcome of a long period of rising prices, will disappear in a similar manner with the stabilization of money.

Speaking of the proper rate of return on capital invested in the street railway business, he said that if 6 per cent was a fair rate of return before the war, 12 per cent is the equivalent fair rate of return to-day. In other words, if a capitalization of $100,000,000 was earning 6 per cent before the war, or $6,000,000, this same rate of return at the present time was producing six million "little" dollars which was equivalent to only three million "big" dollars, or 3 per cent. He also pointed out that if the 5-cent fare was right in 1896, then the equivalent fare to-day would be 15 cents; or if 5 cents is a fair fare to-day, then in 1896, two cents would have been a fair rate, assuming that labor and material have trebled as have prices of commodities.

Grenville S. MacFarland of Boston directed his testimony principally to the bad practices of private operation and the desirability for municipal operation. He said that there was no remedy for the situation under private operation which could be acceptable unless it provided an increase in revenue. He said he had rather see a community suffer some loss under public ownership than to have the old practices under private ownership continued. These practices were simply the inherent abuse resulting from an attempt to make private profit out of a public service necessity.

The witness was of the opinion that the enormous private gains which have been made out of the stock manipulation of the street railways have had an important bearing upon the increased living costs and that the elimination of all these corrupt practices through municipal ownership and operation would tend to reduce the costs. He believed municipal operation of the roads would be more efficient than private operation.

Questioned by one of the commissioners as to what means of relief he would suggest for the industry meantime, while the long process of bringing about municipal ownership was being worked out, Mr. MacFarland replied that he thought "we ought not let the devil get well; make him act up to his profession." Chairman Elmquist asked if the commission should recommend that, and Mr. MacFarland said that the commission should state that the patient was sick and that municipal ownership was the remedy, and if the medicine was taken to-day it would begin the cure sooner, and if put off until to-morrow, the medicine would have to be used in increasing quantity. He thought that the present evil was in private operation more than in private ownership, and that private ownership with public operation would probably bring about a satisfactory condition. In reply to questioning, he said he believed the Cleveland plan was the best system under private operation, but that it had worked well because of special circumstances which would be hard to duplicate.

T. L. Hall, chairman, Nebraska State Railroad Commission, took the stand Thursday evening and testified in great detail concerning the financial history of the Lincoln Traction Company, bringing out the intercorporate complexities and illustrating the difficulty which

We spilled Secretary Burritt's ink the other day and so we're spilling some more here to make up. George Weston is at his left and the chap hiding behind this well-known engineer is J. W. Welsh, statistician of the association. Harlow C. Clark at the right is trying to find his head with his hat. Photo by Harris & Ewing, Washington, D. C.

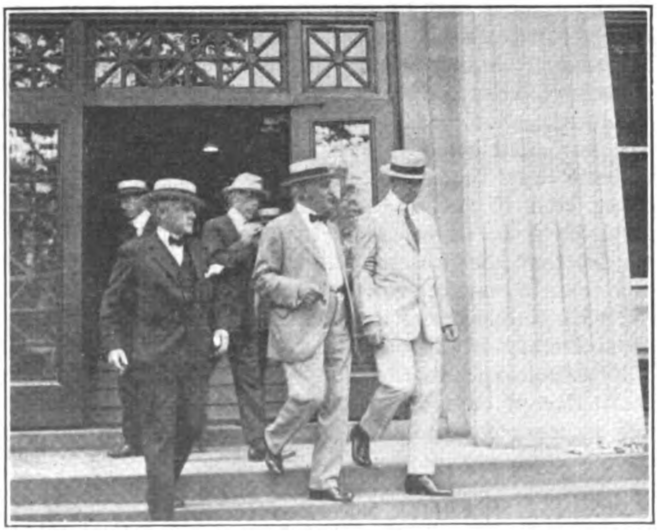
a commission faces in attempting to deal fairly with the company and the public under such circumstances. He also referred to the attempt of the Omaha Company to place in effect a 6-cent fare on an emergency waiting for a valuation of the property of preliminary study by the commission, the matter having been carried to the supreme court of the state which remanded it to the commission, the latter holding that the company had sufficient surplus in material and operating funds to warrant the commission proceeding first to establish a proper valuation.

Speaking of the labor problem, Mr. Hall said that the unions should guarantee labor without strikes, that the wage scale should be sufficient so that the men could establish savings accounts which should be deposited with the company and used in operating, the company to pay dividends on these savings, the same as it does on its stock. In other words, the company must take labor into consideration in its earnings. Mr. Hall concluded his testimony by stating that he believed in public ownership, but that commission control should continue just the same. He thought that public ownership of the utilities would eleminate stock jobbing and manipulation.

Mayor A. T. Connell of Scranton, Pa., made his mission that of informing the commission that he was dead against watered securities. He said that the Scranton company was trying to pay dividends on a total capitalization of $9,076,000, of which $3,800,000, according to Dr. Delos F. Wilcox, was water. Despite this inflation of capital, he said that the state commission had granted the company a fare increase bringing the rate up to 7 cents cash and four tickets for 25 cents.

Questioned as to whether he thought the paving charge against the company ought not be removed from the street car riders, he said that he did not, that the street cars did more damage to the pavements through the working of joints than any other vehicles. He thought this was a legitimate revenue which the city ought to get.

At this point Mr. Ogburn, executive secretary of the Federal Commission, read a communication from the Central Labor Union of Kansas City, containing a resolution urging the Federal Commission to refrain from offering any help to the Kansas City company in its present financial straits until it should recognize the union.



Here you see the genial president of the American Association, John H. Pardee, leading P. S. Arkwright, president Georgia Ry. & Pwr. Co. off to lunch. The "gum-shoe pose" of Harlow C. Clark, at the left, must have been inspired by something, but we absolve ourselves of all responsibility.

Friday's Sessions

William D. B. Ainey, chairman, Public Service Commission of Pennsylvania, was invited to take the stand at the beginning of the hearing Friday morning. He confined his remarks very largely to a prepared statement which was read to the commission and which appears practically in full on a later page of this issue.

During the course of his statements, Mr. Ainey expressed his concern that the railway men had not placed before the public a clear, simple, direct statement of what they sought before the Federal Commission and what they could and could not do for the benefit of the public generally. He believed that the matter which has found its way into the public press has confused rather than clarified the minds of the people on the real issue. At this point Chairman Elmquist interrupted the witness and handed him a copy of the prepared statement submitted during the railway hearings by Harlow C. Clark, which Counselor Warren later explained was in effect a statement of the railway men's position.

Asked by the chairman if this statement did not answer his criticism, Mr. Ainey replied that from a cursory reading of it, his mind ran in harmony with it, but he said it was not his mind he was speaking of, but the public mind, and that in this respect he would reply categorically that the statement by Mr. Clark did not meet his criticism. He said that there was not a single thought in Mr. Clark's statement which would clarify the mind of the Scranton mayor, for example, in the views he held. Then the witness reiterated the need for publicity, concerning the position taken by the railway men at the Federal Commission, of a most simple and direct character. He commented that unfortunately the newspapers pick out only the radical and sensational expressions and that the results upon the average public mind of these piecemeal references to the hearings, carrying as they do a false impression, have been detrimental rather than helpful in improving the public understanding of the problem.

No one is so dependent upon the good will of the people as the railways, the witness pointed out, for they must have water, gas, and electricity, but when it comes to the street car ride, they have the alternative of walking. The railways thus occupy a different relation to the public than any other utility. The railway men may win the judgment and even commendation of the Federal Commission, but the judgment of this body will avail them nothing if the public is not thereby won as well. He said that in the interests of the railways he was exceedingly solicitous that they should state in a simple direct way that they wanted, what they could do, and what they could not do.

As a specific example of the unfortunate publicity which has been spread over the country, he referred to Dean Cooley's statement that the best way to prove to the people the fallacy of municipal ownership was to encourage its adoption so that they might learn from experience how unsatisfactory it was and would then seek relief through a return to private operation. Dean Cooley's half joking reflex remedy would seriously be repudiated by every man, but Mr. Ainey said that it had won large space in the newspapers, and in fact much more space than any sound argument for or against municipal ownership would be given.

During his direct statement, Mr. Ainey diverted to mention with words of praise the success with which the Philadelphia Rapid Transit Company has met the increasing costs of operation through studies which have developed economies and through the splendid morale of the employees without the necessity thus far to increase the fare above 5 cents. He suggested that the commission should invite a witness from this company, and Chairman Elmquist asked him to suggest the name of some official of that company who could best present its accomplishments. Mr. Ainey said that he thought Mr. Joyce of the Philadelphia company, who was present, should supply that information, and it was understood that Mr. Joyce would later advise the commission on this question of the chairman.

During the cross-examination, the commissioners took up further the discussion of the proper publicity, which Mr. Ainey had stated had not been obtained. Commissioner Sweet asked the witness if he were right in interpreting Mr. Ainey's remarks to mean that what was desired was a plain declaration that the railways were not asking for a return on watered stock, etc., in order to counteract the extreme statements picked out for the headlines in the newspapers. Mr. Ainey agreed and added that the public does not know what is going on here, and is very likely to get an entirely erroneous notion of the hearing from the newspaper references.

Questioned about the delay of commissions in rendering decisions, Mr. Ainey replied that it was not always the practice to delay a decision in Pennsylvania until an evaluation could be made. He said the Pennsylvania commission had recognized the existence of an emergency and had fixed rates upon an increase basis as a temporary award while a more thorough study was made afterwards.

Asked about paving charges and similar burdens, Mr. Ainey said that the heaping of such burdens upon the street railways was probably due to an utterance of the United States Supreme Court in the early days of the industry in which it was set forth that the franchise privilege belonged to the public and that such a permit ought to be given only upon receipt of a substantial and continuing reward. On the question of public ownership, Chairman Ainey said that he had not yet arrived at the opinion that the public would get better service through public ownership and operation than it does through the initiative of private ownership. On the merits of the zone system of fare collection, he said that it had very substantial equities, but that he was not ready to recommend its adoption until some company which thoroughly believed in it had given it a thorough trial. He said it should not be tried out by a company only lukewarm to the idea, and that results worth while could only be obtained when it was tried out in the hands of its friends.

The gentleman at the right is Prof. Irving Fisher of Yale, who would remedy the street railway difficulties by substituting a fixed-value, variable-weight dollar for our present fixed-weight variable-value coin. Photo by Harris & Ewing, Washington, D. C.

Dugald C. Jackson, professor of electrical engineering Massachusetts Institute of Technology, followed Mr. Ainey as a witness before the Federal Commission. He followed very closely a prepared statement which appears in part on another page of this issue. During his testimony Mr. Warren interrupted to add the following figures concerning the Boston Elevated Railway to which the witness had made reference: In 1897 the investment in this property per $1 of income was $2.90; in 1918, it was $6.37, and in 1919, $5.38.

Fred J. Macleod, chairman, Massachusetts Public Service Commission, was the next witness heard, and he also read from a prepared statement which will be published in a later issue of ELECTRIC RAILWAY JOURNAL.

Fielder Sanders, city street railroad commisioner of Cleveland, then took the stand and very briefly reviewed in the fifteen minutes time he had available the features of the Cleveland plan from the public point of view. He said that this plan had certainly been a success from the company viewpoint, that the property was probably the finest in the country as was perhaps

Three of Boston's able lawyers and a successful railroad president from the Mid-West. They are Senator Thomas J. Walsh, Fred J. Macleod, chairman of the Massachusetts Commission, H. W. Barnum, general counsel for the Boston "L," and Arthur W. Brady of the Union Traction Company.

indicated by the fact that the city tax commission was assessing the property at the par value of its stocks and bonds, less its credit. He continued that the plan has also been largely a success from the public point of view, for the service is excellent, and this always tends to satisfy the people. The fare has been uniformly low and the company is now in good financial condition, with its stock selling consistently above par. In spite of a 25 per cent increase in wages for practically all employees of the company, Mr. Sanders said that on July 8 the fare had gone down to 11 tickets for 50 cents. At this rate the interest fund was being depreciated $80,000 a month, but he hoped that this rate of fare would carry through when the high maintenance expenditures of the summer season are past.

Mr. Sanders gave the following reasons for the success of the Cleveland plan: First, the low valuation, compared with other street railways; second, the franchise exemptions which relieved the company of the mill tax, bridge taxes, paving taxes, etc., and required the car rider to pay only for the cost of transportation; third, the development of the very latest ideas of operating economies and perhaps the fact that the average length of ride was not as long as in other large cities. He said that the success was largely due to the operating and financial support given the franchise by the city and also by the people. He said there was at present no crucial street car problem in Cleveland. It was his opinion that many people thought the company was now municipally owned and that they were receiving transportation at cost. He pointed out that 4800 of the stockholders of the Cleveland Company are local residents, so that the company may be characterized as a local enterprise. He was not sure that the service-at-cost plan was popular enough to make it a success in other towns.

Turning to the disadvantages of the Cleveland plan, Mr. Sanders pointed out the following: The reluctance of the company to extend its lines obtained as strongly under this plan as under the ordinary franchise. The city is limited by the terms of the franchise which specify that it may not require any extensions which would impair the value of the company's securities. This gives the company a basis upon which to refuse extensions.

The second disadvantage to which Mr. Sanders called attention was that the labor trouble is as inherent to this plan as it is in other cities. The city authorities have no control over the labor problems, who can only regulate but not operate the property. The company fixes wages and the city has no power to force the company to accept any particular agreement with its employees. And in the case of a strike, it is entirely the people who are the losers, since the rate of return to the stockholders is fixed. Mr. Sanders pointed out that the fundamental fault of the plan is that the party who makes the rate does not fix the wages. He thought that the city ought to have the right to fix wages if it must guarantee the return on the investment. In the recent strike, which cost the public, not the company, $80,000, the city was placed in the difficult position of having to meet the demands of both the employees and the company, and endeavoring to appease both without the power to force either.

Questioned about the desirability of including an incentive in the contract to induce efficient and economical management, Mr. Sanders said that, academically, such a provision was good, but practically it was much better to have a fixed rate of return, so that there would be no doubt in the people's mind as to how much the company was getting. Then he thought also that it was the natural tendency for a company to skimp the property in order to increase its earnings. It would be a very easy matter to cut down maintenance, for example, to easily realize an increase of 1 per cent in its earnings. This would be $300,000 on the capitalization, he pointed out, and would be a very small part of the total sum paid out for maintenance, so that it might easily be lost sight of. He thought that if any one were to secure a bonus it ought to be the street car operators, the men.

Asked about the value of the indeterminate franchise, Mr. Sanders said that it was theoretically all right but that practically the definite term with the renewal privilege was better. The witness said that there was a good deal of municipal ownership talk in Cleveland, but it was not because of any antagonism toward the company. His own feeling was that some of the defects of the present franchise might be cured through municipal ownership, particularly the labor difficulty. Asked if he thought that municipal operation would be cheaper, he said he could not say, but he knew that it would not be any more expensive.

STATE SUBSIDY PROPONENT HEARD

Thomas J. Walsh, state senator of Massachusetts and Boston lawyer, and member of the senate committee on street railways, expressed his belief that after the car riders had contributed all that they will to the support of the transportation company "without noticing they are doing anything," the balance of the cost of the service should be contributed by the state. He commented upon the serious loss of riders in Boston with the increasing fares, and said that he was inclined to think that a 5-cent fare was the logical charge and that the effect this had in pleasing the public had a very distinct value. He thought that if the public was saddled with a portion of the expense involved from wage increases that it would be more keenly interested in keeping the operating costs down. Asked by one of the commissioners if it were not true that the employees would take the position, under the state subsidy plan, that the operating officials should not stand in the way of further wage increases, since this did not affect them but came out of state funds. To this the senator replied that he thought the American public could be depended upon to assert its rights and he would anticipate no trouble therefrom. He said the reason that the labor union men are now so successful is because of the cowardice of those they oppose and the want of more Rooseveltian courage. He said that the patriotism of labor had been largely submerged by the old slogans of human greed, but that he believed organized labor could not be successful unless it had the public will with it. He thought that the tide of public opinion was now running against labor, at least in so far as it has shown an inclination to ignore its contracts. He expressed the view that the tripartite arrangement would never work out and suggested instead that a better solution would be for capital to get a smaller but certain reward and permit labor to receive the speculative reward.

The witness stated in regard to public ownership that he believed private ownership was much more efficient, but that state ownership was inevitable because of the inability of the private street railway companies to get new money. He said he thought the public trustees in Boston had been made the "goats" of the irretrievable past of the corporation.

Senator Walsh presented the following thoughts which he had used in support of his bill, Senate 54, now pending, providing for a 5-cent fare on the Boston elevated railway with a subsidy to be paid by the several cities and towns served by it in proportion to the number of car riders from each.

1. *Economy of the proposal.*

a. It capitalizes the good-will inherent in a 5-cent fare by a large increase in riding without proportional increase in cost of equipment, personnel or overhead expense.

b. It makes for easier collection, smaller number of collectors and generally lower cost of administration.

c. It minimizes the temptation to practice fraud upon the road. Many feel justified in evading the 10-cent fare now, and conductors are more inclined to steal because of the public disfavor of the high fare.

d. It will noticeably increase the number of short-haul riders, a very large number of whom would be patrons in non-rush hours. The pleasure riders will be far more numerous at 5 cents, and pleasure riders make velvet income.

e. It holds up the values of suburban properties and also adds to the value of down-town realty by keeping up the normal rate of increase in every metropolis. Mercantile houses, all retail in-town establishments, all theaters and places of amusement and gathering-places of people, markets, in fact every business which solicits trade, will benefit, therefore all landlords of property so used will benefit. It is the bulwark of what is called by economists the "unearned increment."

f. It makes the zone system unnecessary.

2. *Fairness of the proposal.*

a. It distributes the burden of an indispensable public utility which affects every one in the community, in an equitable manner.

b. It safeguards stockholders, as does the act of 1918.

c. All the people have paid for the development of rapid transit upon the theory that all were interested in it. They were invited to rely upon this scheme of development in buying suburban lands and building thereon. Their way of life was pivoted upon low transit fares.

3. *Social value of the proposal.*

a. It helps to reduce congestion; everybody deplores and seeks to prevent overcrowding of humans. We try even to prevent overcrowding of animals in freight cars on humane grounds. Congestion lowers public morale, makes pessimists; from pessimists come those who are easily poisoned by bolshevism. Congestion lowers human values in industry and commerce by taking the spring out of men and women and shutting them out from the amenities of life.

b. The present scheme is an undue burden on the poor. At the 10-cent fare which is now in force a person obliged to use the elevated twice daily on the average pays an excess of $36.50 a year; a household of two riders pays an excess of $73.00; and so on in proportion to the number of riders from any one household. Even if rents were raised to meet a subsidy tax they never could be raised so as to absorb the gain from a 5-cent fare. On the basis of a $3 increase in the tax rate, let us see what these figures mean: $36.50 means an increase of $12,000 plus, and $73 means an increase of $24,000 plus, etc.

If the loss of patronage through high fares equals 50 million nickels a year, that amount is taken from the pockets of those who must ride. In other words the car riders who must ride are paying for those who do not ride because of high fares. Taking a normal increase of 25,000,000 riders as one extreme and a decrease of a like number under abnormally high fares, we see where we lose $2,500,000. Under a 5-cent fare the amount of deficit to be made up is that much less than the difference between the total of 5-cent fares and the total of a higher fare. Why throw away that amount of money?

4. *Political value of the proposal.*

The 5-cent fare will make friends for the elevated road and for the principle of public control. It will silence the kicker and appease him. It will please the great majority who are the car riders, and restore their confidence in public operation. It will make the work of employees easier and the troubles of the trustees lighter. The latter will have a better chance to work out their problems in peace. I dare say the people will be more tolerant of annoyances through poor and inadequate service. The 5-cent fare makes for comfort for everybody. A pleased public is a distinct asset in every community, and this pleasure is reflected upon every member of the community; on the other hand, a dissatisfied public is a serious menace to progressive legislation, for every measure will be viewed with suspicion. A light public spirit is as pleasing as a light spirit in an individual.

As a matter of practical politics I should have in all tax bills in the cities and towns affected by this measure an item called, for example, "Transportation Subsidy," so that the people would know just what they were paying for this service. This new item, representing a daily actual saving to each citizen, may be used to justify economy in other municipal expenditures, and make municipal administrators keen against waste and inefficiency. It will force economies in operation to keep down the tax rate.

There are now no cheery riders on the elevated, no cheery employees and no cheery managers. Everybody is sore and vindictive, railing in vain against the wrongs of the irretrievable past. This bill, providing a 5-cent fare and subsidy, takes nothing from anybody and gives much to everybody. The soundest fare for metropolitan areas is the limit the public, mostly fairly disposed, will pay without reluctance.

Dividends should not be proportioned to original investment or par value but to actual present value. There is no public sympathy for railway security holders because their investment was predicated on the hope of heavy speculative returns. They ought to stand or fall with the varying fortunes of their gamble, with any political promotors like the Public Control Bill of 1918.

Marion M. Jackson, attorney, representing Mayor Key of Atlanta, Ga., occupied the stand for the remainder of Friday evening and was the last witness to be heard on the public side. Mr. Jackson brought the message that municipal ownership offered the only solution of the present difficulties, which he believed to be very largely the result of the stock manipulations by the private companies. He reviewed the financial history of the Atlanta companies in great detail, endeavoring to show how with every consolidation which had taken place there had been a considerable inflation of the capitalization. Commenting on the service-at-cost franchise in Cleveland, he said that this plan was put in because it was impossible to have municipal ownership in Ohio at that time, and that it was therefore only a makeshift. His principal mission, he said, was to induce the Federal Commission not to make any recommendation which would act as a club against municipal ownership. The mayor for whom he spoke was elected on a municipal ownership platform, said the witness.

The testimony on the public side having been completed, Mr. Warren, counsel for the railways, sought opportunity to place at the disposal of the commission several statements prepared by the American Electric Railway Association in answer to questions that had been raised by the commission during the previous hearings. Some of this statistical information will be published in a later issue of ELECTRIC RAILWAY JOURNAL. A statement by J. A. Emery, of the firm of Ford, Bacon & Davis, was entered in the records at this time. An analysis of the income accounts of the street railways was presented in this statement which appears in part elsewhere in this issue.

In closing the testimony of the public side, Secretary Charlton Ogburn, who had acted as counsel for the public on behalf of the commission, called attention to the 12 per cent flat increase which had been awarded by the War Labor Board as its final act. This brought the maximum scale of the Board from 48 cents an hour up to about 54 cents an hour. He also announced that the Pittsburgh men had rejected this increase and had gone on strike the evening before (Thursday evening). The employees of the East St. Louis lines did the same.

Traction Situation in Seattle*

Events Leading Up to Purchase by City of the Street Railway System, and Operating Statement for the Quarter Ending June 30, 1919

By Mayor Ole Hanson

Seattle, Wash.

SOME years ago the Puget Sound Traction, Light & Power Company, operating most of the privately-owned street railway lines in Seattle, filed with the Public Service Commission of the State of Washington an application to be relieved from certain franchise obligations relative to paving of its right-of-way, payment of proportion of its gross earnings, and payment of bridge rental and other franchise obligations.

Because of this pending application the company did not comply with its franchise obligations. A decision was finally rendered by the Public Service Commission in a similar case coming up from the city of Tacoma, wherein the Public Service Commission decided adversely to the railway's contention.

The city of Seattle also was successful in its various suits in the Superior and the Supreme Courts of the State to enforce payment of gross earnings, taxes and payment of proportion of bridge rental. The long record of litigation between this company and city resulted in the rapid crystalizing of public sentiment to a point where it was shown that the Puget Sound Traction, Light & Power Company could no longer enjoy the good-will necessary to operate its street railway property.

FINANCIAL REPORT FOR QUARTER ENDING JUNE 30, 1919

	Current Year	Previous Year
Revenue from transportation	$1,273,018	$1,115,076
Revenue from other railway operations	26,021	20,046
Total revenue	1,299,039	1,135,122
Operating expenses	1,052,727	840,713
Deductions	239,503*	
Net operating revenue	6,809	294,409[2]

*Includes interest,	$198,781
Damage claims	20,000b
Industrial insurance	20,722a
	$239,503

(a) The Industrial Insurance shown above has not been paid as no demand has been made by the commission. This amount, however, is a proper amount to be apportioned for this period.

(b) As the city paid out about $1,000 for damage claims we have set aside arbitrarily the sum of $20,000 as a proper amount to be charged.

	Current Year	Previous Year
Operating expenses	$1,052,727	$840,713
Way and structures	84,079	55,599
Equipment	146,461	76,197
Power	179,979	194,398[1]
Conducting transportation	599,672	352,346
Traffic	478	2,270
General and miscellaneous	42,058	159,903
Kw.-hr. purchased	17,035,346	18,514,119
Car-miles	4,146,850	3,386,350
Car-hours	442,572	347,360

An average for depreciation would ordinarily be $75,000. Owing to the fact, however, that our maintenance charges are heavier by $98,744 than the same period last year, we feel that we have appreciated the property and that no depreciation should be charged.

[1] This figure was computed from the number of kw.-hr. and the unit cost of the current year.

[2] Presumably there are deductions that should be made from this figure but the report supplied includes none.

The company was also in dispute with its employees as to a proper scale of wages, and was unable at the scale of wages it was paying to secure an adequate number of men to operate its cars; it had as much as 20 per cent of its equipment in the carhouses at one time, although these cars were imperatively needed to take care of the transportation of the shipyard workers. The city officials endeavored to adjust in an amicable manner the points at issue between the company and the city in order that better service might be provided for the public, and on July 6, 1918, I sent the traction company a communication in which I indicated willingness to co-operate with the company in every way, even waiving for the period of the war certain franchise obligations, and also co-operating with the company so that operating economies would be effected in the following manner:

SUGGESTED METHODS FOR EFFECTING ECONOMIES IN OPERATION

1. Inauguration of a system of skip stops by which the company expected to save $100,000 per year,
2. Elimination of street congestion due to standing and parking of motor cars at curbs. This the company expected would result in a saving of approximately $100,000 per year, as a faster running time could be maintained through the business section.
3. Permission from the city to use the new bridge in the north section of the city, by which faster running time could be made.
4. Transfer exchange between the Municipal Railway lines and the company's lines.
5. The right to use idle cars of the Municipal Railways on a fair rental basis.
6. Emergency interchange of power between city and company.
7. Assistance in staggering of school hours and shopping hours to relieve peak loads.
8. Extra charge of 1 cent for transfers on certain lines, which would mean a probable extra revenue of $200,000 per year to the company.
9. Discontinuance of service on certain lines where service was being maintained only to hold the franchise.
10. Relief during the period of war from compliance with the paving obligations of the company's franchises. The unfulfilled paving obligations to this date would have required the expenditure of approximately $400,000.

These concessions were to be contingent upon the company's consenting to increase the pay of its employees so that $4 would be the minimum wage for eight hours, and also to pay its past due percentage of gross earnings and to operate all the cars available.

NET RETURN ALLOWED DETERMINED BY INCOME OF PREVIOUS FIVE YEARS

The city then entered into conference with the company on the points involved, and on July 11, 1918, the City Council adopted a recommendation to permit the company to earn an average net amount during the war equal to that earned during the previous five years and to bring about the necessary fare changes to make this possible. In compliance with this recommendation the Department of Public Utilities submitted a report on Aug. 17, 1918, during the discussion of which I made an offer to lease for the period of the war the street railway property upon the understanding that it was to be kept in as good condition as when turned over to the city; that the company would receive a net return equal to the average net return it had earned on its properties for the last four preceding years; and that the city of Seattle would purchase direct current power for the railway system from the company at the rate of 1 cent per kilowatt-hour on the trolley feeder lines.

On Sept. 6, 1918, after a thorough investigation the City Council offered $15,000,000 for railway property payable in 5 per cent utility bonds. The city agreed to purchase direct-current power from the company at 1 cent a kilowatt-hour at the trolley feeders. The company accepted the proposition Sept. 13, 1918. On Jan. 8, 1919, the ordinance providing for the acquisition of the street railway lines was approved. The retirement of the bonds at the rate of $833,000 a year beginning Feb. 1, 1922, was specified in the ordinance.

The city was further bound by the ordinance to charge such rates as would provide for the payments of interest and capital specified. In the litigation incident to the purchase of the street railway properties the City of Seattle was successful both in the lower court and in the Supreme Court of the State, which on March 5, 1919, confirmed the legality of the proceedings by which the city aimed to acquire the property. On March 31, 1919, the proceedings were finally consummated and municipal operation began at 11 p.m. on that date.

---

*Abstract of Statement sent to the Federal Electric Railways Commission, Washington, D. C., and read by Charlton Ogburn Aug. 13, 1919.

State the Facts to the Public*

Plain, Simple Publicity Needed—Criticism of Commissions Refuted—Fundamental Faults Outlined and Remedies Suggested

BY WILLIAM D. B. AINEY
Chairman, Public Service Commission of Pennsylvania

WITHOUT adequate electric railway service the economic, social and industrial life of the nation is seriously affected, if not paralyzed. Its continuance upon a sound and efficient basis is of paramount importance and that continuance cannot be assured to the public without affording to these companies adequate revenues enabling them to produce it.

My acceptance of your invitation to appear before you is not predicated upon the assumption of the possession of any fund of knowledge on my part which would enable me to present to you a four-cornered plan by the application of which the difficulties surrounding the railway would disappear. I shall content myself by suggesting for your consideration a line of inquiry which I believe has in it, elements of substantive helpfulness. I have some objection to placing myself in the position of a mere doctrinaire and an abhorrence for the vacuum of immature theories. I am convinced, nevertheless, after some careful consideration of the difficulties toward which you are devoting your attention, that there is no single plan of general applicability to all companies and to all localities and to all conditions. I cannot accede to the suggestion that you have *a* problem before you; on the contrary, I must, with due deference to these distinguished gentlemen who differ, insist that you are confronted by several problems predicated upon different factors and requiring various answers as differentiating circumstances play upon particular companies and localities.

If, then, I may with full appreciation of these problems as they affect the railway and the public help in clearing away the underbrush so that we may obtain an unobstructed vision into the fields beyond, I shall have at least fulfilled the actuating purpose of my presence.

1. There are widely varying conditions both with respect to the state laws and the economic policies enforced therein under which electric railways are permitted to operate.

2. Within each state the localities which these companies serve vary so radically as to prevent a conclusion which we might reach with regard to one being applicable to another.

3. The companies vary with respect to their corporate history, the circumstances under which their roads were constructed, and the extent and character of the population which they serve.

Necessarily the increases in cost of operation will not equally affect the net returns of all these companies, and so we may have 5, 6, 7, 8, 9 and 10-cent fares each reasonable and severally yielding adequate returns.

We would be blinded to the obvious, however, if we did not recognize that every electric railway of the land has felt the heavy weight of these increases. They exist, and must be paid. It is, therefore, a part of our duty to ourselves, and the public which need them, to aid, in our own selfish interests, in maintaining the railways as efficient public servitors.

We would rapidly retrogress, as a nation, into conditions similar to those which confronted the world in the dark ages, were we to be deprived of the services of and means of inter-communication provided by railroads and railways.

The public which constitutes the patrons and provides the revenues will not in my judgment have the least difficulty in agreeing with the carriers that the increased costs of operation ought to be, yes, must be, reflected in the rates of fare which they are called upon to pay. Neither will they controvert the fact that railway service is a national necessity in the conduct of business and in providing for the convenience of the country, but there are other matters concerning which they are in doubt and as to which they have not been advised, and every man is inclined to resolve the doubt in his own more immediate interest. They are entitled to the assurances which can only come to them through definite clear-cut information, free from vague generalizations. If I am able to judge, the psychological influences which are at work against the public acceptance of increased fares are that there is a belief that some companies are over-capitalized or are extravagantly managed whereby the incomes are diverted and the public overburdened. This is the psychology of the case.

FEDERAL HEARINGS HAVE HELPED CONFUSION OF ISSUE

In this connection and as emphasizing this point, let me express in no unfriendly spirit of criticism my astonishment at the incertitude and confusion with respect to remedies which appear in the testimony of the railways and allied interests which have been presented before you. Notwithstanding many notable and instructive statements, that of President Pardee coming uppermost to my mind at the moment, there is on the part of the railways a remarkable lack of cohesive or constructive suggestion as to what ought to be done. I have no doubt this is the result of an attempt to nationalize the subject, to generalize where generalization was impossible and to hazard conclusions which might have application in some states and to some localities but not to all.

Take the following thoughts which were carried extensively in the public press and consider their effect upon the car riders whose good-will it is admitted by the railways must be won. I have gathered from a hurried perusal of your hearing records that the testimony of the railway witnesses ranges from the advocacy of municipal ownership, not as an effective remedy, but on the penalizing theory that it was bad and that the public when sufficiently punished would in a repentant frame of mind give more friendly support to private ownership; to requiring the public to pay fair return on watered stock. There have also been indirect statements, if not direct ones, intimating that public utility commissions were politically created and as such, with ears continually to the ground, were too timid or disinclined to grant the full measure of relief to which the railways were entitled. It is such expressions that bring doubt in the public mind as to the good faith of these companies and undermine the public's confidence in the integrity and fairmindedness of commission decisions. Particularly is this likely to be so when these decisions support increases.

---

*Abstract of Statement made before Federal Electric Railways Commission, Washington, D. C., Aug. 15, 1919.

Again emphasizing, as I believe I have the right, my full and sympathetic appreciation of their difficulties, it appears to me that the electric railways have pyramided an admittedly serious situation, which requires at your hands most careful and helpful attention, by at least a mild form of hysteria, which does not. Suggestions that patrons pay dividends on watered stock or on "capitalized hopes," that dividends on all capital be doubled because of the lessened value of the dollar, do not go far in wining public confidence, or gaining public support, when read by these patrons in daily newspapers. It necessarily distracts all our minds from the point in issue, from increased costs of maintaining service, to increased dividends to stockholders. If, therefore, the companies which are burdened with overcapitalization or unnecessary corporate complexity will put their houses in order fairly and fearlessly, they will have laid the foundation upon which they may establish public confidence and receive public support.

The valuation basis for rate-making purposes, in every state in the Union where regulatory authority is exercised, rests primarily under the law upon original costs and reproduction costs new; in other words, upon the fair value of the property devoted to public service. Upon that fair value, every company is entitled to receive a fair rate of return, in addition to the costs of operation, including the increases in labor and material items, and a reserve fund for depreciation; and I am quite content to add, an allowance when tangibly expressed for economies in operation. I believe these allowances should be generous and not trimmed to the bone.

PUBLIC MUST KNOW FACTS IN FULL

Are the electric railways willing to stand actually as well as theoretically upon these revenue grounds? If so, I need make no promises for the Pennsylvania Public Service Commission. Its deliverances from time to time, and some of which have been specifically called to your attention, are sufficient to establish that it will fearlessly and justly perform its duty with due regard to the carriers and the public.

Of course operating costs, including increases for labor and material, must be met out of the imposed rates of fare. The public have no just ground for objecting, nor can I conceive of a public service commission placing an obstacle in the way, but the problem is not fully stated in the public's estimation by calling attention to the heavy increases in operating costs and to the materially lower net return. Between these two to their mind are numerous intervening factors, an inquiry into which we must turn our attention if we would emerge from the chaos of the present situation.

When an epidemic touches a locality its effect upon the individual depends in part upon any organic or fundamental physical weakness which that individual possesses. It is an axiom, I think, that disease usually makes its most sinister attack upon the weaker organ of the patient. A physician in diagnoisis would be recreant if he did not, therefore, take into consideration these fundamental difficulties in each patient. While analogies are not always logical, it is without question that the high costs of labor and material, the lessened purchasing power of the dollar, perhaps the changing riding habits of the people have borne down upon the electric railway interests of the land most heavily in places where there are fundamental weaknesses in corporate history, management or general conditions. Shall we stop short of inquiring into these weaknesses?

If, then, these higher costs are likely to be continued, the companies in order to survive and meet the responsibilities of the new conditions under which they are called upon to operate must not deceive themselves. They must not gloss over any organic difficulties if they exist, but even at the expense of much travail subject themselves to rigid self-examination.

SAVING WATERED STOCK FOR WIDOWS UNTENABLE

It has been remarked before you, I understand, that some companies have capitalized "hopes." It would be inexpedient for me to name or even have in mind particular companies, but making a composite statement of several to which my attention has been directed, let me inquire what you would recommend to public service commissions who were seeking to determine the fair return in the cases of companies which on outlays of from two million to three million dollars without an additional rail, spike, car or dollar of investment, capitalize such properties at seven or eight million dollars. Where increases were not made on the basis of money invested or upon the physical value of the property devoted to public service, but the then or anticipated net incomes were capitalized, these incomes have necessarily been lessened by the increased costs. Naturally such companies do not wish to readjust their capital issues to meet present net incomes on the basis they were established, but they now desire to increase their income to meet their former increases in capital.

The payment by the public of a fair return upon watered stock on the ground that that stock had passed into the hands of widows and orphans, no matter how just or equitable it might appear to the advocate of such a policy, nor how strongly entrenched in law, nor pursuasive the argument as an *ad hominem* appeal, would with difficulty secure a consenting riding public to support it and would, of course, require changes in the organic law of every state regulatory body of the land. For valuation for rate making purposes is by law based primarily upon original costs and reproduction costs new, neither of which would respond to such a suggestion. Moreover we would then be confronted by a situation in which the company whose capital issues bore fair relationship to the value of its property devoted to public service would fare much worse than the one burdened with watered stock.

I am deeply concerned then, as a public official charged with grave responsibility, with respect to the matters before you and acting in the interest of the public and these companies, that the carriers shall place their appeal for relief squarely upon the only tenable and legal grounds which would entitle them to consideration at the hands of the public utility commissions of the land

and not predicate their demand upon arguments and theories which under the law, as it exists, would be bound to close the door of helpfulness of every regulatory body of the nation.

REGULATION BY STATE COMMISSIONS NOT A PRIMARY OBSTACLE

If we are agreed upon the legal and equitable standards for fair value and a fair rate of return as the basis upon which the railways are entitled to relief, then I submit that in the larger aspect there are no regulatory difficulties, except perhaps in a negative sense standing in the way of an adequate solution of the railway problems. The equation stands, adequate service on the one side and a paying public on the other. To create the ideal situation the railway companies and their patrons must be brought into harmonious relations in which adequate service is rendered and reasonable and compensatory rates are paid.

At the risk of being trite and also redundant, I will state that it is recognized that the companies must have adequate revenues, sufficient to pay the cost of operation, provide for proper reserves and to yield a fair return upon the value of the property devoted to public service. The public, of course, must, out of rates of fare, provide such revenues, but it does not lie within the power of public utility commissions nor in statutory enactments nor with the deliverances of your distinguished body to provide a riding public *willing* to pay the imposed rates. The patronage to produce the required revenue must be obtained by the energy, efficiency and business acumen of the companies. Against the fiat of any law, order or recommendation of regulating or recommendatory bodies, municipalities or legislatures, the public have a determinative veto, for they may still withhold their patronage.

In states and in localities where statutes or municipal ordinances have fixed rates in which companies have heretofore assented and which under the law of those states are beyond the regulatory authority of commissions to change, the barriers are legal and not administrative, and the relief must be found by appealing to the authorities which imposed and may remove those barriers. How can your distinguished body generalize over such conditions? They do not obtain in Pennsylvania. They do not exist in some other states. It was held by the Pennsylvania Commission, in an opinion which I had the privilege of preparing, (Wilkinsburg case), that notwithstanding the constitutional provision authorizing municipalities to grant or withhold consent to the laying of tracks upon the municipal highways, when such grants were made and accepted by the companies with conditions fixing the rates of fare to be charged, the commission had authority to inquire into and determine the reasonableness of filed rates which were in excess of those prescribed by ordinances. That opinion has recently been affirmed by the Superior (Appellate) Court, and the legal barrier against imposing reasonable and if need be higher rates has not existed in Pennsylvania. Since the establishment of the public service commission the companies file their rates which upon thirty days notice automatically, without approval, become effective. If complaints are filed the rates continue in effect until the commission makes a deliverance

What the Federal Commission Should Bring Out

BY WILLIAM D. B. AINEY

The public and those charged with administrative and legal responsibilities will welcome clear and definite statements of the facts which confront them as railway patrons

1. The people should be advised of the commission's conclusions as to the extent to which increased costs have entered in railway expenditures.

2. The people should be advised by the commission as to the basis upon which it would grant or withhold increases to meet the situation.

3. The commission's deliverances should clarify the public's vision with respect to the importance of the railways in carrying on its business, and advise the public in a definite way as to the results which would follow the failure to provide adequate revenues.

4. The public, the railways, state commissions, municipal authorities, legislatures and executives have several duties and responsibilities, the performance of which awaits in some instances definite utterances and programs.

5. The inter-dependence of railways and patrons in which the railways must supply the service and the riders must provide revenues, cannot be over-emphasized.

6. The injustice to the car rider as well as to the company, and the economic fallacy of certain franchise burdens imposed on the carriers should be corrected.

7. Railways, if they are to be continued, must be operated under conditions not heretofore confronting them. The jitney, auto-bus and private automobile have no doubt deflected many fares. Their advent in such large numbers has not only affected revenues, but it has placed a competitive service in action, and these private or public competitors must be met by the railways.

8. If railways are to survive, they must meet that competition by efficiencies and economies in operation, and there is a wide range for study and recommendation in these respects.

9. Too long rides for fares less than cost are sometimes provided. The short-distance rider, of course, foots the bill.

10. Coal must produce more current, cars more riders, and miles of track more service.

11. Some railways were constructed with more optimism than good judgment. Without patronage to support them, of course, they cannot survive, and we cannot burden our statistics with such cases.

12. Jitney service where it exists must be a regulated service.

13. On the part of companies corporate complexities should be eliminated where possible and if the future holds any promises there must be some fair relationship between capital issues and the property devoted to public service.

after a hearing. No intervening power to suspend exists.

This establishes that the electric railways of Pennsylvania are operating under legal and regulatory conditions quite different from those obtaining in other states. A difference which, with due deference, I submit you are bound to note in your conclusions. Nearly all the electric carriers of the state were operating under municipal ordinances fixing rates of fare, but a very large proportion of them have increased their rates above the municipally imposed ones and their right to do so, to the extent that they were just and reasonable, is supported by commission decisions and judicial affirmance.

Permit me to excerpt from the report in one case wherein there was a rate fixed by ordinance. In the Waverly case the commission made the following pronouncement in upholding a 7-cent fare:

> To expect public service of these carriers without permitting them sufficient revenues to produce it is as fallacious an economic suggestion as to demand bricks without straw or to require faithful toil from the muzzled ox.
>
> It is therefore a matter of ordinary business prudence and sagacity that the public generally should come to an appreciative understanding of what that service means to the industrial and commercial life of the State, and to each locality within it and to recognize that the terms upon which it can be continued for their use and enjoyment are that it shall receive at their hands as ratepayers, sufficient to furnish it.
>
> If the public is to be adequately served, railways must be permitted to earn out of imposed rates of fare revenues large enough in amount to pay operating costs, a fair return and provide for the maintenance of the property, provided always that the rates imposed are not unjust or unreasonable.

I am calling these matters to your attention for the purpose of stressing two points, that Pennsylvania, both in its law and under the commission's broad policy, has dealt fairly with the electric railway interests of the state, and to establish before you that regulatory authority has not stood in the way of these interests obtaining adequate returns.

RECEIVERSHIPS RARE IN PENNSYLVANIA

In that connection you will be interested to note that we have upwards of 130 operating companies in the state with about 5,000 miles of track, and as I am informed not more than eight are in the hands of receivers. Of these, seven have 180 miles of track, and one has 605 miles. Two of them with 39 miles of track went into receiverships in early 1914, two with 60 miles of track in 1915, and the remainder in 1918. In every instance where receivers have been appointed, it was due in very large measure to special circumstances. For instance, one of these small companies had a serious wreck with heavy loss of life, the damages for which were enormous and beyond its ability to pay.

Regulatory authority is therefore not a primary obstacle confronting utilities. In fact, in some of the larger states the want of such authority is manifest.

In recent addresses I have adverted to the fact that no two companies have the same corporate and financial history. Their railways have been constructed under widely varying conditions; they serve different types of localities in which the congestion of population, geographic and topographic features and riding habits play important parts. Take our two largest railway companies; that in Philadelphia and that in Pittsburgh. Each has been affected by the increases in labor and material. In the one, the company has met, in fact anticipated the demand for increased wages, has continued to pay accustomed dividends on its stock and interest on its bonds, and it has not increased its rates of fare which are continued at the basic 5-cent rate.

I quote briefly in passing from one of the newspapers of Philadelphia of Friday, Aug. 8, with respect to that company:

> The introduction of improved operating methods, including removal of wasted effort, has thus far in Philadelphia served to keep pace with increased wages and other costs, as against the alternative of raising fares.
>
> Increasing fares in other cities has almost invariably resulted in reducing the number of passengers carried by forcing many who would and should be car riders to walk or use other means of transportation.
>
> The remedy, it is believed, is to be found in doing everything possible to increase revenues by increasing the number of passengers carried and decreasing the costs of operation.

In the other case the company has gone from five cents by gradations to ten cents, is in the hands of receivers, and has earned hardly enough to pay operating expenses.

Here I again stress the point of the error of generalization in seeking our remedies. With these two localities before us, similarly influenced by the wage increases and higher material costs, it would lead to doubtful conclusions that either the 5-cent fare or the 10-cent fare were wrong when it is possible that (with the other factors of differing topography and density of population before us) both may be correct.

INTER-CORPORATE COMPLEXITIES

I invite your attention to another economic difficulty which confronts some but not all the railways—expensive inter-corporate complexities. An operating company of Pennsylvania controls directly or indirectly, by stock ownership or leases, some seventy-eight (formerly 204) underlying companies with a complexity of inter-corporate relationships, including numerous bond issues and rental charges, and all surmounted by a holding company. Such a condition can no more be justified from the standpoint of economy or efficiency than could be the placing of that many wheels in a watch. The expense of maintaining these corporations, together with the duplication of taxes, is a burden which ultimately comes out of the revenues of the operating company, even though commissions may deduct the amount from fair return. And the arrangement serves no useful purpose either to the public or to the railways. Whether that expense is $500, $1,000 or $1,000,000 per year, there is but one answer to its continuance. This is a matter which at least in Pennsylvania must be adjusted by the companies rather than by the commissions, but it is important in connection with your present inquiry.

TOO LONG RIDES HAVE BEEN SUPPLIED

Sometimes companies carry passengers for distances which at imposed rates are less than cost. Why should not there be a readjustment of rates to avoid such inequality? When the short distance rider awakens to the fact that he must be charged a larger rate in order to give some other person a partially free ride, there ought to be no serious local difficulty in accomplishing the change. Whether that readjustment should be made upon a strict zoning basis I am not at all convinced, but prefer to leave the matter under the general statement that rates of fare must be based upon some fair proportion to the service rendered. It is too much to ask that companies give greater attention to economies in operation. Some are now doubt doing it. The meet to-day's and to-morrow's condition every utility must get more out of each ton of coal consumed.

MERCHANDIZING

Let us assume that each company has reached the goal of economic efficiency, that each company has done its part. The required gross revenue has to be raised by the imposition of rates of fare. Here, then, comes the severe test of operative discretion. The gross amount to be raised is made up of two factors, the anticipated number of passengers and the rate of fare to be applied. It is an axiom of every day business judgment that patrons should be retained and others gained if it is possible to do so. I shall not burden this commission with any extended statement on this phase of the question. This too is a matter involving the exercise of business judgment of each company in the light of local conditions, congested centers and study with respect to potential riders. In two recent addresses I have discussed at some length the influence of the rate of fare upon the riding habit, and have sought to emphasize the fact that street railway companies might profit by the merchants experience and methods. Having car rides to sell, why should not the companies adopt adequate methods for selling? The percentage of increase in rates has not followed by the same ratio increase in revenues. Increased rates have in many instances been followed by a flattened curve in the number of car riders. It has been pointed out that the unusual winter conditions of 1917-1918, the removals by draft and the later epidemic all affected the data which we might use in determining the extent of the loss of riders. It has also been noted that the jitney and private automobiles have taken away a considerable number of patrons. Nevertheless there remains a very appreciable number who have been influenced by the rates of fare. No business house would be content to lose such a large percentage of its customers without making a stupenduous effort to retain them. Many of these would not be casual but permanent patrons. Why not consider in particular localities monthly commutation tickets to meet this situation? This matter must be measured not only in terms of the revenues to the companies, but by potential good will of these riders in their respective communities, a good will that is reflected in local sentiment, political and otherwise. I look upon the loss of car riders as being a serious menace to the well-being of any company, and it is not an answer which should satisfy the companies that the increased fare gives them a revenue sufficient to meet their needs even if it has to be secured from selected patrons at the loss and consequent cost of a considerable number of their former patrons.

Let me frankly say that all these matters do not affect all of these companies, and no doubt many of them are wholly free from any of them, but where they do exist that company cannot afford to ignore them in its own interest as well as that of the public.

[The conclusion of Mr. Ainey's statement appears in the box at the bottom of page 389.]

Status of the Electric Railway*

Its Place Cannot Be Taken by the Jitney But Zone Fares Are Desirable

BY DUGALD C. JACKSON

Professor of Electrical Engineering, Massachusetts Institute of Technology.

HOWEVER serious may be the direct financial disturbances arising if the extensive electric tramway systems in the country decline into bankruptcy, those effects are minor compared with the effects on the prosperity of the country that will result from a failure of systematic local transportation in the cities. The continuation of business in American cities, whether industrial, mercantile or other, is dependent on systematic local passenger transportation being available, and the activities and comfort of the great majority of individual citizens are likewise dependent on systematic local passenger facilities. Such facilities must be preserved and enlarged in a character which will maintain them, adapted to the characteristics of the cities.

Most street railways have been organized and work under provisions of some agreement between representatives of a city and representatives of the stockholders. The principles embodied in these contracts are usually similar to those in short-time business contracts, but the conditions are different, and both city representatives and company representatives have been at fault in the past in not recognizing this fact. A company directorate which accepts an agreement to make a fixed fare within city limits which are not defined and may be largely expanded, places the company in a situation where the ultimate bankruptcy of the enterprise is likely to result in case the area of the city grows in large measure, and a city council which insists on such a provision promotes the ultimate strangulation of service as the city grows. But the difficulty has been to find a better way. With the advent of state public utility commissions, the execution of some of the provisions may have yielded here and there to judgment. But even then there has often been a failure to correlate the facts so as to bring out the essential meaning of the tendencies in the industry.

The introduction of supervision by public utility commissions was essentially a move which, uniformly and fairly applied, would result in providing good service at cost, when a fair return on the investment is included as part of the cost in addition to the ordinary daily out-of-pocket expenses. At the same time it affords opportunity for a street railway operated with particularly able, foresighted management and giving notably good service to profit through receiving a larger return on its investment than the average for the industry, since a regulating commission may use its judgment on the question of restricting the return. The present slogan for service at cost adds to this the additional feature of guarantee by the taxpayers of a return on the investment, associated with operation under public authority. This addition has been adopted in certain instances, but it introduces an inflexibility in the rate of return which may in the future prove unfair to one side or the other. Another solution is to add to the powers of the public utility commissions, giving them sufficiently extensive and experienced engineering and accounting staffs so that they can fully audit the companies' affairs and correctly advise the public in respect to the problems of extension and of operation, without actually undertaking the details of the management. This is a solution to which I believe it is important for your commission to give careful thought.

---

*Abstract of statement made before Federal Electric Railways Commission, Washington, D. C., Aug. 15, 1919.

Our present street railway service is an outgrowth of horse car service which, naturally, dealt alone with the short haul, and the electric railway fares were chosen and fixed by habit on the basis of the horse car service. In that service, the investment per passenger-mile haul was less than in the modern electric service. In Massachusetts the general ratio of total investment to revenue passengers carried per year has gradually but unmistakably increased during the entire period since electrification of the street railways, and the density of traffic measured in revenue passengers carried per car-mile was less in 1915 than at the opening of the period. The service itself has been entirely changed by the introduction of the electric car, which made practicable longer hauls, so that a single fare was paid for hauls which previously cost the passenger two or three fares spent on connecting horse railways. The speed of transportation has also been raised and this has again increased the investment per passenger-mile-haul as well as certain factors of the operating expenses.

Since it is necessary to maintain both the short-haul and the long-haul traffic, it may be inquired whether the electric car is adapted to do this double service. The following considerations bear strongly upon this question:

RAIL LINES BETTER THAN BUSES

It must be remembered that approximately one-half of street railway investment is fixed in the permanent way and adjacent pavement. This proportion has slowly increased during the past thirty years. The jitney buses which run at will on the street surfaces are free from this investment. True their owners contribute by taxes and license fees toward the cost of pavements, but so do the street railways in addition to financing the investment of their own permanent way which is used jointly by other street traffic. Moreover, the street railways make heavy investments in power plants of the most economical character, which is a conservation policy as well as a policy for economy, and the jitney does not. These considerations make the jitney business more like other commercial enterprises in respect of the rapidity of turn over of capital and also enable it to compete with street car service operated with flat fares. It is important to examine carefully whether these considerations make the jitney bus lines with systematic routes and reliable schedules desirable substitutes or successors to the street railways, or at least to a part of their business, as has been asserted.

What would be the effect on the street traffic congestion in cities such as Chicago, Baltimore, Philadelphia, Boston, and a large number of others, if the surface street railway service was replaced by bus service of equal reliability? Many of the American cities each have more than 1000 cars operating on street railways during their rush hours. To replace such a service with buses would require several times as many vehicles, thereby adding to the welter of street traffic in the heart of each city. These vehicles would cause more than a proportionate addition to the traffic confusion because they would travel at will over the street, instead of being confined to certain definite channels like the street cars. Moreover, additional streets would have to be paved with smooth pavement at greater expense to support this bus traffic. This means a large increase of investment in paving as well as annual cost for paving maintenance. Given equally systematic and reliable service by street cars and by jitney buses, community economy stands with the street car for service in main channels. The jitney may be made serviceable for certain special conditions. It should also be observed that the use of subways to divert some of the surface traffic from the surface in certain parts of the city, as is done in Boston and Philadelphia, and as is talked of in Chicago, Cleveland and elsewhere, would be less readily accomplished and less safe for railless traffic than for rail transportation. All of these considerations point to the fact that it is necessary under our present conditions of city life to maintain the rail traffic at a high degree of completeness.

UNIT FARES DISCOURAGE SHORT HAULS

In my opinion, no amount of repressive regulation will be adequate to do away with the competition which jitney buses produce. If the street railway service cannot be made complete and adequate to the needs, some other service, such as jitney service, will come in as a competitor. In fact, it ought to come in and be encouraged unless means can be provided to make the street railway service adequate to the needs, and the necessities of the present are to find the best ways of making the street railway service adequate, in view of the fact that it is (with all things considered) the more economical service for the community.

After having studied carefully the conditions of local transportation in American cities under the normal conditions of cost prior to the war, I became convinced that a considerable part of the difficulties of the present street railway transportation systems is due to their effort to satisfy the needs of long haul at the expense of the needs of the short haul. These conclusions are set forth in a statistical report on the subject, published in 1917 in a book entitled "Street Railway Fares, Their Relation to Length of Haul and Cost of Service" by Jackson and McGrath. In the first chapter of this book are set forth a summary and general conclusions. I wish to call your attention to seven paragraphs of specific facts regarding street railways which this investigation, in my opinion establishes.

1. Density of traffic is the most fundamental factor in establishing the cost of service per passenger. The higher the density of traffic, the lower the investment charges and operating expenses per passenger. In this connection density of traffic is a term used to mean passengers carried per car-mile run, and passengers carried per mile of track per annum.

2. Long hauls tend to decrease density of traffic, thus decreasing the earnings per car-mile and increasing the cost per passenger.
3. The average length of passenger haul increases with the length of line.
4. The density of traffic becomes large in medium-sized cities, but as the cities spread out and become very large, the density of traffic tends to decrease again because of long hauls into thinly settled suburbs.
5. Increased unit fares have a tendency to decrease traffic, while decreased unit fares tend to increase traffic.
6. For a number of individual roads studied, as well as for the aggregate of all street railways in Massachusetts combined statistically as a single system, it has been found that the average actual investment per revenue passenger carried per annum has been increasing, and the average rate of return has been decreasing. This has been associated in the last few years (considering conditions prior to the European war only) with an upward tendency of operating cost per revenue passenger.
7. Fares in British cities are somewhat lower than on American street railways, and are almost invariably based upon the distance the passenger rides. In general they approximate (before the war) about 1 ct. (U. S. money) per mile and the average ride is usually only about 2 miles. Lower rates abroad may be ascribed partially to a greater density of traffic which results from a much greater density of population per mile of track, while wage scales are much lower in British cities than in this country and free transfers between lines are seldom issued.

[In addition to these seven specific facts, Professor Jackson quoted ten conclusions from his book, setting forth, among other things, that, in his belief, the street railways in the United States, both urban and suburban, would sooner or later be forced to adopt a system of rates based more nearly on the length of the haul. A mileage system of rates would probably be less desirable, in his opinion, than to retain the nickel fare by putting a reasonable limit on the length of the ride permitted for that rate. In general, he recommended, something shorter and more uniform than the present irregular and unsystematic 5-cent zones, possibly with lower unit rates than 5 cents.]

ZONE FARES SHOULD BE ESTABLISHED

The foregoing conclusions all point to the necessity of some zone plan of fares for our large cities. Where it is pointed out in the conclusions that a mileage system of rates is probably not desirable in American cities, it is the intention to urge the fact that transportation, like other branches of business, has a certain proportion of overhead cost which is reasonably independent of the bulk of the business, and that, therefore, the short haul passengers may be expected to pay a larger fare per passenger-mile apportionment than the long haul passengers, and that the zone system should be laid out recognizing that fact. Zones which might have been based on a 3-cent fare under pre-war cost, would, to-day, call for a 5-cent or larger fare.

Most of the street railways of the United States have wished to avert the introduction of zone fares, partially on account of the difficulty of adequately auditing the fares collected. In the European cities where zone fares have been used for several decades, the plan has been usually founded upon a straight mileage charge without consideration of the stand-by charges, and measures for adequate auditing have not been introduced. This is undesirable in American practice since we have a much heavier passenger flow which calls for larger loads on our cars and makes impracticable the collection of fares according to European methods. Moreover, the American public is more inclined to criticise loose methods of fare collection than the foreign public, and the American public has become more accustomed to methods of checking money collections in all lines of business, as is illustrated by the very general use of cash registers in the mercantile lines, than has the European public. Some of our American street railway employees suggest that the introduction of accurate methods of accounting for fares is a reflection upon the honesty of the platform men on the cars, but, in my opinion, this is an inaccurate inference in respect to the attitude of the true man. No true man can fairly object to the use of a cash register in a corner grocery in which he is employed as a clerk nor in a department store where he is employed, as it puts him upon his metal to do his work accurately and is to his advantage rather than his disadvantage if he is honest. Similarly accurate methods can be introduced in association with some fare collections on street railway cars. The passengers can rely upon paying only for that which they get in the way of transportation and can likewise rely upon the company receiving a full accounting from the collectors.

With the normal conditions of commodity costs gradually returning, as we may expect them to return ultimately, the unit fare may go below the nickel, so that a proportion of the passengers carried should pay less than the traditionally established nickel fare, while those pasesngers who travel larger distances will, and ought, to pay more than the nickel fare.

ZONE FARES REDUCE CONGESTION

Voice has been given to much well meant but incorrect criticism of zone fares for American cities. This has generally been based upon an allegation that zone fares would increase the concentration of population in the cities. My study has satisfied me that these premises are erroneous. The family that has gone to the suburbs for the purpose of obtaining better living conditions, as a rule, is able to pay a slight increase of fare without over-throwing its margin of advantages. If such fares are not increased above 5 cents provided the distance to the suburb is greater than a passenger can be carried for 5 cents, then the loss from carrying such passengers for 5 cents must be borne by others. If it is assumed by the state or city, the suburban dwellers will ultimately pay more than the extra fare, because we cannot escape the proposition that the general public pays for all such costs which are assumed by government, and that the cheapest way of meeting the costs is by direct payment, rather than the indirect payment through taxation.

Moreover, there are a large proportion of unskilled working people living in cities on whom the payment of even 5-cent fares falls heavily, and these, with their families, are now constrained to live in definite portions of our cities often denominated "slums," which are near the locations of centers of employment, because the individuals are unable to pay transportation charges and must live near their work. The zone plan, properly introduced at the present time, may not aid this portion of the population now, but with the gradual decrease of the cost of commodities and the consequent reduction of the price of transportation there will be an ultimate reduction of the unit price per zone, which will enable such passengers to get a certain amount of transportation at less than 5 cents per passenger. The ultimate result of the zone system introduced properly into American cities will improve the present situation by tending to spread the area within which it is practicable for unskilled working people to live.

Statistics Show Railway's Plight*

Records of the Industry and From an Individual Property Show Increasing Costs and Lessened Earning Power

By J. A. EMERY
Ford, Bacon & Davis, New York, N. Y.

ANALYSIS of the combined income accounts of American electric railways since 1902, shows clearly:

1. That the present acute situation is not due to the size of payments for interest and dividends.
2. That per passenger the payments for interest and dividends have practically remained stationary for seventeen years.
3. That payments made for interest and dividends represent only a moderate return on a moderate amount of capital.
4. That the increase in cost of labor and material which had been going on before the war was nearly offset by improvements in efficiency, but that the increase due to the war came too quickly to be so absorbed.
5. That electric railway labor, as a whole, has received increased wages commensurate with the increase in cost of living.
6. That the cost of materials used in electric railway operation has increased in proportion to the decline in general purchasing power of the dollar, and there is no prospect of material relief.
7. That the estimated combined net income in 1918 was only 11 per cent in excess of obligated deductions for interest and rentals. This represents average conditions so that nearly half the industry was unable to meet its obligations in 1918. In 1919, when the full year's effect of wage increases made during 1918 will be felt, a far greater portion of the industry will be involved.

Taking up these assertions in order:

NOT DUE TO INTEREST AND DIVIDENDS

1. That the present acute situation is not due to the size of payments for interest and dividends.

The payments made for interest and dividends, less that portion supported by non-operating revenue, have been as follows, per 5 cents of operating revenue:

PAYMENTS FOR INTEREST AND DIVIDENDS PER 5 CENTS OF OPERATING REVENUE

1902	1.56 cents
1907	1.59 cents
1912	1.61 cents
1917	1.50 cents
1918	Not available

For each 5 cents collected, only 1.5 cents goes for return on capital. This is so small that a large percentage reduction therein would not greatly affect the fare. For example, a reduction of 33 per cent in the payments for use of capital would only reduce the fare by 10 per cent. The salvation of the electric railway industry, therefore, cannot be effected by trimming the return on capital.

THESE PAYMENTS HAVE BEEN STATIONARY

2. That per passenger the payments for interest and dividends have practically remained stationary for seventeen years.

It is shown by the foregoing statement that payments for interest and dividends per 5 cents of railway operating revenue, increased by only 3 per cent from 1902 to 1912, but in 1917 were 4 per cent lower than in 1902. Thus, in the face of increasing costs in every other particular, the capital charges per 5 cents of revenue have decreased slightly. During the period in question the cost of all material and labor entering into electric railway construction increased at the rate of approximately 1.3 per cent per year up to the beginning of the war. Increased efficiency in design, however, has counteracted this increase in cost of construction.

It is clear that present high cost of service is in no wise due to increases in payments to capital.

THEY HAVE BEEN MODERATE

3. That payments made for interest and dividends represent only a moderate return on a moderate amount of capital.

Payments for interest, rentals and dividends, less that proportion supported by non-operating revenue, have been in the following amounts per mile of track:

INTEREST, RENTAL AND DIVIDENDS PER MILE OF TRACK

1902	$3,430
1907	3,880
1912	4,460
1917	4,760

The payment for interest and dividends in 1917 per mile of track, represents a return at 6 per cent per annum on $79,300. This would be a most conservative valuation per mile of track at pre-war prices, especially considering that all subway and elevated lines are included. Valuations accepted by public authorities for over 4000 miles of track of various representative systems excepting subway and elevated lines, give an average of $87,000 per mile.

Thus it is seen that whatever the nominal capitalization, undue payments have not been made for return upon capital.

PRE-WAR COST INCREASES OFF-SET

4. That pre-war increase in cost of labor and material has been offset by improvements in efficiency, but that the increase due to the war came too quickly to be so absorbed.

The cost of operation per 5 cents of operating revenue which, up to 1918, is substantially the passenger revenue per revenue passenger, has been as follows:

OPERATING EXPENSES PER 5 CENTS OF REVENUE

	Amount	Increase over 1902
1902	2.87 cents	....
1907	3.00 cents	0.13 cents
1912	2.94 cents	0.07 cents
1917	3.19 cents	0.32 cents
1918	3.61 cents	0.74 cents

From 1902 to the beginning of the World war, electric railway wages increased at the rate of about 2 per cent per year, and material and supplies used in operation at the rate of about 1.0 per cent per year, the average being about 1.5 per cent per year. Electric railway managers were able to counteract such increase in prices by continuous improvements in efficiency so that in 1912 the cost per 5 cents of revenue was only 2 per cent greater than in 1902, indicating an increase in efficiency of about 13 per cent in the ten-year period.

---

*Abstract of statement presented through Committee of One-Hundred to Federal Railways Commission.

Since 1915 operating expenses per 5 cents of revenue have increased by about 21 per cent or 7 per cent per year, a rate which is altogether beyond the efforts of managers and engineers to cope with.

WAGES INCREASED WITH COST OF LIVING

5. That electric railway labor, as a whole, has received increased wages commensurate with the increase in cost of living.

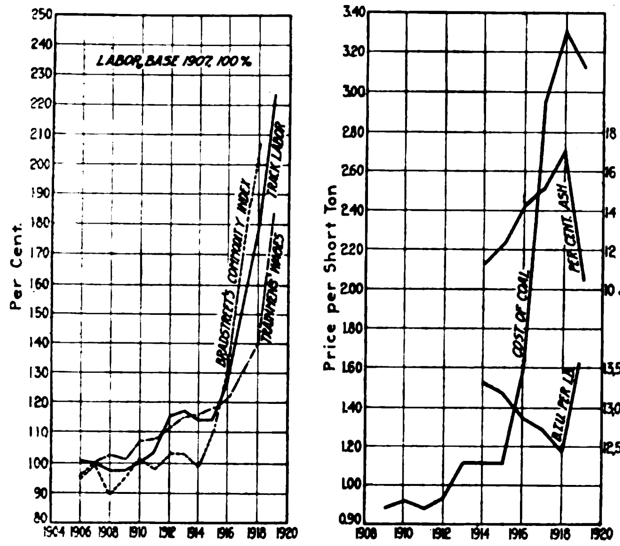


Fig. 1 Fig. 5

FIG. 1 SHOWS STATISTICS REGARDING LABOR AND LIVING CONDITIONS; FIG. 5 REGARDING COAL

The rise in wages since 1907, of electric railway employees, is illustrated by chart Fig. 1 showing representative figures on trainmen's wages and track labor in comparison with Bradstreet's Commodity Index. It will be noted that wages kept in advance of the Commodity Index up to the beginning of the war. Since 1916, wages have lagged behind the Index, but at the present time, with the effect of all the increases made in the past year now in full force, it is probable that the increase in wages fully equals that of the Index. According to reports of the National Industrial Conference, which agree substantially with investigations of the same subject by the United States Department of Labor, the cost of living increased by 61.3 per cent between 1914 and 1919. The corresponding increase in trainmen's wages as shown on the chart, is 59 per cent and in track labor 95 per cent.

The foregoing figures and illustrations show that electric railway wages have substantially kept abreast of the increase in prices. That wages in the earlier years of the industry were not comparatively low is proved by the fact, that, at that time, there was little difficulty in obtaining labor in competition with other lines of industry except in years of unusual business activity.

COST OF MATERIALS UP

6. That the cost of materials used in electric railway operation has increased in proportion to the decline in general purchasing power of the dollar, and there is no prospect of material relief.

Electric railways expend approximately 1 cent out of each 5 cents of revenue for materials and supplies, including coal and purchased power. The larger items of materials and supplies are coal and those which enter into maintenance of track and roadway, principally rails, ties and trolley wire.

The base price, per gross ton of girder rails, at the mill has been as follows:

BASE PRICE OF GIRDER RAIL PER GROSS TON AT MILL

		Per Cent of 1902-1915 Price
1902 to 1915	$36.00	100 per cent
1916	42.00	117 per cent
1917	60.00	167 per cent
1918	90.00	250 per cent
1919 (July)	60.00	167 per cent

Variations in price of girder rail as actually purchased by a large operating company, are illustrated on chart Fig. 2. On this chart the prices are given for each year based upon the average price paid in 1895 as 100 per cent. The slight irregularities in price between 1902 and 1916 are due to variations in specifications and points of delivery. This company purchased its girder rail requirements for 1916 and 1917 at pre-war prices, so that the rise due to the war does not show until 1918.

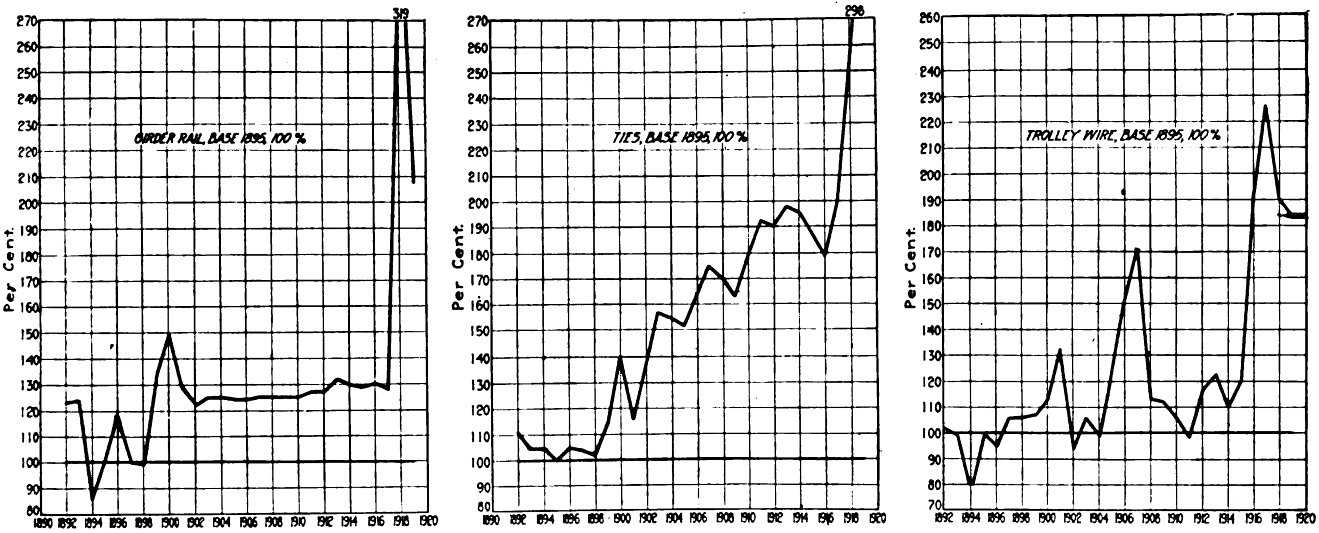


Fig. 2 Fig. 3 Fig. 4

THESE CHARTS, AND FIG. 5, WERE COMPILED FROM THE RECORDS OF ONE COMPANY, A LARGE OPERATING PROPERTY. THESE SHOW STATISTICS ON GIRDER RAIL, TIES AND TROLLEY WIRE

Fig. 3 illustrates the average price paid for ties by the same company, based upon the average price paid in 1895 as 100 per cent. This chart shows that just previous to the war, ties in this locality had practically doubled since 1895. In 1918 the average price had risen to 255 per cent of the 1895 price, or about 30 per cent above the pre-war price, while in 1919 the price has risen'to 298 per cent cent of the price of 1895, or 50 per cent above that of 1914. Chart Fig. 4 shows the average price paid by the same company for trolley wire, based upon 1895 as 100 per cent. In the period before the war, copper made wide variations, practically all being above the 1895 price, but in 1914 it was only 10 per cent above the price of 1895. In 1917 the price reached a maximum which was 225 per cent of the price in 1895, or about double the pre-war price. In 1918 the average price was lower than that of 1917, and at present the price of trolley wire is approximately 185 per cent of 1895 prices, er about 65 per cent above pre-war prices.

The cost of power constitutes approximately 18 per cent of the cost of street railway operation. Of central station power capacity in the United States, approximately one-third is water power and two-thirds steam power. It is probable that electric railway power is supplied in about this proportion. The cost of production of hydro-electric power has increased comparatively little due to the war, but the cost of steam power has increased enormously on account of the rise in price of coal during the war period, and in deterioration in quality of coal.

COAL PRICES UP, QUALITY DOWN

Chart Fig. 5 illustrates the rise in price of coal and decrease in quality of coal used by a large central station in a coal district where the freight charges are small. It will be noted that the average price paid by this company increased from 90 cents per ton in 1909, to $1.12 in 1913-1914-1915, after which a rapid rise began to $1.60 in 1916; $2.96 in 1917, and $3.32 in 1918, being then 300 per cent of the pre-war price. For the first seven months of 1919 the average price has declined to $3.12 per ton.

The per cent of ash increased from 11.2 per cent in 1914, to 17.0 per cent in 1918, but has now dropped to the pre-war ratio. The B.t.u. per pound decreased from 13,300 in 1914, to 12,500 in 1918, a decrease of 6 per cent. The heating value has now risen to pre-war levels. With scarcity of coal and rising prices, the quality is certain to decline again, and central stations are probably facing such conditions next winter in view of the foreign demand for coal.

The increase in price of coal during the war to stations located at a distance from the mines, is shown by the following comparative analysis of average cost of coal to a large eastern electric railway system at pre-war prices, and at prices governing in the fall of 1918:

COMPARATIVE COST OF COAL PER TON AT PRE-WAR AND 1918 PRICES FOR A LARGE EASTERN ELECTRIC RAILWAY SYSTEM

	Pre-War	1918	Increase Per Cent of Pre-War Total
Cost at mines	$1.50	$2.95	37 per cent
Freight	2.20	5.00	71 per cent
Tax on freight	...	0.13	3 per cent
Demurrage	0.22	0.90	17 per cent
Clean coal premium	....	0.05	1 per cent
Total	$3.92	$9.03	130 per cent

The cost of the coal purchased by this company practically doubled at the mine. The freight rate more than doubled, and to this was added the tax on freight amounting to 13 cents per ton.

Demurrage regulations, together with government commandeering, increased the average demurrage payments from 22 cents per ton to 90 cents per ton. The total cost of coal in this case was 130 per cent greater in the fall of 1918 than under pre-war conditions. The quality of the coal used by this company deteriorated by 20 per cent as indicated by the increased cost of coal per kilowatt-hour in excess of increase in price per ton.

While the prices of materials used in electric railway operation have decreased to some extent below the prices caused by the acute conditions of last year, yet, on the average, they are far above pre-war prices, and there is practically no expectation among supply men and students of finance that the purchasing power of the dollar will increase in the immediate future.

IMMEDIATE RELIEF NECESSARY

7. That the estimated small excess of net income over income obligations in 1918, indicates that nearly one-half the industry is in immediate need of relief.

The estimate submitted to this Commission of the income account for 1918 of electric railways whose records are included in the Census Bureau reports shows, after the payment of bond interest and other deductions from income, an amount of $20,183,413 applicable to dividends, surplus and other corporate purposes. This would indicate that, by omitting dividends in part, electric railways in general could tide over the present emergency and survive on present rates of fare if prices tend downward substantially in the early future. This might be true if all electric railways were combined in one company, or if the stronger companies could help the weaker ones. This is not the case, however, and it must be borne in mind that the net income as estimated represents average conditions. As it shows gross income of only 11 per cent in excess of all the obligations for interest and rentals, it is clear that practically all companies whose financial condition is below the average, or about one-half of the total number of companies, are in need of immediate relief.

As pointed out before, there is practically no prospect of improvement in operating conditions through decrease in prices of labor and materials.

REASONS FOR UNIFORMITY OF COSTS

The extraordinary uniformity in cost of carrying electric railway passengers in the past in large cities and small, on urban and surburban lines, and during a long period of years in which wages and prices have greatly increased, has been due to a balancing of four prime factors entering into the cost of service, namely, length of haul balancing density of traffic, and increasing efficiency balancing rising wages and prices. Thus where long average hauls have been given for a single fare, the cost has been balanced by high density of traffic. The continual increase in prices of labor and materials has been balanced by continually increasing efficiency in management and design of construction and equipment. The latter balance has been irremediably destroyed by the war and the effect has been particularly severe on those companies which combine comparatively long hauls with low density of traffic. The only salvation of this situation is a reasonable, scientific adjustment of fare to cost of service in each locality.

West Ham's Telephone Control System

First to Install System Permitting Immediate Touch with One or all Traffic Regulators—Reduction of Accident Costs a Valuable By-Product

TRAFFIC REGULATOR TAKING INSTRUCTIONS FROM TRAFFIC CONTROLLER

(Note alarm bell overhead)

IN THE United States, the use of the telephone for the control of traffic conditions along the line has depended in large measure on the initiative of the outside men except where they have been instructed definitely to call up at regular intervals. In the several electric railway installations, for example, the conductors call up on reaching the terminals or special traffic points in order to give their time and ask for further orders.

The West Ham (England) Corporation Tramways has gone a step further. To its original private telephone exchange, it added in 1916 a control telephone set which permits the traffic controller at the board to call up one or all of the traffic regulators stationed at all important traffic intersections and to talk to them in single or multiple. In this way, the desired benefit of telephone control is obtained without any but emergency contacts with the car crews themselves. On a system with two-and-one-half minute and three-minute headways, and supplementary overlapping routes almost everywhere, it would be utterly useless to have platform men leave the cars en route. Through the system of immediate communication with the traffic regulators, however, any changes necessary in the service can be made almost immediately, as the regulators exercise direct, personal supervision over the cars which pass through their control stations.

FOUR KINDS OF TELEPHONES AVAILABLE

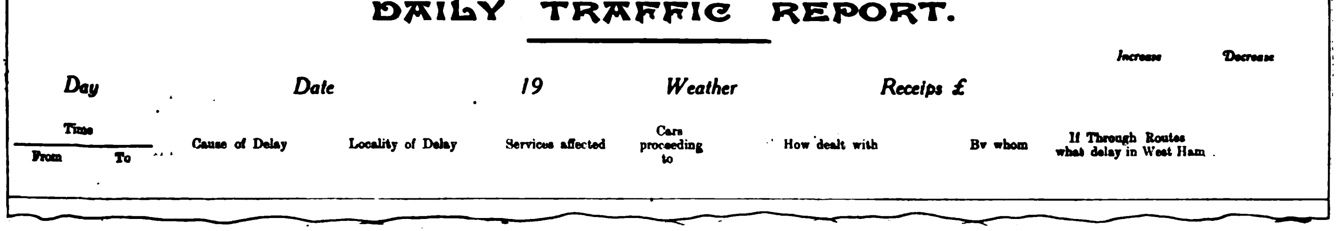
The control of traffic is centered at a telephone room in the headquarters of the tramways, where four kinds of telephones are available, as follows:

The standard post-office or long-distance exchange, which is operated by an assistant during regular office hours (9 a.m. to 5 p.m.), and from the car depot between 11.30 p.m. and 5 a.m. During the other hours of the day, calls are handled by the man at the control telephone.

An inter-departmental telephone with automatic setting and anti-listening-in features.

A sixty-line board, with northern and southern trunk, connects with substations, feeder pillars, cross-overs spaced every ½ mile, section boxes spaced every ¼ mile, terminals, etc. This is the original system for the use of crews and others along the line, and authorized users are provided with jacks to enable them to establish communication. A third trunk on this exchange establishes direct service with the power station for quick action when breakers go out, when portions of the line are to be killed, etc.

Finally, there comes the most modern feature of all—the control telephone. This places the traffic controller in touch with any one of his traffic regulators or with any combination or all simultaneously. The telephone instruments at the locations of these regulators are fitted with a bell which not only can be easily heard at a distance of several hundred feet, but which also gives a ring-back so that the controller always knows that the telephone is operating. At the controller's end there are two horns (not unlike phonograph horns), one of which is the receiver and the other the transmitter. The receiving horn also replaces the bell or buzzer signal. As shown on the accompanying general telephone map, the present equipment has ten control points, but is adaptable for extensions. The control



WEST HAM CORPORATION TRAMWAYS.

DAILY TRAFFIC REPORT.

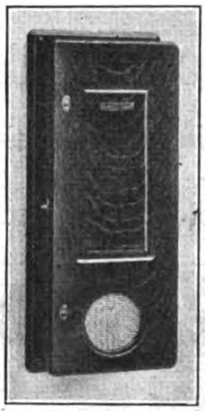
Increase Decrease

Day Date 19 Weather Receips £

Time From To	Cause of Delay	Locality of Delay	Services affected	Cars proceeding to	How dealt with	By whom	If Through Routes what delay in West Ham

DAILY TRAFFIC REPORT USED IN WEST HAM TELEPHONE CONTROL SYSTEM installation is confined to the area of West Ham.

Two men—one on early duty and one on late duty—handle all traffic control. Their work is so varied that the best way of describing it is to present an abstract from the delay reports and the log book. In the latter are recorded all calls with date, time, circuit, name of sender, and message and initials of the traffic controller who received the message. Reports, for example, are sent in as follows:



SELECTOR CASE CONTAINING BELL AND BATTERY INSTALLED AT TRAFFIC REGULATOR'S STATION

From traffic regulators:

Conductor on car 85 reports stiff trolley base. Please advise car sheds.

Car No. 43 must go back to the depot. Please arrange for another to take its place.

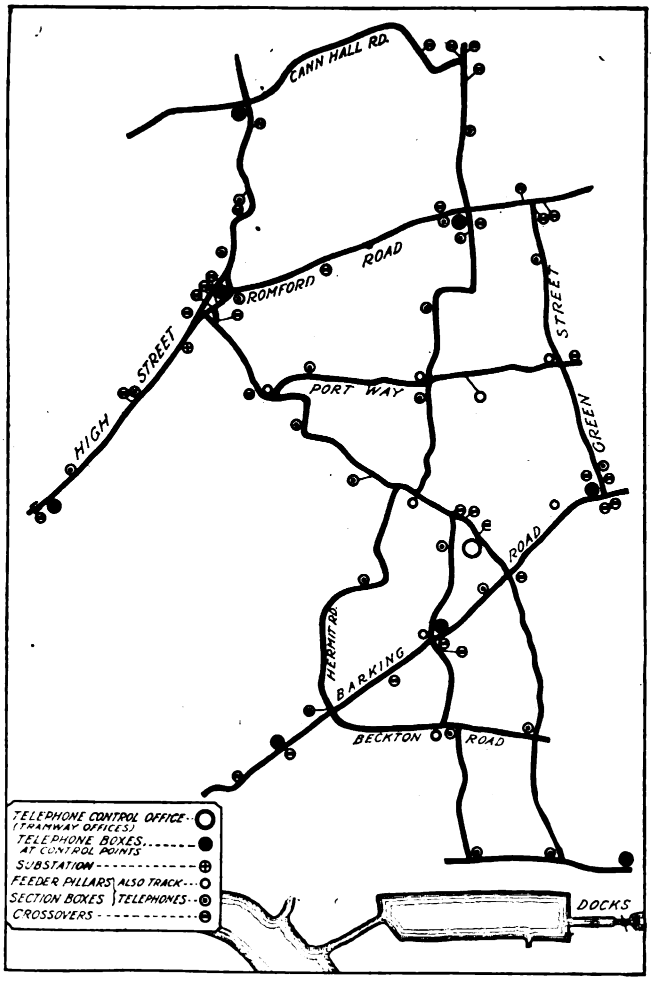
A baker's cart broke down in front of "The Green Man." I have obtained sample of the defective spokes that caused the breakdown.

A boy was knocked down by Car 101, Motorman Jones. We have obtained six witnesses, as follows,............, name of police officer, as follows.................... .

Or the crew of the line emergency wagon reports: "We have repaired the break at 'The Baker's Arms.' What next?"

Or an excited passenger calls up from an outside telephone to ask: "Has an umbrella marked W. L. G. been found on the car that left Whipps Cross at 3.15 p. m.?"

The foregoing will suffice to show the varied character of activities that pass through the hands or, more strictly, the ears of the traffic controllers. From the opening of the day's work, when every traffic regulator calls up to get his time, the traffic controllers are on the job to see that the schedules are kept as close to perfection as is possible. No matter what telephone is used to send the message, these officials are in a position to transmit orders, suggestions and inquiries in a twinkling. In a district where foreign vehicular traffic is extremely heavy and congestion and breakdowns frequent, this means of inter-communication is invaluable. In addition to receiving every morning a complete report of all accidents and other delays of the preceding day, the general manager can exercise further supervision of the traffic control system by listening-in at any time.


CANN HALL RD.
ROMFORD ROAD
HIGH STREET
PORT WAY
GREEN STREET
BARKING ROAD
HERMIT RD.
BECKTON ROAD
DOCKS
TELEPHONE CONTROL OFFICE (TRAMWAY OFFICES) ○
TELEPHONE BOXES AT CONTROL POINTS ●
SUBSTATION ⊕
FEEDER PILLARS ALSO TRACK ○
SECTION BOXES TELEPHONES ◎
CROSSOVERS ⊖

SCHEMATIC DIAGRAM OF WEST HAM TELEPHONE CONTROL SYSTEM

MAKING THE GUILTY PARTY PAY FOR ACCIDENTS

One of the valuable by-products of the telephone control system is that it fosters immediate and more detailed reports of accidents without, of course, dispensing with the written reports which must be turned in by the employees concerned. It is often possible to give helpful advice at such times to the men on the ground, particularly with regard to securing the names of witnesses, specimens of wreckage, etc. If the vehicle owner is at fault, the West Ham Corporation Tramways does not wait for him to present a bill but immediately puts in a claim for damages to the car: If palpable negligence is disclosed a prosecution may follow. British tramways do not take punishment lying down.

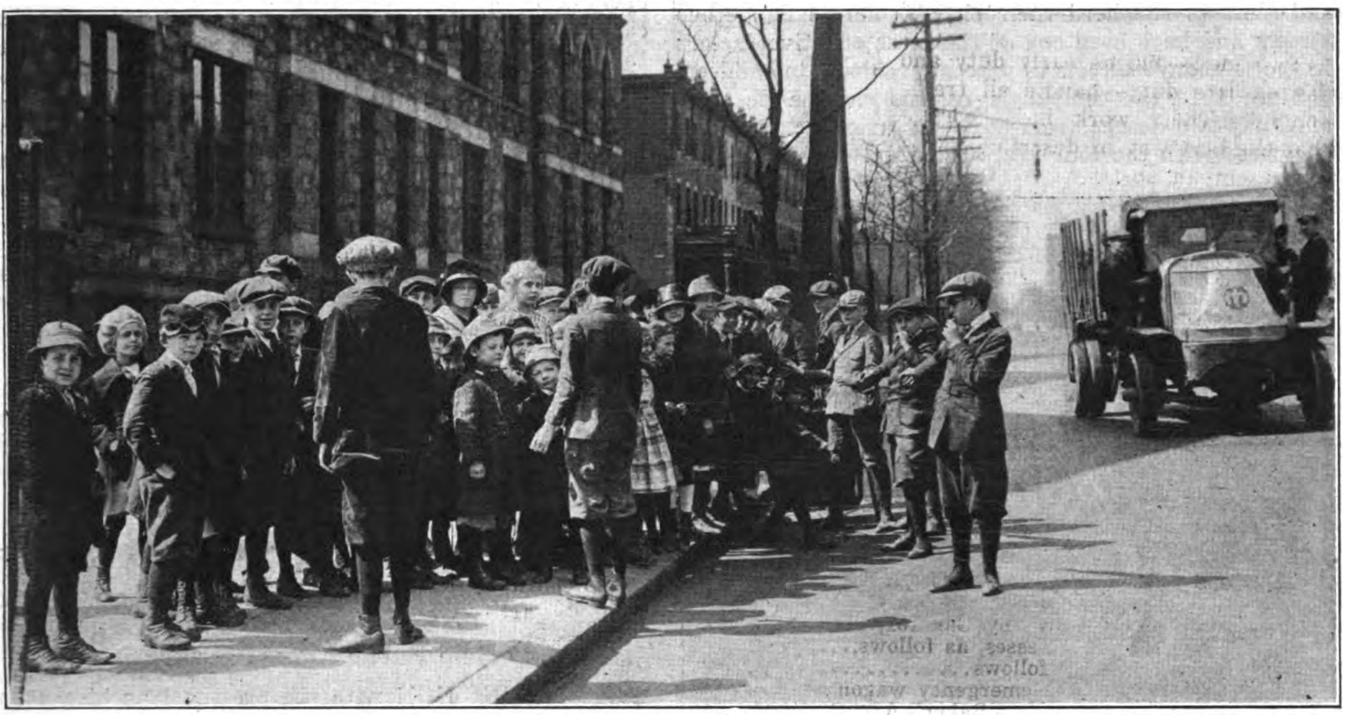
As the joint result of careful operation, telephone control and counterclaims for damage due to foreign vehicles, the West Ham Corporation Tramway's third-party claim payments (damage and injury payments) for the fiscal year ended March 31, 1917, amounted to 2.2 per cent of traffic revenue or 0.242d. per car-mile and in the following year to about 2 per cent or only 0.197d. per car-mile. These figures are all the more impressive because they were obtained during a period of darkened streets, inexperienced platform employees and heavier traffic.

FEW DIFFICULTIES WITH TELEPHONE EQUIPMENT

The operating staff of the West Ham Corporation Tramways has long been accustomed to the extensive, all-around use of the telephone. From a maintenance standpoint, the telephones are declared to be as satisfactory as the installation and weather conditions permit. Shorts occur sometimes because only a portion of the telephone wires are in underground conduit. Troubles with individual boxes are nearly always due to their exposed location, war shortage having led to the employment of sets made for indoor use. Protected instruments, like that at the power station, are practically trouble-free.

On the whole, the cost of installation and not the cost of upkeep is the chief matter for concern. It cannot positively be proved by figures that an installation of this kind pays for itself many times over in the prevention of severe blockades and in better service to, and therefore more revenue from, the public or in the reduction of accident cost, but the probabilities are all in favor of the telephone.

The Tramways and Light Railways Association resumed the holding of an annual dinner on July 25, with appropriate other entertainment, in London. There will be no annual congress this year in the provinces, owing to the difficulty of securing transportation and hotel accommodations.



SCHOOL SCOUT PATROLS ORGANIZED BY P. R. T. IN ACCIDENT REDUCTION CAMPAIGN

A Many-Sided Safety Campaign in Philadelphia

"Miss Safety-First," School Patrols and Bulkhead Signs in Cars Were Among the Features Characterizing the Present Crusade

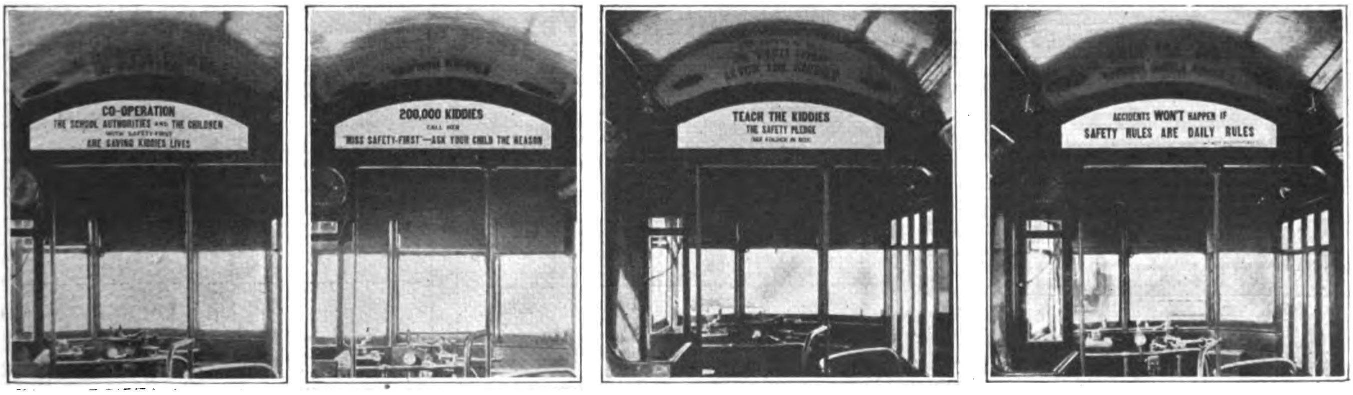
UTILIZING the interior bulkhead spaces over the doors to present forcibly to the public facts of interest to the car riders has become a settled policy with the Philadelphia Rapid Transit Company. Under the personal direction of President T. E. Mitten these spaces have been effectively used for informing the public as to car routes, for waging an anti-spitting campaign during the last influenza epidemic and for refuting misstatements concerning the skip-stop system. References to these crusades have been made in the columns of this paper. More recently the bulkhead spaces have been devoted to a safety campaign for the prevention of accidents to children.

Ever since the Stotesbury-Mitten management took charge of the company in 1911 it has endeavored to lessen accidents among children in the streets, and the results of the eight-year crusade are highly encouraging. Some initial safeguards were the adoption of the near-side car, the equipment of all passenger cars with an approved safety fender, and the enlistment of the co-operation of school authorities in urging safety among pupils and of the police in preventing children from playing on car tracks and hitching onto cars.

So helpful were the results of this work during the 1911-1914 period that in 1914 a safety bureau was created under the auspices of the company, with "Miss Safety First," a young woman possessed of deep affection for children and ability to inspire their confidence, at its head.

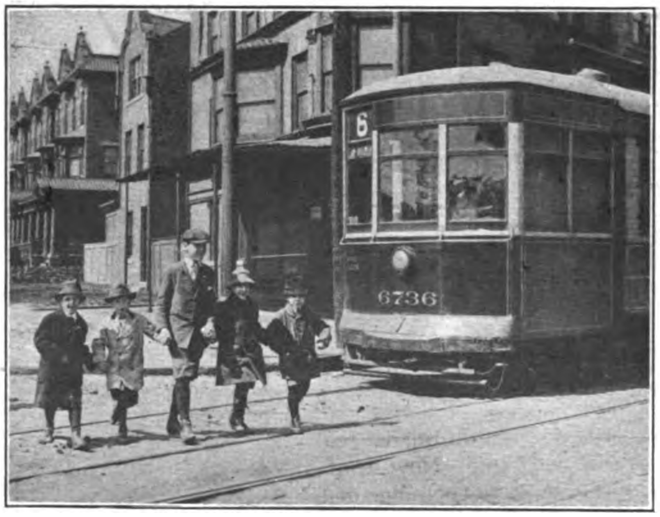
The records show the following work accomplished by this bureau: More than 100,000 children have been addressed annually on safety; during the last year 627,000 pieces of safety literature have been distributed; 8000 children have taken the "safety pledge," and 100 safety officers or school "patrols" have volunteered from among the children themselves for patrol duty, this responsibility consisting of cautioning other pupils against dangers in streets and safeguarding smaller pupils to whom danger has no meaning.

The boys and girls constituting the "patrol" wear arm bands in the school colors bearing the words "Safety Patrol." They carry whistles to be used in signaling their orders to the children. They are trained


CO-OPERATION
THE SCHOOL AUTHORITIES AND THE CHILDREN
WITH SAFETY-FIRST
ARE SAVING KIDDIES LIVES
200,000 KIDDIES
CALL HER
"MISS SAFETY-FIRST"—ASK YOUR CHILD THE REASON
TEACH THE KIDDIES
THE SAFETY PLEDGE
ACCIDENTS WON'T HAPPEN IF
SAFETY RULES ARE DAILY RULES

BULKHEAD POSTERS USED IN P. R. T. SAFETY CRUSADE and alert to shepherd their charges across dangerous streets and have been one of the most effective factors in the company's efforts to prevent accidents to children.

Since 1914 the company's records show a decrease of thirty-two deaths from accidents among children as compared with the four years previous.



MEMBER OF SCHOOL PATROL GUIDING "KIDDIES" ACROSS CAR TRACKS IN PHILADELPHIA

The safety publicity campaign conducted in the bulkhead spaces consisted of a series of four signs, which are shown on page 399. The campaign featured "Miss Safety First" and aroused great interest in all of the schools and in the homes of the school children.

The first bulkhead sign appeared in the cars from Feb. 19 to Feb. 28, 1919, the second from March 1 to March 20, the third from March 21 to April 6 and the fourth from April 7 to April 19.

When the third sign was posted there were also distributed, through the medium of a small box or holder in each car, 2,000,000 copies of a four-page folder entitled "Making the Streets of Philadelphia Safe for the Kiddies." This was described as "a little heart-interest narrative in words and pictures telling of a distinctly worth-while effort by authorities, children, and 'Miss Safety First' of the P. R. T." The folder was illustrated with photographs of the school "patrol" at work and gave a summary of the results accomplished.

The safety first pledge which the school children take upon themselves under the tutelage of "Miss Safety First" is as follows: "I hereby pledge myself to aid my country and my city by preventing accidents."

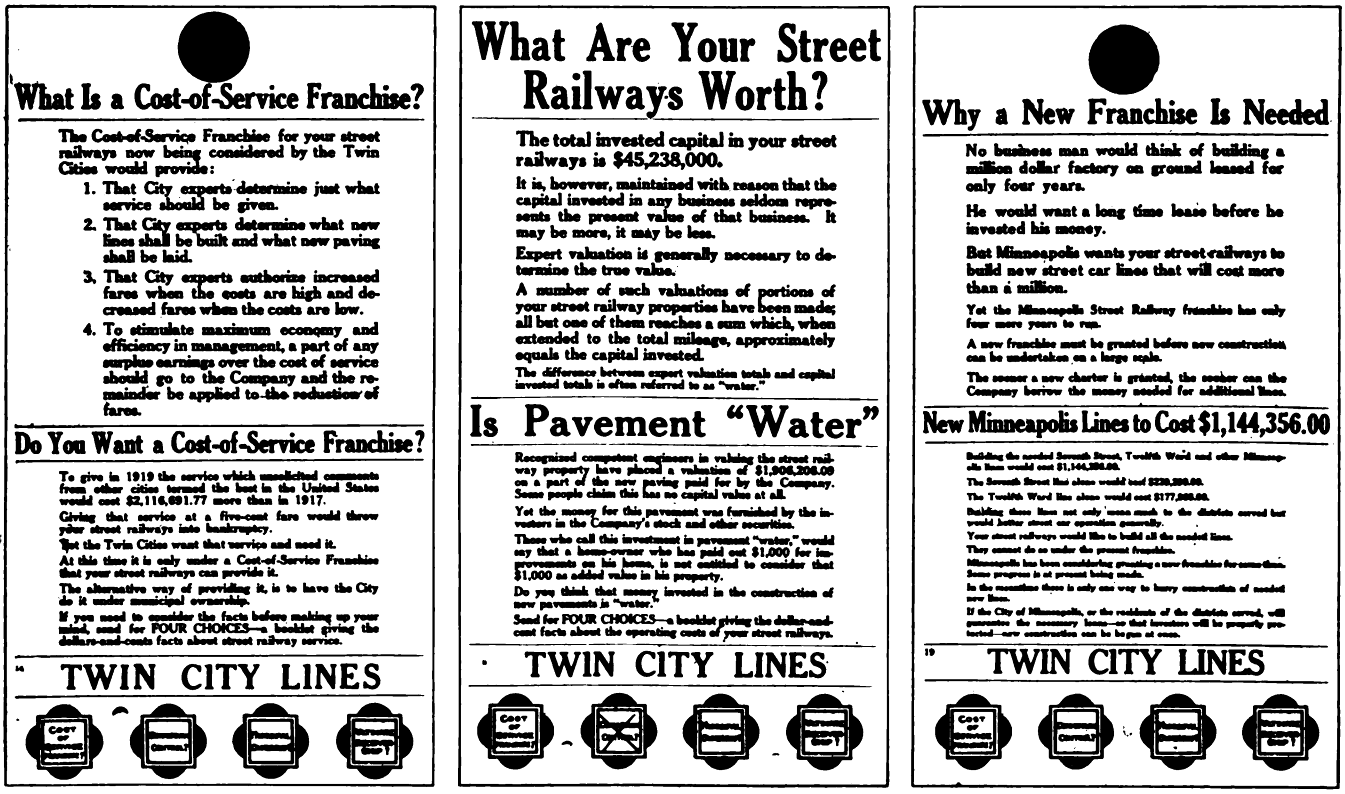
The pledge of the Philadelphia Rapid Transit Company is that it will continue to co-operate unqualifiedly with authorities, children and "Miss Safety First" in this great humanitarian movement.

Educational Publicity in Twin Cities

On Twin City System Campaign Was Conducted to Demonstrate Seriousness of Existing Condition and to Help Public Choose Future Wisely

IN CONJUNCTION with the present franchise negotiations between the Twin City Rapid Transit Company, and the cities of Minneapolis and Saint Paul, the railway company in the latter part of February began the publication of an extensive series of educational advertisements. The first insertion took the form of an announcement that service was being given at less than cost, that such operation would ultimately impose direct penalties on the taxpayer, house owner, business man and workingman, and that facts concerning operating costs would be published regularly in the daily press, in order that the people of the Twin Cities might understand the conditions.

The second advertisement announced that it would



What Is a Cost-of-Service Franchise?

The Cost-of-Service Franchise for your street railways now being considered by the Twin Cities would provide:

1. That City experts determine just what service should be given.
2. That City experts determine what new lines shall be built and what new paving shall be laid.
3. That City experts authorize increased fares when the costs are high and decreased fares when the costs are low.
4. To stimulate maximum economy and efficiency in management, a part of any surplus earnings over the cost of service should go to the Company and the remainder be applied to the reduction of fares.

Do You Want a Cost-of-Service Franchise?

To give in 1919 the service which unsolicited comments from other cities termed the best in the United States would cost $2,116,691.77 more than in 1917.

Giving that service at a five-cent fare would throw your street railways into bankruptcy.

Yet the Twin Cities want that service and need it.

At this time it is only under a Cost-of-Service Franchise that your street railways can provide it.

The alternative way of providing it, is to have the City do it under municipal ownership.

If you need to consider the facts before making up your mind, send for FOUR CHOICES—a booklet giving the dollars-and-cents facts about street railway service.

TWIN CITY LINES

What Are Your Street Railways Worth?

The total invested capital in your street railways is $45,238,000.

It is, however, maintained with reason that the capital invested in any business seldom represents the present value of that business. It may be more, it may be less.

Expert valuation is generally necessary to determine the true value.

A number of such valuations of portions of your street railway properties have been made; all but one of them reaches a sum which, when extended to the total mileage, approximately equals the capital invested.

The difference between expert valuation totals and capital invested totals is often referred to as "water."

Is Pavement "Water"

Recognized competent engineers in valuing the street railway property have placed a valuation of $1,906,206.09 on a part of the new paving paid for by the Company. Some people claim this has no capital value at all.

Yet the money for this pavement was furnished by the investors in the Company's stock and other securities.

Those who call this investment in pavement "water," would say that a home-owner who has paid out $1,000 for improvements on his home, is not entitled to consider that $1,000 as added value in his property.

Do you think that money invested in the construction of new pavements is "water."

Send for FOUR CHOICES—a booklet giving the dollar-and-cent facts about the operating costs of your street railways.

TWIN CITY LINES

Why a New Franchise Is Needed

No business man would think of building a million dollar factory on ground leased for only four years.

He would want a long time lease before he invested his money.

But Minneapolis wants your street railways to build new street car lines that will cost more than a million.

Yet the Minneapolis Street Railway franchise has only four more years to run.

A new franchise must be granted before new construction can be undertaken on a large scale.

The sooner a new charter is granted, the sooner can the Company borrow the money needed for additional lines.

New Minneapolis Lines to Cost $1,144,356.00

Building the needed Seventh Street, Twelfth Ward and other Minneapolis lines would cost $1,144,356.00.

The Seventh Street line alone would cost $[illegible].

The Twelfth Ward line alone would cost $177,[illegible].

Building these lines not only means much to the districts served but would better street car operation generally.

Your street railways would like to build all the needed lines.

They cannot do so under the present franchise.

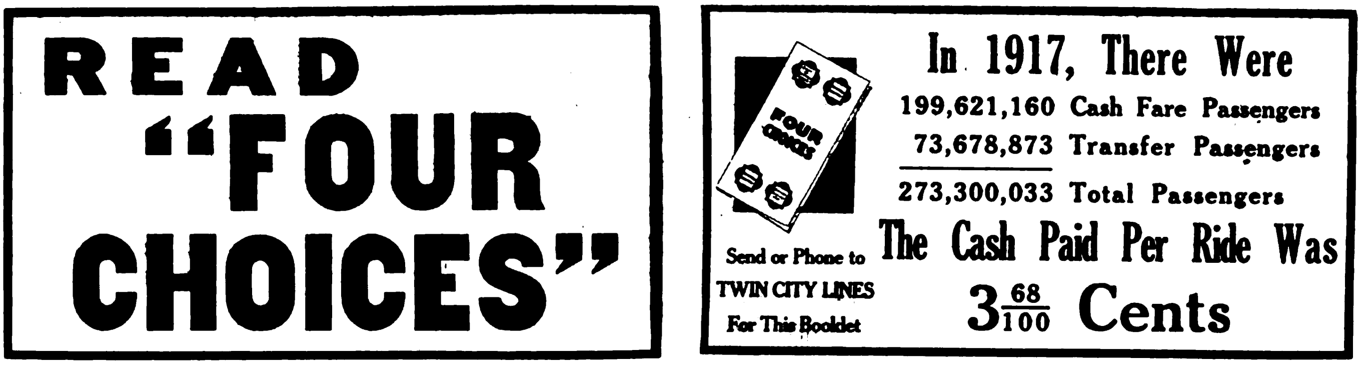
Minneapolis has been considering granting a new franchise for some time. Some progress is at present being made.

In the meantime there is only one way to hurry construction of needed new lines.

If the City of Minneapolis, or the residents of the districts served, will guarantee the necessary loans—so that investors will be properly protected—new construction can be begun at once.

TWIN CITY LINES

THREE TYPICAL NEWSPAPER INSERTIONS IN TWIN CITY PUBLICITY CAMPAIGN



READ "FOUR CHOICES"

In 1917, There Were
199,621,160 Cash Fare Passengers
73,678,873 Transfer Passengers
273,300,033 Total Passengers
The Cash Paid Per Ride Was
$3\frac{68}{100}$ Cents

Send or Phone to
TWIN CITY LINES
For This Booklet

FOUR CHOICES

TWO TWIN CITY EDUCATIONAL CAR-CARD ADVERTISEMENTS

cost $2,116,691.77 more to provide in 1919 the same service as was given in 1917. It was then shown what proportion of this amount went to various items of expense. Beginning with the second advertisement each insertion ended with the request that the reader "send for the booklet, 'Four Choices.'" This is a twenty-page 3½-in. x 6-in. booklet explaining the increases in cost of operation and announcing that the four choices which the public has for the future of the company are the granting of a cost-of-service franchise, commission control, municipal ownership and ultimate receivership. An explanation of what each means was given. The back cover of the book is a detachable post-card upon which the reader is asked to vote on the four choices.

The third advertisement, announcing that the largest stockholder in the company holds only 1.6 per cent of the total stock and that the average dividend for twenty-eight years has been 3.6 per cent, ended with the statement of the four choices each superimposed on the company insignia.

Each insertion carried some very interesting facts similar to those mentioned. For instance, No. 7 gave a tabulation of 370 cities where fares have been increased, together with the amounts of increase, populations of cities, etc. No. 13 announced that the company is receiving an average of 3.68 cents per passenger carried, not enough to pay operating charges. Beginning with this advertisement also a black spot with some statement regarding cost of operation set off in white letters was placed at the top of each advertisement to attract attention. No. 14 explained what a cost-of-service franchise is. Other advertisements have included data on paving costs, the valuation of the company's property, the mortgage upon the property, the cost of advertising, etc.

Each of these advertisements measured 9 in. x 16 in. and was inserted for a period of one week. Six different daily papers were used and thus each advertisement appeared one day in each paper.

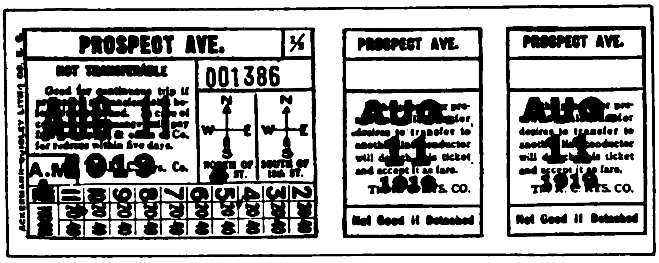
Beginning about April 1, a series of car-card advertisements began to appear in all cars. The card was fastened inside the upper portion of the window and the back, or street side, in every case carried the request that the observer "Read 'Four Choices.'" In addition to the illustration of the booklet "Four Choices," which appeared on every card, some of the statements other than those which appear in the reproductions have been as follows: "To Give 1917 Service in 1919 Will Cost $2,116,697.77. More Than in 1917"; "Wage Increases Alone Will Add to the Cost of Giving 1917 Service in 1919 $1,360,003.66"; "Your Street Railways Must Pay $1,222,200 in Interest on Mortgages in 1919"; "The Average Dividend of Your Street Railways for Twenty-eight Years Was 3.6 Per Cent." Each of these cards ran for one week.

In presenting the facts by the method which was employed in this publicity campaign, it is believed the people have received a much better knowledge of the situation and are beginning to realize the necessity for taking some action. Now that the valuation figure for Minneapolis has been decided upon, the cost-of-service franchise becomes a clear-cut issue. The publicity will, therefore, now deal more with an explanation of what a cost-of-service franchise is and will include data along this line.

New Transfer for Kansas City

A NEW transfer was put in use by the Kansas City Railways on Aug. 10, and an ordinance passed by the City Council making it a misdemeanor for anyone to traffic in transfers. These steps have been taken in an effort to stop the transfer abuses that have grown up among the company's patrons. The fraudulent use of transfers at the Union Station became so extensive under the old system that transferring of passengers from one line to another at that point had to be prohibited on July 25.

The stub of the transfer, 2¾ in. long, is a condensed reproduction of the transfer used prior to May 1. If a passenger wishes to transfer once only he turns it in to the conductor of the second car. If he wishes to transfer twice, the conductor of the second car tears off one coupon and returns the remainder to the passenger. The second coupon is torn off by the third car conductor if the passenger wishes again to transfer. The chief advantage of the new form of transfer is that the company may now obtain an accurate record of the number of times each passenger transfers.

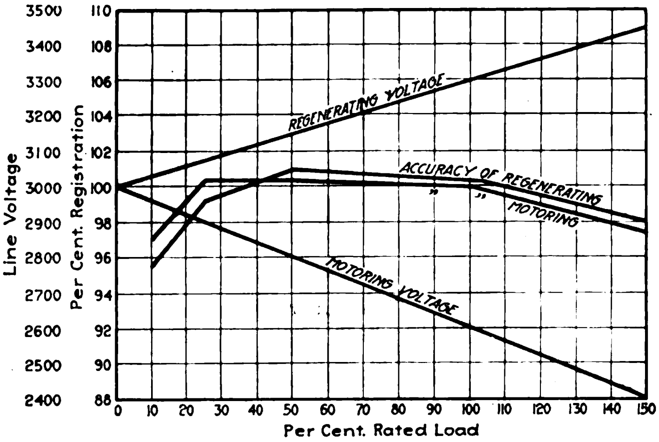


TRIPLICATE TRANSFER USED IN KANSAS CITY

The new transfer permits and provides only for time and direction punching and for punching half-fare. The transfer is overprinted in red with the day of the month.

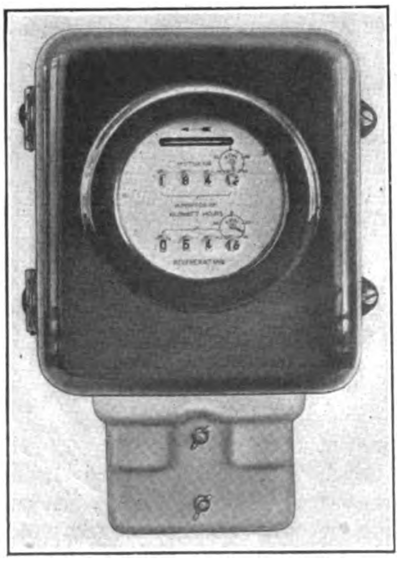
Duplex Dial Watt-Hour Meter for Electric Locomotives Using Regenerative Braking

TEN new locomotives for the electrified divisions of the Chicago, Milwaukee & St. Paul Railroad are being equipped with Economy watt-hour meters to measure the energy consumed in driving the trains and the energy returned to the line through regenerative braking, each reading being shown on one of two cyclometer-type dials.



CURVES SHOWING METER REGISTRATION UNDER OPERATING CONDITIONS

The locomotives are of the Baldwin-Westinghouse passenger type, each equipped with six 533-hp. twin-armature motors. Each locomotive has one meter. The meters are a modification of the type ordinarily used with single dials. The distribution of certain accounting charges is done on a basis of the watt-hour consumption used by these locomotives for the respective classes of train service. The meters provide a check on this and on the use of power in connection with the handling of the train and also provide operating and engineering data which must be known to check the operation of the system as a whole.



FACE AND DIALS OF METER

An idea of the wide voltage and load conditions can be gained from the fact that the voltage varies from an average of 2600 on motoring to an average of 3300 on regeneration. Graphs giving the load characteristics are shown in the accompanying illustrations. From these graphs it will be seen that there is a variation of less than one-half of 1 per cent in the accuracy of registration between motoring and regeneration from 25 per cent to 150 per cent of rated load and over a potential variation from 2400 volts to 3450 volts. This characteristic has been achieved through the use of the standard meter element with special series compounding. Each meter has an external shunt of 800 amp. normal capacity, capable of high overload service. The meter element has one series compound winding around the shunt field. This compound winding is reversed from normal practice and therefore acts as a bucking compound winding when the locomotive is motoring and as a boosting compound winding on regenerating. This winding is a part of the current circuit and carries the full-load current of the meter element which is 10 amp., diverted by the 800-amp. open-type shunt which is cut in on the negative side of the motor group.

In mechanical design these duplex dial locomotive meters differ from the regular Economy meters as used in electric railway power-saving work only in the dials and gear trains. The dial is of the duplex type with openings for two sets of figures. The reading for the motoring is above and for regenerating below, so that a subtraction can easily be made to get the actual net energy used for any period. The single meter element drives the two gear trains through a differential, so arranged that when the locomotive is motoring, the energy drawn from the trolley is registered on the upper train, and when it is regenerating the energy is recorded on the lower train. The reversal is made without loss of motion in the gear train.

In the design of this meter standardized parts are used. The meter element is so mounted on a sub-base that it may be removed from the case with little effort and without disturbing any heavy circuits. The case which protects the element is of heavy construction with tight-fitting joints designed to exclude dust. These meters, without their shunts, may be easily checked as 10-amp. units.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Engineering Standards Committee

THE committee on standards of the Engineering Association will meet at association headquarters on Aug. 25 and 26. Several reports of committees are already in the hands of members of the standards committee for advance study. Chairman H. H. Adams has announced the appointment of Martin Schreiber, chief engineer, Public Service Railway, Newark, N. J., as vice-chairman of the committee.

Public Service Commissioners at Convention

SECRETARY E. B. BURRITT has announced the intention of the association to extend an invitation to all public service commissions to be represented at the Atlantic City convention. It is suggested that companies extend invitations to members of their commissions and to local and state officers. So much of the program will be devoted to readjustment problems that it is the belief of the association officers that these public officials would find the convention interesting and profitable.

The committee on compensation for carrying United States mail was meeting in New York City as this issue went to press. A report of the meeting will be given in a later issue.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Portland Wage Details

Oregon Company Points Out Its Inability to Meet War Labor Board Award

The Portland Railway, Light & Power Company, Portland, Ore., has been advised that the War Labor Board, in its final session in New York, referred to in the ELECTRIC RAILWAY JOURNAL for Aug. 16, granted to the employees wage increases amounting to 12 per cent. The increase granted is only three-fifths of the advance asked by the men. It is announced by union officials that negotiations will be immediately opened with the company for a further increase.

The application to the board was made for higher wages dating from April 1, and in the absence of detailed information it is presumed that the scale is retroactive to that date. The previous scale of wages ranged from 50 cents an hour for the platform men, and those in ordinary labor, to more than $1 an hour for work of an expert character. On April 1, 1917, the minimum for platform men was 26 cents an hour, and the maximum 31 cents an hour. The wage has been gradually advanced, until on Oct. 24, 1918, the War Labor Board, after long delays, finally announced a scale of 46, 48 and 50 cents an hour for platform men. The men, in their last appeal to the War Labor Board, asked for a maximum of 60 cents an hour.

Franklin T. Griffith, president of the company, in a public statement, said that the railway cannot pay the increased wages and continue to operate. He says it is up to the public authorities to determine how the emergency shall be met. Mr. Griffith is quoted as follows:

> The flat increase of 12 per cent in wages to all traction employees of the company means an increase of $27,000 to $28,000 a month in the operating expenses of the railway. The lines are not now, at the present rate, earning fixed charges, and are making no returns to stockholders. The new rate of wages will be 95 per cent higher than two years ago, and with higher costs of materials of all kinds, it puts the operating costs of the railway more than 100 per cent higher than two years ago. The railway cannot pay those charges and live. If we are to pay the increased scale of wages, it will be absolutely necessary that additional revenue be secured.

Seattle Strike Vote Postponed

The indications were on Aug. 15 that the threatened strike of the empolyees of the Seattle Municipal Railway as a protest against the seniority rule made by Thomas F. Murphine, superintendent, would be avoided. The strike vote called by the union has been postponed, and an attempt is being made to settle the dispute. Mayor Ole Hanson has suggested to the representatives of the union that Mr. Murphine's ruling need not be final, and that the men have the right to appeal to the City Council or Board of Public Works, and if Mr. Murphine's ruling is found to be unfair, it can be ordered changed. Mayor Hanson points out, however, that the union must agree to abide by that decision, and that the threat of a strike will not affect the settlement of the question. It is not believed that the matter will be taken to the City Council.

New York Surface Railway Wages Advanced

On Aug. 19 Judge Mayer in the Federal Court at New York approved the suggestion of Job E. Hedges, receiver of the New York (N. Y.) Railways, to increase the pay of all employees of the "green car" lines 25 per cent. An increase of 10 per cent had been made to the men the previous week, but this was not satisfactory to members of the New York Railways Brotherhood, who called upon Mr. Hedges on Aug. 19 to discuss a proposal for an additional increase. The increase is equivalent to that which was granted by the Interborough Company to its employees in the subway and elevated strike settlement.

On the same day Judge Mayer wrote to Louis Fridiger, representing the Amalgamated Association, which conducted the strike in Brooklyn, that he would not tolerate any attempt of the Amalgamated to disrupt the Brotherhood of the New York Railways. He said the brotherhood had protested against the activities of agents of the Amalgamated and had continued faithful service during the Interborough strike and while Mr. Hedges and Judge Mayer himself were coming to a decision upon the employees' request for more pay.

Judge Mayer declared his belief that the public was "sick and tired" of strikes and bickerings. He said that it was the duty of the court and the receiver to preserve the use of the "green car" lines for the public, as well as to insure the safety of the investment by thousands of persons, and that he purposed placing the blame upon the shoulders of the Amalgamated officials if they caused the strike.

The Third Avenue Railway, New York, N. Y., on Aug. 20 announced an increase of 25 per cent in pay to its uniformed men, effective immediately. The company operates in Manhattan, Bronx and Westchester. Under the increase the men will receive from 52 to 62 cents an hour. They had been getting 41 to 49 cents an hour.

"L" Nearing Completion

Entire Frankford Line, Philadelphia, Expected to Be Completed Some Time Next Year

Such rapid progress is being made in the construction of the Frankford elevated line which extends from within a short distance north of Arch Street, Philadelphia, to Dyer Street, Frankford, that the belief is expressed by municipal officials that the entire road will be built and in operation before the close of 1920.

ELEVATED SUPERSTRUCTURE COMPLETED

The superstructure of the elevated has been completed on Front Street to Callowhill, and the Phoenix Iron Company is now building the road south of that point to within a short distance of Arch Street, where, according to the plans, the physical connection with the Market Street subway is to be made.

Plans and specifications have been drafted by the Department of Transit for continuing the big operation, and proposals will be opened the latter part of this month which will call for work and materials that will involve an expenditure of several millions of dollars. The most important of these is the furnishing and laying of rails for a double track the entire length of the superstructure, a distance of 5½ miles, making 11 miles of track.

Proposals will be opened soon by the department for continuing the construction of the road from the present terminus at Dyer Street to Bridge Street. These proposals will call for concrete foundations and column piers to support the superstructure. Proposals will also be received soon for razing eight structures on Water Street above Arch, and a like number of buildings on Front Street, all of which have been acquired by the city under condemnation proceedings. The removal of these buildings will permit of the erection of the superstructure to the point where the line will connect with the Market Street subway. Under the specifications all the foundation piers and columns must be completed by Dec. 31 of this year, and the laying of the double-track by April 30, 1920.

PLANS CONSTRUCTION OF STATIONS

Plans have also been completed, and in a short time the department will ask for proposals for erecting more passenger stations on the line of the elevated railroad.

The matter of the lease for the operation of the road by the Philadelphia Rapid Transit Company remains to be arranged.

Subway and Elevated Tied Up

Short Strike in New York Settled on Basis of 25 per Cent Wage Increase

The trainmen in the employ of the Interborough Rapid Transit Company, New York, N. Y., went on strike on Sunday morning, Aug. 17, tying up the subway and elevated lines of that company in the Boroughs of Manhattan and the Bronx and the extensions to Brooklyn and Queens. The men who went out belonged to the Brotherhood of Employees of the company. They struck to enforce demands for an increase in wages amounting to 50 per cent.

ROADS IDLE TWO DAYS

For forty-three hours not a train was operated on the lines. A settlement of the matter was finally brought about on the night of Monday, Aug. 18, and service was resumed in full on the morning of Tuesday, Aug. 19. The men will get an advance of 25 per cent. The previous week they had been advanced 10 per cent. The terms of the settlement follow:

1. The men to return to work immediately.
2. A flat increase of 25 per cent of the rates of all the wages paid over and above those paid on Aug. 1, 1919.
3. All other questions to be negotiated between the Brotherhood and the company, and in case of the failure of such negotiations, to be arbitrated as provided for in the constitution approved by the directors.
4. All members of the Brotherhood of the Interborough Rapid Transit employees to be restored to their former positions, and each to retain his individual seniority in the service.

The platform expense of the company will be increased $4,800,000 a year, under the settlement. Officials of the company made it plain that unless the company receives relief through an increase in fares the railway faces bankruptcy.

The strike was settled at a six-hour conference in which officials of the company, officers of the Brotherhood, Public Service Commissioner Nixon and Governor Smith participated.

The tying up of the lines resulted in great confusion. The steam railroads put on extra cars and trains and the surface lines did their best, but the facilities afforded by them were totally inadequate to cope with the more than 1,500,000 passengers a day, who were so unexpectedly thrown upon them for transportation.

THE MAYOR IGNORED

The strike has not been without its animosities. Mayor Hylan, avowed advocate of municipal ownership, sees in the strike only a great conspiracy on the part of the company to secure an increase in fares. Shut out from the negotiations which resulted in the settlement, he and the District Attorney have been writing letters to each other. They promise a Grand Jury inquiry. On the other hand, the Amalgamated Association, which apparently has been making little headway in its efforts to organize a local among men in Manhattan, sees in the strike and the settlement collusion on the part of the management and the Brotherhood to prevent the Amalgamated from making any progress toward organizing the men.

The rates of pay which were in effect previous to the strike settlement are as follows:

Position and Service	Cents.
Motormen, first year	50
Motormen, second year	53⅛
Motormen, third year	56¼
Motormen, fourth year	59⅜
Motormen, thereafter	62½
Conductors, first year	43
Conductors, second year	44
Conductors, thereafter	45
Guards, first year	39
Guards, second year	40
Guards, thereafter	41
Towermen, first class, first year	46
Towermen, first class, second year	49
Towermen, second class, first year	44
Towermen, second class, second year	46
Switchmen, first year	44
Switchmen, second year	46
Special officers, first year	35
Special officers, second year	36
Platform men, first year	34
Platform men, second year	35

The motormen, conductors, guards and towermen get one day off per month with pay and the switchmen, special officers and platform men are given two days off per month with full pay.

St. Louis Wage Award Announced

A wage increase of 45 per cent has been granted to employees of the United Railways, St. Louis, Mo., in a decision handed down on Aug. 15 by the Public Service Commission of Missouri. All increases are to date from June 1, 1919, and become effective on Sept. 1.

If the men accept the award the advance authorized will make the total increase in the wages of the men 96 per cent since June 1, 1918. Approximately 5500 workers are benefited. Under the present sliding scale of wages the carmen receive a minimum of 36 cents an hour and a maximum, which is not attained until the ninth year of employment, of 42 cents.

The men, in recent wage demands, sought increases on the following basis: For the first three months, 55 cents an hour; for the next nine months, 60 cents an hour; for the second year and thereafter, 65 cents an hour.

The commission fixed the wage scale as follows: First year, 50 cents an hour; second and third years, 55 cents an hour; after the third year, 60 cents an hour.

The men also had demanded an eight-hour day, to be completed in nine hours, time and a half for overtime and a guarantee of $110 a month for conductors and motormen of the company on the extra list.

The arbitrators ruled that the men shall complete their eight hours work in nine hours on 40 per cent of the runs; in twelve and one-half hours on 40 per cent of the runs, and in fourteen hours on 20 per cent of the runs. Work on holidays is not to exceed eight hours and payment is to be made for actual working time and a minimum of six hours. Employees who volunteer to work overtime are to receive the regular rate while those who are required to do so are to get time and a half, according to the ruling. The wages of other employees are too numerous to be given in detail, but in general the employees other than trainmen receive an increase of 45 per cent.

No mention was made in the ruling on the company's application for increased fares to meet the wage increase, except a reference to Receiver Rolla Wells' estimate of the cost of the wage increase.

Massachusetts Investigating Commission Filled

To replace Robert F. Herrick, Milton; James L. Doherty, Springfield; George W. Anderson, Brookline, and Levi H. Greenwood, Gardner, who have declined to serve on the Massachusetts Electric Railway Investigating Commission, Governor Coolidge has nominated Roland W. Boyden, Beverly; Charles Giddings, Great Barrington; Charles S. Ashly, New Bedford, and David A. Belden, Boston and Haverhill, who have accepted and been confirmed by the Council. The other members of the commission are Ex-Congressman Charles G. Washburn, Worcester; Senators Cavanaugh of Everett, Hardy of Huntington, and Walsh of Boston, and Representatives Kneeland of Winchester, Young of Weston, Allen of Norwood, Maloney of Chelsea, and McDonald of Boston. It is expected that the commission will begin work immediately.

Railway Concessions Sought in Mexico

Applications filed by American and other foreign investment interests for concessions for the construction of electric and steam railroads and various other kinds of industrial enterprises are now pending with the Department of Communications and Public Works of the Mexican government. It is indicated by the attitude of the Carranza administration toward outside capital that these applications may all be rejected. The government has already adopted the policy of not granting any new concessions for the construction of additional lines of steam railroad. It has announced its intention of doing on its own account whatever railroad building may be deemed necessary, adding such lines to the National Railways of Mexico.

Recently application was filed with the Department of Communications and Public Works for a concession to construct an electric interurban railway through the oil fields of the Gulf Coast region, connecting Tampico and Tuxpam. The proposed line would be about 120 miles long. No action has as yet been taken upon this application. American oil interests are back of the project.

Pittsburgh Men Go Out in Spite of Contract

A Story that Puts the Blame Where It Properly Belongs Purposely Told at Length

Arrangements to operate the lines of the Pittsburgh (Pa.) Railways despite the strike that has tied them up since midnight on Aug. 14 were started by the receivers of the company on Thursday night, Aug. 21, after the platform men had voted by an overwhelming majority against returning to work under the wage award of the War Labor Board.

The hope of the receivers was that they might be able to resume operation with at least a part of the strikers in view of the fact that the action of Division 85 of the Amalgamated Association in calling the strike was a violation of their agreement following the May strike to accept the arbitration of the War Labor Board.

As a result of this situation the receivers contended in a public statement issued on Thursday night, Aug. 21, that no man by returning to work would imperil his standing as a union member. If the strikers failed to respond to their call, however, the receivers announced their intention of manning the cars in some other way.

On the afternoon of Aug. 21 upon the advice of W. D. Mahon, international president of the Amalgamated Association, Division 85 voted on the question: "Shall Division 85 return to work, perform its contract obligations and live up to the laws of the international union?"

MEN VOTE NOT TO RETURN

The vote was "No," 2521 to 63. The receivers immediately started arrangements to resume service without further dealings with the local union. They specified, however, in their public announcement that any striker returning to work would be considered and dealt with as a union man. They applied to the Mayor for police protection and immediately all policemen on vacation were ordered back to duty.

The platform employees, 3300 in number, walked out at midnight on Aug. 14 in protest against the smallness of the award made to them by the War Labor Board. The men, in striking, repudiated an agreement that bound them to accept the award. Moreover, they struck in the face of advice from the officers of the local division of the union and in defiance of the orders from the international officers. The men have been sued by the receivers of the railway for $900,000 damages, and have been accused, by counsel for the receivers, in a more recent court action, of having sacrificed their standing in the eyes of the law. Opposition of the international officers of the union to this strike has become so pronounced that the strikers have been threatened with expulsion from the Amalgamated Asssociation unless they return to work and live up to their agreement.

The Pittsburgh award was made on Tuesday, Aug. 12. The men had asked that their wages be made 55, 58 and 60 cents an hour, according to the length of service; these figures were 12 cents above the existent rates for the respective classes. Instead, they were given a 12 per cent increase, which made their wages 49, 52 and 54 cents.

STRIKE THREATS MADE

Next day there was a hubbub of strike threats among the men. The situation darkened. At midday, the receivers issued a statement, apparently to offset this talk of a walkout. The statement caused a mild sensation, for embodied in it was the text of an agreement, signed by the receivers and the representatives of the men, which absolutely bound the men to accept whatever decision was made by the War Labor Board. It was the first hint of the existence of such a document. The statement showed that the agreement was drawn up on May 19, last, just at the close of the four-day strike at that time. The crucial paragraph, and the one upon which the strike was later outlawed by the national leaders of the men's own union, read:

> It is further agreed that the decision of said board after approval by the said court (the United States District Court, of which the railway is now a ward) shall be valid and binding upon the parties hereto.

Eight men of the union had signed it.

In order to validate this clause in the most evident manner, the receivers went into the district court the next day, Thursday, and petitioned the judges to approve the award. At the same time they issued a statement announcing their intention of abiding by the award, and their confidence that the men should be held to it. It was also made plain in the same statement that even the increase allowed by the War Labor Board would necessitate another and, perhaps, a substantial advance of the fare. The present fare was put into effect only fourteen days before and made increases in all the rates. It would take $1,050,000 to give the men the 6-cent advance, the receivers claimed. In this connection they declared:

> If these wages are paid no justice can be done to the people whose money is honestly invested in the property, except by a further increase in fare together with a material reduction in the service, which has been suggested as a last resort. We wish, if possible, to avoid the application of these means of raising additional revenue; but we cannot shirk the responsibility of considering it as a remedy—and one which we contemplate with grave apprehension. If the law permitted, a possible solution would lie in direct help from the city in order to avoid excessive fares. If this is impossible at present, the city and boroughs still could help very materially by relieving the railways of many of the burdens.

As the day wore on it became even more plain that a strike was inevitable. The call went out for the meetings at which the men were to cast a strike vote. The strike vote was cast first by the night men. They were unanimous for a walkout. While they were thus engaged the wage committee for the men waited upon the receivers and asked them to petition the court for a straight 12-cent increase. The receivers refused. Mayor E. V. Babcock addressed a letter to both sides in the controversy, demanding that a strike be put out of mind, and giving warning that it would probably be unpopular, if attempted. A committee of business men and officers of the Chamber of Commerce jumped into the breach and insisted upan amicable settlement. William D. Mahon, international president of the Amalgamated Association, addressed a wire to the men warning them to "go slow." William B. Fitzgerald, first vice-president, wired that a strike would probably be illegal.

In the face of all this, the day men voted solidly to strike. Three hours after they had cast their ballots, the strike was on.

MEN SEIZE THE REINS

It became apparent then that the men had literally seized control of the situation. P. J. McGrath, international vice-president, admitted to the business men's committee that "these street car men will not listen, even to their representatives. They are working on their own authority in this instance."

Immediately upon the beginning of the strike, the receivers embarked upon a policy of publicity that has since characterized their conduct. They began to explain the situation in the most minute detail in statements issued two or three times each day. The first of these statements, dictated on the first morning of the strike, declared that the receivers had asked Messrs. Mahon and Fitzgerald to Pittsburgh in the hope that the international officers could be impressed with the fact that the strike was wholly illegal, in view of the violation of agreement by the men, and that the officers might order the men to return to work. Unless that was done, the statement went on, the receivers would go into court at once and ask for an order requiring a specific performance of contract on the part of the men. Later that day the receivers gave warning that they contemplated a rejection of the entire principle of collective bargaining unless the union was able to prove its power to carry out its agreements. Recourse would be had to individual negotiations with the men, it was threatened.

Business men, perturbed by the havoc the strike was working with them, begged the receivers to pay the men the 12 cents increase. This only drew from the receivers a tart reply to the effect that "although we can again increase fares with the consent of the Public Service Commission, we cannot compel people to ride on the cars, and experience has taught us that increased fares do not by any means insure increased revenues." The business men thereupon retired from the situation

The Mayor brought the receivers and representatives of the men together on Saturday morning, Aug. 16. They conferred all day and got nowhere. In desperation, Mayor Babcock wired to Mr. Fitzgerald to come to Pittsburgh and take charge of the situation. To this Mr. Fitzgerald replied:

> I cannot participate in this conference (the meeting of the receivers and men). The membership of our organization in Pittsburgh are acting upon their own initiative. The local officers and members, from the telegrams that have been sent them, clearly understand the position of their international organization in connection with the present controversy.

The telegram was immediately seized upon by the receivers as the basis for a call to the men to be prepared to act as individuals in the event the company decided to operate the cars. Their statement read:

> Should it become necessary for us to call for men to operate the cars, notwithstanding the strike, it must be remembered that union men who respond to the call will not thereby impair their union standing. In fact, they would be doing their organization a service by protecting its good name through the faithful upholding of its contracts. The strike is not binding upon anyone, because it is contrary to the laws of the organization and against the protest and instruction of its international officers, as well as in repudiation of its signed agreement.

The men agreed to take a referendum on Aug. 21.

On Sunday, the receivers appealed to Mr. Mahon, asking: "Are you in a position, as officer of the organization, to require the members of the local division to comply with the said agreement?" Coincidentally, they made a threat that they were "formulating plans, which, with the co-operation of the public, will result in the operation of the street cars at an early date."

Mr. Mahon's answer to the appeal from the receivers came in the form of an earnest suggestion to the strikers to reconsider their action, and it was accompanied by a request that the receivers deal leniently with the men.

Meanwhile, the receivers had entered suit for damages against Division 85 of the Amalgamated Association in the United States district court. The suit names the association, eight members of the wage scale committee of the association and 100 motormen and conductors who were alleged to have been active in the pre-strike agitation, as the defendants. The receivers claim the $900,000 to compensate them for the loss of revenue that has resulted and must hereafter result through the failure of the cars to operate. The receivers reserve the right to add to the list of defendants.

On Tuesday afternoon, counsel for the strikers appeared in court and filed objections to the wage award as made by the National War Labor Board. Great stress was laid upon the rate of wages now paid railway men in other cities of America, notably Detroit, Boston, Cleveland, Philadelphia, Chicago and New York. Attention of the court was also called to the fact that the Homestead & Mifflin Street Railway, operating a system about 12 miles from Pittsburgh, was paying its men 60 cents an hour.

At the same time the strikers issued their first public statement. It was an attempt to justify their repudiation of contract. They said:

> The record of the men in keeping their obligations is vastly better than that of the Pittsburgh Railways; the courts of the county are filled with lawsuits brought by the city and other interested parties in an endeavor to compel this corporation to comply with its solemn obligations, while this is the first time that such a charge has been brought against the members of this organization. If the dispute is to be adjusted, it will not be by measures of coercion, but by recognition on the part of the receivers and the public of the facts in the case.

The district court on Wednesday morning, took up the hearing on the objections of the men to the award as made by the War Labor Board. Attorney George E. Alter, counsel for the receivers, immediatley called the attention of the court to the fact that the men had gone out on strike since the award was made. Consequently, he argued, they had no standing in the law and could have none until the resumed operation of the cars. He asked, therefore, that their objections to the award be stricken from the records. Attorney C. Elmer Bown, for the men, admitted he was a trifle uncertain as to the legal status of the men, in view of the strike, and moved that the court set a later date for a hearing on Mr. Alter's motion. Friday morning was named by Judge C. P. Orr.

Judge Orr, speaking of the situation in which the men now find themselves, said:

> They are in a very unpleasant position and the stand they have taken is unfortunate. A board of arbitration is a court and men are bound to honor decisions of court. Some people, it is true, break contracts; but I have my doubts as to the morality of a man, or body of men, rich or poor, who will willingly break an agreement, as in this case.

MEN REVERSE THEIR POSITION

Copies of the minutes of the receivers' meetings, supplied to the ELECTRIC RAILWAY JOURNAL, indicate that the suggestion that the award of the War Labor Board be made binding was the direct proposal of the men and was incorporated in a letter submitted by the authorized officers of the union May 9, last. All through the strike last May, the men demanded unequivocal approval of the principle of a binding award, and in this strike they are assuming opposition the position and are directly fighting it.

On behalf of the receivers, it has been made plain that the wages in other cities are not fair criterions of what should be granted in Pittsburgh. The 12 per cent increase was given because the cost of living had increased 12 per cent in one year, and the increase was in keeping with that made by the War Labor Board at the same time for other cities.

It is pointed out by the receivers that in the hearings before the War Labor Board in Washington, only two witnesses were put upon the stand by the street car men, although in other arbitration hearings as many as 25 or 30 were called upon to prove that higher wages were justified.

Aurora-Elgin Strike Continues

Up to Aug. 19 there was no apparent change in the strike on the Aurora, Elgin & Chicago Railway, Wheaton, Ill. Service has been suspended since 4 a.m. on July 30. The appointment of a receiver for the road has apparently had little effect on the strike.

During the week ended Aug. 16 all-day conferences were held between representatives of the men and Edwin C. Faber, manager for Receiver Joseph K. Choate, and while no settlement has been effected, some progress has been made. Mr. Faber announced that a tentative agreement on the classification of employees other than trainmen had been made.

Interurban Men Strike

Platform men of the Ohio Electric Railway left their cars on the morning of Aug. 15. The entire system, with the exception of the Dayton-Indianapolis division and and the Dayton-Cincinnati division, is at a standstill. Local lines at Zanesville, Newark and Lima are also affected and there is some trouble on the line at Springfield.

Aside from the asking for an increase of 10 cents an hour in pay, the union men want the miscellaneous employees recognized as members of the union with an increase of 25 per cent in wages. This the company has so far refused to do. The company offered an increase of 3 cents.

B. R. T. Recognizes Union

The Amalgamated Association has won recognition in Brooklyn. On Aug. 14 Judge Mayer, by whom Lindley M. Garrison was appointed receiver of the Brooklyn Rapid Transit Company, wrote to Frederick P. Royce, general manager for the receiver, that it had been established to the satisfaction of Public Service Commissioner Nixon and himself that at midnight on Aug. 8 more than 50 per cent of the employees of the company eligible to membership in the Amalgamated were enrolled members of the association. He requested Mr. Royce to take up the matters in dispute in the absence of Mr. Garrison. He laid down the procedure as follows:

> The next step under the agreement is to entertain the grievances presented by the committee, headed by E. D. Smith, or such substitute, or such committeemen that may be properly substituted in place thereof, according to such committee at least the same recognition as is now accorded the Brotherhood of Locomotive Engineers, to receive the committee presenting the grievances, and take the same up with such committee with such advisers or counsel as such committee selects.

In accordance with these instructions efforts to settle in conference the differences which resulted in the recent strike were begun on Aug. 19 when a committee of the Amalgamated Association went into conference with Mr. Royce, in the absence of Receiver Lindley M. Garrison, and George D. Yeomans, counsel for the company. Failure on the part of the conferees to agree on the matters in dispute will result in arbitration.

Makes Plea for Co-operation

The Philadelphia (Pa.) Rapid Transit Company has reprinted in pamphlet form a letter from President T. E. Mitten to the employees. The trainmen are asked to read the letter carefully and carry it with them. The letter is a plea for still closer co-operation. The company says it wants more rides at 5 cents, not fewer rides at higher fares. The appeal follows in full:

> We added $1,750,000 to our annual payroll in August, 1918, and overcame the cost by skip stops and other economies.
>
> We have added approximately $2,250,000 to our annual payroll in August, 1919, and will overcome the cost by withdrawing all duplicated or unnecessary car service and removing all wasted effort from the car schedules.
>
> *We Want More Rides at 5 Cents*
> *Not*
> *Fewer Rides at Higher Fares*
>
> Street-car riding is a habit which can be encouraged.
>
> Co-operation in this, as in all other matters, will work wonders.
>
> The management must provide the best car service for the greatest number of people at the lowest possible cost.
>
> Conductors, by alertness and courtesy, must endeavor to make the street-car ride an agreeable experience to the passenger—*a smile always helps.*
>
> Motormen must watch out for passengers and space the cars to catch the short distance riders—*pick up all the nickels.*
>
> Employees generally must never miss a chance to *help win the public.* Tell everybody what we are now doing and what nine years of co-operative effort has accomplished in *building wages up and keeping fares down.*
>
> Note the following:
>
> Philadelphia, up to 1911, was always in trouble with its street-car system—strikes every little while, men underpaid and the worst service imaginable. Deep-seated prejudices were established in the mind of the public and the employees were openly hostile to the management.
>
> Philadelphia, since 1911, has suffered less from labor disturbance on its street railways than any other large city.
>
> Philadelphia's street-car service is supplied to-day by a loyal and satisfied body of men, who are a credit to the company and of whom the city may be justly proud.
>
> Philadelphia has to-day less trouble with its street-car service than ever before in its history.
>
> Philadelphia has retired all of its old, four-wheeled cars and has to-day a greater proportion of modern, double-truck cars than any other large city.
>
> Philadelphia is to-day the only large city in this country where street-car fares have not been increased by some method.

A New Labor Policy

Rolla Wells, receiver for the United Railways, St. Louis, Mo., has announced that the company will abandon all secret lines of communication by which it has been getting information of the deliberations of the union. Mr. Wells also made known the fact that he had discharged James F. Brady, confidential employee of the claims department. In regard to the decision to terminate the supply of "inside information" about union matters, Mr. Wells said:

> I am doing this in fairness to our employees. In the future their union meetings are not to be spied upon with the consent of the receiver. All such information will now cease to be received by the company. We are going to act open and above board in our dealings with our employees who belong to the union. We shall be fair with them. As a matter of fact, I do not care what goes on at the union meetings.

H. M. Nelson, the head of the local branch of the union, expressed himself as delighted with the announcement made by Mr. Wells and said it assured co-operation of the employees with the company.

Improvement Program Announced

Complete rehabilitation of the property of the United Railways, St. Louis, Mo., within the next year and a half is the plan of Rollo Wells, receiver, and Albert T. Perkins, general manager.

Among the improvements planned are the following:

Use of 100 lb. T-rails for relaying purposes.

Purchase of a large number of new cars with modern motors.

Relaying of 21 miles of rail before cold weather sets in, at a cost of $750,000. This is twice the usual amount spent in the past.

Filling with dressed granite blocks the space between tracks.

Improvement of various carhouses and repainting of cars at the rate of two a day. All the 1445 cars of the company will be refurnished. Coke will be used for heating this winter, and 5000 tons have been ordered.

Strike in Des Moines

The city of Des Moines, Ia., on Aug. 18 had been without electric railway service for six days. Employees of the Des Moines City Railway went out on strike on Aug. 13 on account of dissatisfaction over the ruling of Judge Wade of the Federal Court, on Aug. 5, which provided for temporary relief in the wage dispute between the company and the men. Judge Wade's ruling failed to take into account the claims of the men for retroactive pay. The men claimed that they were entitled to increased pay from March 1.

On Aug. 18, upon application of the city of Des Moines, Judge Wade ordered the issuance of receivers' certificates to cover the $100,000 which the men claim is due them.

Immediately after the issuance of the order Emil G. Schmidt, president of the Des Moines City Railway, was served with a notice by the employees that they would not return to work until the money for the certificates was deposited in the bank.

While jitneys partly relieved conditions resulting from the strike, private automobiles and trucks proved the real solution.

Louisville Men Strike

A general strike of the employees of the Louisville (Ky.) Railway started at midnight on Aug. 19 with about 1300 men out. About twenty cars were running the first day. There were mild disorders, resulting in two arrests, up to noon. Patrolmen rode on the front and rear platforms of all cars run. Such cars as were run carried very few passengers.

The matters not agreed upon were apparently of small moment, and the indications on Aug. 19 were that the strike will not be of long duration.

Increase in Wages in Baltimore

On Aug. 16 the wages of the trainmen and other employees of the United Railways & Electric Company, Baltimore, Md., were increased approximately 10 per cent. In the case of motormen and conductors the rates in cents per hour were changed as follows:

	Previous Pay Per Hour	New Rate Per Hour
First three months....	41	45
Next nine months.....	43	48
Thereafter	45	50

With the increase in wages of platform men the minimum monthly wage was raised to $90. It had previously been $75. The minimum is guaranteed to every car man who reports daily whether or not he has a run.

In the case of other labor employed by the company the increase is a flat 10 per cent.

The increases were ordered after a conference on Aug. 13 between a subcommittee of the United Railways Association and President C. D. Emmons.

In discussing the matter Mr. Emmons said:

> We had expected to take up the question of wages with our men at the conclusion of the rate case, but on request of the committee from the association we felt that the question should be settled immediately and the amount of money be included in our figures before the commission.
>
> I appreciate the way in which our men have conducted the negotiations. It was very gratifying to me to know the kind of men with whom I will have to deal in Baltimore.

The increase in wages, which will mean an additional expense of about $1,000,000 a year, caused a realignment of the company's plans for increased carfare, necessitating annual revenue to cover this large increase in the payroll.

A significant point brought out at the fare hearing before the Public Service Commission, on Aug. 18, was that the people's counsel would concede that the United Railways was entitled to a higher rate of fare than the present 6 cents. The question is how much higher the commission will be willing to fix the rate. The original petition of the company under which the present hearing is being held was for a 7-cent fare with four tickets for 25 cents. Even before the increase in wages it was seen by the company's representatives that this rate would not suffice to cover the augmented expenses of the railway. The petition has not been amended, however, but the company's attorneys have indicated that they may ask for as high a rate as 8 cents.

Strike Again Ties Up Muskogee Lines

Street-car service in Muskogee, Okla., which was resumed on July 17 following a strike which began on May 30, was again interrupted when the carmen walked out a second time on Aug. 1. Failure of the company to stand by the terms of the recent arbitration award granting the men seniority rights, was given as the cause of the second strike. Company officials declare that the terms of the contract have been fulfilled.

News Notes

Convention of Amalgamated Association.—The sixteenth convention of the Amalgamated Association of Street and Electric Railway Employees has been called for Sept. 8 in Chicago, Ill. The meeting will be held in the Ashland Boulevard Auditorium. The headquarters of the association will be at the Briggs House, corner Randolph and Wells Streets.

A Railway Hires a Humorist.—Edgar A. Guest, Detroit, Mich., who has a humorous column on the editorial page of the *Free Press* daily, is contributing a page of jokes every week to the *Service Spotlight*, the official publication of the International Railway, Buffalo, N. Y. The *Service Spotlight* is placed in the "Take One" boxes of the International Railway's cars every Monday morning.

Cripple Creek Short Line to Be Electrified.—Announcement by the Cripple Creek Short Line, which operates between Colorado Springs and the gold mining camps, is to the effect that the road will be electrified, construction to begin in September. Electric power will be purchased, according to the announcement, from the Arkansas Valley Railway, Light & Power Company, and another central station company.

Burlington Employees on Strike.—On Aug. 8, the employees of the Burlington (Vt.) Traction Company went on strike. The men seek a wage schedule of 50 cents an hour for an eight-hour day, with time and a half for overtime. They also demand the reinstatement of some of their number who were discharged recently. The company in a statement on Aug. 10 said that motormen and conductors had been receiving from $18 to $23 a week, according to length of service, and were liberally paid for overtime. The statement added that the company was unable to meet the demands without increasing its present 5-cent fare.

Arbitration Accepted by Memphis Men.—Agreement of officials of the union and of the Memphis (Tenn.) Street Railway that an arbitration board should settle demand for increased wages was ratified on the afternoon of Aug. 17 by the men. The arbitration board will consist of three members. The union and the railway each will name a man and these two will select the third member. The demand of the union members was for 75 cents an hour flat. At present the men are paid 36 cents to 40 cents.

Suburban Employees Demand More.—The employees of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., held a meeting recently and decided to go on strike if an additional wage increase was not granted. A three-year contract between the company and the men expired on July 21. This contract called for a closed shop, but at its expiration the company refused to grant a wage scale of 60 cents an hour, saying that the financial condition of the company would not permit it to grant another increase.

Chicago Suburban Line Tied Up.—On Aug. 16 the trainmen of the Hammond, Whiting & East Chicago Railway, Chicago, Ill., went on strike because the company had refused to meet their wage demands. This company has an operating agreement with the Chicago Surface Lines for use of the city tracks, and the employees asked for the Chicago wage scale. The management asked for a 7-cent fare to help meet this demand. The authorities in the three cities refused the petition and the tie-up was the result. It was reported that the city of Hammond, Ind., would ask for a receiver to operate the road.

No Strike at St. Joseph, Mo.—Prospects of a strike of trainmen of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., have been averted by the decision of the men to abide by their contract with the company which provides that no strike shall be called on account of a wage misunderstanding until the matter has been laid before a board of arbitration. The employees are negotiating with the company for an increase of 10 cents an hour in pay. The company has asked the men to wait until the Public Service Commission of Missouri has disposed of its petition for an 8-cent fare.

New Wage Scale in Clarksburg.—The new wage scale of local union employees of the Monongahela Valley Traction Company was signed at Clarksburg, W. Va., on Aug. 14. By the new agreement the employees are granted substantial wage increases based on the length of service with the company. The new working conditions call for a closed shop. The new wage scale is as follows: For the first six months on city lines, 40 cents an hour, on interurbans, 40 cents an hour; second six months, city, 42 cents; interurban, 42; third six months, city, 43, interurban, 44; fourth six months, city, 45; interurban, 46; fifth six months, city, 47; interurban, 48; sixth six months, and thereafter, city 49, and interurban 50 cents an hour.

M. O. Theory and Practice Differ.—In granting the Third Avenue Railway, New York, N. Y., permission to abandon operation of three of its subsidiaries which were not paying expenses, Public Service Commissioner Lewis Nixon wrote to Mayor Hylan, telling him of the situation of the lines, and informing him that if the city desired to take them over, the necessary hearings before the commission would be held. Mayor Hylan is an avowed advocate of municipal ownership, but he replied to the commissioner in part as follows: "From their statement to you as to their present condition, it would seem more proper that they (the railroads) take their wares to people who deal in second-handed railroad scrap, who are commonly called junk dealers."

A Railway Offered as a Present.—The United Railways, St. Louis, Mo., is being asked by the Memorial Park Association, which controls Memorial Park Cemetery at Melrose and Lucas and Hunt Roads, St. Louis County, to accept a car line as a present. The United Railways now runs its St. Peter's line to within three-quarters of a mile of the cemetery gate and the association has proposed that Receiver Rolla Wells of the United Railways extend the St. Peter's line to the cemetery gate at the association's expense. The extension would cost approximately $10,000. Receiver Wells is also being petitioned by a committee, appointed by the citizens of West Walnut Manor, St. Louis County, to extend the Lee Avenue line through Walnut Park with its western terminus in West Walnut Manor.

Franchise Renewal Up in Belleville.—Mayor P. K. Johnson of Belleville, Ill., called a special meeting of the City Council on Aug. 14 to discuss the matter of a new franchise for the East St. Louis & Surburban Railway. The company has as yet made no move for a renewal of its franchise, although its present grant expires on Sept. 1 for the line within the old city limits of Belleville. The franchise for the suburban line running between East St. Louis and Belleville was granted in 1899 by the St. Clair County Board of Supervisors for a period of fifty years. Although various civic bodies in discussing the matter of a renewal of franchise, were insistent upon gaining a 5-cent fare to Edgemont, that matter has since been dropped and an extension of service to outlying parts of the city will probably be all the city will ask as a condition for the renewal.

Road Offered to City.—W. O. Wood, vice-president and general manager of the Long Island Electric Railway, which operates from Jamaica across the meadows to Far Rockaway, Long Island, has informed Deputy Public Service Commissioner Alfred M. Barrett, of the First District, that he is willing to recommend that the road be turned over to the city of New York to be operated municipally upon the basis of payment by the city of only the appraised value of the road. The line, which operates for a 10-cent far, is nearing bankruptcy, according to Manager Wood. The commission has for some time been investigating the affairs of the road with a view to meeting complaints as to its service. Manager Wood testified before Commissioner Barrett that the road for a period of some years has not earned its operating expenses and that the deficits from operation have been made up by contributions from the owners, namely, the Interborough Rapid Transit Company, and interests connected with the Long Island Railroad.

Financial and Corporate

Interurban in Receivership

Aurora, Elgin & Chicago Railroad Placed in Hands of J. K. Choate on Creditor's Petition

An involuntary petition in bankruptcy was filed on Aug. 9, against the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., by attorneys representing the General Electric Company. In the petition, to which brief mention was made in the ELECTRIC RAILWAY JOURNAL for Aug. 16, it is charged the road has an authorized capital stock of $6,200,000 and is indebted to the company for $3,215. The road is alleged to have a total outstanding secured and unsecured indebtedness of about $11,000,000.

Receiver in Complete Charge

Judge Evan A. Evans of the Federal District Court issued an order appointing Joseph K. Choate, New York, as receiver. Mr. Choate is to have power to take complete charge of the road, operate it, and take whatever steps he deems advisable to produce satisfactory results.

Mr. Choate has announced he will retain E. C. Faber, former manager of the company, as his representative and general manager. B. P. Alschuler, Aurora, will act as counsel for Mr. Choate. According to Judge Evans' order the receiver also has power to employ M. B. & H. H. Johnson as attorneys.

The bankruptcy petition, filed by Attorneys George B. McKebbin and Dwight S. Bopp, states the railway was organized on March 20, 1901, in Illinois. Its principal office, the petition goes on, is at Aurora, and the lines traverse Cook, Du Page and Kendall Counties.

On April 1, 1901, the petition states, the road executed and delivered its so-called first trust deed to the American Trust & Savings Bank, Chicago, securing $3,000,000, par value, first mortgage bonds, of which there are now outstanding $2,589,000, par value, secured by a lien on part of the roadbed and equipment. The total of first mortgage bonds outstanding, the petition states, amounts to $1,546,000, likewise secured by a lien.

$8,045,000 of Outstanding Bonds

The petition states on July 1, 1910, the road executed and delivered to the Northern Trust Company a so-called trust deed securing an authorized issue of first and refunding mortgage bonds amounting to $15,000,000, par value.

The petition names the principal bond and note indebtedness of the road as $8,045,000. The amount said to be due the holders of first and refunding mortgage bonds is set at $76,975, which the road, the petitioners say, has been unable to pay.

Furthermore, the petitioners assert, there is no prospect that the road can meet its obligations, its buying capacity has been exhausted, and it now faces financial destruction.

Grafton Creditors Meet

Committee Appointed to Consider Offer of Purchase from Edison Electric & Gas Company

Another meeting of the creditors of the Grafton Light & Power Company and of the Grafton (W. Va.) Traction Company, bankrupt corporations, was held on July 29 at Grafton after two former postponements taken at the instance of the creditors for the purpose of considering propositions made by New York capitalists for the purchase of the two plants at private sale, before taking an order for public sale thereof. The meeting was addressed at length by John T. McGraw in person on behalf of the two companies. He recounted a proposition to buy the plants made by a new company already organized and incorporated, which had acquired extensive holdings of gas and electric properties in West Virginia and Maryland, chief among which was that of the Western Maryland Gas & Electric Company.

Briefly stated, the proposition is this: The new company, which is known as the Edison Electric & Gas Company, proposes to pay off the indebtedness existing against the two bankrupt concerns, the Grafton Light & Power Company and the Grafton Traction Company, now amounting to about $176,000, exclusive of the Brady claim, by paying therefor $100,000 in cash and $100,000 in second mortgage bonds of the new company. Then the new company further proposes to liquidate the Brady indebtedness by the payment of a like sum of $100,000 in cash and $100,000 in preferred stock of the new company, the Brady debt at present with interest amounting to about $180,000.

Mr. Parry, of the law firm of Larkin & Parry, New York, which represents the Central Trust Company, New York, Barstow & Company and other bankers interested in the Edison Electric Power & Gas Company, was also present and made a brief address in which he fully corroborated the statements of both Messrs. Coniff and McGraw as to the responsibility of the new company.

The end of the matter was the appointment of a committee from among the creditors present by attorneys for the purpose of seeing the absent creditors and sounding them upon the matter of accepting these bonds in part payment of their respective debts, and reporting the outcome of their action to a future meeting of creditors.

Pittsburgh Valuation Presented

Some Difference of Opinion Between Railway and City and Commission Experts

The value for rate-making purposes of the Pittsburgh (Pa.) Railways is $48,000,000, in the opinion of the engineers who represented the city of Pittsburgh on the Pennsylvania Public Service Commission's joint valuation board, but a rate base to be just to both parties and unjust to neither should not be less than $65,000,000 and to give weight to the cost of reproduction should range between $65,000,000 and $70,000,000, in the judgment of the men on the board who represent the company.

The report was filed before members of the Public Service Commission in Pittsburgh on Aug. 20. It was attended with no ceremony and there was almost no attendance at the hearing, although it is conceded in some quarters that this report may be the beginning of the end of the receivership.

The valuation proceedings were begun eighteen months ago with the intention of establishing a definite calculable basis for the computation of an equitable rate of fare. The two engineers of the company on the board estimated that the traction system will need $18,986,000 for its operation during 1920, and that, to raise this sum, a fare of 8.45 cents is necessary. The two representatives of the city of Pittsburgh declare the railways will need only $17,446,000 for its operation in the coming year, but to secure this they must charge a 7-cent fare. The present fare is 7½ cents when paid by ticket and 10 cents in case of cash payment.

The letter of transmittal to the Public Service Commission briefly summarizes the work of the board, and then goes on to relate the manner in which the valuations were arrived at. The value of the physical property was determined upon by seven different methods. They are as follows:

Basis No. 1—Historical cost as determined upon from the records, with scrutiny of engineers and accountants, representing actual investment in physical property placed in the service of the public, $59,069,392.

Basis No. 2—Estimated costs of reproduction new at prices ruling when each part of the existing property was constructed, and under original conditions of construction, $49,324,791.

Basis No. 3A—Estimated cost of reproduction new at average prices of the period 1906 to 1915 inclusive, and under original conditions of construction, $56 148,398.

Basis No. 3B—Estimated cost of reproduction new at prices indicated for 1918 by the trend of prices for twenty years previous to 1916, and under original conditions of construction, $60,832,200.

Basis No. 3C—Estimated cost of reproduction new at average prices in the period 1914-1918, inclusive, and under original conditions of construction $73,560,300.

Basis No. 3D—Estimated cost of reproduction new at the estimated average prices for the period from 1918 to 1922, inclusive, and under the original conditions of construction, $84 191,300.

Basis No. 4—Estimated cost of reproduction new at prices and under the conditions ruling at the date of valuation, viz., April 1, 1918, $102,842,274.

No allowances were made by the board for franchise values in excess of cost, nor for earning capacity, nor for terminal facilities, nor for bridge rights in excess of cost, nor for the special value of the charter, which is one of seven said to be the broadest of the kind known. The company placed a substantial value on this charter, but the board denied it. It was on the question of whether "other elements of value," besides the actual physical valuation of the properties, should go into the total, that the valuation board split, the company's engineers opposing the stand taken by the city's representatives on "development values," "going concern values" and similar items.

$14,086,000 REQUIRED A YEAR

All the engineers agreed that the physical operation of the system required $14,086,000 next year. To the capital invested the city engineers would allow a return of $3,360,000, making the total requisite revenue $17,446,000. To capital the company engineers credited a return of $4,900,000 a year, thus making their total $18,986,000.

The city's engineers recommended a zoning system of fares, presumably based on that recently projected for trial in Newark, N. J. The board also made a recommendation as follows:

NO ACCOUNT TAKEN OF RECENT WAGES

> The solution of the railway problem, in our opinion, will not come with the mere setting down of fixed charges that are reasonable under all the circumstances on the amount invested. The real need, in our opinion, is for some contract arrangement between the public and the company, which would be based on the reasonable assurance of securing all necessary charges, including a return on the investment. We are absolutely convinced that a contract relationship should be established at the very earliest moment.

The report makes it plain that all its estimates were made without regard to the recent award of the National War Labor Board, which adds, according to the receiver's figures, $1,050,000 to the company's annual expenses.

Abandonment Threatened by Long Island Line

Officials of the New York & North Shore Traction Company, operating from Flushing, Long Island, to the New York City line in Little Neck and continuing to Hicksville, Long Island, filed notice on Aug. 19 with the Public Service Commission for the First District, that it will not be able to continue operation this fall at the present fare of 5 cents. Deputy Public Service Commissioner Alfred M. Barrett agreed to hold a meeting on Aug. 23, at which time reasons for the proposed abandonment of the road will be advanced by the company's representatives.

George A. Stanley, president of the company, said on Aug. 19 that it is impossible to continue to haul passengers under existing financial conditions. He said that some patrons of the road are voluntarily paying 7 cents for a ride, but that this increase in the company's receipts does not go far in solving the problem.

The line was started in 1907. The company has 38 miles of track, 17 in the city and 21 outside the city. The company has never paid a dividend, and has only paid bond interest for four and a half years out of the twelve it has been operating. The road now owes $13,000 in taxes and more than $10,000 in current bills.

The efforts of the company to secure an increase in fare through the authorities of New York so far have failed. The affairs of the company have been reviewed previously in the ELECTRIC RAILWAY JOURNAL.

Basis of St. Louis Valuation Announced

The Public Service Commission of Missouri has replied recently to the inquiry of the Civic League of St. Louis, Mo., concerning the methods of its valuation of the property of the United Railways, on which the commission's engineers have been at work for several months. The answer to the Civic League was as follows:

> All property owned by the company will be included in the appraisal, being divided into property in use and useful and not in use and not useful. The matter of discarded property has not been decided. The factors of wear and tear, inadequacy and obsolescence, will receive due consideration. Unit prices used in the appraisal are based on costs as evidenced by vouchers, contracts, and work orders and actual weighted average costs for the thirteen years ending Dec. 31, 1918. The percentage allowance to cover overhead construction costs has not yet been calculated. The commission fixes the fair present value of the property used and useful in the service after all evidence has been submitted and when finding the fair present value it makes such allowance for intangible value as the evidence warrants.

The league will announce later the use to be made of the information.

Investment Return Arbitration Soon

Hearings in the arbitration of the demand of the Cleveland (Ohio) Railway for an increase from 6 per cent to 7 per cent in the guaranteed dividends on its stock will be started during the week ended Aug. 23. The public will be admitted to the hearings, but the conferences of the arbitrators will be private. As is well known the Cleveland system is operated under the service-at-cost plan.

J. R. Nutt, president of the Citizens' Saving & Trust Company, will represent the company on the board of arbitration; W. E. Davis, city light commissioner, will represent the city, and Attorney A. A Stearns, appointed by United States District Judge Westenhaver, will be the third member. Attorneys Harry J. Crawford and Thomas Sidlo will represent the company, while Alfred Clum, of the city law department, will be the attorney for the city.

It is understood that some members of the Council contend that an increase in the dividend cannot be legally made without submission to a vote of the electors, and they threaten to circulate petitions for a referendum vote if the decision is in favor of the company.

Financial News Notes

Foreclosure Sale on Sept. 5.—The sale of the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., under foreclosure has been set for Sept. 5 by order of Wallace H. White, special master. As noted in the ELECTRIC RAILWAY JOURNAL for Aug. 9, page 301, the foreclosure proceedings were started by the Old Colony Trust Company, Boston, Mass., trustee under the mortgage securing the first and refunding bonds of the company.

Abandonment Authorized.—The International Railway, Buffalo, N. Y., has been authorized by the Public Service Commission for the Second District, to abandon part of its Gooding Street line in the city of Lockport. The company will tear up the rails on this line and reroute cars on its Lockport-Olcott interurban division over other tracks through Lockport. The company contended before the commission that operation of the line resulted in a big annual loss.

Foreclosure Sale Set for Sept. 8.—The Pennsylvania & Ohio Railway, which extends from Conneaut to Jefferson in Ashtabula County, Ohio, together with all its property of every description, franchises, rights-of-way, real estate and appurtenances, will be sold at receiver's sale, in Jefferson, Ohio, on Sept. 8. Bondholders who have not yet deposited their bonds with the bondholders' protective committee are urged to do so before Sept. 1, 1919, which is the last day bonds may be deposited. The receiver of the company is Palmer Wardman, Ashtabula, Ohio.

Electric Branch Lines Sold to Santa Fe.—Announcement was made at Porterville, Cal., on Aug. 2, of the completion of the sale by the Visalia Electric Company to the Santa Fe Railroad of certain branch lines extending south and southeast of Porterville, built to connect with the Porterville Northeastern Railway. In connection with the transfer and the reconstruction of these lines to freight traffic standard, it is announced the Santa Fe will start immediate surveys for the extension of their lines south from Porterville through a rich farming and orchard district to Ducor.

Sale Under Foreclosure Confirmed.—The recent sale at auction of the Southern Traction Company, to H. M. Mepham, St. Louis, Mo., who originally promoted the road has been approved by Federal Judge George W. English, in chamber at Danville, Ill. The sale was held in East St. Louis a few weeks ago by the master in chancery of the Federal Court and the purchase price was $400,000. This ends litigation which began in the Federal Court in the year 1914, at which time the road became bankrupt. It was built by the Lorimer-Gallagher Construction Company, Chicago.

Back Interest Payment to Be Made.—Holders of the 6 per cent three-year gold notes of the International Traction Company, Buffalo, N. Y., dated Aug. 1, 1917, have been notified that through the efforts of the protective committee appointed under the protective agreement dated Jan. 31, 1919, the interest on said notes which became due on Feb. 1, 1919, and Aug. 1, 1919, together with interest at the rate of 6 per cent per annum upon each of said instalments of interest from its respective due date to and including Sept. 2, 1919, will be paid on and after Sept. 2, 1919, at the office of the Bankers' Trust Company, in New York.

St. Louis Receivers Reports.—The third monthly report on the operation of the United Railways, St. Louis, Mo., since the concern went into receivership was filed on Aug. 13 in the United States District Court by Receiver Rolla Wells. It shows total receipts of $1,892,299 against disbursements amounting to $1,629,397. The receipts include $16,850, paid by employees of the company on Liberty Loan subscriptions and $538,000 realized through the sale of certificates of debt. The report covers the period between June 1 and June 30, 1919. Cash on hand on June 1 is given in the report as $149,198 while the cash balance on June 30 aggregated $410,100.

Plan to Reclaim Road.—The New York & Pennsylvania Traction Company, Hornell, N. Y., which has a line between Canistee, N. Y., and Shinglehouse, Pa., will start running cars again between the two points about Nov. 1. The line has been idle since 1917. W. W. Crittenden, Hornell, has been successful in raising $325,000 for the purchase of the property. The line is 54 miles long. Old stockholders of the company have pledged a large part of the money. The roadbed is badly washed out in places and must be rebuilt. Eight miles of single track near Whitesville, N. Y., has also been damaged. The old rolling stock will be used, according to Mr. Crittenden, who has had an option on the property for more than a year.

Electric Line to Be Sold.—On Aug. 11 Judge R. C. Patterson of the Common Pleas Court at Dayton, Ohio, ordered the sale of the electric line between Miamisburg and Germantown, controlled by the Ohio Electric Railway. The sale is for the purpose of satisfying mortgage indebtedness, according to an announcement. Judgment for $50,000 and interest was ordered in favor of Phillip C. Swing, Cincinnati, as trustee. He is the plaintiff in the suit. Among the corporations named as defendants are the Miamisburg & Germantown Traction Company, the Cleveland Trust Company, as trustee; the Cincinnati & Dayton Traction Company and the Ohio Electric Railway. Judgment for $2,000 was also ordered in favor of the Cleveland Trust Company on bonds secured by mortgage.

Exception Taken to Report of Special Master.—Exceptions have been filed in the United States District Court to the report of Special Master Henry Lamm, regarding the issuance and sale of receiver's certificates to take up a debt of $2,300,000 of the United Railways, St. Louis, Mo., which is due. Those who filed were John W. Seaman, who instituted the receivership suit against the company; Elmyr A. and Robert T. Laughlin, intervenors in the suit. They object to language of the report, in so far as it refers to a "default" on the part of the company, in not taking up bonds issued in 1904 by the St. Louis Transit Company which leased the railways in St. Louis from the United Railways. They assert that there was no consideration for the indorsement by the United Railways of the Transit Company bonds and that therefore the indorsement is void.

Protective Committee for Eastern Pennsylvania Railways' Bonds. — A protective committee of the mortgage 5 per cent bonds of the Eastern Pennsylvania Railways, Pottsville, Pa., has been organized. A circular issued by the committee says that the company is faced with the immediate necessity of largely increasing its power generating capacity but is without funds that can be used for this purpose and that it has no way of raising money at a satisfactory rate of interest. For this reason the holders of the first mortgage bonds are requested to deposit these bonds with the Central Union Trust Company, New York, N. Y., or with the Girard Trust Company, Philadelphia, Pa. Deposits must be made on or before Sept. 26. The last annual report of the company, dated June 5, showed a balance available for renewals, depreciation, amortization, etc., for 1918, of only $1,987, against $44,754 for 1917. It was stated that for the first four months of 1919 there has been an increase in net profits of $48,435 or 100 per cent over the corresponding period of last year. The annual report also spoke of the increased demand for power. The protective committee consists of Edwin G. Merrill, chairman; Herbert Coppell, A. A. Jackson, Lewis A. Riley, and Thomas Newhall.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$14,346	$16,687	$2,341	$523	†$2,864
1m., June, '18	14,865	12,151	2,714	517	2,197

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$84,769	*$52,082	$32,687	$20,547	$12,140
1m., June, '18	73,723	*43,850	29,873	19,502	10,371
12m., June, '19	980,653	*635,358	345,295	243,822	101,473
12m., June, '18	910,855	*539,500	371,355	234,007	137,348

CHATTANOOGA RAILWAY & LIGHT COMPANY,
CHATTANOOGA, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$156,597	*$118,050	$38,547	$20,943	$17,604
1m., June, '18	149,073	*120,003	29,070	22,396	6,674
12m., June, '19	1,869,400	*1,456,858	412,542	268,214	114,328
12m., June, '18	1,552,084	*1,354,217	197,867	349,333	†151,466

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$1,601,017	$54,140	$1,546,877	$167,373	$1,379,504
1m., June, '18	1,808,929	38,393	1,770,536	5,751	1,764,785
12m., June, '19	21,566,635	668,173	20,898,462	1,199,439	19,699,023
12m., June, '18	20,907,945	398,630	20,509,315	13,815	20,495,500

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY,
GRAND RAPIDS, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$1,992,372	*$1,314,851	$677,521	$544,198	$133,323
1m., June, '18	1,831,428	*1,162,616	668,812	505,784	163,028
12m., June, '19	23,904,157	*15,785,580	8,118,577	6,346,150	1,772,427
12m., June, '18	20,789,999	*13,727,411	7,062,588	5,648,168	1,414,420

CUMBERLAND COUNTY POWER & LIGHT COMPANY,
PORTLAND, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$221,793	*$156,477	$65,316	$56,030	$9,286
1m., June, '18	278,214	*175,338	102,876	72,311	30,565
12m., June, '19	3,004,447	*2,110,904	893,543	767,464	126,079
12m., June, '18	3,141,634	*2,158,755	982,879	847,632	135,247

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$322,638	*$263,082	$59,556	$68,844	†$9,288
1m., June, '18	318,857	*243,468	75,389	67,915	7,474
12m., June, '19	4,370,095	*3,499,062	871,033	827,019	44,014
12m., June, '18	3,863,918	*2,810,900	1,053,018	801,618	251,400

THE NORTHERN OHIO TRACTION & LIGHT COMPANY,
AKRON, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
12m., June, '19	$8,070,622	$5,421,704	$2,648,918	$1,288,541	$1,360,377
12m., June, '18	6,750,454	4,339,549	2,410,905	1,047,182	1,363,723

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$45,155	*$35,483	$9,672	$8,822	$852
1m., May, '18	38,606	* 25,996	$12,610	7,088	5,520
12m., May, '19	557,504	*426,882	130,622	91,973	38,642
12m., May, '18	404,933	*249,283	155,650	82,358	73,299

PORTLAND RAILWAY, LIGHT & POWER COMPANY,
PORTLAND, ORE.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$725,633	*§$452,157	$273,476	$191,125	$82,351
1m., June, '18	632,552	*§391,558	240,994	187,746	53,248
12m., June, '19	8,279,444	*§5,554,502	2,724,942	2,262,643	462,299
12m., June, '18	6,818,090	*§4,181,568	2,636,522	2,155,699	480,823

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$120,915	*$100,255	$20,660	$24,927	†$4,267
1m., May, '18	93,022	*62,857	30,165	23,439	6,726
12m., May, '19	1,278,899	*1,003,464	275,435	289,846	†14,411
12m., May, '18	1,053,943	*705,680	348,263	275,166	73,097

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '19	$103,018	*$64,146	$38,872	$4,610	$34,262
1m., May, '18	82,798	*51,526	31,272	4,266	27,006
12m., May, '19	1,144,288	*677,273	467,015	52,883	414,132
12m., May, '18	998,742	*578,020	420,722	50,390	370,332

* Includes taxes. † Deficit. § In June, 1919, $21,769; June, 1918, $18,977; twelve months, 1919, $557,397; twelve months, 1918, $290,512 included for depreciation.

Traffic and Transportation

Rhode Island Plan Presented

Three Propositions Filed with Commission—Three Miles for Eight Cents Favored

It was announced that the hearings would commence on Aug. 19 on the petition of the Rhode Island Company for increases in fares, to which brief reference was made in the ELECTRIC RAILWAY JOURNAL for Aug. 16. The petition of the company for relief presents three plans by which officials believe that the revenue may be increased sufficiently to meet the added operating expenses incurred by the wages named in the settlement of the recent strike. The plans as suggested by the company follow:

1. By contracting the present central zones to central zones having radii of 1½ miles, in Providence, Pawtucket and Woonsocket, with all other zone points remaining as at present fixed, and making the fare 6 cents instead of 5 cents for each zone, thereby securing an estimated increase of $1,021,400 a year, and by increasing the charge for transfers from 1 cent to 2 cents, with the same transfer privileges enjoyed as at present, thereby securing an estimated increase of $120,000 a year, or a total increase of $1,141,400 a year.

2. By maintaining all present zone limits and making the fare 6 cents instead of 5 cents for each zone, thereby securing an estimated increase of $643,000 a year, and by increasing the charge for transfers as in Plan 1, thereby securing an estimated increase of $120,000 a year, or a total increase of $763,000 a year.

3. By contracting the present central zones to central zones having radii of 1½ miles, in Providence, Pawtucket and Woonsocket, with all other zone points remaining as at present fixed, and retaining the 5-cent fare for each zone, thereby securing an estimated increase of $344,000 a year, and by increasing the charge for transfers as in Plan 1, thereby securing an estimated increase of $120,000 a year, or a total increase of $464,000 a year.

The company expressed the opinion that the largest increase in revenue can be obtained under Plan 1. In discussing the various plans the receivers said:

In Plan 1 the only zone limits which would be changed are those between the central zone in each of the three cities and the first outer zone. The proposed central zones are 3 miles in diameter, giving the privilege of a ride of 3 miles for 8 cents, with the use of a transfer. The ride offered in the first outer zone is 2½ miles for 6 cents.

In Plan 2 the zone limits remain as they now are, but the fare in each zone is increased from 5 cents to 6 cents. Experience seems to warrant the expectation of an increase in revenue of 10 per cent from this 20 per cent increase. It will be noted that operation under this plan results in a deficit of more than $189,000, unless paving charges and franchise taxes are abrogated.

In Plan 3 the central zones are contracted to diameters of 3 miles as in Plan 1 and the 5-cent fare in each zone is retained. Operation under this plan would yield a deficit of more than $488,000 a year, and even with the remission of paving costs and franchise taxes there would still be a deficit of more than $88,000.

With their proposed schedule of fares the receivers also filed a table of the estimated earnings, which is reproduced below.

ESTIMATED EARNINGS AND OPERATING EXPENSES OF RHODE ISLAND COMPANY

	Plan 1	Plan 2	Plan 3
Estimated earnings for year (based on six months to June 30, 1919)	$8,000,670	$7,622,269	$7,322,836
Estimated operating expenses for year (based on six months to June 30, 1919)	$5,495,902	$5,495,902	$5,495,903
Estimated taxes	629,023	629,023	629,022
Amount increased payroll 48 cents to 56 cents	640,000	640,000	640,000
Depreciation and deferred maintenance charges	1,046,500	1,046,500	1,046,500
Total	$7,811,425	$7,811,425	$7,811,425
Operating deficit		$189,156	$488,589
Operating surplus	$189,243		
Relief afforded by cancellation of paving burdens and franchise taxes	400,000	400,000	400,000
Surplus—If paving burdens and franchise taxes are remitted *	$589,243	$210,843	
Deficit—If paving burdens and franchise taxes are remitted *			$88,589

*No return on investment or interest on bonds are considered in the above tabulations.

Increased Chicago Fares Cause Little Friction

Collection of 7-cent fares on the Chicago Surface Lines and 8-cent fares on the Elevated Lines has proceeded without friction since midnight of Aug. 7. The falling off in traffic due to the higher rates was about as expected. No financial reports have been issued as yet by either company, but it is said the increased revenues will be sufficient to meet the heavy wage burdens agreed upon in the settlement of the recent strike.

The Chicago Surface Lines management has been trying to push the sale of cash-fare tickets. Numerous agencies for the distribution of paper tickets at face value have been established in stores throughout the city, and advertisements were placed in the daily papers calling attention to the improvement in service which may be expected when a sufficient number of patrons tender the exact fare or tickets.

The city administration remains hostile to the traction companies, and numerous hints of court action have been made. The latest threat is that an attempt will be made to have the court impound the excess receipts collected since Aug. 7. Riders have been urged to retain their transfer slips as evidence of rides made at the higher rates.

Seven Cents in Tri-Cities

Decision of Illinois Commission Means Higher Rates on the Iowa Lines Also

A straight 7-cent fare was granted the Tri-City Railway, Davenport, Ia., for its Illinois lines by the Public Utilities Commission of Illinois on Aug. 7. The commission, which some time ago denied the company's petition for higher fares, announced that the 7-cent rate would be needed to take care of the increase in wages to 60 cents an hour recently given the men and referred to at length in the issue of this paper for Aug. 16, page 352. The commission's ruling requires the company to file monthly reports to show whether a still higher rate is justified.

A 5-cent fare on the Bridge line connecting Davenport and Rock Island, the 10-cent commutation ticket fares from Davenport to Rock Island and Moline including the Bridge line haul, and a special rate to employees of the United States Arsenal of $2 a month will be allowed to stand pending adjustment of the fare question in Davenport.

A universal transfer was allowed from the Illinois lines of the Tri-City Railway to the Moline, Rock Island & Eastern Traction Company. Previous to this decision a transfer had been allowed only to East Moline. Silvis, Milan and Watertown, Ill., are now given the transfer privilege.

Children between the ages of seven and twelve years inclusive are allowed half fare. The minimum age limit before was five years. Two minor children are allowed to ride for 7 cents. Children under seven years of age accompanied by an adult may ride free.

This settlement on the Illinois lines went into effect at midnight on Aug. 8. Conductors were provided with a supply of coppers and passengers did not appear to be inconvenienced. The Davenport City Council, while pledged to put the same arrangement into effect in Iowa, has not yet formally done so. A new ordinance has been drawn up and was expected to be passed during the week ended Aug. 23.

At that time formal notice of the fare change was to be made. According to the company's franchise, notice must be given four weeks before the increased fare may be collected in Davenport. The new fare agreement in Iowa will automatically expire June 1, 1920, the date of the expiration of the men's 60-cent maximum wage scale.

No cars were running on Aug. 14 at Muscatine, Ia., the Council there having turned down an offer of the Clinton, Davenport & Muscatine Railway, affiliated with the Tri-City Railway, to run cars immediately, provided a 7-cent fare was granted and the Council repealed an ordinance passed last October providing for two-man car operation and dismissed injunction proceedings against one-man car operation now pending in the Iowa Supreme Court. Cars stopped at Muscatine on Aug. 1 when the general strike on the Tri-City Railway's lines began.

Hearing on Registers

Board of Arbitration in Boston Listens to Arguments For and Against Rooke Automatic Register

Hearings were held by an arbitration board on Aug. 5, 6, 7, 14 and 15 at the State House, Boston, on the continued use of the Rooke register on the Eastern Massachusetts Street Railway. This arbitration was part of the agreement ending the strike of June last as mentioned in the ELECTRIC RAILWAY JOURNAL for June 28, page 1283.

MAKE-UP OF BOARD

The Board of Arbitration consists of three members, Samuel H. Pillsbury, Boston, representing the company; James H. Vahey, Boston, representing the sixteen local Amalgamated Unions, and James L. Dougherty, Springfield, as the third member.

The conductors, in putting in their side of the case, claimed that the Rooke register was inconvenient to handle in that it took longer to collect fares than by hand with an overhead register; that it wore out their clothes; that it was inaccurate in registration; that its use made the car rider suspicious of their honesty; that it was more dangerous to use on open cars than to collect by hand, and that it was heavy to carry on a hot day and likely to slip off their belts and to fall on the car floor or underneath the car.

The company in presenting its case claimed the register to be entirely accurate. Prof. Charles E. Fuller of the Massachusetts Institute of Technology substantiated this by testifying the register was properly designed, was not unduly complex and when properly cared for and correctly operated would register coins inserted.

Wallace B. Donham, who as receiver of the system ordered the register installed, said he did so because he considered it more desirable than the overhead system.

H. F. Fritch, assistant general manager of the company, stated that 28.3 per cent of the cash collected on the cars was through the Rooke register, and that the company had in operation a maximum of about 700 machines.

COLLECTION METHODS DESCRIBED

Mr. Fritch outlined very fully the method of fare collection now in effect and stated that all closed cars are equipped with a registering fare box. These fare boxes are being used to collect the minimum fare of a passenger when boarding the car, Rooke registers being used for all inside collections of cash fares. Only Rooke registers are used on open cars. The company has in operation a maximum of about 804 cars, 145 of which are open cars.

H. K. Bennett, claim agent of the company, testified that fewer accidents had occurred on open cars during the season of 1919 than during previous years when open cars were in operation.

Homer Loring, chairman of the board of trustees, declared that under the public control act the public had a right to demand that every fare should find its way into the company's treasury, and that the Rooke register was the best guarantee that this would be the case.

J. O. Ellis, V. B. Leavitt, F. I. Hardy, J. G. Nellis, local managers and superintendents, were called in rebuttal of statements made by conductors, when their side of the case was presented, that the register was inaccurate. Each cited incidents to show that the conductors were mistaken in their claims, for in practically all cases it was proved that the trouble was due to the fact that the dials had not been read correctly.

Maurice E. McCormick and Lewis E. Grant, Bangor, testified that Rooke registers had materially increased the revenue of the local railway at Bangor and thereby stopped the stealing of fares. R. W. Hewins, Taunton, and C. B. Pierce, New Bedford, told of the benefits received from the use of this register on their respective roads. A. E. Potter, president of the Rhode Island Company, Providence, R. I., said that his company had been using the Rooke register since 1907, and had found it entirely satisfactory and superior to the overhead method of collection. R. W. Perkins, president of the Shore Line Electric Railway, Norwich, Conn., testified that the Rooke register is more desirable than the overhead register.

The hearing was adjourned on Aug. 15 to allow opposing counsel to prepare briefs for submission to the third member, Mr. Dougherty.

Illinois Commission Increases Fares

The Public Utilities Commission of Illinois has issued the following orders: The Bloomington & Normal Railway is authorized to charge a 7-cent fare in these two cities, effective until Aug. 1, 1920.

The petition of the Aurora, Elgin & Chicago Railroad for an increase in fares is denied and the present 6-cent fares are ordered to be continued to July 1, 1920.

A rehearing is granted the East St. Louis & Suburban Railway in its petition for increased rates in Belleville and East St. Louis and for a revised zoning system.

Six-cent rates authorized some time ago for the Rockford City Traction Company and the East St. Louis Railway are continued to Oct. 31, 1919. The present rates charged by the Sterling, Dixon & Eastern Traction Company and the Central Illinois Traction Company are also continued in effect to Oct. 31.

Seven Cents Asked in Baltimore

The Public Service Commission of Maryland on Aug. 8 opened hearings on the application of the United Railways & Electric Company, Baltimore, Md., for a further increase in rates above the 6-cent fare granted last October. The company now asks a flat 7-cent fare with a ticket rate of 6½ cents or four tickets for 25 cents.

In presenting the traction company's case its counsel introduced a summary of earnings to show that at the end of 1919 earnings will be $335,000 behind a year ago. The company has been saved from disaster, he said, only by the increased traffic over the amount estimated when the 6-cent fare was set. He said that gross receipts for six months were from $60,000 to $90,000 in excess of estimates, but that in spite of this fact the surplus of $600,000 had disappeared.

As noted on page 406 of this issue, the company has recently increased the wages of trainmen and other employees. As stated there, it was seen by the company's representatives that the 7-cent rate would not suffice to cover the augmented expenses of the railway. The petition of the company has not been amended, but the company's attorneys have indicated that they may ask for a rate as high as 8 cents.

Wants More in Wheeling

J. D. Wittemore, receiver for the West Virginia Traction & Electric Company, Wheeling, W. Va., has appeared before the City Council of Wheeling and requested that body to withdraw its opposition to the establishment of a new fare rate between Wheeling and Elm Grove. He suggested for the consideration of Council the proposition to eliminate the fare zone system and establish a single fare unit system between Wheeling and Elm Grove.

The receiver's statement of the condition of the traction company led to the adoption of a motion creating a commission composed of Mayor Thomas F. Thoner, City Manager Charles O. Ephlin, Councilman Ambros F. Habig, W. T. Otto and David A. Morgan, and three citizens of Wheeling, to investigate whether Wheeling merchants favor the establishment of a single fare system between Elm Grove and that city, and to make a report to the Council. Citizens of the Out-the-Pike district will also be heard by the committee. Mayor Thoner has not yet named the citizen representatives on the committee.

Mr. Wittemore, in addressing the Council, said in part:

> The application for a receiver has back of it, as one of the chief reasons, the fact that the City & Elm Grove division has had to meet tremendous increases in expenses without receiving a sufficient increase in revenue.
>
> In 1917 the company petitioned the Public Service Commission for an increase in fare in the single zone between Wheeling and Elm Grove Something like nine months elapsed between the date of filing the application and the decision.
>
> Conferences were held with the city manager of Wheeling in an effort to bring about a reconciliation that considered the city's interest and afforded the city the best protection. Those conferences resulted

in the city absolutely opposing an increase affecting the single fare unit that enabled the company to meet the additional expense.

As a result the company revised its petition, dividing the territory between Wheeling and Elm Grove into two fare zones, and the Public Service Commission granted the two zones, but reduced the fare in the second zone for the reasons that the commission believed that the increase in revenue would be larger than the company estimated.

The year which has elapsed since that decision was granted has proved two things: First, that the company's estimate of operating expenses proved to be too low; second, that the revenue from the increased fare proved to be lower than the Public Service Commission estimated. This fact became apparent in the spring, but under the terms of the Public Service Commission's ruling we could not apply for a rehearing in less than six months from July, 1918.

Fare Increase Defeated

Residents of Columbus, Ohio, Vote Down a Plan for Six Tickets for a Quarter

The ordinance giving the Columbus Railway, Power & Light Company, Columbus, Ohio, an increase in fare from eight tickets for a quarter to six tickets for a quarter was defeated by 4525 votes at the polls on Aug. 12. After having been approved by the Council the matter was put before the voters.

According to the company only one thing remains for it to do and that is to give the Columbus people the kind of service they have chosen by vote. The first move in this direction came when the company announced on Aug. 16 that service would have to be curtailed in order to accumulate the back pay due employees from an award of the War Labor Board. The Oak Street line has been put back on its old schedule and the Leonard Avenue and West Broad Street line has been given its original schedule of eleven minutes. Regarding this the company says:

> The general conditions and the special need is that the company should, after the long and patient waiting of the loyal and efficient employees for back wages, now take steps in any way reasonably possible, to make them some further restitution. Ten per cent of this back wage was paid last May and it is due that further payments on this account be made soon.
>
> All the restrictions and curtailments now contemplated by the company are fully within its franchise requirements.
>
> We very much hope that any or all of the restrictions in service mentioned will be considered as due to conditions beyond our control, and that car riders will consider and believe that it is the desire of the company to do at all times the best it can to serve the interests of the public.

C. L. Curtz, president of the company, made a statement the day following the vote on the franchise, in which he spoke in part as follows:

> The people have decided. Our only course is to do the best we can and continue serving the public.
>
> We had thought it so clearly to the best interests of the public that the company be given the increase in fare, but the public seems to have thought otherwise. There is no further recourse, therefore, but to go on serving the public in the best way we can, and take care of the future as it comes.

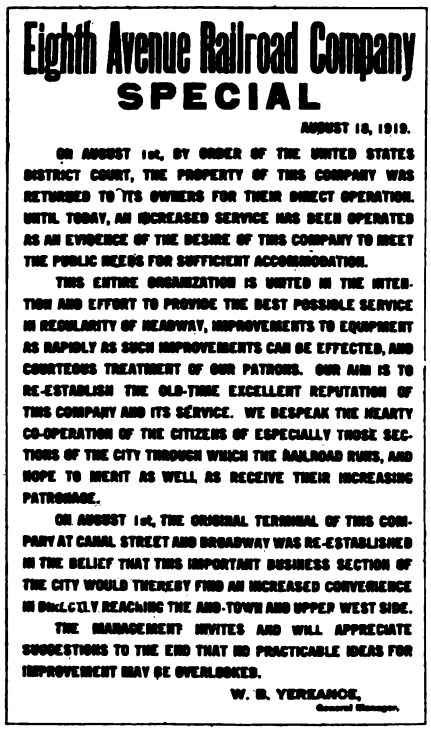
When asked in regard to the back pay due to the men, he said:

> The men certainly have proved a loyal, patient group of citizens, who have given up much in order to serve the public. I had thought they would be rewarded by the public, but the public decided otherwise. We are the servants of the public. We must obey the Council and, under the referendum, the wishes of the people.

Organizing a Railway

Eighth Avenue Officials in New York Promise Patrons Good Service

The Eighth Avenue Railroad, New York, N. Y., whose system was separated from the New York Railways on Aug. 1 by court decree, is rapidly completing its organization. All departments are housed at the company's headquarters at the corner of Eighth Avenue and Fiftieth Street. One of the first acts of the new management was to post an announcement that the operation of the property was now being conducted by the owners and to request the co-operation of the patrons.



Eighth Avenue Railroad Company

SPECIAL

AUGUST 18, 1919.

ON AUGUST 1st, BY ORDER OF THE UNITED STATES DISTRICT COURT, THE PROPERTY OF THIS COMPANY WAS RETURNED TO ITS OWNERS FOR THEIR DIRECT OPERATION. UNTIL TODAY, AN INCREASED SERVICE HAS BEEN OPERATED AS AN EVIDENCE OF THE DESIRE OF THIS COMPANY TO MEET THE PUBLIC NEEDS FOR SUFFICIENT ACCOMMODATION.

THIS ENTIRE ORGANIZATION IS UNITED IN THE INTENTION AND EFFORT TO PROVIDE THE BEST POSSIBLE SERVICE IN REGULARITY OF HEADWAY, IMPROVEMENTS TO EQUIPMENT AS RAPIDLY AS SUCH IMPROVEMENTS CAN BE EFFECTED, AND COURTEOUS TREATMENT OF OUR PATRONS. OUR AIM IS TO RE-ESTABLISH THE OLD-TIME EXCELLENT REPUTATION OF THIS COMPANY AND ITS SERVICE. WE BESPEAK THE HEARTY CO-OPERATION OF THE CITIZENS OF ESPECIALLY THOSE SECTIONS OF THE CITY THROUGH WHICH THE RAILROAD RUNS, AND HOPE TO MERIT AS WELL AS RECEIVE THEIR INCREASING PATRONAGE.

ON AUGUST 1st, THE ORIGINAL TERMINAL OF THIS COMPANY AT CANAL STREET AND BROADWAY WAS RE-ESTABLISHED IN THE BELIEF THAT THIS IMPORTANT BUSINESS SECTION OF THE CITY WOULD THEREBY FIND AN INCREASED CONVENIENCE IN DIRECTLY REACHING THE MID-TOWN AND UPPER WEST SIDE.

THE MANAGEMENT INVITES AND WILL APPRECIATE SUGGESTIONS TO THE END THAT NO PRACTICABLE IDEAS FOR IMPROVEMENT MAY BE OVERLOOKED.

W. B. YEREANCE,
General Manager.

ANNOUNCEMENT TO PATRONS

Seattle Regulates the Auto

The new traffic ordinance for Seattle, Wash., has been passed by the City Council, signed by Mayor Ole Hanson, and will go into effect as soon as it has been published. Sections of the new law which differ widely from the old ordinance and which most vitally affect automobile owners are those relating to parking and standing machines on the downtown streets. Parking is entirely prohibited on the principal downtown streets, and machines may be left standing not more than thirty minutes. Between the hours of 4 p.m. and 6 p.m., it will be unlawful to stand a machine for any period, except for loading or unloading, on the downtown streets. Provision is made for the designation by the Board of Public Works of zones where passenger vehicles for hire and commercial machines may stand in the prohibited areas during the time necessary to transact business. These zones are to be established on petition of the interested parties, and after a hearing.

Transportation News Notes

Will Refuse Canadian Coins.—The International Railway, Buffalo, N. Y., has directed its conductors to refuse to accept Canadian currency, either silver or bills, because of the high exchange rate. The order became effective on Aug. 3.

Eleven Killed in Collison in West Virginia.—As the result of a collision between a special car of the Monongahela Valley Traction Company, Fairmont, W. Va., and a Baltimore & Ohio Railroad switch engine, near Parkersburg, W. Va., on Aug. 14, eleven persons were killed and many others were injured.

"Tramway Bulletin" Resumes Publication.—The *Tramway Bulletin*, house organ of the Denver (Col.) Tramway, has resumed publication after a suspension lasting six months. The break, which was the first one in ten years, was due to unsettled conditions. It is planned to publish the paper monthly henceforth.

Round-Trip Tickets to Be Discontinued.—The Black River Traction Company, Watertown, N. Y., under a tariff filed with the Public Service Commission for the Second District, proposed as effective on Sept. 19, will discontinue the sale of round-trip tickets between Watertown and Dexter and intermediate points.

Few Accidents on Municipal Road.—Although 59,341,253 passengers were carried by the Municipal Railway, San Francisco, Cal., during the last year, there were only ten fatal accidents, according to a report filed by J. B. Leighton, claims adjuster for the city. Claims settled as the result of all accidents during the year amounted to 0.0111 per cent of the gross revenues.

Overcrowding Reduced in St. Louis.—Overcrowding of cars in St. Louis, Mo., is being materially reduced, according to reports of operating officials of the United Railways to Receiver Rolla Wells. This is being done by a combined process of speeding up schedules, adding cars where reports show persistent overcrowding, and by increasing the number of car hours.

Referendum on Jacksonville Fares.—The City Council of Jacksonville, Fla., has voted to submit to the people the question of amending the charter of the Jacksonville Traction Company to permit an increase in the fare from 5 cents to 7 cents. The bill provides for establishment of a commission with power to lower the proposed 7-cent fare at any time it is found necessary to do so.

Public Will Pass on Increase.—Petitions for a referendum on the ordinance giving the Ashtabula (Ohio) Rapid

Transit Company a 6-cent fare have been filed and the matter will be submitted to the voters for their approval at the November election. An ordinance requiring jitney bus operators to give bond has been passed and a petition to submit this to a referendum vote is now being circulated.

Objects to Transfer Charge.—The City Council of Lakewood, suburb of Cleveland, Ohio, has directed its law department to order the Cleveland Railway to cease charging 1 cent for transfers in addition to a 5-cent fare. The Council claims that the charge is a violation of the agreement between the company and the city of Lakewood fixing the rate of fare.

Six Cents Again in Grand Rapids.—After a month's trial of a 5-cent fare, the Grand Rapids (Mich.) Railway on Aug. 1 reverted to a fare of 6 cents. The metal tokens which are used in place of tickets are sold at the rate of nineteen for $1. The City Commission ordered the company to place the tokens on sale on its cars, following the charge that they could be procured only at drug stores.

Ottawa Company Publishes Bulletin.—The Ottawa (Ont.) Electric Railway has begun distributing a weekly bulletin, among its patrons. The purpose of the publication as announced in the first issue, that of Aug. 2, is "to foster the spirit of co-operation that is so essential in the development of an industry which, as in the case of a street railway, takes on the proportions of a public institution."

Eight Cents on Alabama Road.—The Public Service Commission of Alabama has issued an order permitting the Sheffield Company, which operates in Sheffield, Florence, and Tuscumbia, to raise fares from 5 cents to 8 cents. The company had asked for a 10-cent fare. The company's application for a revision in fare zones was denied. When tickets are purchased in books of fifty a discount of 20 per cent is made, making the ticket rate 6.4 cents.

Court Contest on San Antonio Fares.—Hearings in the fare suit of the San Antonio (Tex.) Public Utilities Corporation *vs.* the city of San Antonio, have been concluded before Frank H. Booth, master in equity, who will present his findings and recommendations to Judge Duval West early in September. The company, which a year ago was permitted by the court to raise the fare from 5 cents to 6 cents, now wishes to establish a 7-cent fare.

Fares and Wages Increased.—Officials of the Homestead & Mifflin Street Railway, Homestead, Pa., have announced that the motormen and conductors will be given an increase of 10 cents an hour. At present the men receive 48 cents an hour for the first three months service and 50 cents an hour thereafter. An increase in pay for shopmen has also been announced. Notices have been posted by the company that the fare will be raised on Sept. 1. At present 4 cents is charged but the new fare will be 6½ cents by ticket and 7 cents cash. The increase granted the men is the fourth in two years.

Increase in Effect on Maynard Line.—The Concord, Maynard & Hudson Street Railway, Maynard, Mass., on Aug. 15, put into effect a substantial increase in fares, the rate being raised from 3 cents to 5 cents within each zone. A trip from Concord to Hudson now costs 50 cents as against the former fare of 42 cents. Workers may purchase 100-coupon commutation books, good only from 5 a.m. to 8 a.m., and 5 p.m. to 8 p.m. These books are sold for $3.75, a new coupon being required in each zone.

Seven Cents Asked in Albany.—The United Traction Company, Albany, N. Y., has applied to the Public Service Commission for the Second District for permission to raise local fares from 6 cents to 7 cents, and its through zone fares from 12 cents to 14 cents. The 6-cent fare was established under authority of the commission in August, 1918, and at that time was intended as a war emergency measure only. The company declared in its petition that for the year ending June 30, 1919, there was a deficit of $266,247.

Six-Cent Fare Asked for Gary.—The Gary (Ind.) Street Railway has petitioned the Public Service Commission of Indiana to increase fares within and between the cities of Gary, Hammond and East Chicago. The fares now being charged are 5 cents, with six tickets for a quarter for school children. The company requests an increase to a 6-cent fare with 3 cents additional for a transfer within the three cities and a fare of 8 cents in zone systems outside the city limits. If the commission does not approve the zone system, the company asks permission to charge a straight fare of 2 cents a mile or fraction thereof in the territory between the cities.

Wants Seven-Cent Fare in Olean.—Facing the prospect of having to grant a further wage increase to its carmen, who are now on strike, the Western New York & Pennsylvania Traction Company has made application to the Public Service Commission, Second District, New York, N. Y., for permission to increase its fares in Olean and Salamanca from 7 cents to 10 cents, and its interurban rate from 3½ cents to 4½ cents a mile. Present rates have been in effect since Sept. 5, 1918. Motormen and conductors are now receiving from 27 cents to 33 cents an hour as against 21 cents to 27 cents prior to the company's first application for increased fares.

Agreement on Rates at Canton, Mass.—Following the order of the Public Service Commission of Massachusetts, suspending the operation of the new rates of the Blue Hill Street Railway, Canton, which provided for 10-cent fares in three zones and which were to have become effective on Aug. 15, the officials of the company and residents in the communities served conferred with the commission on Aug. 12, when an agreement was reached. The road will be divided into six zones, having a 5-cent fare in each zone. The zones in Milton and Stoughton will comply with suggestions made by the residents of these places, who had strongly protested the 10-cent fare. The new tariff will be allowed to go into effect upon its being filed with the commission as the result of the agreement.

Two Committees Study Kansas City Case.—Two "Committees of 100" are studying the electric railway problem in Kansas City, Mo. The original committee of 100 business men was appointed by the Chamber of Commerce at the instance of the Real Estate Board; this committee has secured data on financial matters from the company, and is holding hearings to get direct information from the company's officers. The second committee of 100 was selected by the local labor unions, after complaint had been made that the original committee did not contain representation from this element of the public. The labor committee includes several attorneys and business men as well as labor members.

Court Restrains Bus Line.—Justice Harry L. Taylor in the Supreme Court of New York, sitting at Niagara Falls, has issued an order prohibiting the Gray Bus Line from operating jitney buses between Niagara Falls and Lewiston along the lower Niagara gorge in competition with the Niagara Gorge Railway, Buffalo, N. Y. Individuals opposing the operation of the jitneys say that although the company was authorized by the Public Service Commission for the Second District on June 6 to operate a bus line in Niagara Falls and suburbs, the permit did not include permission to operate buses between Niagara Falls and Lewiston in competition with the Niagara Gorge Railway. The Lewiston village board of trustees has granted a franchise to the bus line allowing it to operate in the village.

Fare Request of St. Louis Company.—Col. Albert T. Perkins, general manager of the United Railways, St. Louis, Mo., presented a request to the Public Service Commission of Missouri for an increase in fare immediately after the wage award, referred to elsewhere in this issue, was announced. He said that he had not fully decided whether to ask an increase from the present 6-cent fare to a definitely higher amount or to file a blanket application, asking a sufficient increase to enable the company to meet the increased wage scale. In a report recently made public Mr. Perkins stated that a fare increase of 2.48 cents would be necessary to pay the company for the full wage increase asked by the men. The company is showing a yearly deficit now at the 6-cent rate and the added financial burden will make it impossible to operate the lines without a heavy loss. Receiver Wells has petitioned the commission for immediate action on the request for increased fares.

Personal Mention

Charles A. Swift has resigned from the position of chief supervisor of the Denver (Col.) Tramway. Mr. Swift entered the employ of the company as gripman in 1886.

Albert G. Towers, chairman of the Public Service Commission of Maryland, retired from the commission on Aug. 1 to take up his new duties as president of the Title Guarantee Company, Baltimore.

C. H. Johnson, chief engineer in charge of power stations of the Columbus Railway, Power & Light Company, Columbus, Ohio, for the last two years, has resigned to take a position with the Combustion Engineering Company, New York, N. Y.

H. H. Cooper has been appointed superintendent of the Tyler Traction Company's line between Sistersville, W. Va., and Middlebourne. Mr. Cooper was formerly superintendent of the Union Traction Company, Sistersville, and was in charge of the power station. Mr. Cooper will succeed Ralph Broadwater, Sr., who resigned the superintendency of the Tyler Traction system, effective on Aug. 1, to devote his time to personal business interests.

W. C. Callaghan has been appointed manager of railways of the Monongahela Valley Traction Company, Fairmont, W. Va., succeeding S. M. Gallaher, who recently resigned. Mr. Callaghan is an experienced electric railway manager, having been connected with J. G. White & Company for the last seven years. During the war J. G. White & Company placed Mr. Callaghan in charge of the Augusta-Aiken Railway & Electric Company in Augusta, Ga., where the demands on account of the cantonment near that city were exceedingly heavy. Prior to that time he was in charge of the Shore Line Electric Railway, operating in eastern Connecticut with offices at Norwich, Conn.

Joseph K. Choate, appointed receiver of the Aurora, Elgin & Chicago Railway, Wheaton, Ill., is vice-president of The J. G. White Management Corporation, New York, N. Y. Mr. Choate is very well known to electric railway interests through his activities in the affairs of the American Electric Railway Association, and through his former connections with the Morris County Traction Company and the Otsego & Herkimer Railroad. He is a past-president of the New York State Electric Railway Association. He was graduated from the University of Colorado and began his business career as a civil engineer, later going into steam railroad work.

S. R. Dunbar, who recently resigned as purchasing agent of the Union Traction Company, Anderson, Ind., after serving in that capacity for some fifteen years, has been retained by Albert S. Richey, electrical and consulting engineer of Worcester, Mass., to represent him in the valuation of the Memphis (Tenn.) Street Railway. Mr. Richey represents the Public Utilities Commission of Tennessee on a committee which also has representatives of the city of Memphis and the Memphis Street Railway. It is probable that Mr. Dunbar will take up expert valuation work permanently, being peculiarly qualified on account of his wide experience in operation and cost problems on electric railways.

Ralph Waldo has been appointed superintendent of equipment of the Eighth Avenue Railroad, New York, N. Y. Mr. Waldo was graduated from Middlebury College, Vermont. In 1913 he entered the employ of the Westinghouse Electric & Manufacturing Company in the traction department, devoting his attention to the Norfolk & Western Railroad, which was then undergoing electrification. In 1915 he entered the employ of the New York Railways in the truck department. He continued with that company up to the time we entered the war. He was commissioned a first lieutenant and returned to the New York Railways in the testing department and continued in that capacity until his recent appointment as superintendent of equipment of the Eighth Avenue Railroad.

William L. Lyons has been appointed chief engineer of the power station of the Trenton & Mercer County Traction Corporation, Trenton, N. J. Mr. Lyons was graduated from the Missouri Valley College and later from the Drexel Institute, Philadelphia. Returning to Missouri, he became foreman of the construction department at the plant of the Kansas City Power & Light Company. He was subsequently made superintendent of the power house and the construction department of the Philadelphia (Pa.) Electric Company. He remained with that company for five years and then resigned to become assistant electrical engineer of the Baldwin Locomotive Company's plant in Philadelphia, leaving to accept the position at Trenton.

Obituary

John B. Parsons Dead

John B. Parsons, formerly president of the Philadelphia (Pa.) Rapid Transit Company, died at his home in Atlantic City, N. J., on Aug. 16.

Mr. Parsons began his street railway career in Philadelphia in 1870 when he entered the service of the Philadelphia City Passenger Railway, better known as the Chestnut & Walnut Street line, as a clerk. He rose rapidly and when in the latter part of 1887 Messrs. Widener, Elkins and Kemble purchased a controlling interest in the railways of the West Division of Chicago, they made Mr. Parsons such a tempting offer to take charge of the property that he accepted.

On Dec. 13, 1896, Mr. Parsons, who was then general manager of the West Side Street Railway, Chicago, was unanimously chosen as vice-president and general manager of the Union Traction Company, Philadelphia, to succeed J. R. Beetem, resigned. In September, 1898, he was elected president of the company and on the organization of the Philadelphia Rapid Transit Company, as the successor to the Union Traction Company, Mr. Parsons was placed at the head of the new company. Mr. Parsons was born on May 17, 1850, in the southern part of Delaware, at Whitesville. Mr. Parsons went to Salisbury Academy, leaving it at the age of sixteen. It was first intended that he go to Princeton University, but this plan was abandoned and he became assistant station agent at Salisbury on the Delaware Railroad. Mr. Parsons retired as president of the company in Philadelphia in 1909, saying that he had reached an age when he felt that he should be relieved of the arduous duties of president.

Col. George E. Pillsbury, who retired last year as chief engineer of the Pacific Electric Railway, Los Angeles, Cal., died at his home in Los Angeles on Aug. 5 at the age of sixty-two years. Mr. Pillsbury had suffered from a nervous breakdown, following active and long service in the capacity of chief engineer of the company. He was born in 1857 at Tewkesbury, Mass., where he attended public school. He graduated from Lawrence Academy with degree of civil engineer. He practiced his profession at Lowell, Mass, until 1880, when he accepted the position of division engineer with the Mexican Central Railroad. After several years service in Mexico, he removed to Los Angeles, where he engaged in private practice of civil engineering until 1895, when he was appointed chief engineer of the Los Angeles Electric Railway, which position he held until the Pacific Electric Railway was organized, when he became chief engineer of that system. Mr. Pillsbury continued in the capacity of chief engineer of the Pacific Electric lines until April, 1918, when he was forced to resign on account of poor health. He supervised the construction of some of the most extensive lines that the Pacific Electric Railway projected in connection with its large interurban system in southern California. In 1905 Mr. Pillsbury was appointed a member of Governor Pardee's staff as military aide, being given the rank of lieutenant-colonel, which position he held during the entire term of Governor Pardee.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Paint and Varnish Market Fair

Railway Demands Small But Needs Are Great—Good Business Looked for by First of Year

Although heavy demands in the paint, oil and varnish fields are looked for as soon as the railways gain financial relief, conditions are comparatively quiet. The extremely high prices now prevalent are mainly responsible for the small amount of work being done. Railway companies which expected to paint cars this summer have put off their work, and from present indications may do very little along these lines until late in the year.

Linseed oil which a year ago was quoted at $1.86 a gallon is now selling at $2.27 a gallon, an unheard of price. Turpentine, which at that time sold at 63 cents a gallon is now quoted at $1.65 a gallon. White lead, which was then quoted at 10½ cents a pound has been increased to 13 cents. Gums, white enamel, zinc, rosins, China-wood oil, fillers, etc., have all increased considerably. Tin cans and steel drums are also up with deliveries none too good. Labor is uncertain, with a great deal depending upon its vagaries. Deliveries can be made from stock in practically all cases.

MARKET FOR BRUSHES GOOD

The demand for paint brushes greatly exceeds their supply, although it is admitted that the supply is not as great as it should be. Bristles which before the war were obtained in Russia are very difficult to obtain, with the result that the price has been forced up. Bristles from China although inferior in quality are being used extensively. A 4-in. paint brush which before the war sold at 50 cents now brings from $1 to $2.50, according to its quality and kind of bristles. Considerable trouble has been experienced in keeping brushmakers at work, but it is expected that deliveries in brushes will shortly become normal.

NEW EQUIPMENT ORDERS WILL HELP BUSINESS

Inasmuch as several large car orders have been placed within the last few weeks, it is known that the orders for paints and varnishes for these cars will help out materially, although in the aggregate they represent but a small volume of business. Owing to the unprecedented rise in the materials above named, prices must continue to go up unless the quality is cut down. The paint and varnish men, however, are reluctant to announce an increase in prices, and in some cases have reduced their margin of profit rather than send out notices of an advance at the time inquiries are received. It is believed, however, that as a result of the hearing which is now going on in Washington, some relief will be given to the railways and that a considerable amount of work will have been done by the first of the year.

Hewn Tie Shipments Slower

Wet Weather and Labor Difficulties in South Hurt Production—Slight Price Rise

Conditions in the Southern tie camps are such that shipments of hewn ties are slow and supplies are short. Recent continued wet weather has put some of them under several inches of water and greatly curtailed output. Another feature having the same effect on output is the difficulty in securing sufficient labor. Many negroes, who before the war were satisfied to work in tie camps, have, since their discharge, attempted to find work in the cities.

Some success has attended their efforts and tie production has fallen off, but it is expected that when the cooler weather comes around city jobs will tighten up and sufficient help will be available to again supply the camps. Prices on hewn ties have shown an advance of about 5 per cent.

Overhead Line Materials Higher Than Expected

The expected increase in overhead line materials has been announced as effective Aug. 11, and the railway supply men are busy checking up to find what items have been most affected. The majority of trolley clamps, fittings, ears, etc., are up from 18 to 21 per cent, although it was believed that the proposed advance would not amount to more than 10 per cent. Increased copper and labor costs are responsible for this latest advance.

Inquiries are numerous and of fair size and it is believed many orders will be placed shortly, before it becomes necessary to announce a further increase.

Crossarm Prices Advanced

An advance in price of 20 per cent was placed on crossarms on Aug. 16 by one distributer. From another source comes the word that fir crossarms have gone up 10 per cent in less than carload lots, while prices have been withdrawn on carload lots.

Sanitary Hand Strap Sales Brisk

Many Orders Being Placed on Inquiries—Prices Up Slightly—Deliveries Good

The sanitary hand strap market is growing with leaps and bounds. Orders for small quantities are being received from a considerable number of companies, and in addition many large orders are being placed. Total sales during the past month on certain types of straps are equivalent to or greater than the sales for the entire year to date. The majority of the sales have resulted on inquiries. It is expected that this is just the forerunner of a buying movement that is impending.

Demands have been quite heavy recently for the white celluloid composition straps. One railway in the Middle West recently placed an order for 7000 straps of this kind. Deliveries are good. Owing to an increase in the cost of raw materials used in making the celluloid type, an increase of 10 cents a strap has been made, although there are no advances in any of the other sanitary types.

DEMAND FOR WHITE PORCELAIN ONLY FAIR

The market for glazed white porcelain enameled straps is only fair. This is a type used by the Interborough Rapid Transit System and also by the Brooklyn Rapid Transit Company. Purchasing agents who specify this strap usually are forehanded, and hence deliveries can be made by the time the straps are needed. Porcelain enameled straps made of leather with a drawn steel tubing strap cover, which has a glazed white porcelain enamel finish, seem to be gaining popular favor on Canadian properties. In fact, it has been noted that most of the orders on this type of strap are from Canada. The demands are regular and the orders of such proportions that deliveries can be made promptly.

BAKELITE CONTINUES ACTIVE

Demand for bakelite straps continues heavy. This is a short strap made from a special composition of bakelite reinforced with steel wire and is made up in brown or red. A mid-Atlantic railway recently placed an order for 5000 of this type of strap, while a large Eastern railway has placed orders aggregating between 7000 and 8000 of these straps. Unless railway companies anticipate their demands, they will find it difficult to secure good deliveries on this strap, owing to manufacturing conditions. A considerable number of these straps are usually carried in stock, but the demands have recently been of such a nature that those desiring prompt delivery on this strap must anticipate their demands by at least six weeks.

Buttons and Badges Becoming Active

There has been a slight increase in the volume of business on buttons and badges. On account of an increase in the price of metal, readjustments are taking place continually with the result that during the past four weeks an increase of from 10 to 25 per cent has been effected. Deliveries are from three to four weeks. One manufacturer reports several orders, one of which exceeds $2,000.

Orders for belt change-makers are practically normal. No increase has been noted in the last few weeks and deliveries are fairly good.

Purchasing Agents to Standardize Invoices

Purchasing agents are interested in the movement initiated by their national association, through its standardization committee, to adopt standard forms for invoices, purchase orders, acknowledgments and notices of shipment.

This association, by action of the same committee, last year adopted a standard catalog size. The committee now has called a conference of individuals and representatives of associations to meet at the Bellevue-Stratford Hotel, Philadelphia, Pa., on Sept. 20, at 10 a.m., to consider the subject of standardization of forms for invoices and related documents. The standardization committee of the National Association of Purchasing Agents is composed of the following members: W. L. Chandler, chairman, Dodge Sales & Engineering Company, Mishawaka, Ind.; W. V. C. Bulkeley, Liberty Steel Products Company, New York City; H. H. Meehan, A. B. Dick Company, Chicago, Ill.; A. Lockwood, Lumen Bearing Company, Buffalo, N. Y.; F. L. Kulow, Willard Storage Battery Company, Cleveland, Ohio.

Rolling Stock

Boston & Worcester Street Railway, Boston, Mass., suffered damage to the extent of about $5,000 when fire partly destroyed an electric freight car on its lines in Roxbury, Mass.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has placed an order with the St. Louis Car Company for thirty-five one-man cars. These cars will weigh about 18,500 lb. and will be the same as the cars ordered from the St. Louis Car Company about a year ago. It is intended that all of this new equipment will be used in regular operation in the city of Fort Wayne.

Franchises

Ranger, Tex.—A franchise has been granted by the City Council of Ranger, to S. C. White and associates, owners of the present Ranger Light & Power Company, for an electric railway system in Ranger. The franchise covers a period of fifty years and the grantees must have the system completed and in operation within a period of twelve months. The franchise permits no higher fares than 7 cents for adults and 3½ cents for children. The city reserves the right to purchase the system five years from date at the cost of actual construction and motive power, less wear and tear and plus 10 per cent on the investment.

Track and Roadway

Calgary (Alta.) Municipal Railway.—The commissioners of the City of Calgary contemplate the extension of the Bridgeland Street car loop to serve a much larger area of that section.

Southwestern Gas & Electric Company, Texarkana, Ark.—It is reported that the Southwestern Gas & Electric Company proposes to construct 1½ miles of additional track this fall.

Macon Railway & Light Company, Macon, Ga.—The Macon Railway & Light Company is relocating its track on Napier Avenue to the center of the street. An extension will be built from Forsyth Road to Crumps Park.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—The construction of an interurban line from Cedar Rapids to Tama is contemplated by the Iowa Railway & Light Company, at a cost of about $100,000.

Eastern Massachusetts Street Railway, Boston, Mass.—Work has been begun by the Eastern Massachusetts Street Railway on the rehabilitation of its tracks on the lines leading out of Brockton. Extensive work will also be done on the Brockton and Quincy route, and the Mattapan line.

Mexican Tramways Company, Ltd., Mexico City, Mexico.—A contract has been entered into by the Department of Communications and Public Works of the Mexican government with the Mexican Tramways Company, Ltd., for the resumption of the construction of the interurban electric line which will operate between the city of Mexico and Puebla, about 130 miles. The construction of this line was begun about twelve years ago, but before much progress had been made the revolutionary activities caused a suspension of the work. Later the lines of the company were taken over by the Mexican government and subsequently turned back to their owners.

Detroit, Mich.—Plans have been prepared by the city of Detroit for the construction of a subway system in the congested section, comprising St. Woodward, Monroe, Michigan, Grand River and Jefferson Avenues, to cost about $6,000,000. H. H. Esselstyn, chief engineer.

Cleveland (Ohio) Railway.—Cuyahoga County Commissioners have given the Cleveland Railway authority to lay a single track on the county's side of Ridge Road, between Denison Avenue, S. W., and West Park Cemetery, a distance of about ½ mile. The city had already granted authority to build a track on its side of the road, so this will be a double track.

Ottawa (Ont.) Electric Railway.—The City Council of Ottawa has authorized the Ottawa Electric Railway to construct a loop for its St. Patrick cars on Coburg, Murray and Charlotte Streets.

Niagara, Welland & Lake Erie Railway, Welland, Ont.—It is reported that the Niagara, Welland & Lake Erie Railway will construct an extension to Parkway Heights.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—An extension will be built by the Chambersburg, Greencastle & Waynesboro Street Railway from the Pen Mar, Md., terminal to the heart of the park. The line will be carried by a subway under the tracks of the Western Maryland Railroad at Pen Mar and on up along the breast of the bluff, paralleling the Western Maryland Park siding to the observatory at the main entrance to the park inclosure. The Western Maryland now offers no objection to the plan and will grant all rights-of-way. The work of construction awaits a proposed double-tracking of the Western Maryland through the gorge from Pen Mar to Highfield, an operation that was interrupted by the war.

Bryan Central Texas Interurban Railway, Bryan, Tex.—The Bryan & Central Texas Interurban Railway will transform its motive power from electric to steam equipment. The line is about 27 miles long and connects Bryan, Stone City, Pittsbridge, Grant, Whittaker and Wilcox.

Dallas Southwestern Traction Company, Dallas, Tex.—E. P. Turner, president of the Dallas Northwestern Railway and Dallas Southwestern Traction Company, has asked the city for an extension of time until June 28, 1920, to build the companies' proposed lines. (June 14, '19.)

Eastern Texas Traction Company, Dallas, Tex.—S. B. Brooks of Greenville has purchased at sheriff's sale the physical holdings and franchise of the Eastern Texas Traction Company. Construction of this company's interurban electric railway between Dallas and Greenville, about 50 miles, was in progress at the time the war caused a suspension of the work in 1914. It is planned by Mr. Brooks to reorganize the company and complete the line. (June 1, '18.)

Marshall (Tex.) Traction Company.—Reconstruction work is being completed by the Marshall Traction Company on its East End Street car line.

New ties have been put in throughout the line, which has been otherwise repaired, at a cost of about $50,000.

Power Houses, Shops and Buildings

Durham Light & Power Company, Durham, Cal.—The Durham Light & Power Company has applied to the Railroad Commission of California for permission to sell its property to the Pacific Gas & Electric Company.

Pacific Electric Railway, Los Angeles, Cal.—Plans have been filed by the Pacific Electric Railway for its proposed new power station at Los Angeles Harbor, to cost about $12,000.

Sacramento (Cal.) Northern Railroad.—Work has been begun by the Sacramento Northern Railroad on the construction of a passenger and freight station at Marysville. The cost will be at about $30,000.

Washington, Baltimore & Annapolis Railroad, Baltimore, Md.—A new freight station will be built by the Washington, Baltimore & Annapolis Railroad, in which considerable space will be leased to manufacturers.

Transit Development Company Brooklyn, N. Y.—Work has been practically completed by the Transit Development Company on the construction of the new extension to its power plant and electrical gallery on Kent Avenue near Wallabout Canal, Brooklyn, and it is expected that operation will be inaugurated at an early date.

Interborough Rapid Transit Company, New York, N. Y.—Plans have been completed by the Interborough Rapid Transit Company for the extension and improvement of the one-story car repair shop of the Manhattan Railway at 1530 Lexington Avenue, to cost about $50,000.

Toledo Railways & Light Company, Toledo, Ohio.—The Toledo Railways & Light Company will construct a new building at Superior and Jefferson Streets, Toledo.

Allegheny Valley Street Railway, New Kensington, Pa.—Bids will be received by the Allegheny Valley Street Railway and the Waverly Oil Company, for the construction of an oil storage building and office. The structure will be 71 ft. x 81 ft., six stories, with reinforced concrete flooring and concrete foundation.

Texas Electric Railway, Dallas, Tex.—A contract has been awarded by the Texas Electric Railway for the construction of additions to its carhouse in Trinity Heights, Dallas, to the Kidd-Scruggs Company at $25,000, and work will be begun at once.

Rutland Railway, Light & Power Company, Rutland, Vt.—Plans are being considered by the Rutland Railway, Light & Power Company for the construction of a large hydro-electric power plant at East Creek, located between the Mill Village dam and Mendon.

Professional Notes

Dantzig, Pfeiffer & Ritt, 500 West 116th Street, New York City, is the name of a firm of consulting mathematicians recently formed to handle all problems arising in industry for the solution of which the knowledge of a mathematical specialist may be necessary.

Fowle & Cravath is the title of a firm of engineers recently established in Chicago. It is composed of Frank F. Fowle, lately receiver of the Central Union Telephone Company, and James R. Cravath, consulting electrical and illuminating engineer. The firm will make a specialty of electrical illuminating and mechanical engineering and will have headquarters in the Monadnock Block, Chicago.

Trade Notes

Babcock & Wilcox Company, New York, has moved its Seattle office to the L. C. Smith Building.

Import Licenses to Italy.—The following railway materials may be imported into Italy as of Aug. 1 only under special license from the government: Steel rails and railway ties, railway rolling stock.

Fred H. Ogden, for years in the frog and switch and sales department of the Bethlehem Steel Company, has lately become connected with the International Steel Tie Company, Cleveland, Ohio, in the capacity of sales manager.

Relaxation of Spanish Embargo on Cotton Waste.—A cable from Consul Dawson, Barcelona, dated Aug. 9, 1919, states that a Spanish royal order of Aug. 5 authorizes the export of cotton waste under permit from the official cotton committee.

N. S. Braden, former sales manager, has just recently been elected vice-president of the Canadian Westinghouse Company, Ltd., Hamilton, Ont. H. M. Bostwick, assistant sales manager, has been appointed sales manager, to fill the vacancy created by Mr. Braden's promotion.

The Director of Purchase and Storage, War Department, is offering for sale under sealed proposals 2378 gal. of Galena journal oil, at San Antonio, Tex., bids for which will be opened by the surplus property officer, Zone Supply Office, San Antonio, at 10 a. m., Sept. 9, 1919.

Illinois Manufacturers' Association, Fort Dearborn Bank Building, Chicago, Ill., has issued invitations to manufacturers for a conference under the auspices of the above association in Chicago, Sept. 8 and 9. It is desired that the attendance be representative of all the elements of industry.

Allen Ramsey has joined the engineering staff of the Delta-Star Electric Company of Chicago. Previous to his acceptance of this appointment he was designing engineer for the New York & Queens Electric Light & Power Company of New York, and prior to that an electrical engineer with Sargent & Lundy of Chicago.

James R. Kearney, who for the last fourteen years has been connected with W. N. Matthews & Brother, has just been made Western manager of the line material division of that company, with headquarters at Chicago. He will cover all of the United States west of Pittsburgh, and Canada from Winnipeg west, supervising the line-material division sales and being in charge of all salesmen traveling that territory.

Wellman-Seaver-Morgan Company, Cleveland, Ohio, manufacturers of hoisting engines, hydraulic turbines, mining and other heavy machinery, is offering a block of 7 per cent cumulative preferred stock at par. This company operates extensive plants at Cleveland and Akron and is one of the largest manufacturers in the country of hydraulic turbines.

German Porcelain Insulator Concerns Combine.—About forty German firms in the ceramic industry, it is reported in the London *Electrical Review*, have combined under the title of the Syndicate of German Electrotechnical Porcelain Works for their mutual protection and their economic interest. All of these concerns, the report states, produce mainly porcelain insulators and insulating material.

L. A. Kling has resigned as superintendent of shops of the Kuhlman Car Company, Cleveland, Ohio. Mr. Kling has been connected with the Brill interests for the past fourteen and a half years. From 1905 to 1910 he filled various positions with the John Stephenson Company, Elizabeth, N. J. Then for the next year and a half, before going to Cleveland, he entered the Philadelphia offices of the Brill Company, as sales engineer.

O. M. Smart, trade commissioner of the United States Bureau of Foreign and Domestic Commerce, has just returned from an extensive investigation of the markets for the sale of American electrical goods in Italy. Mr. Smart will confer with interested firms in room 734, Custom House, New York City, between 10 and 12:30 and 2:30 and 5, daily for the next ten days. Appointments may be made either by letter or by telephoning 794.

Pittsfield G. E. Bonus.—Two thousand employees of the Pittsfield (Mass.) Works of the General Electric Company received a semi-annual bonus of 5 per cent on the earnings of the plant on July 21. The total amount distributed was between $65,000 and $75,000, those sharing being employees of at least five years standing. The amount distributed was slightly below that shared in January, but the number of employees participating was somewhat larger.

A. P. Saas, formerly sales manager of the Independent Lamp & Wire Company, Inc., New York City, resigned recently to go into exporting and importing business at 39 Cortlandt Street, New York City. Mr. Saas still holds his connection as secretary-treasurer and a director of the Miniature Incandescent Lamp Corporation, Newark, N. J. A. F. Pusch, formerly of the Capital Electric Company, Denver, Col., succeeds Mr. Saas as sales manager of the Independent Lamp & Wire Company.

Duff Manufacturing Company, Pittsburgh, Pa., announces the appointment of W. C. Epstein as general superintendent of its works at Pittsburgh, Pa. Mr. Epstein until recently was in charge of the production engineering division of the Bureau of Aircraft Production at New York. Before entering the government service, he was with the American Brake Shoe & Foundry Company, Chicago, assisting the vice-president in charge of operation. Mr. Epstein is a graduate of the University of Wisconsin, class of 1913.

Schiefer Electric Company, 312 E. & B. Building, Rochester, N. Y., is the new name for Henry J. Schiefer & Company. H. J. Schiefer, Jr., writes that the new company is capitalized at $35,000 to carry on the business of the old company, which is a selling organization only. The company represents in the State of New York in the territory west of Albany the following concerns exclusively, it states: Delta Star Electric Company. Sangamo Electric Company, G. & W. Electric Specialty Company, Maloney Electric Company, and Taylor Instrument Companies. It has also a local agency for the Western Electric Company.

Misuse of Trademarks.—The Council of National Defense announces that one of the new and extremely difficult problems which vast expansion of international trade and newer development of international advertising have brought with them is the protection of trademarks of articles or firms with international reputations in foreign countries. It is stated that already piratical use of trademarks in foreign countries as a weapon in trade competition has gone very far, especially in Latin-American countries, and that some American products have been registered by German concerns.

Milliken Brothers Manufacturing Company, Inc., Woolworth Building, New York, manufacturer of galvanized steel transmission towers, has organized the Milliken Manufacturing Syndicate, London, England, to handle all export trade, exclusive of North and South America. Offices have been established at Amberly House, Norfolk Street, Strand, with C. T. Wilkinson and F. Sumner-Smith in charge. To handle its Western trade in this country, branch offices have now been established in the Majestic Building, Chicago, while to provide for Pacific Coast business a branch is now located in the Rialto Building, San Francisco.

G. E. Sales at Rate of $170,000,000 a Year.—During the first six months of the current year bookings by the General Electric Company, it is understood, were at the rate roughly of $170,000,000 annually. While this, of course, is considerably less than bookings for 1918, still it must be remembered that bookings for the first quarter were considerably less than for the second quarter, and consequently that the annual rate shown by the first six months of the year may be considerably increased before the year is over. It is also understood that billings are running ahead of last year, owing to the large number of unfilled orders carried over.

Hazard Manufacturing Company of Wilkes-Barre, Pa., manufacturer of insulated wire and cable, on July 1 opened a new sales office and warehouse at 1415 Wazee Street, Denver, Col., in charge of Ernest P. Kipp, district manager. The Denver office will cover the Intermountain district, including in its territory Colorado, Wyoming, Montana, Idaho, Utah, New Mexico and the western portions of Nebraska and South Dakota. Mr. Kipp, who has had sixteen years experience in the wire industry, was captain in the United States Engineers and has received his honorable discharge. A full stock of wire rope and rubber-insulated wire is carried at Denver.

American Steam Conveyor Corporation, Chicago, announces the appointment of Thomas O. Morgan, until recently head of the service department of the New York office, to the position of sales engineer. He will handle Long Island and Connecticut territory. H. S. Valentine has been appointed sales engineer in charge of Philadelphia territory. An office has been established in the North American Building, Philadelphia. Mr. Valentine was connected with the Link-Belt Company of Philadelphia for five and one-half years, with the Brown Hoisting Machine Company and Yale & Towne Manufacturing Company for six years and with the Badenhausen Company for one year.

Norton Company Reorganization—From July 1, 1919, the business of the Norton Company and Norton Grinding Company, Worcester, Mass., will be conducted by the Norton Company with the following board of directors: George I. Alden, chairman; Aldus C. Higgins, treasurer and general counsel; Charles L. Allen, president and general manager; George N. Jeppson, secretary and works manager; R. Sanford Riley, John Jeppson. Announcement is also made of the following appointments: Carl F. Dietz, vice-president and general sales manager; W. LaCoste Neilson, vice-president and foreign manager; Herbert Duckworth, sales manager grinding wheel division; Howard W. Dunbar, sales manager, grinding machine division.

Export Association Plans to Assist Foreign Buyers.—Arrangements have been made by the American Manufacturers' Export Association whereby introduction cards will be placed in the hands of foreign buyers about to visit this country. These cards, properly signed by representatives of the United States government abroad, banks, chambers of commerce and the representatives of the Export Association in foreign lands, will serve to accredit visiting buyers to the New York office of the Export Association. Buyers seeking particular kinds of merchandise will thus be aided by the association in getting in touch with American manufacturers producing the kind of goods desired. This will result in putting foreign purchasers in direct touch with American exporters.

Chicago Pneumatic Tool Company plans moving its general offices from Chicago to New York, and toward this end is erecting an office building at 6-8 East Forty-fourth Street, New York City. The operation of the company's six American plants and twenty-six sales and service branches will be directed from this plant. There will be continued in Chicago a sales and service organization more extensive than formerly. The new building is to be ready for occupancy early in 1920, at which time the transfer will be effected. The company announces the appointment of L. C. Sprague, formerly district manager of sales at New York, as manager of Western railroad sales with headquarters at Fisher Building, Chicago, and H. G. Barbee as manager of Eastern railroad sales with headquarters at 52 Vanderbilt Avenue, New York City. Nelson B. Gatch, formerly district manager of sales at Chicago, has been appointed district manager of sales at New York, succeeding Mr. Sprague. Announcement of Mr. Gatch's successor at Chicago will be made later.

New Advertising Literature

Laclede - Christy, St. Louis, Mo.: "Mixes Brains into Fire Brick" in its August bulletin.

Breeze Manufacturing Company, Inc., Newark, N. J.: Thirty-six page book on "Flexible Metal Hose, Tubing and Accessories."

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Booklet, "Prospectus of Apprenticeship System." Also Bulletin No. 4014 on "Perforated Metal."

General Electric Company, Schenectady, N. Y.: Index to its descriptive bulletins and sheets, and also an index to its supply parts bulletin. Both these indexes are dated July, 1919.

Wheeler Condenser & Engineering Company, Carteret, N. J.: A pamphlet entitled "What Worried Admiral Jellicoe Most." A postcard is inclosed for those who request a Tube Handbook.

Whiting Foundry Equipment Company, Harvey, Ill.: Catalog No. 145, which has for its subject railroad equipment, and covers locomotive hoists, coach hoists, frames, transfer tables and turntable tractors, as well as car-wheel foundries.

Holden & White, Inc., Chicago, Ill.: Illustrated catalog No. 20 descriptive of the new Jewel hot blast car heaters recently placed on the market by this company and described in the Aug. 9 issue of the ELECTRIC RAILWAY JOURNAL, page 290.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, August 30, 1919 *Number* 9

One Reason Why Transportation Work Fascinates

AN EX-LAWYER, then prominent in the electric railway field, said a few years ago that he left the law for transportation work because people spend so much more money on the latter. His idea was that where the most money is spent in paying for needed service there the opportunity is greatest. Even now, when the whole transportation industry is in dire straits, the business continues to hold large numbers of able men, who could make a living in other fields with less expenditure of nervous energy, but they remain in the business because they feel that transportation is an essential industry and must continue in one form or another permanently to supply a vital public service. As good service is one of the most saleable of commodities, its merchandizing will always attract the men who can produce, deliver and advertise it well.

The very difficulty of producing good transportation under the present transient conditions furnishes an appeal to real transportation men. With reasonable encouragement in the way of compensation they can be held indefinitely.

Declining Usefulness or Greater?

THE harassed electric railway manager who has to find ways and means of securing more revenue can hardly be blamed for seeking the immediate path offered by the higher unit rate of fare. He gets a certain increase in revenue at a sacrifice in number of passengers. Costs go up again and there is another increase in fare, some increase in revenue and a further decline in the number of customers. How long is this process going to continue before the usefulness of the electric railway has shrunk to such a point that it will be patronized only by those too poor to own an automobile or bicycle or so situated that they cannot use a jitney?

If an electric railway was carrying well-loaded cars throughout its working day of eighteen to twenty hours, then it would be obvious that an increase in fares was the only resource. Fortunately, if we may use the word for such a situation, almost every electric railway is badly underloaded most of the day. If, then, there are ways of getting more riders during the off-peak hours that have not been tried, those ways ought to be tried before we reconcile ourselves to making the electric railway less useful instead of more useful.

Have we not been treading a dangerous road in assuming that the riding characteristics of the community, hour by hour, could not be affected favorably by different standards of service and rates? Are we not unduly timid also in assuming that the public cannot be convinced that one-man cars, graduated fares, wholesale-ride tickets, etc., are worth trying to stave off higher fares and poorer service? Have we ever realized how the coming of other means of transportation can be turned to the benefit of the street railway if we modernize the street railway, because the man who is used to an automobile is becoming disused to walking? Have we forgotten that the more customers we have, the more likelihood there will be of our getting a square deal?

Therefore, in trying to meet the need for more revenue let us exhaust every possibility of securing riders, more riders and still more riders during those hours of the day that we have seats and service to spare. The sensible investor will always take more interest in a concern whose customers are increasing year after year than in one whose customers are showing a steady decline while the competitors are flourishing. There is always hope for the concern which is growing even though it pays only a small return; but there is no hope for the concern which is deliberately getting all it can to-day with no thought for the morrow. We must never forget that before anything else, an electric railway must make itself useful to the greatest number of people who could possibly benefit from its service. As one of the greatest electric railway operators in the world said recently: "Don't begin to increase fares until you are sure that you have attracted all the people who not only need but who also like your service."

Modern Cars Are a Necessity for Holding Traffic

IN ANALYZING the rolling stock of a small-town electric railway recently we were struck by the fact that one-half of the rolling stock was almost thirty years old. And when we went a step further into the analysis, we learned that two of these cars were required to give the same annual mileage that could reasonably be expected from one up-to-date car which would be able to do the trick partly through faster schedules but more largely through staying on the line instead of in the shop.

While wondering whether these prehistoric relics could have any connection with the red-ink statements of the operating company we passed a 20-cent movie. Lined up in front of this theater and for several feet more in each direction was a choice collection of automobiles from "Henries" to the ultra-luxurious sort in which only Success is said to ride. Now, what could have induced the several hundred automobile owners to have come down to a 20-cent show from a radius of 2 to 3 miles on their machines instead of in the street cars? Simply because of the taste which they had acquired for a faster and more quickly available form of transportation than was being offered by the local street railway. There had been a time when to wait

10 minutes for an electric car was not considered a hardship and when 8 miles an hour was considered pretty lively going. But the years had come and the years had gone with the street cars growing dingier and slower, while the electric car's rival, the automobile, was becoming cheaper and more plentiful. On the day that the balance figures changed from black to red, the street railway began to realize that it had failed to satisfy the appetite thus acquired by the public for more and better transportation.

It has been remarked that no merchant would think of foisting a 1900 hat upon a 1919 customer. Why then should a street railway expect to get along with the car of 1890, which certainly has not improved with age, when the car of 1919 is needed to meet new conditions? It is all very well to point to the difficulty of getting new money. The fact remains that bondholders and stockholders eventually will lose a lot more money if they will not back up the efforts of the management to modernize the property.

How Deep Is Public Prejudice?

IF WE ARE to believe the pessimists of the electric railway industry, the public has decided that "the sins of the fathers shall be visited upon the children even unto the third and fourth generation." Firm in this belief, the "What's the Use" clan turn deaf ears and dull eyes to anyone who holds a contrary opinion.

Those who are in and of the electric railway field are prone to assume rather too readily that the minds of the people are poisoned against them by the sensationalism of newspapers, the currying for favor by peanut politicians and the tales of high financing committed by their forebears in the job. Of course, there is some truth in this assumption, but it is very far from being the whole truth. The man in the street (who ought to be "the man on the car"!) may have some confused notion about interlocking directorships, overlying and underlying securities, excessively liquid stock, etc., but it is a confused idea at best and one that becomes tangible only when he has to wait an unconscionably long time for a car and then find it too crowded to be worth the fare. In short, public prejudice is about 10 per cent due to dislike in the abstract and about 90 per cent due to dislike in the concrete. What proofs can be brought forward for this statement? Here's one of many.

On a large Eastern system with a past that the present management is doing its best to live down, it was necessary to go to a 6-cent fare. The change did not meet with unanimous approval—far from it. About the same time, however, the company equipped one of its lines with light-weight cars and added 50 per cent more service. What followed? An increase in traffic, despite the 6-cent fare, practically proportional to the increase in service! Not the least pleasing feature of the operation on this line is the obvious desire of the passengers to help the car operator through having exact change ready. But the great, big, outstanding fact is that despite the bitter opposition which this community put up against an increase in fare and despite the prejudices of a generation, traffic has increased as it never did increase in the palmiest days of this electric railway company. If there is a better index to the decrease of prejudice than the increase of riding, we would like to hear of it. And it was all done within three or four months with no other means than the honest-to-goodness service that the elimination of hard feeling and the extirpation of jitneys demanded! Prejudice is only *service* deep after all.

Is the Proposed Change in Method of Testing Girder Rails a Good One?

THE news columns of this paper on July 5 carried a rather extended notice of the proposed change in the American Electric Railway Engineering Association's standard specifications for girder and high T-rails. This is proposed by the American Society for Testing Materials acting jointly with the way committee of the Engineering Association. The change has to do with the method of testing, a proposition to substitute a modified form of Brinell hardness test for the present drop-test requirement.

The drop test as now specified differs slightly from the same sort of test required by standard specifications for standard (low T) section rails, the height of the drop being regulated by the depth of the rail as well as by certain limits of rail weight. Thus it was recognized that the testing of girder rails presented some different problems from those present in the standard-section rails. Another factor regulating the girder rail tests is the higher limit of the carbon content in the standard girder rails. The greater tendency toward brittleness had to be provided for in the drop test.

Girder rail breakage in service is comparatively rare and, in paved streets at least, the element of danger from this source is much less. Consequently there were ample reasons for using drop tests of somewhat less severity. Nevertheless, we call attention to the desirability of some form of test which will cover the girder strength of the rails. There are also such defects as piping, segregation, seams and other detrimental factors which may come from unsound ingots and these must be guarded against. These forms of unsoundness contribute largely to the breakage of rails in connection with electric welding of joints. To eliminate drop tests without providing some other agency for the discovery of unsound metal would be a step backward. If the drop test is to be abandoned, we suggest the possible substitution of the "quick-bend" or hydraulic-bend test for this purpose. Its very name implies that it is quite rapid, and it is now thought that it will produce results equal to, or even better than, the drop test. The American Railway Engineering Association is considering its adoption in place of the drop test, and we do not think our association can afford to discard the sort of test which is thus obtained without very serious consideration of the A. R. E. A. action in the same matter. In electric railway work these tests need not be so frequent as to be burdensome, but they should be made. There can be no harm in sticking to the drop test for another season—that is, until the Pennsylvania Railroad and A. R. E. A. reports on comparison of the "quick-bend" and drop tests come to hand.

The proposed new test is one which may better be added to the specification rather than used as a substitute, and a hardness test of the sort proposed will be well worth while as it doubtless can be made at little, if any, extra expense. We favor its adoption, but as an addition and not as a substitute.

In conclusion, attention is called to the present title of the specifications referred to. The use of the words "high T" is out of date, and the association has long been trying to get rid of the word "tee" because of its red flag effect in the minds of municipal engineers. Several of the association specifications and recommendations have already been edited in this regard, and the rails referred to are now called "plain girder rails," which indicates their similarity in form to I-beams. We suggest that the way committee take this point up and ask the A. S. T. M. to join in the standardization of the use of better terminology. The title of the specifications should be "Standard Specifications for Girder Rails."

Seeing Things from the Customer's Viewpoint

EVERY department-store merchant knows that if he had no stools at the counters there would be more room in the aisles; also that he could carry more stock if he could dispense with writing rooms, nurseries and other accessories that have no direct relation to the selling of his wares. Yet he seems glad to install these conveniences because he does believe that they have a beneficial, even though indirect, effect upon sales.

If we were to apply this policy to the merchandising of transportation, we should doubtless have to give up certain things which make for efficiency but not necessarily for ultimate maximum net. In the matter of aisles, we would surely use cross-seats in preference to longitudinal seats, at least to the extent of two-thirds of the entire seating capacity. It is true that a car with longitudinal seats is the easier to load, but it is not the kind of seat that the customer prefers. It may even please the customer himself during the rush hours, but why not have a car that will attract passengers during the other fourteen operating hours of the day? We recall distinctly an instance where the change from longitudinal to crossseats increased the earnings by 3 cents a car-mile. That there was nothing "fluky" about this was proved upon investigation, as it was found that many people would walk over about one-eighth mile for the sake of riding in these cars instead of using the longitudinal seat cars upon the nearer line. As for summer riding, the cross-seat convertible car can be made as attractive as an open-bench car, and safer, whereas the longitudinal seat car will get compulsory riders only.

The provision of shelters at important transfer points is another example of seeing things from the customer's viewpoint. The weather may be bad and the wait may be long only once in a month, but that is the occasion he recalls to the disadvantage of the railway. It cannot be claimed, of course, that shelters directly increase riding, but if they please the customers they will prove a good investment for many a day.

For an industry that never had the inspiration that comes from competition and that was further handicapped by the absurdity of charging a price that had no relation to quantity or quality or cost, the road to the merchandising sense is going to be a hard one; but there are already encouraging signs that the electric railway in future will win out on merit and service, quite regardless of price, just as progressive merchants win out on the simple basis of proving to the customer that they are always trying to see things from his point of view. As Marshall Field is reported to have said: "The customer is always right."

The Tragedy of Precedent

WHETHER we acknowledge it or not precedent has much to do with the course of human life and human activities and incidentally has had a very considerable influence on the development of the electric railway industry. If we do a certain thing in a certain way a few times the action becomes reflex or automatic, conscious thought about details no longer being necessary. If a man travels from his residence to his place of business over a certain route for a few days he will tend to continue following that route, although other routes just as short and as satisfactory in other ways may be available. If we see some one perform an operation new to us, when our turn comes we tend to try to imitate the performance. The "homing" instinct, the tendency to run in the same groove, the blind following of precedent, seem to be an inherent quality of the human mind.

To illustrate, years ago some bell wether in the industry enunciated that most fallacious of ideas, that a 5-cent fare would always be adequate for a passenger fare within city limits and often beyond. Of course, the theory upon which this was based was that improvements in the art would counterbalance the greater expense of increasing lengths of haul, but besides including a very loose assumption upon a very important matter this theory was faulty because it did not take into consideration the varying purchase power of the nickel.

Again, somebody in the years gone by decided that cars should be big and heavy. The idea appealed to everybody. The public liked to see battleships passing up and down the street. The idea has been developed until now it is not uncommon for us to be hauling, on the average 1000 lb. of passengers on a 50,000-lb. car. An awful waste of effort! And so we might go on reciting bad precedents. Of course, there have been many good precedents that have resulted in great benefit to the industry, but good precedents like good men do not need watch dogs to keep them from doing damage.

It is said that you cannot teach an old dog new tricks, and the transportation industry is an old one. Ever since some cave man ancestor of ours invented a vehicle by rigging a forked sapling into a sledge, men have been selling transportation. History is a young thing and leaves no record of this cave man benefactor of mankind, but we do know that the waybills of Nebuchadnezzar's day are not a very far cry from those in use to-day. Possibly the development of sales methods for selling the transportation of men and materials has been hampered to no little extent by the efforts of our illustrious ancestors. Certain it is that the methods of selling transportation of communication and electric energy have been placed on a far more scientific basis. And these methods have been developed within the memory of men now living.

The moral of the whole story is that it is worth while to stop short occasionally, look around a bit, do a bit of thinking, and get a perspective of our job and our industry. The cry of the teamster to the hurrying throng "Heads up" is a warning worthy of attention. Railway operating men are busy men, in these days they are harassed men, but in many instances a little more time spent in getting a broad outlook on the industry and its development would pay big dividends in the way of increased progress.

Maintenance of Air-Blast Transformers

United Railways of St. Louis Has Sixty-three Air-Blast Transformers in Continuous Service, Forty-four of Which Were Rebuilt in 1913 for 13,200 Volts—Maintenance Confined to Rebuilding from Burnouts and to Bi-Weekly Cleaning—New Cover Designed to Prevent Fires

THE United Railways of St. Louis has in continuous service thirteen substations, three portable substations and two power plants, each of the latter having two rotaries in addition to their generators. The largest substation has a capacity of 12,000 kw., and the smallest a capacity of 500 kw. The total capacity of rotary converters is 47,500 kw.; of alternating-current generators, 3600 kw.; of direct-current generators, 18,100 kw.; of steam boosters, 600 kw.; and of motor boosters, 200 kw., giving a total kilowatt capacity of 70,000.

The company has a total of sixty-six transformers in continuous service, sixty-three of which are of the air-blast type. These range in capacity from 2200 kva. to 110 kva. and only seven are of a 6600-volt primary type, all of the rest being wound for 13,200 volts primary. The secondary voltage on all of these ranges from 370 to 430. Practically all of the air-blast transformers are General Electric.

FORTY-FOUR TRANSFORMERS REBUILT IN 1913

During the first half of 1913 it became necessary to change part of the high-tension system at St. Louis from 6600 volts to 13,200 volts. This necessitated the taking apart of forty-four transformers to install new primary coils and rebuild. This work was done by four men in the maintenance gang and four men in the armature room. The armature winders assembled the primary and secondary coils in their insulation casings, while the maintenance men did all of the lining up of coils in the transformer casings and the laying of the laminated irons and connecting of transformers to the lines and rotaries. It might be stated that a wrong connection was not made during the rebuilding of the entire forty-four transformers.

At present the company has plenty of spare transformer equipment. There have been times, however, when not a single spare part was available and it was necessary to have a machine down until it could be repaired and rebuilt before it could be placed back on the line. On one occasion a coil in one phase of a three-phase 1100-kva. transformer burned open in the Quincy Street substation on April 5, 1918, and the equipment was back on the line five days later. This would not appear to be much of a record, but the various steps necessary to accomplish the work should receive careful consideration and will furnish an example of the work which is necessary to rebuild a transformer after a burnout.

The transformer, which weighs 10½ tons, was back in a corner on a raised concrete air chamber and would not pass the other equipment in the station. There was no crane, and there was not room enough around the transformer either to take it apart or build it up. It was impossible to get at the unit with jacks except below in the air chamber, so screw jacks were used to raise it high enough to get some iron slides underneath it. It was then forced away from the wall, and in this position was jacked up high enough to get 8-in. rollers under it. The fan had to be moved entirely out of the station to make room for the transformers to be loaded onto a flat car, by means of which it was hauled to the central power station. Here it was taken apart, one phase was hauled to the armature room, repaired and hauled back, the transformer was rebuilt and the former operations repeated to get it back in the station and running again.

The above transformer consists of three phases and about 20,000 pieces of laminated iron placed in layers, no two of which must lap anywhere. Each alternate layer is painted, thus insulating all layers from each other to reduce iron losses due to heating caused by eddy currents. Another feature worth noting is the fact that only four men can lay irons at one time, one on each side and one at each end.

The accompanying diagram shows the position of the laminations during the process of rebuilding a transformer. There are fourteen pieces in each layer, every other layer being laid opposite the previous layer—that is, piece No. 2 will be where piece No. 1 is and so on, There are about 150 layers to a section and fifteen sections to a transformer, and, as mentioned before, only four men can build at a time, their position being one on each of the four sides.

After laying about twelve sections without pressing the irons down, there is very little space left between the coils at the top and the iron where the key is driven in. The loose irons are pressed down by means of two heavy plates of iron with the screws in one pushing against the other, these are placed in the same position as the timber shown in one of the accompanying photographs. This press is generally left on over night in order to compress the irons and force them to remain in position. After all of the irons are in place, a hard maple key is driven in where the timber shows in the photograph. It is then an easy matter to put the top and side casings in position and connect the transformer to the line.

Considering a 1100-kva., three-phase transformer, it will under ordinary conditions take four men one day to take the irons out of the transformer and get the three phases into the armature room from any location on the system where there is a crane for loading onto a car. It will require four men in the armature room six days to take the three phases apart and reassemble and put the casing around them again. It requires four men one-half day to get the coils back to the station and lined up ready for laying irons. It requires four men two days to lay the irons and put the transformers in shape for connecting. Thus it normally requires four men working steadily eight hours a day, nine and one-half days to complete the repair and rebuilding of an 1100-kva., three-phase transformer.

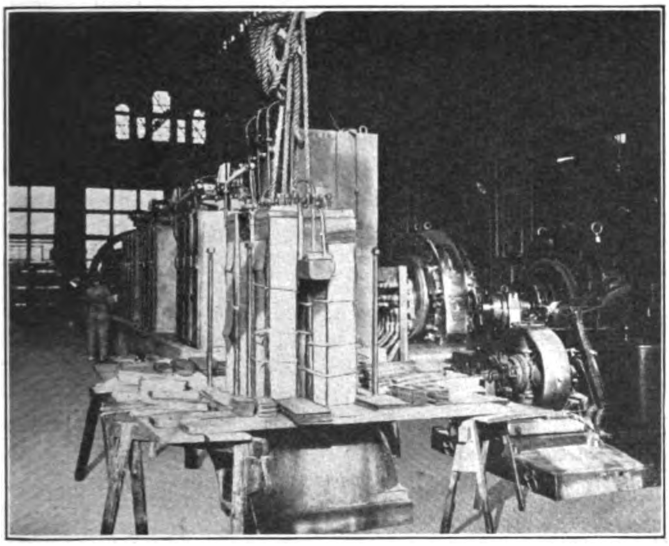
The original policy of the company was to install air-blast transformers for the reasons that they were cheaper in first cost and required less floor space and considerably less head room than self-cooled transformers. These air-blast transformers operated satisfactorily until the inter-connection of the Union Company's power system and water system greatly increased the generating capacity available and caused damage in case of short-circuits. It was found that even the transformers which had been rebuilt in 1913 were seriously damaged due to the disruptive force of heavy currents on the coils of the transformer. The construction of an air-blast transformer is inherently poor to withstand heavy mechanical jars because the coils have to be separated to allow the passage of air, and these separators become loosened and disarranged.

The oil-insulated transformer, either self-cooled or water cooled, is particularly advantageous where large amounts of power are involved because the coils can be compactly constructed and braced mechanically against strains. No trouble of any kind has been experienced with the three oil-insulated transformers in service in St. Louis. This type of transformer has the disadvantage of higher first cost and more floor space required, and some insurance companies object to the fire risk on account of the oil. The oil used, however, has a high flash point and the fire menace is not of much importance.

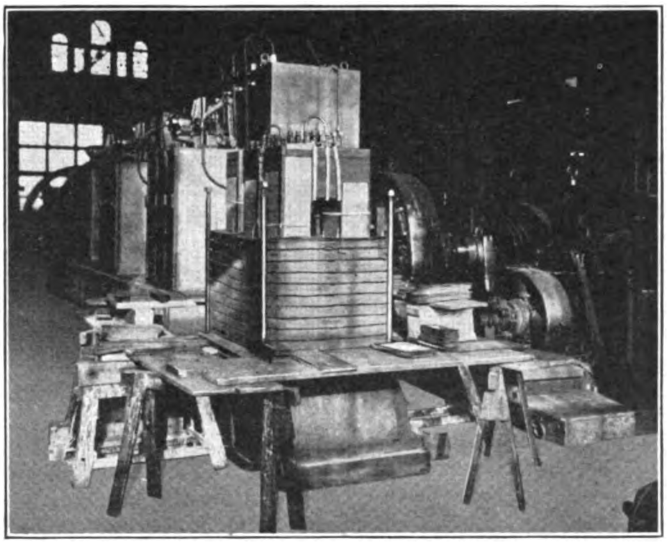
The question which arises concerns the best method of preventing damage and limiting fires in air-blast transformers following short-circuits. These might be briefly stated as follows:

1. Install some protective devices, say, an aluminum cell lightning arrester, perhaps two, on the busbar supplying the transformers, which acts as a safety valve to relieve the surges, and hence protects the transformers. This has been done at two stations in St. Louis and the results have been very beneficial.

2. If a fire does start in the transformer, means should be provided so that it can be quickly smothered out. This has been accomplished by means of airtight lids a description of which appears in the following paragraphs. In addition, transformers should, if possible, be run either with individual fans or arranged so that they can be separated into compartments so that in case of fire in one transformer it can be isolated and the rest of the station continued in operation.

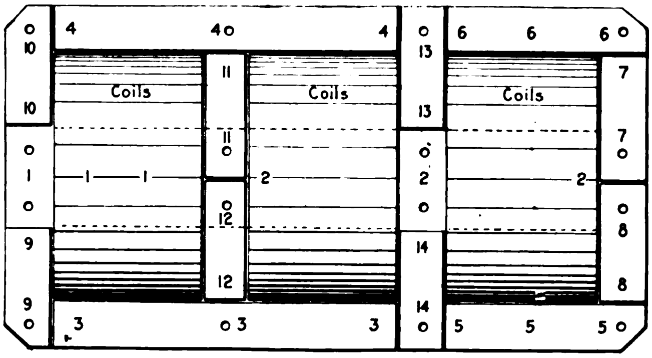


POSITION OF LAMINATIONS DURING PROCESS OF REBUILDING AN AIR-BLAST TRANSFORMER



REBUILDING AN AIR-BLAST TRANSFORMER, SHOWING METHOD OF LAYING IRON LAMINATIONS

3. Remove causes for fires as much as possible by keeping the transformers blown out with air and by removing from the air chamber any apparatus which might cause a fire. At one station the United Railways suffered a $3,000 loss because a spark from a small piece of apparatus, which had been damaged, flew into a transformer which was not in service and caused a fire which ruined the big transformer. At this station all apparatus which can cause sparks from the air chamber has been removed.



DIAGRAMMATIC LAYOUT OF AIR-BLAST TRANSFORMER LAMINATIONS

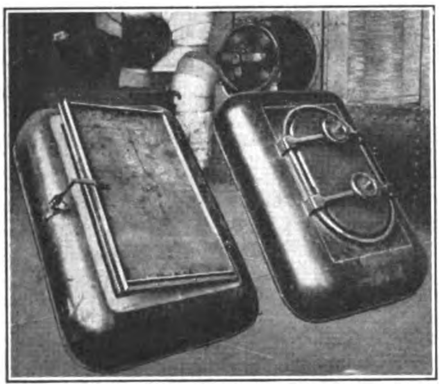
NEW COVER DESIGNED TO SMOTHER OUT FIRES

As mentioned above there is always danger of bad fires in an air-blast transformer. A very slight spark will cause a fire in the insulation and the constant pressure of air will soon fan this into a roaring flame. Thus it is necessary that the operator be watchful at all times and if he smells smoke he must find the source immediately and try to smother it out. It has sometimes been necessary to shut down a whole station in order to shut off the air from a transformer to stop a fire. This is due to the fact that the lid cannot be made airtight.

With this in mind the United Railways has rebuilt its transformers as shown in an accompanying illustration. First a series of ⅜-in. holes is drilled all the way around the top as shown, giving, when the piece is taken out, an opening 20 in. x 34 in. A tool is then run over this, giving a flat, smooth surface about 1 in. wide. A new cover is then made from No. 16 gage iron reinforced around the top edge by ⅛-in. x 1-in. angles and fitted with felt around the lower bearing surface. This cover is hinged and equipped with a special lock device. During operation this device props the lid up on one side about 4 in. as the transformers cannot operate at all without the air passing through the coils. In case of fire, however, the device is used to clamp the lid securely shut. With this new lid which has been put on, it is believed that an ordinary fire can be smothered out without shutting down the fans.

Another advantage of the hinged top is that during cleaning it can be opened back while the old top had to be lifted off and put on the floor. As this weighed about 50 lb., it was hard for one man to perform the operation where he had as many as eight transformers to clean. The new top also affords ample room for changing transformer taps during construction work. All of the 13,200-volt transformers can be connected for 6600 volts, and it is sometimes necessary to make this change.

The care of air-blast transformers is practically limited to the matter of cleaning the dust from between the coils and from the iron laminations. This is mostly carbon dust from the rotary brushes sucked into the air chamber by the fans. The cleaning is done once every two weeks by means of compressed air and is accomplished after midnight when the station is shut down. The air pressure must not be too high as the cleaning of the coils would tend to loosen the insulation. Each station is equipped with an air compressor and enough air hose to reach any desired point.



AT LEFT, NEW COVER DESIGNED TO SMOTHER OUT FIRES; AT RIGHT, OLD COVER DRILLED TO ENLARGE COVERING

After the station is shut down the operator on the watch, wearing a wet sponge over his nose and mouth and with the air pumped up to about 60 lb., starts at the end transformer and blows down through the coils in a direction opposite to that in which the air ordinarily passes. This dislodges any dirt or dust which has collected during the operation of the transformers. After the transformer is blown free of all dirt, the top is closed tight and after all transformers have been cleaned, all dirt is cleaned from the air chamber so that when the station is again started up the same dirt will not be carried back into the coils. The tops on all the transformers are then raised and the transformers are ready to cut back into service.

In the new Midland station, there is a separate compartment air chamber and separate fans, so that in case of fire in a transformer this can be smothered out without taking the air away from the other transformers. These fans take fresh air from outside of the station, and it is noticeable that there is not as much dirt and dust as in other stations where the air is taken from inside the building.

It may be of interest to note that the company has had in continuous service since 1906, three 1100-kw. air-blast, 6600-volt transformers which have never been opened up or taken apart for repairs. These have been subjected to 50 per cent overload for a half hour to an hour per day for a number of years. The principal trouble has been experienced at the Spring Avenue Station which is connected to the water power source by three heavy tie lines and is therefore in a particularly exposed position.

The foregoing information was secured through the courtesy of W. E. Bryan, superintendent of power stations and P. C. Varble, power department United Railways of St. Louis.

Pay Subsidies, if Necessary

Rhode Island Receiver Advocates Guarantee by State of Cost of Service to Provide Reasonable Fare

THEODORE FRANCIS GREEN, for the last five years connected with the Rhode Island Company, of Providence, R. I., first as trustee and then as receiver, has given his views to one of the Providence daily papers on the future of the electric railway. After referring to the needs of the community for good transportation service which only an electric railway can supply, Mr. Green pointed out that the great increase in wages and cost of materials has made it impossible for the Rhode Island Company and most other electric railways to continue to pay a fair return to the owners of the property; in fact, he says that at present the Rhode Island Company's receipts are less than its expenses and fixed charges, and it may be that no reasonable system of fare can be devised that will provide for proper operation.

His remedy is that "the whole community, that is, the State, or cities and towns affected, should in some way make up any difference between the receipts from a reasonable system of fares and the amounts necessary to provide for the proper operation of the road. This may be by remission of general or special taxes, or by guaranty, or even, if necessary, by direct subsidy."

Mr. Green believes that a fair return on the investment should be guaranteed to the investors and that any surplus of receipts over expenditures, including such return, should go to the whole community, either directly by payments to the State, cities and towns, or by providing a lower system of fares for better service. He also recommended profit-sharing with the employees, and that they should have some voice in the management of the company. He maintains that the questions of the past history of the Rhode Island Company, and the extent of "water" in its stock have nothing to do with the case because "all that is now asked and all that for several years has been asked by the investors in several companies constituting the system is that a reasonable return shall be paid to them on the actual value of the property which they own and for which their money was spent."

According to Mr. Green, the receipts of the Rhode Island Company during the first six months of 1919 amounted to $3,429,418.12, while the operating expenses and fixed charges for the same period amounted to $3,769,854.97, a deficiency of more than a third of a million dollars.

Some prepayment cars with door and step control have been put in service on the Rome Municipal Railway system. They are the first of this kind to be tried in Italy.

Public Ownership May Be Only Means of Restoring Credit*

Massachusetts' Problem Particularly Acute—Higher Fares Have Been Unsatisfactory—Subsidy Plan or Public Ownership Seems Necessary—Further Legislative Aid Anticipated

By FREDERICK J. MACLEOD
Chairman Massachusetts Public Service Commission

THE crisis in the street railway situation in Massachusetts is due in the main to the same general causes and conditions which have been described in the testimony already given before your commission. The problem with which we have been confronted in Massachusetts has been, however, in certain respects more than ordinarily difficult and complex owing to certain special conditions resulting from the history of street railway development in our State.

1. The losses due to experimentation in successive stages of street railway development and to replacements and renewals made necessary at frequent intervals by successive advances in the art, have been heavier in Massachusetts than in most of the other states.

2. In Massachusetts the financial stability of the street railway industry has been impaired by over-production. Massachusetts has more street railway mileage in proportion to its population and area than any other state in the Union, and this mileage is not only large in amount, but in many cases badly located. This condition is the result of the era of speculation in street railway building which set in with the advent of electrification. It might have been better in the long run if this boom period had been allowed to run its natural course, if unnecessary lines had been abandoned and if a number of small companies which had sprung up during this period of mushroom growth had reorganized by scaling down their securities to correspond with the traffic possibilities of the territories they served. Instead, these speculative companies were saved from prospective bankruptcy or the scrap heap by the policy of consolidation, under which they were taken over, with all their questionable debts and obligations, on a share-for-share basis by the more prosperous urban companies. From this union of prosperous and potentially bankrupt companies there emerged a number of street railway systems with just sufficient vitality to keep their heads above water during fair weather, but incapable of meeting the stress of hard times and war conditions.

3. Our Massachusetts companies undertook the disastrous experiment of trying to extend to the country districts the ordinary type of street railway service which had been developed to meet city conditions. The interurban lines have been merely appendages to the city systems, with similar fares and methods of operation. Our present hybrid and diversified street railway systems were built up on the theory that the city lines would prove sufficiently profitable with a 5-cent unit of fare to absorb the losses on the suburban and interurban lines. For a time a downward trend of prices as the result of improved methods and the comparatively low cost of upkeep while the properties were new, offered some encouragement that the experiment might prove successful. As soon, however, as prices began to rise and the need of extensive renewals arose, it was found that the money which was needed for the proper upkeep of the more prosperous city lines had to be expended in the reconstruction of the cheaply built promoters' lines which were taken over, and in meeting the deficits from their operation. Companies originally prosperous then found themselves unable to support the burdens imposed by the consolidation of unprofitable lines.

4. While in the early days a substantial amount of water was injected into street railway securities, most of the electric railway lines in Massachusetts have been built under rigid State supervision of security issues. Generally speaking, the stocks and bonds of Massachusetts street railway companies represent an equivalent amount of money paid in in cash and expended for legitimate corporate purposes. In all cases, moreover, the bonded indebtedness had been protected by the issue of an equivalent amount of stock paid for in cash at par or better.

This policy, in conjunction with the policy of consolidation already referred to, has resulted in giving an extended lease of life to properties which would otherwise long ago have been faced with bankruptcy and forced to abandon operation, and in saving Massachusetts until recently from the frequent failures of street railway companies which have marked the financial history of other states. This policy, moreover, in its immediate effect has been in many ways beneficial from the public standpoint, as it has made possible longer rides and additional transfer privileges for former units of fare, has prevented unwholesome congestion in the cities, has made possible more healthful living conditions for a large part of our population, and has largely increased property values and otherwise contributed to the prosperity of our suburban communities.

FARES INADEQUATE FOR MANY YEARS

The prevailing fares, however, were insufficient for many years prior to the war to enable the companies to maintain themselves in sound financial condition. Depreciation requirements were almost wholly neglected and many companies were not even making adequate provision for current repairs and maintenance. The companies, in other words, were not meeting current expenses out of current revenues, but were in effect paying dividends by drawing upon invested capital. During all this period, the companies, influenced by the necessity of preserving their financial credit in order to obtain new capital, affected an air of prosperity, and shrank from disclosing their real financial situation, even to obtain an increase of rates, and were thus left in an impoverished condition with no reserve of financial strength to stand the shock of wartime prices and conditions.

---

*Abstract of statement made before the Federal Electric Railways Commission, Washington, D. C., Aug. 15, 1919.

MANY FARE INCREASES GRANTED

Since 1914, successive applications for fare increases to meet the constant rise in prices have been made by almost every company in the State and have from time to time been granted, in whole or in part, by the commission. In considering these proposed increases the commission has tried to do justice both to the companies and to the public, and in every instance has fully recited the facts and its findings, in order that there might be no doubt as to the basis of its decision. The decision has been based upon the principle that in the long run the rate-paying public, as well as the investing public, will be best served by recognizing that our public utility companies are entitled to charge such rates as will, under honest, efficient and economical management, produce revenue sufficient to meet operating costs, including proper provision for depreciation and other reserve funds in order to prevent an impairment of assets, and to pay taxes, interest charges, and a moderate return on invested capital, based, not upon the cost of reproduction with or without depreciation, but upon the capital honestly and prudently invested in the property. On the other hand, the commission has emphasized the fact that in any proper method of dealing with street railway rates, the public cannot be expected to pay dividends upon watered stock, or interest upon indebtedness improperly incurred, or to make good any losses due to mismanagement.

Under proper public regulation dividends do not represent profits, but merely interest upon invested capital. The man who invests his money in street railway stock is entitled to the prevailing interest rate for the use of his money equally with the man who makes his investment in the form of bonds. Indeed, in so far as the stockholder assumes the risk of having his principal impaired or entirely wiped out before bonds are affected, he is entitled to something more than the bond interest rate. Public service companies, however, should be so managed and regulated that the risk to the investor and other speculative elements will as far as possible be eliminated, and the dividend return practically limited to the going interest rate. But if the possibility of speculative profit is removed, it is essential that the investment be reasonably secure, or private capital will not enter the field.

In the past, the legitimate investor has been receiving a very moderate return, usually less than the current interest rate, and is confronted with the prospect of a substantial loss of principal if forced to realize upon his investment. The public have had much to put up with in the way of poor service, but this service has nevertheless been furnished in many cases for less than cost and at the expense of the properties and the investors. Broadly speaking, the deterioration of the properties and service of our street railway companies is due to deferred maintenance, and that in turn is due, in part at least, to deferred increases of rates. As between the car rider and the investor, the car rider has, up to the present, had much the better of the bargain.

Recent fare increases in Massachusetts have been greater, both in number, variety and extent, than in any other state, and the effects of such increases upon traffic and revenue have been such that they supply little evidence indicating that a general increase of rates offers a panacea for the present ills of the industry. When it is pointed out that interurban fares in Massachusetts are now generally on the basis of about 2½ cents a mile, that a straight 10-cent fare is now charged in twenty-three cities and a 7-cent fare, with a 6½-cent or 6¼-cent ticket rate in the remainder, it can hardly be claimed that the experiment of increasing fares has not been given a fair trial. The results of fare increases for the smaller companies have been less satisfactory than for the larger companies.

Rather than pay the higher fares passengers will forego all mere convenience riding, will walk, change their place of residence, or remain at home, will patronize the jitneys, or use the railroads where lower rates in many cases are available through the purchase of commutation tickets. The revenues received even by the larger and more prosperous systems under the high fares now prevailing fall far short of meeting the legitimate costs of service under present high prices. As a practical matter, a maximum limit for fare increases is fixed by what the traffic will bear, and increases beyond that point will decrease rather than increase gross revenue. It is possible that some further increase of revenue may be obtained by raising fares still higher, although it would appear that the saturation point must be almost reached with fares already on a 10-cent basis. If further increases are made, it is clear, in any event, that the burden imposed upon the car riders will be wholly disproportionate to any benefit which the companies can possibly receive.

LEGISLATIVE SOLUTION OF TROUBLES SOUGHT

The unsatisfactory revenue results from fare increases under the old regulatory system have stimulated efforts to solve the street railway problem through new legislation. Last year the Massachusetts legislature passed a general act to provide for service at cost by street railway companies. No company, up to the present time, has availed itself of the provisions of that act. The service-at-cost principle, however, has been recognized in two special acts providing for the public operation of the two principal street railway companies in the commonwealth, the Boston Elevated and Bay State companies, representing together approximately 46 per cent of the mileage and about 72 per cent of the capital investment of all street railways in the commonwealth. Under the plans embodied in these special acts the properties of the company are in effect leased to the commonwealth for a period of ten years, and the entire direction and control of the properties is placed in the hands of public trustees appointed by the Governor. The trustees are required to advance the fares from time to time as may be needed in order to meet the cost of service, including a return on legitimate invested capital as determined by the commission, at a rate of a little over 5 per cent in the case of the Boston Elevated Company and of 6 per cent in the case of the Bay State Company. The Boston Elevated act also provides that any deficit in the amount necessary to meet the cost of service may temporarily be raised by assessing it on the communities served, but must ultimately be repaid by the car riders.

During the year ended June 30, 1919, the fares of the Boston Elevated Company were successively advanced to 7 cents and 8 cents, and on July 1 to 10 cents. A general strike on the company's lines and other abnormal conditions during July make it difficult to draw conclusions from the revenue figures thus far available, but there appears to be little reason to anticipate that the company will prove self-supporting even on that basis. On the Bay State system, under the 10-cent fare, the increase in revenue for the month of July was only 10.06 per cent, which is less than half the percentage of increase under the former 7-cent fare.

During the present year further attempts have been made to secure remedial legislation for our street railway companies, but the various plans presented all failed of enactment. The gravity of the present street railway situation under the conditions disclosed is so great that the Governor of the commonwealth has found it necessary in the public interest to appoint a special commission for an expert study of the problem, and to provide for the calling of a special session of the legislature in the latter part of this year in order to enact appropriate legislation.

ORDINARY LAWS OF ECONOMICS PREVAIL

In considering the remedies which are open, it must be clearly kept in mind that no legislative enactments can override the operation of ordinary economic laws. The street railway companies have no revenue except that which is received from the public, and unless the public, in one form or another,contributes an amount sufficient to meet the legitimate cost of operation, service must deteriorate or be entirely abandoned. Every effort must of course be made to secure the greatest possible economy and efficiency of operation, but the chief problem is to determine the method by which the burden of street railway cost can be distributed with least detriment to the public interest.

In our judgment street railway service should be supported through the fares paid by the car riders in so far as this can reasonably be done without unduly interfering with the freedom of traffic which is essential for the business prosperity of the communities served. But when fares have been raised to a point where a further increase is likely to prevent the public from availing themselves with reasonable freedom of the service and facilities furnished, and where the burden upon the car riders is likely to be wholly disproportionate to any revenue benefits received by the company, any additional revenue needed to maintain the service should, we believe, be contributed by the communities served out of the general tax levy. I believe that where rides of substantial length are furnished, there would be little public protest and little diminution of riding if fares were established on the basis of 6 cents, or possibly higher. If that is so, and the fact can only be determined in the light of experience in each particular case, there is no convincing reason, on account of historic reasons or a mere accident of coinage, for preserving fares at the old five-cent level. There are, however, manifest advantages as a matter of convenience as well as a matter of psychology, in retaining the five-cent unit of fare and that may prove to be the wisest policy.

Under a plan of making up deficits out of taxation, the financial drain upon the communities served would be enormously less, and the advantages resulting from the free movement of traffic would inure mainly to the benefit of the merchant, the manufacturer and the real estate owner, and would thus more than offset any amount paid through increased taxation. Any payments so made, it is true, are likely to be passed on to the ultimate consumer through increased rents and higher prices paid to the local merchant, or, broadly speaking, to the same class of persons who constitute the present body of car riders, but the economic waste under the existing system will be eliminated.

PUBLIC OWNERSHIP MAY BE THE REMEDY

Other remedies besides an increase of fares may be available as a means of increasing the net revenues of the companies, such as new shop machinery and labor-saving devices and improved equipment including the one-man cars which may permit of a sufficient frequency of operation to reclaim a considerable portion of the traffic which has been lost to the jitney. No substantial saving can, however, be effected without new capital and the credit of the companies is such that the necessary capital cannot be obtained.

It may well be that the ultimate solution of the street railway problem must be found through public ownership. No other method offers any reasonable prospect for the restoration of the companies' credit, which is necessary to provide needed capital. The figures presented to your commission, indicating the decline in the street railway riding per capita, emphasize the fact that, with the growth of motor transportation, street railway service is no longer a public necessity to the same degree as heretofore. The street railway is no longer in undisputed possession of the field of urban transportation, and the possibilities of profit are correspondingly curtailed. While no other agency of transportation yet devised can supplant the street railway and while its retention is vital in the public interest, it is extremely doubtful if the street railway, under present economic conditions, can be supported wholly by private investment. As a matter of abstract theory, private operation may have many advantages over public operation, but where a public utility must be retained in the interest of public service rather than as a possible source of profit, and where private capital continues to occupy the field only in the hope of salvaging the investment already made, recourse must be had to public credit if adequate service is to be retained.

If it should be deemed necessary or advisable in any case for the public to acquire existing street railway properties, many difficult questions will arise in regard to the terms of purchase. In determining the proper purchase price, while consideration should be given to the investment cost and perhaps also to the cost of reproduction less depreciation, the most important factor, in my judgment, is the actual or potential earning power of the companies. If it can reasonably be shown that the actual results of operation are due to restrictive legislation or supervision through the denial of needed increases in fares the value of the property should not be depreciated because of losses due to that policy but should be based upon its revenue potentialities under the maximum fare which the traffic will bear. On the other hand, the investors must assume the losses incident to a decline of business from general economic causes, which would have operated even if the companies had been free, like the ordinary business corporation, to fix the price of their product at the point which would yield the maximum return.

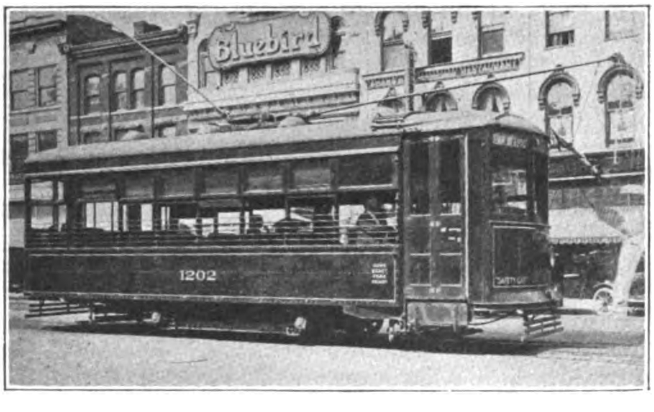
Massachusetts, as already pointed out, has already embarked upon the policy of public operation for about half the street railway mileage of the State through the lease rather than the purchase of street railway properties. While this experiment has, up to the present time, not proved in all respects as successful as was hoped, there is, as far as I can judge, absolutely no public sentiment whatever in favor of a reversion of the properties to the old system and in so far as there is agitation for change, it is directed towards the outright purchase of these properties. But even if we should be forced into public ownership as the only way out of our present street railway difficulties, it must be borne in mind that no change in ownership of the properties will materially affect the cost of the service, and that under any form of operation, the public can obtain in the way of service just as much as it is willing to pay for, and no more.

Safety-Car Experience in Virginia

Fifty Safety Cars Are Now In Operation On the Lines of the Virginia Railway & Power Company

BY H. N. CALLARD, JR.
Commercial Engineer Westinghouse Electric & Manufacturing Company

CERTAIN franchise matters delayed the inauguration of safety-car service on the various lines of the Virginia Railway & Power Company on its Virginia properties, but these have now been ironed out and to-day twenty cars are in operation in Petersburg, Va., twelve in Norfolk and eighteen in Richmond.



THE INCREASINGLY FAMILIAR SAFETY CAR IN A NEW ENVIRONMENT IN VIRGINIA

In Norfolk the cars operate on the Atlantic City, East Main and Brableton line which passes through the narrow, congested streets of this city, including Granby Street, the principal thoroughfare. Formerly this line was operated with seven cars on a ten-minute headway. Now a seven-minute service with ten cars is given. Car mileage has been increased 38 per cent and the number of revenue passengers approximately 20 per cent.

In Petersburg the cars are used to replace old single-truck, longitudinal-seat cars, with a seating capacity of twenty-four passengers. With the decreasing soldier traffic from Camp Lee, the density of travel did not warrant an increase in service, and a car-for-car replacement was made. The new cars are so convenient and comfortable, however, that a slight increase in travel has resulted. The cars are used on the Sycamore Avenue, Grove Avenue-Cemetery line, and the Washington Street and Ferndale Park lines of this property.

In Richmond the cars are operated on the Belmont Avenue and Laurel Street lines, both of which make the Eighth Street, Main Street, Ninth Street and Broad Street loop which handles the most congested travel in the city. Service has been increased on the Belmont Street line approximately 55 per cent and on the Laurel Avenue line 40 per cent.

On Aug. 6 a test trip was made by the Mayor of Richmond, accompanied by city officials, to determine whether the operation of a street car by one man was hazardous. The car was put through various "stunts" on the level and on some of the 7 per cent and 8 per cent grades. As a result the entire investigating committee, including the Director of Public Safety, were enthusiastic over the car and were convinced that the safety features provided for every emergency. The following extract is from the *Richmond Times-Dispatch* of Aug. 12:

> ### MYERS GIVES APPROVAL TO SAFETY STREET CARS
>
> #### DIRECTOR REPORTS TO COUNCIL COMMITTEE THAT NEW EQUIPMENT IS BEST EVER USED HERE
>
> In a report made at the meeting of the City Council's committee on streets yesterday afternoon, Director of Public Safety Myers declared that the one-man street car used in Richmond is a "thoroughly safe car" and that the modern appliances with which it is equipped "make it the safest of any car operated by the Virginia Railway & Power Company in the city."
>
> It is probable that this report brings to an end the movement in the Council against these cars which are now being run on two lines in Richmond. The committee yesterday took no action beyond "receiving and filing" the report.

In order to popularize the cars in Richmond, as much as possible, marker lights are used to help patrons to distinguish their cars more readily at night. The Belmont Avenue cars show red, and the Laurel Street cars green markers.

The maximum permissible load in the car is placed at fifty passengers and when the car has this number of passengers aboard, a "car full' sign is shown. This is a welcome innovation for the people in the car and, since very frequent service is given, passengers who are passed up do not complain.

> *Colored Patrons Will Please Fill the Seats From the Rear. White Patrons Will Please Fill the Seats From the Front. Thank You!*
> VIRGINIA RAILWAY & POWER COMPANY.

Separation of the races is necessary on all lines of this company. When the safety cars were installed, the above sign was placed in the center of each car to accomplish this purpose.

The *Interborough Bulletin* for July, 1919, contains an account of the 60,000-kw. turbo-generator unit installed by the company in its Seventy-Fourth Street power station in New York City. This was based upon the article published in the ELECTRIC RAILWAY JOURNAL for May 10. This article was written by W. S. Finlay, Jr., superintendent of motive power of the company.

Mr. Jackson Discusses Foreign Fare Practice*

Short Zones, High Density, Short-Haul Traffic and Concessions as Features of Foreign Operating Practice Described at Commission Hearing — Interesting Australian Zone System Data Are Presented

THE development of the fare system on a distance basis has taught the Britisher that people can not be carried for the same price for a like distance in different cities or even over different parts of the same line. His fundamental endeavor is to secure the greatest possible revenue from the greatest possible number of riders rather than the greatest amount per individual passenger. It is characteristic, therefore, that British zones begin and end at a traffic-gathering point wherever possible instead of having definite lengths. These points may be an intersection with another line, a large store, a theater, a junction of several streets, the foot of a severe grade or other condition that tends to attract riding. Municipal boundaries have an influence on the location of zone limits due to the fact that they also represent the boundaries of the local municipal system. Zone boundaries change from time to time as fares are changed. Depending on the character of the route and the nature of the territory, zones vary greatly in length, as from 1.62 miles to 0.74 mile on a 20.8-mile run and from 1.75 to 1.42 miles on a 13.8-mile run.

ZONE STAGES CLASSIFIED

The difference between end-on and overlapping stages is that in the latter the passenger has the advantage of being able to travel from the middle of one stage to the middle of the next. If the London County Council Tramways had end-on stages it would be necessary for a passenger to go to the boundary of the stage in order to be sure of getting 1½ miles for a penny. Instead, the stages are halved (approximately), so that the passenger has a much shorter distance to walk in order to get his full money's worth. The disadvantage of the overlapping stage in a large city is the difficulty of collecting the full fare. Thus the London County Council Tramways figured that a system averaging fourteen passengers per car mile should have ¾-mile laps in order that the conductor might be able to collect all the fares due from the passengers. The lengthening of the lap from 0.6 mile to 0.75 mile was estimated to be good for an increase in revenue of £40,000 per annum. The London cars are very large, seating seventy-eight passengers on two decks.

However, the practice in London must not be taken as indicative of the proper practice for other systems with thinner traffic and smaller cars. The British Electric Traction Company uses much shorter laps. In a number of cases this company has reached the statutory fare of 1 penny per mile with end-on stages. It has realized that it can not get 2 pence from a man who is going 1½ miles, as he would walk after getting his pennyworth. To keep him on the car, the company had devised the quarter-of-a-mile farthing increment. As the farthing is a rare coin, farthing tickets were sold before the war in strips at full price. These were legal tender for either penny fares or penny-plus-fraction fares. The farthing increment has since been superseded by the half-penny.

LENGTH OF ZONE FOR A GIVEN FARE

The British form of discrimination is intended to work out for the greatest benefit of the greatest number, whereas the American unit fare has discriminated always against the short rider—the very person who should be encouraged to use the service. The length of stage for a given fare is best illustrated by a table which includes data for thirty-four municipal properties.[1] The statutory maximum rate is still 1 penny per mile, but this is likely to be raised in the near future. At the same time, the general principle of irregularity in length of zones will be maintained. Bus fares, which are not regulated, are in the London area about 30 per cent higher than tramway fares where tramways are not in competition; otherwise, they are the same except that the buses do not attempt to have a 4 pence maximum fare (as on the London County Council Tramways) because of their long-ride pleasure traffic. Bus fares run up to 1 shilling 6 pence (36 cents) or more for long runs into the suburbs. The latest ordinary fare of the London County Council Tramways is 1 penny for two sections totaling 1½ miles, replacing the rate of 1 penny for a three-section zone totaling 1.8 miles—the average distance current, February, 1919.

The 0.3-mile cut and the use of two sections instead of three are expected to bring more revenue and assure better fare collection. The variations in length for a penny ride are also noticeable on the tube lines, ranging from 1.1 to 1.9 miles on the Piccadilly line and 1.1 to 2 miles on the South London and Central London tubes. The Aberdeen system has practically a two-fare arrangement. A halfpenny fare is charged for distances averaging 0.6 mile; a penny fare is charged for the overall ride on any line from the center of the city. A ride across town costs the sum of the fares on the opposite sides of the center. The short-ride fare is so popular that it is responsible for more than 25 per cent of the traffic at ordinary fares.

SUBURBAN TRAFFIC IS ENCOURAGED

Zone fares are not necessarily cumulative. On the London County Council Tramways, as already explained, the maximum fare does not exceed 4 pence, regardless of distance beyond four two-section zones, and on the London Underground lines also certain concessions are made to the long rider. This is to encourage riding on the outer or suburban ends. Thus, a passenger who rides the full length of the Hampstead tube gets two or three stations on the connecting District Railway or Piccadilly tube, so that he is carried into a large part of the business district without extra charge. As a general proposition British electric railways favor the suburban rider, the theory being that since a certain base service must be given on a suburban line the railway should be willing to reduce the fare or lengthen the zone if the result promises a greater revenue because of the capture of walkers.

---

*Abstract of testimony of Walter Jackson presented during the hearing on fares of the Public Service Railway before the Board of Public Utility Commissioners of New Jersey, at Newark, June 23, 24 and 25, 1919.

[1] ELECTRIC RAILWAY JOURNAL, May 3, 1919, page 856.

From the earliest days of the British tramway, passengers boarding cars before 7.30 or 8 a.m. (according to local franchise conditions) have enjoyed less-than-cost transportation. This fact emphasizes the buncombe in statements that the zone fare has prevented the British workman from living in the country. In its last fare increase, the London County Council Tramways management noted that instead of losing £160,000 per annum on workmen's fares they would lose only £105,000—a mere half million dollars!

SHORT-HAUL TRAFFIC

It is difficult to make any real comparison of the headways and other service standards except to bring out this fundamental fact: If a street railway is operated on the assumption that the short rider is wanted, a certain number of invitations must be extended to a person before he has walked a mile or less. If he has already walked half the way before a car comes, he is not likely to be interested, but should a car come along every two or three minutes the temptation to ride is irresistible.

British Discrimination

The British form of discrimination is intended to work out for the greatest benefit of the greatest number, whereas the American unit fare has discriminated always against the short rider—the very person who should be encouraged to use the service. People cannot be carried for the same price even over different parts of the same line.

The chief difference between the American and British rush hour is that the contrast between off-peak and peak riding is less in the United Kingdom, chiefly through the excellent short-ride traffic throughout the day which comes from the non-factory part of the population—women shoppers, school children, office workers going to and from lunch, delivery boys, agents and others. One parallel which brings out the difference between the short-ride and long-ride system is the cinema, or moving-picture theater. In Great Britain the rise of the neighborhood playhouse has improved afternoon and night traffic; in the United States it is said to have injured such traffic. Actually almost every British system has three peaks—morning, noon and night.

In Belfast, a fairly wide-spread city, the ordinary penny passengers constitute almost 50 per cent of the riding, although the penny passenger can not get much over a mile for his fare.[2] In general, the minimum fare on British tramways, whatever that fare may be, is responsible for from 40 to 60 per cent of the traffic.

While the revenue return per passenger carried is 1½ to 1¾ pence (3 to 3½ cents) on a number of British lines, that figure is not so far below the United States average after allowance is made for the dilution caused by the free transfer. Furthermore, many British passengers pay two fares or, say, 4 to 6 cents in all in making a trip, because they get no free transfers but pay only for actual distance. Figures of many British operators show that even where the individual zone fares are low, the earnings per car-mile compare very favorably with those secured with the higher unit fares paid in the United States. For example, the 1918 report of the Liverpool Corporation Tramways showed earnings of 18.91 pence per car-mile, or very close to 38 cents, despite the fact that fully 80 per cent of the passengers paid a fare equivalent to 2 cents and that this fare was good for a ride of not more than 2 miles.

The short-ride habit can be illustrated in no better way than by the fact that in London a man who has already paid 6, 8 or 10 cents for an underground ride will jump on a bus and pay another 2 cents for the ¼ to ½ mile to his home. In fact, in building up its bus traffic, the London Underground looks upon every subway station as a focal point for short-ride traffic. It will deliberately turn a bus line a block or two off its route in order to pick up this class of traffic. British operators are usually willing to reduce the rate of fare where there is a chance of getting more revenue without a corresponding increase in operating expenses.

WHY BRITISH CITIES HAVE LESS TRACK

The smaller suburban development of British as compared with American cities accounts largely for their smaller track mileage. At the same time even the municipal lines do not hesitate to take up unremunerative sections of track. After all, the only way to determine whether a city has sufficient track is to inquire if what it has is meeting the needs of the community. Most British managers do not see the need for any great enlargement of mileage, as the British systems were fortunate in having been developed systematically without duplicate competitive lines and the like. America is ahead of Great Britain as regards the mechanical side of the industry; but the British, because of the influence of the short-ride traffic, appear to be ahead of Americans on the commercial or selling side.

CAR SPEED AND EQUIPMENT STANDARDS

In spite of the heavy traffic the schedule speed of British cars is not more than a mile-per-hour or so lower than American cars in cities of equal size, and this difference is not chargeable to fare collection but to the lower motoring of British cars. The average American car has four 50-hp. or two 75-hp. motors, whereas many British single-truck, double-deck cars have only two 35-hp. motors. Most British cars are double-decked. Opinion concerning their desirability is divided. Some British managers contend that they are absolutely necessary for their heavy traffic while others wish for the single-deck car. Within the past decade, the tendency has been to inclose the upper deck except on lines where pleasure traffic is a factor. The seating usually is longitudinal on the lower deck and transverse on the upper. The seating capacity is high, ranging from fifty-four to seventy-eight. The Glasgow car seats sixty-two passengers. Standing in pre-war times was permitted only to a very small extent. The managements realize that the short rider must get comfort or he will walk.

---

[2] ELECTRIC RAILWAY JOURNAL, May 10, 1919, page 909, and May 24, 1919, page 1005.

A great variety of signs are used to indicate stop and fare points. Inside the car is a poster showing the rates of fare between different points on the route. The regular rider, of course, simply asks for a penny or 2-penny ticket, etc., but the poster is helpful to the stranger. No automatic devices for showing the number of the stage reached by the car are in use. Stopping periods are short, owing to the prevalence of open platforms, the absence of prepayment and the presence of loading inspectors at busy points. The number of stops per car mile is not greater than in the United States, despite the greater number of passengers per car mile. Compulsory stops are few in number, the fire-hose type of America being unknown. One factor, which tends to keep down the number of boarding stops, is the tendency of people to walk to a fare stage boundary.

EFFECT OF INCREASED FARES ON TRAFFIC

British roads are now getting higher fares, but under the zone system adjustments in fares are much easier. It is not necessary to change the coins; it is enough to give smaller packages of transportation at the old prices. The most striking feature is that, despite the greater proportionate increase, 50 to 100 per cent, there are no such decreases in riding as followed a mere 20 per cent increase in the United States. Also, the greatest increase in cost has to be borne by the short rider whose fare rose from ½ penny to 1 penny. Riding is holding up very well since the armistice, although many managers had feared a drop after the war fever. The reasons for the good post-war riding are various, including the eight-hour day, which gives the workman more leisure.

The Dublin United Tramways may be regarded as a good example of the effect of increased fares; first, because it is a private undertaking; second, because it serves a non-industrial community; third, because the fare in the older part of the city was fixed at 1 penny by local statute. Despite two fare increases, an enforced cut in service due to fuel shortage and the influenza epidemic, there has been a gain in traffic. The report period, covering eleven months of 1918, is divided as follows: Jan. 1 to March 20, full service at ordinary fares; March 21 to April 26, reduced service but no increase in fares; April 27 to Nov. 13, first fare increase; Nov. 4 to Nov. 30, second fare increase. The total number for the 11 months was 64,996,883 passengers, an increase of 4,356,447.[3] It is only fair to state that British tramways have had no competitors except buses—and the latter are a factor chiefly in metropolitan London. Even in the case of Leeds, one of the few cities showing a drop, the loss in traffic for the fiscal year ended March, 1919, was only 3 per cent as compared with an enforced cut of 4 per cent in mileage, due to fuel shortage. Probably some increase might have followed if the mileage had been maintained.

During the war almost every able-bodied man went into some kind of war service. As a result of the war hundreds of thousands of women went into industry and a good deal of the increased riding came from them. They rode more than men do. The workers, generally, have become better riders because of higher pay. Men in working clothes get on a bus or car to ride for only one or two traffic stops. They can not refrain from riding apparently because of the frequency of service and the short-ride fare rate.

BRITISH ZONE FARE COLLECTION METHODS ARE UNIFORM

In Great Britain the system of fare collection current involves the issuance of a receipt showing the amount of fare paid and some other details. Prepayment is used to some extent for upper-deck passengers on some properties and for all passengers only at Gateshead and on one or two other small properties. Among the reasons why the prepayment idea has not been popular in Great Britain are the following: Occupancy of rear platform by the stairway to upper deck; length of time necessary to handle a variety of fares; smaller losses than in America from stealing by conductor or passenger due to the fare receipt system; absence of enclosed front and rear platforms; low standing load, which prevents conductor's presence within the car from becoming obnoxious.

Three well-known kinds of fare receipts are: The Belfast type, which shows only the number of stages or zones to which the passenger is entitled to ride; the London type, which shows both the number and the name of each stage; the Glasgow type, which shows only the names of the stages. With any kind of a ticket, the conductor must as a precaution against fraud cancel each receipt in a counting-type bell punch. At the end of the day the total increase over the starting number shown by the bell punch must equal the total number of receipts issued, whether cash or non-revenue exchange for tokens or workmen's "returns."

Encourage the Short-Haul Traffic

If a street railway is operated on the assumption that the short rider is wanted, a certain number of invitations must be extended to a person before he has walked a mile or less. If he has already walked half of the way before a car comes along he is not likely to be interested. A car every two or three minutes is irresistible.

The use of differential fares on the British pay-while-you-ride system necessitates the use of ticket inspectors. These men board the cars at irregular intervals to check the passengers' receipts against the route and serial numbers shown on the conductor's way-bill or trip-sheet. The use of defunct tickets is rare, the chief loss being due to over-riding the zone to which fare has been paid. On detecting over-riding, the conductor issues a new ticket for the additional amount exactly as for a second passenger. On lines of moderate traffic, that is to say ten to twelve passengers per car-mile (British standards) missed fares and over-riding are declared to be negligible. It is amazing that the British conductor can collect so much money for the treasury as he does in view of the fact that he has to handle differential fares on double-deck cars seating from fifty-four to seventy-eight passengers. Unlike the American conductor, the British conductor has no time-limit transfer to worry about, however. In general, the zone fares in Glasgow where there are about twenty passengers per car-mile are collected with less difficulty than is the unit fare plus the time limit transfer in America. On the Alexandria Park crosstown line in Glasgow it has been found possible to make twenty-three fare collections per car-mile.

---

[3] ELECTRIC RAILWAY JOURNAL, May 31, 1919, page 1038, and June 7, 1919, page 1087.

THE ZONE SYSTEM IN AUSTRALIA

Statistics on zone fare practice in Australia show that short riding is as popular there is in Great Britain, although the conditions in Australia, such as widespread cities, liberal amount of trackage, high wages, etc., are much closer to American conditions than to British. Australian practice appears to be a blend of British and American. Much of the Australian equipment is of American origin.

Sydney, New South Wales, with a population of from 750,000 to 800,000 people, has 225¼ miles of single track in its "city and suburban lines." During the fiscal year ended June 30, 1918, the fare was 3 cents for any initial section varying in length from 1 to 2 miles plus 2 cents for each additional 1 to 2-mile section. Certain concessions were made to teachers and school children. The number of passengers carried was 212,372,470. The average revenue per car mile was 44.70 cents, the operating expense 35.1 cents, and the corresponding operating ratio was 78.5 per cent. The percentage of profit on the capital invested was 5.51 per cent.

AUSTRALIAN ZONE FARE DATA

City	Population	Length Zone Miles	Fare for First Zone Cents	Fare for Other Zones Cents	Earnings Cents per Car-Mile
Sydney	750,000	1 to 2	3	2	44.7
Melbourne	708,000	1 to 2	3	2	34.0
Brisbane	170,000	1	2	2	45 to 50
Adelaide	145,000	0.94 to 1.9	2	2	

Melbourne, the second city of Australia, with 708,000 people, for the fiscal year ended June 30, 1918, showed traffic receipts of £901,474; passengers carried, 113,034,157; average fare per passenger, 1.914 pence, or nearly 4 cents; revenue per train mile (cable gripper and trailer) 16.859 pence, or nearly 34 cents. A remarkable feature in the Melbourne report is that fares actually have been reduced. The reason for this is that in 1916 the cash fare on the suburban sections was reduced from 3 pence to 2 pence, bringing the average to 1.95 pence; and in the following year a further reduction lowered the average to 1.91 pence, or 3.8 cents. These reductions proved justified by the increase in traffic, for in 1916 the receipts were £805,778; in 1917 they were £841,784, and in 1918 they were £901,474. During these years the revenue per train mile also increased, being 16.217 pence in 1916, 16.261 pence in 1917 and 16.859 pence in 1918. The length of the penny stages varied from 1 to 2 miles.

One peculiarity of Australian systems is that they sell a weekly 12-ride ticket in addition to the season tickets. About one-third of the Melbourne riders used such weekly tickets, although they were no longer obtainable at reduced prices. The single-trip fares in Melbourne were 1½, 2 and 3 pence, or 3 to 6 cents, with an average ride of 1.628 miles per penny. The number of passengers per train mile was 8.8. The total revenue for the fiscal year ended June 30, 1918, exceeded that of the preceding year by £59,690. Most of this excess had been absorbed in the increased costs of fuel and stores and wages. The operating ratio of 56.6 per cent was, of course, lower than that for electric railways.

The Brisbane Tramways serve a population of 170,000. At Brisbane the zones or sections average about 1 mile in length, variations being made to take in traffic concentration points wherever practicable. As at Sydney, the suburban sections are rather longer than those near the center of the city. Furthermore, the maximum fare for a ride taken from the business and retail shopping district does not exceed the cost of three sections or 3 pence (6 cents) even if the ride covers four or five sections. Frequent stopping places attract the short rider and 60 per cent of the fares are from penny (2-cent) passengers. The earnings per car mile are between 45 and 50 cents.

Data covering the operations of the Adelaide Tramways Trust for the year ended July 31, 1914, are of interest. For this year Australian conditions closely paralleled those in America for cities of populations comparable to Adelaide which then had 145,000 people. The beginning wage was a shilling (24 cents) an hour and the maximum 32 cents, with time and one-quarter for each hour in excess of nine hours a day. Actually, eight hours' work corresponded to seven hours' platform time. The men received six days' vacation a year plus three days more for good behavior. Uniforms, overcoats, punch and miscellaneous supplies were furnished free.

AUSTRALIAN ZONES FAVOR SUBURBANITE

While the 1914 figures on Adelaide are probably obsolete now as regards rates of fare, the ratios of different classes of passengers are instructive. In the fiscal year ended July 31, 1914, 41.91 per cent of the passengers paid the base fare of 2 cents, 43.42 per cent paid 4 cents, 8.69 per cent paid 6 cents, 1.49 per cent paid 8 cents and 1.41 per cent paid 10 cents. The length of the sections varied from 0.94 to 1.9 miles, indicating the usual zone fare plan of giving an extra bit to the suburban rider. A report dealing with the Adelaide tramways makes the statement that "the extension of the electric railway system has been in a large measure responsible for the rapid growth and extension of the suburban districts." This is good evidence that the right kind of zone system does not hamper suburban growth. Adelaide suburbanites could buy commutation (concession) tickets at 16⅔ to 18¾ per cent discount if they rode three, four or five sections. There were also concession tickets for school children.

A report of the Auckland, New Zealand, property of the British Electric Traction Company shows for the period Sept. 23, 1916, to Sept. 28, 1917, 27.13 miles of route, a schedule speed of 9.31 m.p.h. and the high car use of 63,705 miles per car per annum. The passengers per route mile were 860,158; the passengers per car mile, 12.35, and the earnings per car mile were 19.95 pence, or nearly 40 cents, based on an average fare of 1.6 pence or 3.2 pence per passenger.

Although the inability of Australia to ship its surplus food and wool abroad probably prevented the need for wage increases as high as in the United States, the Australian tramways have nevertheless been obliged to make certain increases as well as to carry the war allowances to enlisted employees and the increase in the prices for fuel and materials.

The Australian practice of favoring the suburbanite is in accord with British and Continental zone practice.

Zone fare operators see no sense in reducing rates on saturated sections but are willing to do so at the outer ends where there is a possibility of filling up the cars. In short, their theory is to get the largest number of passengers that will bring the maximum revenue.

OBJECTIONS TO ZONE FARES CONSIDERED

As to the relation between zone fares and congestion, Glasgow, the lowest zone fare city in the world, and New York, the lowest flat fare city in the world, are alike in the prevalence of tenements. The rapid transit lines of New York have not taken people out into the country as expected. What they have done is to take the New York (Manhattan) tenement houses to Brooklyn and the Bronx. People who moved out of Manhattan did not want a cottage but a still-easier housekeeping apartment than they had had before. Local habits, as well as topography, have much to do with the character of dwellings. The people of Glasgow and Edinburgh are like New Yorkers in their preference for the multi-family house. In an English city, on the other hand, the average house is a one-family structure.* No doubt, America's adjustment from the flat to the distance fare will be fraught with real estate adjustments too, but this can not be avoided. The realty business has been a parasite long enough. That the zone fare does keep the price of land within reason is also illustrated by the case of the distance-fare suburban railroad of the United States. People would not travel 25 miles or more on a distance-fare road if there was no set-off in lower rents.

American electric railways, in changing to zone fares, are faced by a hard task. Such readjustment is always harder than direct evolution. People demand all sorts of things such as: "Why not give us another block?" etc. If the zone fare is to be a success, discrimination —the giving of different distances for the same rate— is unavoidable, but is not the American unit fare discrimination against the short rider? Human nature is not substantially different in Britain, Australia and America. What has proved good abroad in the way of selling transportation would serve here, too.

City zone fares require a reasonable density of population. Many American cities have that density, but cities like San Diego and East St. Louis are rather too scattered for complete zone fare practice. Newark, Jersey City and Hoboken, all of which are served by the Public Service Railway, are well adapted to zoning. Railways ought to have every encouragement from regulatory bodies in working out a flexible system of zone fares. Otherwise both would be disregarding the vast body of experience on the subject.

While the personnel in field and office for a zone-fare system is greater than for the unit-fare system, the zone-fare operator has the advantage of securing an absolute audit of every fare transaction whereas it is practically impossible to do this with the time-limit transfer. If fare receipts are to be issued in America on a prepayment car, a machine would be more desirable than the British hand punch. However, the general tendency here is to operate the zone system on the pay-as-you-leave scheme of fare collection.

The zone fare tends to make a better business man of the railway operator because of the short riders. A manager who knows that the bulk of his traffic can leave him over night necessarily grows into a different point of view than a manager who feels that the bulk of the traffic must stay with him.

British systems that begin with a penny go in the ratio of 1, 2, 3, 4, etc., or 1, 1½, 2, 2½, and the same rule applies on the Continent. In other words, the second fare is either double or one and one-half times the initial fare. It is clear that in fixing these rates, the desire is to establish the lowest feasible minimum that will attract the short rider. If it be assumed that a corresponding condition exists in the United States, a series like 2, 4, 6, 8, 10 cents, etc., or 3, 5, 7, 9, 11 cents, etc., would result. In any event zone fare systems in which the base or initial fare is three, four or five times the following increment fares, are not known abroad. If foreign zone-fare practice for long rides were applied to the Public Service Railway, the charges might run: An initial charge of 3 or 3½ cents; 2 cents more for the second mile; then 1¼ miles for the next 2 cents; 1⅜ miles for the next 2 cents; 1½ miles for the next 2 cents, and so on, thus reducing the rate for the suburban rider. Whatever method is pursued, the extra revenue has to come in some way, but foreign specific graduated fare systems do not attempt to assess a standby charge against the short rider.

ADJUSTMENT OF CHARGES

The fact that 52.2 per cent of the workers in factories of 250 employees or more live within 2 miles of their work creates an ideal situation for the development of short-ride traffic on the Public Service Railway. With the traffic density on this system it appears hardly necessary to adhere strictly to the mile divisions. There might well be a greater tolerance than the 500 ft. plus or minus to the mile. If a zone fare is tied up to a rigid mileage system it is, in some respects, just as bad as a flat system. It would lack the element of flexibility and of adjustment to increased or decreased costs.

The zone system means more work for everybody. Nevertheless it is necessary to look at this problem as a merchant does. If he could sell everything at one price regardless of quality his bookkeeping would be immensely easier—but it would not be good business. The public is thoroughly used to the fact that he sells the same articles at one price on bargain mornings and at another price on other mornings. It has not acquired that conception about street railways possibly because the latter has been a monopoly. A street railway ought not to be held down to giving exactly the same amount of transportation at the same price under a great diversity of conditions; the manager of a street railway ought to be in the position of saying: "How can I get the greatest possible number of customers and the greatest possible revenue from these customers, regardless of what I do 10 miles from here?" The merchant is not questioned on this discrimination because the customer has freedom of choice. Under the old-time transportation conditions the customer had no choice except to walk. Today he has the choice of some other vehicle. Therefore, the railway operator ought also to be free to meet competition.

A number of foreign zone systems earn more in cents per car mile than the Public Service Railway expects with either a 7-cent flat fare or its 5-cent first-mile plan. It is not uncommon to find car mile earnings 40 cents or more where the base fare is only 2 or 3 cents.

---

*See also ELECTRIC RAILWAY JOURNAL, May 24, 1919, page 1017; Aug. 9, page 276.

Pittsburgh Valuation Reviewed

Cost of Financing, Working Capital and Other Important Valuation Problems Are Discussed—Zone Fares Are Recommended by City Expert

AS WAS NOTED in the news columns of the ELECTRIC RAILWAY JOURNAL for last week the report of the Engineers Valuation Board, Pittsburgh, Pa., was filed before the Public Service Commission of the Commonwealth of Pennsylvania on August 20. The report will be considered at a meeting of the commission now scheduled for Sept. 24. This board was formed early in 1918 for the purpose of assisting the commission in connection with a determination of the rate-making value of the property of the Pittsburgh Railways Company, and of a reasonable return thereon. The report, which is an eighty-eight-page volume, contains the letter of transmittal to the commission which includes a general summary of the report, a general description of the property, a summary of the historic cost of the property, the estimated cost of reproduction on several different bases, the estimated cost of operation, maintenance and renewals, organization charts, maps of the component parts of the property, and separate statements filed by members of the board. The report was signed by Robert M. Feustel and George W. Fuller, representing the City of Pittsburgh and the neighboring boroughs respectively, J. A. Emery and Morris Knowles, representing the Pittsburgh Railways Company, and by F. Herbert Snow, chief engineer of the commission and chairman of the valuation board.

DETAILS OF THE REPORT

Statements of original and historical costs were prepared by the railway companies under the direction of Ford, Bacon & Davis, consulting engineers, New York City. This work was done under general instructions laid down by the valuation board, and was checked while in progress, and after completion by the city's representatives on the board. The several bases upon which the cost of the physical property was determined, together with the corresponding costs were detailed in the news story of last week. Depending upon the basis used, the estimated cost of reproduction ranged from $49,324,791 to $102,842,274. The reproduction cost figures include: Real estate and right of way; organization and development cost prior to construction; engineering, legal and administrative expenses; interest and taxes during construction; cost of financing; materials and supplies and the working capital necessary for operation. The railway company purchases its power of the Duquesne Light Company, and has done so since Dec. 31, 1913. While the actual transfer of title to all of the power plants has not taken place, these plants were not considered part of the property as valued for rate-making purposes.

The board found superseded property costs as follows:

Horse car system	$1,542,178
Cable system	3,778,639
Early electric equipment and construction	5,950,641

A large proportion of this property was superseded while still in good operating condition, some of the cable systems having been in operation for only seven years. Corresponding to the several bases upon which the physical cost was determined, the accrued depreciation was estimated in amounts ranging from $12,039,600 to $23,775,500.

While able to agree on a physical value of the property the board was unable to come to an agreement relative to the value to be used for rate-making purposes. Development value, going concern value and other elements of value proved to be stumbling blocks. In the valuation work no allowances were made for franchise values in excess of cost, the special charter of the Pittsburgh Railways Company, earning capacity, terminal rights or facilities and bridge rights in excess of cost.

According to the report the Pittsburgh Railways Company system embraces 600.2 miles of single track, of which 441.9 is paved. The rolling stock consists of 1861 cars, of which 1630 are passenger cars. The company owns 167 bridges, and has borne a portion of the cost of 32 others. One tunnel, the Mount Washington, 3500 ft. long, is owned by the company. During the year 1918 the company operated 33,573,578 car-miles and 4,209,989 car-hours, carried 264,232,927 passengers, and purchased 173,500,078 kw.-hr. of energy from the power company. The present system is made up of properties, rights and franchises originally acquired by some 200 separate companies. Upwards of 70 municipalities in two counties of Pennsylvania are involved. The report summarizes the history of the property both from a structural and an investment standpoint.

In making the appraisal due recognition was given to probable omissions from inventory, to unavoidable construction wastages, and losses and contingencies as actual experience shows them to be encountered under the customary methods of construction followed by capable engineers. The allowances made for these items range from nothing at all for special work, trolley wire supports, poles and fixtures, etc. to 15 per cent for fences and signs. The percentages were added to costs and not to quantities.

In recognizing the construction expenditure items of engineering and superintendence, legal services, administrative and miscellaneous general expenses, interest during construction, taxes during construction, and financing, the report states that while it has been common practice to estimate these overhead expenses by taking either a percentage of the total property expenditure or a lump sum intended to cover such item, the limitation of such a procedure was considered. Accordingly the probable expenditures for each of the several services named were considered separately, due account being taken of all the available evidence on the conditions and cost of reproducing the property in question.

In estimating these overhead costs it was considered that the property was reproduced at the rate of 150 miles of track per year, that is a four year reproduction period was used. While 5 per cent is ordinarily used to cover engineering, 4 per cent was used in this case because of the absence of power plants. Administrative, legal and miscellaneous general expenses were estimated at 3½ per cent.

COST OF FINANCING DISCUSSED

The discussion of the cost of financing is of particular interest. Quoting from the report: "In this case, taking into account the magnitude of the property and the amount of securities necessary to be issued to reproduce it, the board is unanimously of the opinion that there is an additional element of cost, separate and distinct from bond discount, which may be properly considered as the cost for services that should be included, like engineering and legal expenses, in the cost of property.

"We submit that a distinct factor in the cost of reproducing this large property, not present perhaps in a smaller one, is the expense involved in assembling the necessary capital. This expense is commonly met by money retained from the sale of securities, so that the utility company receives less than the sale price. Moreover, the sale of the securities to the ultimate holder is frequently at less than par, so that the sum actually realized to be devoted to construction purposes is still further reduced below the face value of the securities.

"There are two elements of expense which make up the difference between actual sale price to the investor, and what the company realizes, and the significance of each element is recognized by this board in arriving at a fair estimate of allowances for cost of financing. The first element represents only the reasonable compensation for bankers services in marketing the securities, and forwarding the funds yielded. It covers personal and corporate service and the expenses of examination, negotiation and advertising and selling, through all of the various stages, until a sale to the final investor is effected. Such expenses would be incurred even if the utility company dispensed with bankers and marketed its securities through its own salesmen and agents. In fact, this latter method undoubtedly would require more time and cost more than if recourse were had to an existing banking house with established reputation and clientele.

WORKING CAPITAL IS DEFINED

"The second element of cost in financing is experienced in the case of an issue of securities running into many millions of dollars like those of the property in question. This is the underwriting of a large firm or a syndicate to guarantee that the entire issue will be promptly marketed without even a temporary lack of funds to embarrass the company or halt construction."

In the opinion of the board these two elements of expense constitute a part of the cost of reproduction. The report goes on to say that these costs frequently are merged with an additional definitely recognized element which reduces the sale price of securities below par value. The element referred to is that of the bond discount which is necessary to attract the investor. For the cost of reproduction as of the actual date of construction the cost of financing is estimated at 3 per cent, while for the cost of reproduction as of the present date the cost of financing is estimated at 5 per cent.

Working capital is defined in the report as the total mobile capital required in addition to the fixed capital. This capital was separated into two elements, one relating to general stores and supplies, the other to the funds necessary to meet minor irregular payments incident to the ordinary conduct of the business, and for the prompt payment of bills in order to secure trade discount, for prepayments found to be desirable and necessary, and for the purchase of materials at advantageous market prices. Several different methods of arriving at an estimate of the necessary amount of working capital are discussed in the report. In summing up this discussion the report states: "This board finds, after giving due consideration to the fact that the street railway business is a cash one, revenues being collected almost entirely in advance of ordinary disbursements, that $1,075,000 should be allowed for cash working capital, and that $1,134,000 should be allowed for stores and supplies, making the sum total $2,209,000 for working capital.

SERVICE-AT-COST CONTRACT RECOMMENDED

In arriving at the figures for accrued depreciation mentioned above, consideration was given only to the condition of the inventoried property at the time of the inspection as affecting the ability of the item to give service. Except where the particular part in question could not be satisfactorily inspected, obsolescence was not given consideration; in such cases recourse was had to life tables where obsolescence is automatically reflected. Wherever the part being depreciated had a scrap or salvage value, its value was given recognition. The Mount Washington tunnel was depreciated on the basis of a 100-year life.

Relative to contractual relations, the report expresses the opinion that all expenditures for street improvements, bridge tolls, etc., add nothing to the facilities for the convenience of passengers on street cars. On the other hand these things use up money which would otherwise be available for better cars and improved service generally. It is suggested that there be a readjustment of the contractual relations between the public and the company managements, and that this readjustment should result in a material modification of the terms of the public's consent to the company's operation, and should make possible an agreement in partnership in the construction, maintenance and operation of the railway system. Regarding this point the report says further: "It is beyond the experimental stage in at least two American cities where an effort is seen to give service at cost, to fix a definite return on definite value, to afford public participation in the management of the transportation system, to remove inequitable tax burdens from the rider, to adjust easily and smoothly the fare to the needed revenue and generally to reward good management."

BOARD MEMBERS FILE SEPARATE STATEMENTS

While agreeing on certain figures representing historic cost and cost of reproduction new, the members of the board were not able to agree as to what weight should be attached to each of these factors in arriving at a rate base. Separate statements representing the several opinions of the members of the board were included in the report. In his statement, Robert M. Feustel reviewed the various bases of costs used in making the valuation. He stated it to be his belief that the average prices for the period 1906-1915 were fair prices upon which to base the physical value of this property. He expressed the opinion that going value, as it is commonly called, is not a value which inherently attaches to all properties. In his opinion, this value exists primarily where the business is showing favorable earning possibilities as a result of the efficient way in which the whole enterprise has been built up and operated. He did not believe that the past earnings of the Pittsburgh Railways Company, taken as a whole, warrant any conclusion that there is an additional value which should be added to this property. In his opinion, the proper rate base should not be greater than $48,000,000 and a fair return was believed to be 7 per cent. Where the money is raised 60 per cent from bonds and 40 per cent from stock, this return corresponds to a 6 per cent return on the bonds and 8½ per cent on the stock. He recommended that earnest consideration should be given to a trial of zone fares.

In a concurring statement George W. Fuller agreed as to rate base and rate of return with Mr. Feustel, but held slightly different views relative to certain particulars. In his opinion appreciation of plant because of prevailing high prices should not appear in the rate base. His concluding remarks were, to quote the report: "The first requisite of this proposition is to provide good service, and the cooperative efforts of all concerned should be directed expeditiously to that end. Actual investments of the past should be respected and steps taken to safeguard the necessary return on the new money needed for imperative rehabilitations, extensions, and betterments."

In the statement signed by J. A. Emery and Morris Knowles, the opinion is expressed that neither the present company nor the preceding companies, considered as one system, could have charged off the superseded horse car, cable and early electric system, to say nothing of the accrued depreciation of parts of the present physical property, and at the same time have maintained their credit for the development which was required of them by paying a proper and reasonable rental for the capital required.

They stated it as their belief that the records are clear that at least $6,000,000 cash was put into the property for consolidation purposes. Regarding appreciation they expressed the opinion that the company is justly entitled to enjoy fully the appreciation in value represented by present prices, especially since prices are not expected to revert to their former low levels. As fair average prices they advocated those based on the averages for the period 1914-1918 inclusive. The inclusion of such development cost, together with their estimates of going value, consolidation value and other elements of value represented by actual expenditures, brings their estimate of the rate base to at least $65,000,000. They also expressed the opinion that the rate of return upon new capital should be at the rate of 8 per cent. In their estimate of annual return an item of $4,900,000 covering contingent expense, tax reserve, functional depreciation and amortization of abnormal replacements was included.

Changes in the Cost of Living

July, 1914—July, 1919

THE cost of living for American wage-earners was 71 per cent higher in July, 1919, than at the outbreak of the World War in August, 1914, according to a preliminary statement just issued by the National Industrial Conference Board based on a careful survey of conditions the country over. This represents an advance of 6 per cent since March, 1919, and of 12 per cent since June, 1918. The increase of 71 per cent to July, 1919, makes the highest point yet reached and compares with an increase of 61.8 per cent to March, 1919; of 65.9 per cent to November, 1918, and of 52.3 per cent to June, 1918.

The total increase for the five-year period since the beginning of the war in the average cost of each of the principal items entering into the family budget is shown below:

Budget Items	Relative Importance in Family Budget, Per Cent	Increase in Cost Between July, 1914, and July, 1919, Per Cent	Increase as Related to Total Budget, Per Cent
All items	100.0	...	70.8
Food	43.1	85	36.6
Shelter	17.7	28	5.0
Clothing	13.2	100	13.2
Fuel, heat, and light	5.6	57	3.2
Sundries	20.4	63	12.8

More Statistics Added to Washington Testimony

Data on Distribution of Capital Stock, Comparison of Operating Revenue, Expenses and Wages, etc., Presented

TO SUPPLY supporting data for statements which had been made during the hearings for the railway side before the Federal Electric Railways Commission and to answer questions which had been raised by the commissioners, the American Electric Railway Association, through its counselor, Bentley W. Warren, presented several statistical reports at the close of the recent hearings for the public side. Among these reports was one covering the distribution of the securities of electric railways which showed, in summary, that of 27 companies reporting, 4,665.462 shares of stock outstanding are held by 30,492 individuals, or an average of 153 shares to each holder. Of 98 companies reporting, $440.867.735 worth of stock (par value) outstanding is held by 32.788 individuals, or an average of $13,446 worth to each holder. Of 49 companies reporting, $240,347,825 worth of bonds outstanding is held by 448,475 individuals, or an average of $536 to each holder.

The distribution of the capital stock of 11 electric railways among men, women, and fiduciary institutions showed the following totals:

		Per Cent of Total
Number of men stockholders	11,324	47.28
Number of shares held (men)	667,750	52.42
Number of women stockholders	10,941	45.68
Number of shares held (women)	290,556	22.81
Number of fiduciary institution stockholders	1,686	7.04
Number of shares held (fiduciary institutions)	315,564	24.77
Total number of stockholders	23,952	100.00
Total number of shares held	1,273,870	100.00

A comparison of the valuation and capitalization of twenty-six companies showed in summary, a valuation of $107,985 per mile of single track and a capitalizatino of $119,663. The ratio of capitalization to valuation is 110.8 per cent, or in other words, the capitalization includes 10.8 per cent of water.

Other data which were furnished the commission included a report covering the wages of trainmen, one on one-man car operation, one showing the effect of increased rates of fare on passenger revenues as shown by the results of 125 companies and a summary of the cities in which fares have been increased and the character of the change.

Some Light on British Tramway Conditions*

Companies, Municipal and Private, Are Not Prosperous — A Rational System of Zone Fares Is Outlined — The Effect of Present and Proposed Fares on Congestion

By WILLIAM L. MADGEN, M.I.E.E.
Director British Electric Traction Company, Ltd.

THERE are two criticisms which apply generally to tramways in the United Kingdom. The first is that they fail to produce an adequate financial return to their proprietors; the second is, that in many respects they fail to give the community all the benefits of which they are capable. As a matter of plain fact, we have here a simple example of cause and effect—of what happens when a community is working a stranglehold on an industry.

Both these criticisms apply in greater or less measure alike to the tramways owned by municipalities and to those owned by companies, and to a large extent these failures are the result of faulty legislation. This legislative handicap weighs with different force upon company and municipal tramways, but both are affected, and the remedies have not so far been within the power of any body but Parliament itself. The immediate object of this paper is to point out some ways in which it appears to the writer that the controlling bodies have a considerable responsibility for the failures mentioned, and have it within their power to bring about better results.

The first point is that tramways do not produce an adequate financial returns to their owners. It is taken first for the reason that an insufficiently remunerated industry cannot provide the community with the full service of which it is capable under more encouraging conditions.

A prosperous industry can accumulate funds available for the improvement and extension of its activities or can attract the necessary capital for such purposes. A starved industry cannot do this. Municipal corporations can no doubt obtain loans upon favorable terms because they offer to investors the security of the rates, but they are naturally loth to increase municipal indebtedness for the extension of services which are not likely to be remunerative unless such services are obligatory. Tramway companies cannot obtain capital for extensions unless they can show that their existing enterprise is giving a reasonable return.

It has to be noted that while a number of the municipal tramway systems show good financial returns they are none the less starved because the bulk of their net receipts are ruthlessly appropriated in aid of the rates, instead of being utilized in the improvement of the service. This point was well taken by Mr. McElroy in his report on the Manchester Tramways, wherein he showed that the whole of the extensive improvements recommended could be financed from the tramway net receipts if the City Council would refrain from appropriating £100,000 per annum for the benefit of the borough fund.

Apart from this unjustifiable diversion of tramway profits where they exist, which is not under the direct control of the managing bodies, it remains to inquire why tramways are not more prosperous and therefore more useful to the communities which they serve.

It is clear that for a service to be remunerative the sums charged for it must cover the whole of the costs, including capital charges, and provide a reasonable margin. It is also clear that the charges made for the service ought to be equitable, *i.e.*, every passenger should pay his fair share of each of the items of cost involved in carrying him. In transport undertakings some of these items of the cost of service are proportional to the distance a passenger is carried. Some of them are more nearly represented by a fixed amount per passenger.

If, therefore, we can ascertain what these costs amount to *per passenger* in any given case, the result gives a sum which must be exceeded by the fares charged for the shortest journey. The fares for longer journeys should be increased over this minimum in proportion to the distances.

The results of such a scheme of fares are—first, that every passenger pays his fair share; secondly, that the longer journeys are relatively cheaper than the shorter ones; and, thirdly, that the cost of living consequent upon residing at a greater distance from the place of employment is less than the increased cost of traveling greater distance. The last-named effect would be of immense importance in making tramways of greater service to the community.

Taking "standing charges", to include all the costs of having the system equipped and ready to meet the traffic, and the "running costs" as those proportional to the passenger miles, we distinguish a figure for standing charges which can, with entire fairness, be spread equally over the whole number of passengers. The equity of this as regards passengers at the minimum fares is made more apparent by the fact that, taking all the tramway systems collectively, a far larger number of passengers are carried at minimum fares than at any others. This is true for at least the majority of individual systems. For the tramways of the whole kingdom the Board of Trade's return for the year 1913-1914 show that the average receipts per passenger were 1.105d., proving that the number of passengers at one penny (the minimum fare on the majority of systems) is far in excess of those at higher fares.

As an example of a particular system, Glasgow may be cited where the minimum fare of one halfpenny was paid in the year 1918-1919 by 63 per cent. of the total number of passengers.

The following figures represent a reasonable division of tramways costs into a fixed charge per passenger and charges proportional to the length of journey. They are extracted from the last published Board of Trade returns, viz., for the year 1913-1914. They represent pre-war costs, and require considerable modification to make them fit present conditions. There is not sufficient data available for a safe estimate covering stable post-war costs of labor and material, but this does not affect the principle, and it is better to use figures representing facts under known conditions than to make alterations dependent upon guess work.

---

*Abstract of paper read at a convention of the British Tramways & Light Railways Association, July 25, 1919.

ANALYSIS OF TRAMWAY EXPENSES EXTRACTED FROM THE BOARD OF TRADE RETURNS FOR THE YEAR 1913–1914

	Total	Standing	Charges	Running	Costs
	£	%	£	%	£
Depreciation, say 4% of capital	3,239,113	100	3,239,113	nil	....
Expenditure interest at 3.03%.	2,389,208	100	2,389,208	nil	....
Permanent way............	815,561	50	407,781	50	407,780
Electrical equipment.........	171,114	80	136,891	20	34,223
Engines, etc..............	20,628	nil	....	100	20,628
Rolling stock..............	1,177,431	nil	....	100	1,177,431
Building tools, etc...........	125,769	80	100,615	20	25,154
Traction power.............	2,137,361	nil	....	100	2,137,361
Traffic expenses............	4,236,026	5	211,801	95	4,024,225
Rent of offices, etc...........	50,064	100	50,064	nil	....
Rates and taxes............	638,537	100	638,537	nil	....
Compensation and insurance..	235,971	20	47,194	80	188,777
Other expenses.............	551,094	100	551,094	nil	....
	15,787,877		7,772,298		8,015,579
Average per passenger.....	1.105d.		0.544d.		0.561d.

It has to be observed that these figures are an allocation of the total receipts, the first two items, "depreciation" and "interest," being an allocation of the net receipts of £5,628,321 deduced from the returns.

The operating figures given in the return are as follows:

Passengers carried..........................	3,426,473,192
Car miles..........................	354,379,672
Gross receipts..........................	£15,787,877
Working expenses..........................	£10,159,556
Net receipts..........................	£5,628,321
Capital expenditure..........................	£80,977,838

The gross profits amount to 7.03 per cent of the capital expenditure. Allowing 4 per cent for depreciation, the average net yield on the capital invested was only 3.03 per cent.

This result proves that the tramway work in the United Kingdom is a starved industry, for a return of 3.03 per cent is not sufficient to attract capital or to justify its expenditure, nor does it provide a margin for enterprise in improvements and extensions.

The figures show that the average receipts per passenger were 1.105d., of which standing charges absorbed 0.544d. and the running costs 0.561d.

From this it follows that the basic or fixed charge per passenger to which running expenses proportional to the length of journey have to be added should exceed 0.544d. at pre-war rates, or, in other words, that in 1913-1914 every passenger carried should have paid 0.544d. *plus* an amount varied according to the distance traveled. This fare would, however, have provided a yield of only 3.03 per cent on the capital, which, of course, is quite insufficient.

A moderate yield is 6 per cent, amounting to 0.340d. per passenger. Taking the depreciation, etc., at 4 per cent, as before, gives 0.227d. per passenger; rent, rates, etc., as before, gives 0.090d. per passenger; and, taking 100 per cent increase over pre-war prices for the items mainly made up of labor and material belonging to this side of the account, gives 0.120d. per passenger, making a total of 0.777d. as the basic figure for standing charges, to which must be added in each case an amount per mile traveled to cover running costs.

In tabular form, standing charges modified from 1913-1914 Board of Trade returns to give a yield of 6 per cent on capital and 100 per cent increase on items effected by post-war prices follow:

	Total	Per Passenger
Depreciation, 4 per cent.......	£3,239,113	0.227d.
Interest, 6 per cent............	4,858,640	0.340
Rent, rates, taxes, etc.........	1,286,889	0.090
Material and labor items......	1,714,176	0.120
	£11,098,818	0.777

It has to be observed that, taking the figures of depreciation and those for rents, rates, taxes, etc., from the 1913-1914 returns unaltered, is an assumption too favorable to the passenger. As depreciation has to provide for replacement of equipment, it will be increased by the rise which has taken place in labor and materials. Taxation is also unlikely to revert to prewar levels in any near future, so that this basic figure of 0.777d. per passenger is rather on the low side, and leaves something to be made up by the passenger-mile charge for depreciation and return on capital, and meets the criticism that a portion of these charges is in fairness proportional to the use made of the system by each passenger.

There are no statistics in the Board of Trade returns or the accounts published by tramway undertakings of the passenger-miles, so that the running expenses per passenger-mile can only be estimated. A fair estimate of the average distance each passenger was carried in 1913-1914 for the average fare of 1.105d. is 2 miles, or a total of 6,853,000,000 passenger-miles for running costs of £8,015,579, or 0.281d. per passenger-mile. At post-war prices of labor and material, this cost will be doubled, but let us take it on the low side at 0.55d. per mile.

On the bases set out then a table of fares against distance would give the following figures:

	Standing Charges	Running Cost	Total	Rate per Mile
For 1 mile..............	0.77d.	0.55d.	1.32d.	1.32d.
For 2 miles..............	0.77d.	1.10d.	1.87d.	0.935d.
For 3 miles..............	0.77d.	1.65d.	2.42d.	0.806d.
For 4 miles..............	0.77d.	2.20d.	2.97d.	0.742d.
For 5 miles..............	0.77d.	2.75d.	3.52d.	0.704d.

This table is an illustration of the plan on which an equitable fare table can be made up. It is believed to give fair average figures for United Kingdom tramways under post-war conditions, but each undertaking can determine the two basic figures—standing charges and mileage rate—from an analysis of its own accounts. Greater London is, of course, a particular case in which special factors have to be considered.

It is submitted that this is a sound method of settling fares, and that it will tend to raise the tramway industry, legislation permitting, from the position of being starved to one in which it will be moderately prosperous, and therefore able to attract and to expend capital in improvements and extensions. Such a result will meet the first criticism mentioned at the beginning of this paper, viz., that tramways fail to produce an adequate financial return to their proprietors, and will enable them to meet the second criticism, viz., that in many respects they fail to give the community the benefits of which they are capable.

Of the failures to benefit the community as much as they should, by far the most important is that tramways have not brought about that spreading of the population of large and crowded industrial centers which they clearly can assist. It is admitted that they have done something in this way, but, on the other hand, it is believed that the practice of giving very low fares for short distances, which militates against reasonable financial returns, has another very serious effect, in that it encourages people to continue to live at distances from their work within the radius of the minimum fares. The table of fares given above shows that on a sound basis the fare per mile would be lower for long distances than for short ones. That is, a man living two miles from his work would not pay twice as much in tramway fares as one living a mile away.

TRAMWAYS SHOULD AID IN DISTRIBUTING POPULATION

It is obvious that successive rings at distances of one mile, two miles, etc., from a given center have areas proportional to their distance. Taking the rings as a mile wide, that lying between 1 and 2 miles radial distance will have an area of nearly 9½ square miles, or 6030 acres; that between 2 and 3 miles an area of 15¾ square miles nearly, or 10,050 acres; and that between 3 and 4 miles an area of nearly 22 square miles, or 14,070 acres; and that between 4 and 5 miles an area of 28¼ square miles, or 18,090 acres. With these increases of living room it is at least probable that rents will decrease with increasing distance from the center more rapidly than the annual expenditure on fares increases. There will be more room to live, more garden and park space, more sunlight and fresher air.

The importance of providing the poorer classes with these improvements in their living conditions is so well understood that it is unnecessary to dwell on it, but it has not been sufficiently recognized that a rapid and economical means of traveling over the greater distances between house and work is essential to the purpose, and that it is best afforded by tramways up to at least 6 or 7 miles from the industrial centers.

The most serious social fault of the systems of very low fares for short distances is that they discourage families from moving outward.

It is at least partly due to this effect of low fares that the central districts of some of our large cities, such as Glasgow, have not been relieved of their overcrowded slums to anything like the extent which might have been expected from the operation of the very efficient tramways there. As above explained, this low-fare system charges the short-distance passenger less and the long-distance passenger more than his fair share of the standing charges, and is therefore a direct handicap upon the spreading of the overcrowded population. This is not because Glasgow has not made tramway extensions to long distances from the center. It has done so in a few directions, but only seven of these spurs go beyond three miles from the central districts. Similar conditions as to fares and extensions prevail around other crowded centers, and the only reasons for mentioning Glasgow are that the corporation has made a special feature of halfpenny fares, keeping them in operation throughout the war, and that 14 per cent of the population are reputed to live in one-roomed "houses." If the corporation had perceived the relation of tramway fares to overcrowding, there can be little doubt that it would have arranged them to encourage the spreading of the population rather than to discourage it.

Most of us are familiar with the consideration which I might mention here that the crowding of cars by minimum fare passengers has a tendency to drive away those wishing to travel longer distances and to encourage competitive services.

There are two obvious difficulties against setting up a rational fare system. The first is that tramway fares are generally limited to a maximum of one penny per mile, and any sound system—at present costs—must charge more than a penny for the first mile.

Besides this general statutory obstacle, there are numerous provisions in special acts and orders, agreements between companies and local authorities, and the like, setting out scales of fares or maximum fares which cannot be reconciled with the principles laid down.

An entirely different set of circumstances has also had a serious influence upon the development of improved transport facilities by means of tramways and light railways. The ratable value of a town is in some degree a measure of the remuneration paid to some of its principal officials and of the personal prosperity of the trading classes, of which with a sprinkling of professional men the Council itself is largely composed.

Now we must not regard these gentlemen as municipal Pharaohs who consciously and intentionally "will not let the people go," nor can we believe that they impose bad fare systems upon the tramways in order to keep the population within range for business purposes or to promote congestion; but we may urge that the community should be no longer subject to the "ratable value" fetish which tends to provide particular attractions for the centers of population and an influence adverse to the provision of adequate housing arrangements in more healthy surroundings.

The working classes have been misled into the idea that the halfpenny tram fare is an advantage to them, but as a cold and cruel fact the conditions which it helps to foster are the very worst in all respects for themselves and their children.

There is very strong evidence that the contrast between the sheer discomfort of the crowded working class quarters and the comfortable homes of those who are able to live in decency and comfort—though they may derive their incomes from the same industries as the workmen—is a chronic and growing cause of the unfortunate spirit which manifests itself in labor unrest. Of the many manifestations of this spirit during the war, it was noticeable that the worst and most persistent cases occurred precisely in those districts where overcrowding is most prevalent.

What labor needs above all things is to improve its living conditions, and one of the most effective means to that end is to spread the houses outside the industrial areas in bright and pleasant surroundings, where the working man and his family can enjoy their allotments or other favored occupations of their increased daylight hours and leisure time. To make this possible the lowest possible fares for the longer distances, and ample transport facilities for those districts are essential. Both these conditions will be favored by abolishing non-paying short distance fares, graduating all fares in an equitable way, and making the tramways sufficiently remunerative to induce an enterprising spirit in the management.

It is obvious, therefore, that a campaign of education and propaganda among the authorities concerned in favor of sound fare tables and a more tolerant spirit is urgently necessary, and the tramway interests should take up this work with energy.

There is another difficulty about the application of rational ideas to tables of fares, viz., the coinage. Referring to the table of rational fares, it is seen that for the first 2 miles the nearest coins include farthings, and, even so the difference between the theoretical fare and the nearest coin is a somewhat large percentage of the total. Farthings are not popular. The penny has too small a value for the minimum fare, because the standing charge item alone is nearly 8d., and the length of ride which could be given for the 2d. balance is too small for a stage.

The writer strongly advocates the adoption of the decimal system of coinage as approved by the Associated Chamber of Commerce, the Institute of Bankers, the Decimal Association and by numerous other bodies, including your Association. This system divides the £1 into 1,000 mils, and includes the provision of a 5 mil nickel coin of the value of ten to the shilling. This is equivalent to 1.2d., and would suit a rational system of fares very well. The value is a little lower for the mile distance as set out above, but that table is only an illustration based on collective figures. The actual length of the stages will in every case have to be adjusted to the circumstances and costs of the particular system. There is no need to keep to even miles in making this adjustment. As it is, the lengths of fare stages are rarely based on even miles. They vary on different routes on the same system as the stages are in practice defined by traffic points, junctions, etc. There is no more difficulty in fitting the stages to the coins of a decimal system than to the halfpennies and pennies now in use. Five mils is a better starting point than a penny or the near equivalent four mils, and there are very strong reasons in other directions for making the coin of the slightly higher value.

Electric Railway Employees Own Half-Million Dollar Building in Chicago

THE accompanying illustration shows the carmen's building in Chicago owned by Local Division 241 of the Amalgamated Association of Street & Electric Railway Employees of America. This local comprises the employees of the surface lines. The Elevated Railways' men, who have no financial interest in the building, have offices in it. The building is located on Ashland Boulevard and Van Buren Street, and is 100 ft. x 180 ft. in plan. It contains an auditorium with a seating capacity of 4000. The Union which owns the building comprises about 10,000 members, including carhouse workers (truckmen and cleaners), trainmen, switchmen, watchmen, etc.

HEADQUARTERS FOR TRACTION EMPLOYEES IN CHICAGO

Some Observations on Signal Maintenance

The Author Urges the Necessity for a Signal-Maintenance Department on Any Property Where Automatic Signals Are Used

By Carl P. Nachod
President Nachod Signal Company, Inc., Louisville, Ky.

FROM a year's personal observation of the way in which automatic signals are maintained on electric railways I am convinced that the operating managers of many railways unwittingly hamper their service seriously, as well as injure the reputation of their signals, by not providing proper signal maintenance. In contrast, some few roads stand out as shining examples of good practice in this line and enjoy the excellent service that should be attained by all. It is false economy for electric railways to spend large sums for automatic signals and then to neglect to provide properly for their maintenance. It is to be hoped that eventually the signals on electric lines will receive maintenance care of the same standard as prevails on steam railroads, and this is a reasonable expectation because at one time the steam roads treated their automatic signals with indifference also.

Signals do not require an abnormal amount of attention, but they do need periodical inspection and prompt attention when out of order. A minor trouble, if neglected, will often produce severe damage to the signal because the latter is connected to the relatively high-voltage trolley system.

Too many railways are not getting good signal service and many are satisfied with indifferent results. Very often when the signals are in bad shape this condition is due to the passing of responsibility from one department to another. The creation of a signal department would concentrate this responsibility. Installation and maintenance of signals is usually allotted to the line department merely because the signals are connected to the overhead lines; but signal maintenance and repair require a skill in handling fine mechanism which the average lineman does not possess. The characteristics and training of the lineman are not such, in general, as to enable him to acquire this knowledge easily, and he cannot read blueprints or trace out the somewhat complicated signal circuits. Few lineman can make intelligent tests on signals to locate trouble, and in "hunting" trouble most of them expose the elements of the signals in succession or at random until some part shows by its appearance that it is damaged. This procedure is lengthy and uncertain, as many parts do not always show defects to the eye. In addition some part is liable to be put out of adjustment by unnecessary disturbance. With the signals cared for in the line department, and not understood properly, a lack of confidence will result. The line foreman is apt to blame the signals and not the workman, and will do nothing to remedy conditions.

At the head of the signal department there should be a man with a natural aptitude for this work, one who has been trained by working in the testing and assembling department of a signal-manufacturing company as an employee of the signal company, or one who has been sent to the factory by the railway company for instruction. This man should have a helper or understudy. Even a small railway has a man in the electrical department or at work on telephone circuits who is "good timber" for signal work.

The signal department should be provided with a well-lighted work bench, with small tools and testing facilities. The last named should preferably include a miniature trolley or track plan already wired up, so that the signal leads can be connected directly to the terminals. Such an arrangement can be used not only to demonstrate the signals to others but as a basis for study. (See ELECTRIC RAILWAY JOURNAL, March 22, 1919, page 572.) A road having more than three or four blocks of signals should have at least one spare signal on hand, or preferably one block of two signals complete. Other parts should be kept in stock also, so that home-made parts will not have to be used.

In cases where electric railways have not considered it necessary to provide a signal-maintenance department, the manufacturers have endeavored to show them how to get the best results from their signals under existing conditions by furnishing a skilled service man for the purpose. Such a service man finds that the maintenance of signals is often regarded as a minor matter, and the manager is not familiar with the way in which the signals are operating. The superintendent of transportation is apt to say that the signals are not giving any trouble; in fact, this is the general reply. To this statement the service man replies: "Perhaps the signals are all right now, but since I have come all the way for the purpose, it would be to your interest to have me inspect them, note their condition and point out ways of preventing future trouble." On being told to do so, he may find that the signals have been allowed to fall into such condition that only with his help, together with the co-operation of the railway, can they be put back into shape again. Such co-operation is difficult to secure, and it must extend all the way from the manager down to the maintainer. An indifferent official can block the procedure. Sometimes such co-operation cannot be obtained, and service work stops where it began. Sometimes after an inspection a dozen reasons can be pointed out as to why the best results are not obtained, but these do not seem to awake interest in betterment. Obviously, the signal-maintenance work should come under the transportation department, as that department is most interested in signal operation.

The above facts are pointed out in the belief that a clear presentation of them to the progressive and intelligent railway official will be appreciated and will result in improvement in the desired line. It is proposed in a later article to tell how the signals on a certain road, having fallen into an evil estate, were put into another department by co-operation, and by means of hard work were raised to a high standard of operating condition.

Revision of National Electrical Code

The chairman of the Electrical Committee of the National Fire Protection Association has announced the appointment of several committees to consider various questions in anticipation of the 1920 code. The standing committee on cars and railways consists of M. Schreiber, chairman; R. C. Bird and Ralph Sweetland. The American Electric Railway Engineering Association has appointed two committees to co-operate with this standing committee on the revision of rules on carhouse wiring and car wiring for more than 600 volts.

Letter to the Editors

More About That Discouraged Railway Official

BROOKLYN, N. Y., Aug. 15, 1919.

TO THE EDITORS:

I have noted the editorial comment printed with my letter of July 29, in which you point out that the manager mentioned by me should have tried all possible expedients to overcome the obstacles to successful operation before giving up. I reported the interview with this manager rather fully because it brought to my mind a thought new to me, that is, the responsibility of the public, through the rate-making bodies, for the morale of the officers and employees of public utility companies.

It might be interesting to digress on the question of what those officers should do after they have used all means known to them to make both ends meet on the income account. Even then they should avoid discouragement as far as possible, but can they not be excused for accepting a call to service under more favorable circumstances, and so leaving open a position the difficulties of which could perhaps be better met by a new man?

The regular readers of the ELECTRIC RAILWAY JOURNAL are well informed as to the various expedients which have been devised to increase revenues and decrease operating expenses. The public is inclined to think that these expedients have no limit under any circumstances. There is urgent need of public education in the fundamentals of economies and finance, including the function of good credit. The old proverb, "The destruction of the poor is their poverty," seems to be particularly applicable to present-day public utility companies. If the unfortunate companies only had earnings enough to give them credit they might make capital expenditures which would result in new economies of operation.

GEORGE H. JOHNSON

A New Development in Japanning

DR. W. P. DAVEY, of the General Electric research laboratory, describes in the current issue of the *General Electric Review* a new form of japan. It comprises a base, consisting, say, of an asphalt and an oil such as linseed, very finely subdivided and emulsified in water. The water japan was developed to eliminate fire and accident hazard, particularly, in "baking on" coatings of japan in which volatile and inflammable solvents are employed.

The new japan is less viscous than ordinary japan, so that it cannot be applied by dipping in the usual manner. Howeved, special methods of dipping have been devised which accomplish the same purpose. These are termed the "electric dip" and the "hot dip."

The electric dip operates on the principle that electrically charged bodies are carried along by an electric current when in suspension in a liquid. The particles of the base (which are only 0.000010 in. in diameter) carry negative charges, hence when an object to be coated is attached to the positive terminal of a bath and current is sent through it the particles are deposited on the object. As in a metal-plating bath the material tends to spread uniformly over the surface to be coated. The dipping requires about two and one-half seconds for a satisfactory coat and the current required is about 0.8 amp. per square inch. The coating is then baked in the usual manner. This process is adapted to small odd jobs of japanning rather than to quantity production.

The hot-dip process consists in heating the objects which are to be coated to about 500 deg. Fahr., cooling them 100 deg., and plunging them into cold water japan. Woven wire baskets are convenient for holding them for this purpose. After being kept for about ten seconds in the japan the objects are drained for thirty seconds and transferred to the baking oven. The preheating was originally adopted to remove the grease and oil from metal pieces, but experience showed that the plunging of the heated metal at a temperature from 250 to 400 deg. Fahr. produces an effect similar to that which is produced by electro-deposition in the electric-dip method.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Standards Committee Plans Exhibit at Convention

A TWO-DAY meeting of the Engineering Association committee on standards was held at association headquarters on Aug. 25 and 26. Of the committee those in attendance were: H. H. Adams, Chicago, Ill., chairman; E. R. Hill, New York City; C. G. Keen, Philadelphia, Pa.; H. H. Norris, New York City; E. D. Priest, Schenectady, N. Y.; Martin Schreiber, Newark, N. J.; A. B. Stitzer, New York City; N. W. Storer, Pittsburgh, Pa.; N. B. Trist, Pittsburgh, Pa. Other interested members who were present for part of the meeting included E. B. Burritt, secretary of the association; C. L. Cadle and J. H. Libbey of the power distribution committee; Daniel Durie, of the equipment committee, and J. W. Welsh, special engineer.

In addition to consideration of the recommendations as to standards, recommended practices and miscellaneous practices contained in committee reports, the committee discussed ways and means for increasing the use of the standards. A decision was reached to endeavor to have at the Atlantic City convention a tangible exhibit of the results of the Engineering Association committees' work, and plans to this end were immediately formulated. At the convention every available means will be employed to impress upon the men in attendance the urgency of adopting association standards as a measure of economy in construction and maintenance.

In its routine procedure the committee approved for adoption as standards several gages for use in checking car wheels, and specification of gaging points and terms in connection therewith. The same action was taken in reference to a specification for bolted frogs and steam railroad crossings, and to a revised form of rules for carhouse wiring which had been prepared by a committee in co-operation with the National Fire Protection Association.

The Aug. 26 sessions of the meeting were taken up largely with the recommendations of the power distribution committee. A revision of the standard specification for 750-volt overhead line material was approved, and a specification for electrical conduit construction, to replace one included in 1909 in list of miscellaneous practices, was approved for such substitution.

The committee expressed itself as pleased with the quality of the work submitted to it and pledged itself to a renewed effort to "sell" the results of this and previous work to the company members of the association and to others who should buy it.

Committee on Mail Pay Meets

THE committee on compensation for carrying United States mail, consisting of V. S. Curtis, New Haven, who acted as temporary chairman; W. S. Rodger, Detroit; S. S. Ashbaugh, New York; L. H. Palmer, Baltimore, and J. W. Welsh, New York, held a meeting at association headquarters to consider plans for the preparation of a brief which Mr. Ashbaugh, counsel for the association, will present before the Interstate Commerce Commission.

The brief will consist of four parts, as follows: (1) Statements pertaining to the legal phases and issues involved in carrying mail on trolley cars. (2) An abstract of the 3000 pages of testimony presented at the recently held regional hearings, which abstract will be prepared by a sub-committee consisting of Messrs. Palmer and Curtis, in the form of a topical brief covering all subjects on which testimony was presented. (3) Consideration of the operating methods in handling mail on electric railways, especially the portions of service that may be recommended for elimination, such as carrying parcel post on passenger cars, side and terminal service required of car crews. (4) Determination of specific rates applicable to various kinds of service performed. It is planned to submit by letter to all member companies the proposed rates so that in case any companies feel dissatisfied, they can present individual briefs stating rates that would be applicable for the service performed in their respective individual cases. Such briefs must be filed with the Interstate Commerce Commission not later than Oct. 15.

The committee plans to hold another meeting within the next two weeks to prepare a full report covering the entire matter for presentation to the Atlantic City convention.

More Convention Exhibitors

DIRECTOR OF EXHIBITS WELLS reports that the following have been assigned exhibit space in addition to those listed in the Aug. 2 and Aug. 16 issues of this paper:

American Engineering Company.
Automatic Reclosing Circuit Breaker Company.
Dayton Mechanical Tie Company.
Differential Car Company.
Fire Gun Manufacturing Company.
National Conduit & Cable Company.
Republic Engineers, Inc.

These seven exhibitors bring the grand total up to 129, a very encouraging number at this date. Obviously the success of the exhibit feature is now assured.

Mr. Wells will appreciate prompt return by exhibitors of the forms recently sent out covering requirements for furniture, flowers, etc.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Service Withdrawn

Pittsburgh Railways Unable to Resume Service on Account of Strike Disorder

A series of riots, in which several persons were injured, blocked the first attempt, on Monday, Aug. 25, of the receivers of the Pittsburgh (Pa.) Railways to break the strike which has had the lines of that company tied up since midnight on Aug. 14.

PROTECTION INADEQUATE

Absolute failure of municipal authorities to provide adequate police protection was given by the receivers as the reason for their inability to start service.

No attempt was made to resume operation on Aug. 26, the receivers postponing further efforts until police arrangements could be strengthened, according to a statement by Mayor E. V. Babcock. It was planned to send cars out again on Aug. 27.

In the meantime, Division 85 has been disowned by the Amalgamated Association for striking in violation of a contract entered into last May, by which it pledged itself to accept the decision of the War Labor Board in the wage decision then pending. As was related in the ELECTRIC RAILWAY JOURNAL of Aug. 23, the board awarded the men an advance of 6 cents an hour, instead of the 12-cent raise they had asked.

In fact, Division 85 expelled itself from the union by its refusal, upon a referendum vote on Aug. 21, to return to work and carry out its contract, according to President W. D. Mahon, in a telegram to P. J. McGrath, secretary of the local union, an international vice-president and one of the leaders of the strike. This action by President Mahon was taken up by the international executive committee in Detroit on Monday and although no statement would be made by international officials, it was understood that his stand was to be upheld. What the further plans of the Amalgamated Association may be had not been developed late on Aug. 26.

RECEIVERS STATE THEIR POLICY

Following the men's referendum vote on Aug. 21 in which they refused to return to work under the War Labor Board award, the receivers announced that they proposed to resume service without an agreement with the union. They declared that they would bring no operatives in from outside Pittsburgh. Their hope then, they said, was that enough of their own striking employees would return to work to start the cars and that the rest would fall in shortly, leaving the strike to die for lack of strikers.

No attempt was made to send any cars out on Monday morning. Shortly after noon, however, a sand car was run around the carhouse loop. Two or three other cars followed, but the attempt to operate had to be abandoned.

Monday night the receivers issued a statement calling attention to the impotence of the city administration in affording protection for their operatives. Tuesday was a day of innumerable conferences about the City Hall. In the afternoon it was decided that several hundred city firemen would be added to the police force for Wednesday's resumption of operations. Promptly the firemen called a meeting at which to vote on a motion to strike.

General opinion in Pittsburgh is that eventually State troopers will have to be called in to handle the situation, for both the receivers and the men appear to be firm in their resolve not to yield. The city police showed on Monday that they are temperamentally unfitted for such an emergency as exists.

Minneapolis Increases Wages

Trainmen of the Twin City Lines, Minneapolis, Minn., are receiving a wage advance of 5 cents an hour. The increase was effective on Aug. 20 following a series of conferences between officials of the company and members of the trainmen's co-operative committee from the six stations in the Twin Cities. Other departments are raised proportionately. Horace Lowry, president of the company, said in part:

> Following ten days consideration by the management and directors, the company to-day announced an increase in wages to its employees, which will mean added annual cost of operation in all departments of the Twin City Lines of approximately $600,000 per year.
>
> This increase in wages was granted because general conditions are so unsettled all over the country that an increase seemed necessary until conditions become more normal.
>
> In making this increase in its operating expenses, the management was influenced by its belief that the people of the Twin Cities will, without unnecessary loss of time, approve a service-at-cost agreement so that the company may soon be able to furnish the public with the service required.
>
> Until such measure of relief is in effect between the company and the city, this added burden of expense will be a severe strain upon the company's ability to furnish service, and emphasizes the necessity—in the public interest—of the pending negotiations with the Twin Cities being brought to a successful issue at the earliest possible date.

The additional 5 cents an hour will be paid to regular trainmen. Extra trainmen are guaranteed $3.50 a day, a daily increase of 50 cents. Regular trainmen have been receiving 40, 43 and 45 cents an hour, depending upon experience and length of service.

Boston Elevated Affairs

Legislative Commission at Work—Company Not Ready for Zone Fares—Five-Cent Line Run

The special commission on street railways appointed by Governor Coolidge of Massachusetts to investigate financial conditions opened its hearings at Boston on Aug. 26. Chairman Washburn presided, and the entire session was devoted to an inquiry into the affairs of the Boston Elevated Railway.

Chairman Jackson of the company's board of public trustees was the principal witness. He stated that there is no likelihood that fares will ever have to be raised above 10 cents on the Boston Elevated system; that if all the dividends now paid to the stockholders were to be eliminated, there would be a reduction in fares of less than one-half a cent; that the increase in wages to the carmen as a result of the recent strike adds $2,600,000 to the annual financial burden of the company; that the cost of the strike to the company was about $50,000 a day or $200,000 for its duration; and that practically every fare paid to a jitney in Boston must be paid back by the city to the company in making up the cost of service deficit below electric railway earnings.

Relief might be obtained, the speaker said, by the remission of corporation taxes and subway rentals, together with the purchase by the State of the Cambridge subway. The trustees have given a zone system very careful study, but have not yet reached the point of trying it. Mr. Jackson said that he questioned whether fares could be reduced in future below 8 cents.

The 10-cent fare has not yet been in effect long enough to warrant conclusions as to its practicability, but each week the trustees receive some additional hope that it will eventually yield the necessary revenue. If the Cambridge subway should be purchased by the State, the prospects of an 8-cent fare would brighten considerably. Relief from the burdens of highway maintenance, the witness said, is also most important.

On Aug. 23 an experimental 5-cent fare line was established between Franklin Street in the retail district and the North Station. No transfers are given on this line, which covers a round-trip route about 2 miles long, the one-way fare being a nickel. So far results have been rather disappointing. The trustees are considering the establishment of another 5-cent trial line, possibly between the North and South stations. The hearing was continued until the next day.

Toledo Traction Talk

Ouster Ordinance Suspended, Company Suggests Service-at-Cost Settlement

The situation in regard to the railway department of the Toledo Railways & Light Company is clearing. The action of the City Council in passing an ordinance ordering the railway to vacate the streets brought the long-standing franchise dispute to a focus. The company had made all preparations to comply with the terms of the ordinance and would have taken the cars from the streets on the night of July 31, but the citizens of Toledo, realizing what complete cessation of the service would mean to the city, circulated petitions demanding a referendum on the ordinance. More than 10,000 signatures were obtained on the first day the referendum petitions were circulated, and filing of the petitions automatically suspended operation of the ouster ordinance. Had the operation of the ordinance not been suspended by the filing of the referendum petitions, Toledo would have been without railway transportation after Aug. 1.

MEASURE BEFORE VOTERS ON NOV. 4

Frank R. Coates, president of the Toledo Railways & Light Company, has presented to the City Council copies of the proposition of the company for a new franchise ordinance, adoption of which would settle the franchise controversy. This ordinance is now before Council, and steps will be taken to place it before the voters of the city for adoption on Nov. 4. President Coates in his letter to the City Council said that if the proposition the company submitted was not found acceptable, the company would be willing to accept any fair and reasonable plan the city may propose. President Coates also said in his letter to the Council that if the city and the company were unable to agree on a plan, the company would initiate the ordinance it had presented, at the election on Nov. 4. He asked that the City Council make all possible speed so that the company might know by Sept. 1 whether it would be necessary to circulate petitions to initiate the ordinance.

The ordinance presented to the Council by the company aims to provide railway service at cost, including a fair return on the investment made by the company in the property. The ordinance provides for a twenty-five year franchise, and also contemplates a scientific rerouting, which would include a crosstown line.

Other provisions of the ordinance include the following:

> The motive power shall be electricity or such other motive power as the Council may approve. The company is to maintain the pavement between the rails and 1 ft. outside. It must have at least 300 cars of modern design.
>
> The right is reserved to the city to prescribe service, schedules, routes and character of cars. The city shall name a street railway commissioner, who shall keep himself informed and advise the Council as to service, cost and rate of fare and company's accounts.
>
> The company shall pay the salary of the commissioner, as fixed by the Council, but not to exceed $10,000 a year. Differences between the city and company shall be settled by arbitration. In the case of non-agreement upon a third arbitrator, the person who is the federal district judge of the United States District Court, Western Division of Ohio, shall appoint the third arbitrator.
>
> The company shall pay the expenses of arbitration. A decision must be reached within thirty days. The decision of the arbitrators shall be final. The company's books shall be open to inspection by the city at all reasonable times.
>
> A valuation of the company's property shall be made by three arbitrators chosen in the same way as other arbitrators provided for. The decision of any two of such arbitrators shall be binding upon the city and the company.
>
> The arbitrators shall not take into consideration the amount of bonds, stocks and securities of the corporation or franchise value or rights, but shall determine the amount which would be required to create the business and property anew, and from this amount they shall deduct a sum sufficient to put the property in first-class operating condition and the remainder shall be the valuation and shall be the initial capital value of the system.
>
> Arbitrators will also determine what would be a reasonable rate of return to the company, but in no event shall it be less than 6 per cent. To the capital value shall be added the cost of any extensions, betterments and permanent improvements. The fare will be on a sliding scale basis to be determined by an equalizing fund consisting of the earnings above the operating expenses and the maintenance, depreciation and renewal and allowances.
>
> Whenever the balance in the equalizing fund shall be more than 5 per cent of the capital value by an amount equal to 2 per cent of the capital value, the fare shall be lowered to the next lower rate. Either the city or the company may give notice of a change in fare not in accordance with the schedule, and if the two parties cannot agree, the question of the rate of fare will be submitted to arbitration.
>
> In case the city purchases the property, the company agrees that it will furnish electric current at a rate to be agreed upon, or if not agreed upon, to be fixed by the Ohio Public Utilities Commission. The city must give at least six months notice of its intention to purchase the railroad system. The price shall be the capital value of the company as provided in the ordinance. The company shall have sole control of betterment extension and permanent improvement whenever the unexpired term of the grant shall be less than fifteen years, and, at that time, may charge such a rate of fare as will provide a sufficient reserve to provide an amortization fund equal to capital value of property less the amount of the salvage value of the property.

Des Moines Strike Settled

Council Agrees to Put Matter of Increased Fares Before the Public

Employees of the Des Moines (Ia.) City Railway returned to their cars on Aug. 20 after having been on strike since Aug. 13. The settlement was the result of a compromise secured by business men of the city and the union officials.

The settlement was arranged on the following basis: The men agreed to return to work if the Council passed an ordinance submitting a 6-cent fare to the people; secondly, that Judge Wade of the Federal Court should order the issuance of receiver's certificates to cover $105,000 of back pay.

The first condition was met immediately by the passing of an ordinance by the City Council providing for putting the 6-cent fare before the people on Sept. 22.

The ordinance as passed by the Council provides that the voters shall decide upon the collection of a 6-cent fare effective immediately after the election and continuing until the increased pay and the back pay have been paid. The fund raised by this additional fare is to be kept intact and used only for the payment of the men under the scale provided in the arbitration award.

Upon the request of both sides to the controversy Judge Wade returned to Des Moines for a hearing on the settlement and after the case had been presented ordered that "the receivers shall forthwith, as soon as certificates are issued to the employees, pay upon each certificate one-third of the amount thereof, such payment to be indorsed upon the certificates at the time of payment and the money to make such payments to be taken from such other funds as may be on hand, the same to be in the nature of a loan from such fund and to be reimbursed from the advance fare of the ordinance when adopted."

Judge Wade also wrote into his order that a further consideration of additional payment would be deferred until Sept. 10, at which time he would order further advances if he was morally satisfied that the ordinance would be adopted by a vote of the people.

This order did not satisfy the union men, who demanded that the full amount of the certificates be paid at once. They threatened another walkout if this condition was not met by Aug. 25.

A citizens' committee and officials of the State fair, which is being held in Des Moines, conferred on Sunday with the union executive committee and finally a mass meeting of the union voted overwhelmingly to accept the proposition made by the citizens' committee. This proposition offers the men all receipts of the company between Aug. 1 and Sept. 22, over and above the actual operating expenses and specifies that in figuring the expenses taxes and depreciation are not to be considered. Earnings will be paid to the men on second certificates. The receipts for the month of August are to be paid on Sept. 5 and the receipts up to Sept. 22 to be paid Sept. 24. The money thus derived to be applied pro rata upon the certificates. The initial third payment of the certificates ordered by Judge Wade is to be made on Aug. 26.

In his ruling upon the original settlement proposed Judge Wade said:

> At the present stage, I cannot assume the moral responsibility of ordering the payment of the back pay in full, but as the evidence of good faith and to give some aid to the men who have waited so long, I

> am making an order that the receivers shall pay forthwith as soon as receiver's certificates are made out one-third of the back pay. It will no doubt be a surprise to the people of Des Moines to know that in order to make this one-third payment part of it will have to be taken from funds on hand to meet the payment of $63,000 taxes due on Oct. 1, and this is true after the collection of the balance due from the Interurban Railway and other available accounts.
>
> I make special appeal in behalf of these men to the newspapers of the city to get the facts before the people. There is no mystery about the financial condition of the railway. The figures are on file with the city and the receivers will aid in every way in getting the facts to those interested—and this means every citizen in Des Moines.

Upon hearing of the action of the union in threatening another walkout on the morning of Aug. 25 in case the full amount of the certificates was not made Judge Wade ordered the federal clerk to withhold action on his original order for the one-third payment.

Ohio Electric Strike Settled

After a strike lasting more than a week a settlement was reached between the Ohio Electric Railway and its platform employees at a conference held in Springfield on Aug. 23. The men had demanded an increase of 10 cents an hour over their old schedule, but they accepted 5 cents an hour. The company had offered an increase of 3 cents. This was refused at the time the men walked out.

After the strike became effective, the officers of the union announced that they were willing to arbitrate and intimated that they might be willing to accept 5 cents instead of 10. They persisted, however, in their claim that the company's offer of 3 cents was entirely inadequate.

Under the terms of the settlement the union agreed to drop the employees other than trainmen from the organization. They may form a new organization later. The company has agreed to settle with them at the prevailing wages.

Aurora-Elgin Strike Settled

The Aurora, Elgin & Chicago Railroad strike, which tied up transportation on that system for more than three weeks and deprived a number of cities of light and power, was called off at noon on Aug. 21 by practically a unanimous vote of the 600 employees.

The striking employees have accepted a temporary increase of 5 cents an hour with the understanding that if the situation warrants it, a further increase will be granted by Judge Evan Evans of the United States District Court in Chicago.

In offering the men a maximum increase of 5 cents an hour E. C. Faber, general manager for the receiver, estimated an 8-cent fare in Aurora and Elgin and slight increases in the interurban fares would provide for an increase in wages of about 4 cents an hour. It is understood that the company will file an application with the Public Service Commission for an increase in rates.

Westchester Strike Settled

Service on the New York, Westchester & Boston Railway, which had been tied up for five days through a strike of the motormen and conductors, was resumed on the morning of Aug. 27. A settlement was effected on Aug. 26 after negotiations lasting continuously for more than thirty hours. The men struck because their demand for the same wages that are paid to similar classes of labor on the federalized steam railroads was refused.

The men won the rate of pay they asked for, but they conceded to the company a nine-hour day instead of the eight-hour day. On Aug. 17 the company advanced the rate of pay 25 per cent, but the men were not satisfied and demanded steam railroad rates, which the company said it could not pay because it would mean an additional increase of 30 per cent. The men denied this and during the conference statisticians of the Public Service Commission submitted a table showing that the increase asked for would amount to only about 9 per cent, which, with the 25 per cent already granted, would mean an advance of about 34 per cent, which many of the conferees deemed reasonable. L. S. Miller, president of the Westchester line, based his refusal of the men's demands on the belief that the increase they demanded would amount to 30 per cent. When he learned that it meant only an increase of approximately 9 per cent his attitude became conciliatory. The strike situation was complicated by threats of the men against the New York, New Haven & Hartford Railroad, by which the Westchester line is controlled.

East St. Louis Strike Ended

The employees of the East St. Louis & Suburban Railway, East St. Louis, Ill., went on strike on Aug. 15.

The strike was precipitated over dissatisfaction by the men with the War Labor Board increase of 12 per cent. Service was resumed on Sunday morning, Aug. 24. During the time between Aug. 15 and Aug. 24 no attempt was made to operate cars, and practically no discussion was entered into on the part of the company as to wages or rates, but the pertinent issue as to the breaking of the contract was kept most prominent.

Following the declaration of the strike, W. H. Sawyer, president of the East St. Louis and Alton companies, telegraphed President Mahon of the Amalgamated reviewing the issues involved. Mr. Mahon later ordered the men back to work under threat of taking away their charter.

The men returned without any promise on the part of the management other than that contained in the company's telegram to Mr. Mahon. The company felt that it had no option except to take the ground that it did, making no further agreement or promise with men who were then breaking an agreement.

It was explained by the company in the telegram to Mr. Mahon that it would again agree to abide by the results of the War Labor Board award, and if the men promptly returned to work and continued in the future to respect their contract the company would further agree that after the full War Labor Board award was received, if it was unsatisfactory to either party the management would sit in conference with the Amalgamated members alone or with representatives of the public included, in order that there might be a full inquiry as to whether any injustice had been done, and if an injustice had been done, as to what further steps, if any, were practicable.

Mr. Huff Raps the Amalgamated

In announcing the increase of 25 per cent in the wages of the trainmen of the Third Avenue Railway, New York, N. Y., to which brief reference is made in this paper for Aug. 23. Slaughter W. Huff, president of the company, made the following statement:

> In our notice to you advising you of an increase of wages of approximately 10 per cent, effective on Aug. 13, we told you that we were unwilling that you should be paid less than the prevailing rate of wages in the immediate vicinity; and complying with this assurance to you, your rate will again be increased, so as to make a total increase within the last month of approximately 25 per cent, including starters, inspectors, switchmen and plowmen.
>
> This increase will become effective as of the date of the former 10 per cent increase, namely, Aug. 13, 1919.
>
> The financial condition of this system is not such as to justify such a large increase, and without an increase in fare it is simply a question of how long we will be able to meet these largely increased expenses before disaster overtakes the system.
>
> I believe that the large majority of our men are satisfied with their pay and working conditions, and do not wish any interference from the outside with their relations with the management of the system, and particularly in view of your past experience with the Amalgamated Association, you are not willing that they should again take possession of you and use you for their own selfish purposes in the great gamble with the New York transit situation start a strike almost immediately after it that they have been engaged in for the last several years.
>
> Since they violated their contract with the companies of this system and called you out in a sympathetic strike three years ago and threw you down, you have remained independent of the various brotherhoods, both national and local, that have entered into the transit situation. There seems to be ample evidence that during that time a spirit of co-operation and confidence has been developing between the management of this system and its employees, and if this has been developed to a point where you can trust the management to give you a square deal you do not need the Amalgamated Association or any other outside influence to control your course.
>
> As you well know, the policy of the Amalgamated Association has been to gets control of the employees of a system, and in your case they are even now threatening to call a strike before they get control of you, or even before they get a representation among you, trusting to the disorderly element in the community to force you from your positions and into their control. You can rest assured that the management of this system will stand with you in your efforts to keep out these professional agitators, and dismiss from the service those who ally themselves with them.

On Aug. 26 Justice Guy in the Supreme Court postponed until Sept. 8 the hearing on the injunction and restraining order against Patrick J. Shea and others to prevent them from interfering with the management and conduct of the Third Avenue Railway.

Everybody Censured

The local transit committee of the Brooklyn (N. Y.) Chamber of Commerce reported to the membership on Aug. 14 on the Brooklyn Rapid Transit strike situation. It is the opinion of the committee, of which Herman A. Metz, former comptroller of the city, and himself a large employer of labor, is chairman, that the attempt by Receiver Garrison of the company "to deny the right of collective bargaining * * * was of itself a challenge from which the strike was natural and to be expected." The committee says that Mr. Garrison "took an arbitrary stand."

The chamber also sees an error of judgment on the part of Mayor Hylan. The committee says that "for the chief magistrate of the city to take a position which could not by any chance be interpreted as neutral to disorder, places directly the responsibility for the disorder that followed."

For the employees the committee has the following words of censure:

> For the employees of our transit lines to take an unfair advantage of the present financial and industrial situation brings them directly within the class the President brands as un-American and as profiteers.

The committee draws attention to its report of Feb. 4, 1919, in which it "offered co-operation to settle and adjust the transit tangle if the facts were all put upon the table by the transit companies and all of the facts that now are claimed to warrant increased fares are stated." In this connection the committee said:

> This has not been done. The whole transit situation should be settled now without further delay and talk, but we believe that no satisfactory or permanent settlement can be reached which leaves uncovered any of the facts of cost, finance, or leasehold in connection with these properties.

As a matter of fact, the quotation from the reply by Mr. Garrison to the chairman representing the Amalgamated Association, on which the chamber bases its criticism, was to the effect that Mr. Garrison would not deal with outside organizations, but would meet with the employees.

Strike in Los Angeles

On Aug. 16, at 2 a.m., some 3000 trainmen, electricians, shopmen and maintenance-of-way employees of the Pacific Electric Railway and Los Angeles Railway lines, Los Angeles, Cal., went out on strike because the companies had refused to grant certain demands for an increase in pay and changes in working conditions.

The Los Angeles Railway, with the employees who remained loyal and the reserve force of student trainmen, was able to maintain 50 per cent service and has bettered service each following day.

The Pacific Electric Railway, however, due to practically all the substation operators going out, was not able immediately to maintain more than 50 per cent service, but in the succeeding days with competent substitutes was able to restore service to normal.

There was no serious interruption to the Pacific Electric Railway freight service except the delay of interchange with the steam roads, as the members of the Brotherhoods on these lines are refusing to accept or deliver freight to the Pacific Electric. No violence of consequence was evident on either line up to Aug. 19.

A United States court injunction was obtained by the Pacific Electric Railway during the strike of 1918 and an injunction of the Los Angeles Railway returnable on Aug. 20, 1919, restrains the striking employees from intimidating employees who are still working and from molesting or damaging the property. The Pacific Electric Railway trainmen are organized under the National Brotherhood of Locomotive Engineers, and the Los Angeles Railway trainmen are unionized under the Amalgamated Association.

Dissatisfied With Wage Award

The employees of the Eastern Massachusetts Street Railway, Boston, Mass., dissatisfied with the wage award of the War Labor Board, voted on Aug. 25 to go on strike.

During the voting a telegram was received by James H. Vahey, general counsel for the carmen's unions, from President William D. Mahon of the Amalgamated Association, giving instructions to have the men remain at work and accept the award under protest, until he could come to Boston in about three weeks, when he would try and effect a settlement personally.

After receiving the telegram the union leaders conferred with Mr. Vahey for several hours trying to evolve some means by which the men could be persuaded not to put into effect their strike vote.

Disorder and Bloodshed at Olean

All platform men in the employ of the Western New York & Pennsylvania Traction Company, Olean, N. Y., went on strike on Aug. 12. The motormen and conductors were receiving from 27 to 33 cents an hour. They demand 43 cents an hour for the first six months; 50 cents an hour for the next nine months, and 55 cents thereafter. They also ask a reduction in working hours and recognition of the Amalgamated recently organized in Olean.

Wilson R. Page, president of the company, told the men the company is not in a financial position to grant a wage increase at this time and promised he would consider their demands after action is taken by the Public Service Commission for the Second District, on the company's application for permission to raise its local fares in Olean from 7 cents to 10 cents and its interurban fares from 3½ to 4½ cents a mile. This plan the men rejected.

The company then brought to Olean about sixty-five men from Philadelphia, and an attempt was made to run cars. On the night of Aug. 18 strikers attacked a car operated by an outside crew and demanded that the company release the outside employees quartered in the carhouse. More than twenty persons were taken to hospitals suffering from gun shot wounds and as many more were attended by local physicians.

The police and deputy sheriffs were unable to stop the disorder and the carhouse was stormed and after considerable difficulty the outside employees were hurried to the police headquarters in automobiles. Many were badly wounded.

The mob then stormed the jail until State troopers arrived. The strike breakers were then taken to the county jail at Little Valley where they are being held pending a Grand Jury investigation.

No attempt was made by the company to run cars after the riot. James P. Quigley, secretary and counsel of the company, told a correspondent for the ELECTRIC RAILWAY JOURNAL that he is willing to submit to a board of arbitration all questions in dispute between the strikers and the company and said the company will not discriminate against union men. The strikers are also willing to arbitrate all points in dispute but demand recognition of the union.

Alfred D. Ewing, president of the Olean Chamber of Commerce, called a conference between the strikers and the company officials in an effort to bring about a settlement, but no agreement was reached. The Mayor of Olean also tried to bring about an agreement, but without avail.

Strike in Charlotte, N. C.

Electric railway service in Charlotte and Winston-Salem, N. C., and Greenville, S. C., stopped on Aug. 10, when the trainmen of the Southern Public Utilities Company walked out on short notice demanding a further wage increase and recognition of the union. Z. V. Taylor, president of the company, had refused to treat with the men as members of the Amalgamated Association, although expressing willingness that they form a union of their own.

The men asked for a maximum wage of 45 cents an hour for motormen and conductors and for 50 per cent above the scale for operators of one-man cars. The company, which had raised the pay more than 100 per cent during the last three years, contended that no further increase was possible at present. The men operating the line in Anderson, S. C., who had recently received an increase, refused to join in the strike. The company presented its case to the men and to the public in the last edition of its monthly magazine.

For more than a week electric railway service in Charlotte and neighboring towns was completely tied up. The striking car men were backed up in their demands by the workers in the company's power and gas plants, who walked out in sympathy with them.

Rumor About Mr. Mitten

It was reported by the evening newspapers of New York in their editions late on Aug. 27 that Thomas E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, had been invited to succeed Theodore P. Shonts as head of the Interborough Rapid Transit Company, New York. It was said that the resignation of Mr. Shonts was in the hands of the company's directors. The New York *Sun* said that, according to the report in circulation, the plan was for Mr. Mitten, upon assuming the presidency of the Interborough, to take charge of a general merger of all railway lines in New York. That paper, however, quoted an officer of the banking firm of J. P. Morgan & Company as having said that he did not believe there was any foundation for the report.

News Notes

Wage Increase in Easton.—The employees of the Easton (Pa.) Transit Company have been granted an increase in pay of 5 cents an hour. The men had requested an advance of 10 cents.

Railway Takes Over Buses.—The bus lines running between Houghton and Calumet, Mich., and Houghton and Painesdale have been taken over by the Houghton County Traction Company, which is purchasing four new buses for the service. The company is also erecting a garage for the accommodation of the equipment.

St. Louis Men Accept Award.—The wage award of the Public Service Commission of Missouri, granting trainmen of the United Railways, St. Louis, Mo., an increase of 45 per cent, was presented to the men officially at a meeting of their union. The secretary of the union announced that the men were satisfied with the award.

Truce in Burlington Strike.—The Burlington (Vt.) Traction Company resumed operation on Aug. 16, an agreement having been reached with the strikers for a thirty-day truce. The men went on strike on Aug. 8 to enforce their demands for an increase in wages, an eight-hour day and time and a half for overtime.

Strike in Nashville. — Electric railway service throughout Nashville, Tenn., was entirely suspended on Aug. 21 as a result of the strike of conductors and motormen of the Nashville Railway & Light Company. The company attempted to operate a few cars, but the effort was quickly abandoned. It is said that the principal issue involved is recognition of the union.

Wilmington Men Ask More.—The employees of the Wilmington & Philadelphia Traction Company, Wilmington, Del., have presented a request to the company for an increase in wages of 15 cents an hour. Conferences looking toward an adjustment of the matter have been held by representatives of the men with Thomas W. Wilson, vice-president and general manager of the company.

Examination for Mechanical Engineer.—The United States Civil Service Commission has announced that on Sept. 23 next an examination will be held for the position of associate mechanical engineer. Vacancies in the Safety Section, Bureau of Standards, Department of Commerce, Washington, D. C., at salaries ranging from $2,000 to $2,800 a year, will be filled from this examination.

Strike to Enforce Reinstatement.—Between 400 and 500 employees of the Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont., refused to take out their cars on Aug. 21, carrying out their threat to strike made when Superintendent E. W. Oliver, Toronto, refused to give the employees sufficient evidence for the dismissal of William Bell, a conductor. There is no wage controversy involved.

Present Wage Scale Will Continue at Tacoma.—Motormen and conductors of Tacoma Railway & Power Company, Tacoma, Wash., have agreed to sign a contract continuing the present rate of pay for one year. Union officials said that higher pay was not demanded at this time so that no greater burden need be put upon industrial workers for fare. Fares were raised from 5 cents to 7 cents when the present wage scale went into effect last year.

Solution of Traction Program Proposed.—Traction matters are again due for a stirring up at a special meeting of the City Council of Chicago, Ill., called for Sept. 9. Mayor Thompson has announced that he will present a message on the subject at that time, proposing a solution of the transportation problem. While the details of his plan have not been made public, it is thought they have to do with the construction of a subway system with the traction fund and the forcing of the companies to agree to some form of public operation.

Hammond Strike Still On.—The strike on the Hammond, Whiting & East Chicago System, Chicago, Ill., is still in effect. The employees want the Chicago wage scale and the company insists this cannot be granted without a 7-cent fare. The Hammond city authorities have applied for a receiver to resume operation of the cars, and the hearing was set for Aug. 26. It is said the local authorities are willing to concede a 7-cent fare, but they insist on extension of lines which the company officials say will be too costly.

Brotherhood Men Satisfied.—A statement prepared on their own initiative by employees of the Kansas City (Mo.) Railways and signed by a majority of them, has been sent to the committee of 100 appointed by the Chamber of Commerce to investigate traffic conditions, especially the operation of the railway. The statement reflects satisfaction with their working conditions, and a spirit of co-operation with the company. The employees declare it to be against the interest of the public and the company, for the company to restore to their position men affiliated with the Amalgamated Association who participated in the recent strike.

Disorder Prevents Operation.—Aug. 22 marked the fourth day of the strike in Louisville. It is claimed the strikers are now asking increases in wages and various other things which were settled by arbitration prior to the walkout. At the time of the walkout the question of the company's right to discharge men without preferring charges within twenty-four hours was the principal grievance. The four days have been marked by considerable violence. The company has told the Mayor that it could run its cars if given police protection.

Washington Men Want Seventy Cents.—Demands for a wage scale of 70 cents an hour for motormen and conductors, beginning on Sept. 1; an eight-hour day, an increase for other employees of 25 cents an hour and other improvements in conditions of work and wages were submitted to the Washington Railway & Electric Company, Washington, D. C., on Aug. 22, by a committee of Division 875 of the Amalgamated Association. The Amalgamated claims a membership of more than 800 employees out of the total of 1050 employees of the company. The Brotherhood of Street Railway Workers a few days previous had presented ten demands to the company. The brotherhood demanded a flat increase of 25 per cent for all employees of the company. This was the principal demand. The nine other demands were all for improvement in working conditions.

Holyoke Award Announced.—The report of Henry B. Endicott, as arbitrator on the wage question as affecting the employees of the Holyoke (Mass.) Street Railway gives the trainmen a maximum of 55 cents an hour, beginning June 1, 1919, an increase of 14 cents an hour over the present maximum. Trackmen get similar increases and the snow sweepers get 10 cents an hour more than at present. Spare men will get one-half of one day's pay, when reporting on orders of the company, instead of two hours pay, as at present. In making the award Mr. Endicott said: "If the public is to have the privilege of street railway transportation, it must pay a fair price for it; and the unwillingness of the public to recognize the full cost of transportation by street cars, or the hesitancy of public officials to co-operate with the street railway managements in devising means for the collection of the necessary revenue, is not a reason for requiring railway employees to work for inadequate wages."

Financial and Corporate

Foreclosure Sale Soon

Reorganization Plan Is Announced for the Fort Wayne & Northern Indiana Traction Company

The stage is being set for the reorganization of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind. The plan for carrying out the financial rehabilitation is that advanced by the committee representing the holders of the thirty-year first consolidated mortgage 5 per cent bonds of the Fort Wayne & Wabash Valley Traction Company. Out of the $6,966,000 of this issue outstanding, $6,063,000 has been deposited. The reorganization plan is dated Aug. 18. A period of grace of thirty days is extended to dilatory holders of the bonds to come in under the plan.

220 MILES OF ROAD

The various companies included in this system of 220 miles of street and interurban railways had outstanding $11,801,700 of bonds, of which the largest issues were $6,966,000 of Fort Wayne & Wabash Valley Traction first consolidated mortgage 5's and $3,000,000 of Fort Wayne & Northern Indiana Traction Company first and refunding mortgage 5's. This amount of $11,801,700 does not include $200,000 of car-trust certificates. The stock issues outstanding consist of $2,500,000 of 6 per cent preferred stock and $4,000,000 of common stock. There is also $75,000 of dividend scrip.

Under the reorganization plan only a very small amount of the issues outstanding will remain undisturbed. Those which it is proposed to leave untouched are the $29,000 of Fort Wayne Traction Company first mortgage 4's, the $57,700 of Fort Wayne Power Company first mortgage 5's and the $400,000 of Fort Wayne, Marion & Bluffton Traction Company first mortgage 5's. There has been no default on these.

HOLDINGS OF STOCKHOLDERS REDUCED

The proposed capitalization of the new company will be $13,901,700, divided as follows: $4,679,450 of 5 per cent first and refunding mortgage bonds, $4,807,750 of three-year 6 per cent adjustment mortgage bonds, $2,202,250 of 7 per cent preferred stock, and $2,212,250 of common stock. The details of the various exchanges are of interest mainly to the holders of the issues involved. So far as the stockholders are concerned, however, the scaling down of their holdings appears somewhat drastic. For the holders of the $4,000,000 of present common there is apportioned $400,000 of new common, or 10 per cent. For the holders of the $2,500,000 of present preferred stock there are apportioned $225,000 of adjustment mortgage 5's, $100,000 of 7 per cent preferred stock and $1,600,000 of common, or securities to the extent of 77 per cent of their original holdings.

The committee explains that the property has been improved considerably during the period of interest default out of earnings and the reorganization plan contemplates that no interest shall be paid upon any of the new bonds during 1919 in order that further use may be made of earnings for construction and renewals, thus eliminating the necessity of selling securities.

The receiver, Robert M. Feustel, will shortly apply for an order of sale for the property.

Court Fixes Status of Debentures

In a friendly suit brough by the Connecticut Company, New Haven, Conn., against the New York, New Haven & Hartford Railroad, the Travelers' Insurance Company and the Aetna Life Insurance Company, the Connecticut Supreme Court of Errors has handed down a decision holding that the company cannot mortgage certain property owned by it without providing for participation in the security by the holders of $14,000,000 of debentures issued by the Consolidated Railway before the company came into control of the electric railways in New Haven. The Connecticut Company asserted that these debentures constituted a cloud on its title to certain property and prevented it from raising funds by way of mortgage.

The following questions were passed upon:

> (a) Whether the plaintiff is debarred from mortgaging the main line, formerly of the old Fairhaven & Westville Railroad, situated in New Haven, without providing in such mortagage for participation in security thereof for the holders of the debentures.
>
> (b) Whether or not an equitable lien was created on the property and franchise owned by the Consolidated Railway by the issue of the debentures.
>
> (c) Whether or not the Connecticut Company, having acquired the street railway properties and franchises as described in the pleadings, holds them free and released from any obligation or lien imposed thereon in favor of the purchasers and holders of the Consolidated Company's debentures, and whether or not the Consolidated Company can effect a valid mortgage without providing for the debenture holders.
>
> (d) Whether the obligations of the contract with the debenture holders is protected by the federal Constitution so that its terms are inviolable and cannot be altered or impaired or defeated by subsequent special acts of the Connecticut or Massachusetts Legislatures in 1915 set up in the complaint or by a decree of a judicial tribunal.

With Justice Gager writing the opinion, the Supreme Court's answer was wholly in favor of the bondholders. Justices Prentice and Beach, however, concurred in all except the answer to the second question, dissenting from the conclusion that it should be answered in the affirmative.

See Depreciation Need

San Francisco Committee Opposed to Depletion of Fund to Pay Increase in Wages

The finance committee of the Board of Supervisors of San Francisco, Cal., composed of Ralph McLeran, J. C. Kortick and F. Suhr, Jr., has reported against the resolution to transfer $10,247 from the depreciation fund of the Municipal Railway so that the money would be available to cover the increase in wages of the railway employees for July, making the rate $5 a day.

DEPRECIATION PERCENTAGE STANDS

As noted in the ELECTRIC RAILWAY JOURNAL for July 19, page 144, the board voted to increase the pay of the platform and the track men, but declined to reduce the percentage of gross passenger revenue that is set aside for depreciation. In its report to the Board the finance committee said in part:

> In the judgment of the committee it will be most unwise to attempt a reduction of the 18 per cent of gross revenue set aside for depreciation. As a matter of fact, a study of this problem and comparison with reports of other cities indicate that the depreciation percentage should be raised instead of lowered. This statement is substantiated by a very complete report presented by the city engineer of San Francisco, which is attached to and made a part of this report.
>
> FAVORS SIX-CENT FARE
>
> To meet the extraordinary charges now being imposed upon the Municipal Railway it will be necessary for the Board of Public Works and the superintendent of the Municipal Railway to inaugurate most rigid economies in operating expenses and wherever possible eliminate excess service. The committee is advised that some economies may be made without impairment of the excellent service being given by the Municipal Railway. These economics may bring about partial restoration of the financial balance which makes for the profitable operation of our municipal street railway system.
>
> After a very thorough investigation, the committee believes that the true solution is an increase in fare to 6 cents or more, but does not recommend that such action be taken at this time, for this reason: Increase in electric railway fare can only be successfully installed after education of the public.
>
> The committee has before it reports from other cities where fares have been increased in some instances as high as 10 cents, as in Boston. Other cities have increased to 6, 7 and 8 cents. It is a question that should be brought to the attention of the public, and when the cost of labor, material and all necessities of life is doubled and trebled, there is no reason why railway fares should not be raised proportionately.
>
> NO MORE EXTENSIONS OUT OF REVENUE
>
> To continue the $5 a day wage on the railroad the committee will from time to time recommend to this board transfers from the depreciation fund of a sufficient amount to meet the payrolls. A 3 per cent reduction of the present 18 per cent would not be sufficient to meet the increase which has been granted.
>
> The attention of the Board of Supervisors, Board of Public Works and the public is directed to the questions of extensions of the Municipal Railway, and under existing financial conditions it is certain there can be no further extensions of the Municipal Railway financed out of revenues. Future extensions can only be made by a bond issue or by some method of financing other than from revenue. And unless there is a marked increase in revenue in all probability the Board of Supervisors will be compelled in future years to provide for bond interest and redemption in whole or in part from the annual tax levy.

Running Behind

American Public Utility Company Has Loss of $104,816 for Year Ended June 30

The earnings of the subsidiary companies of the American Public Utility Company, Grand Rapids, Mich., for the year ended June 30, 1919, follow:

Gross earnings from operations	$4,643,318
Operating expenses	3,052,717
Net earnings from operations	$1,590,601
Miscellaneous income	76,429
Gross income	$1,667,030
Loss	$ 104,816
Net income	$1,542,723

FIXED CHARGES FOR TWELVE MONTHS

Interest on underlying securities	$1,389,653	
Interest on collateral trust bonds	172,815	
Interest on two-year notes	29,340	
Miscellaneous interest	55,731	
Total interest charges		$1,647,539
Loss		$ 104,816

The report of the directors covering the operations of the company for the fiscal year ended June 30, 1919, was, to some extent, anticipated by the letter of the president of the company, addressed to the preferred stockholders, on July 1, in which were discussed the conditions of income leading the directors to suspend payment of preferred stock dividends until conditions became more favorable. There is no cessation in the public demand for service furnished by the company, but the net returns from the service give, for the present, no adequate basis for the immediate recompense of the capital already interested, or for attracting the new funds which are constantly required for extensions and betterments.

OPERATING EXPENSES OUTSTRIP EARNINGS

Proof of these statements can be found in a comparison of gross earnings and operating expenses of the company for the years ended respectively, June 30, 1918, and June 30, 1919. For the first of these periods the gross earnings of the properties owned by the company (the Holland City Gas Company and the Jackson Light & Traction Company being excluded) were $4,089,090. For the year just closed the gross earnings from seven of the properties which contributed to the previous year's figures of gross earnings were $4,643,318, an increase of $554,227 of gross receipts. For the first period the net income was $1,590,831, while for the year just closed the net earnings were $1,590,601, showing a decrease of $230 in the net results of the last year's operations as compared with its predecessor. A sum greater than the total amount of increased gross earnings had been absorbed by the increase in operating expenses.

The attitude of the public authorities of Jackson, Miss., toward the Jackson Light & Traction Company resulted in its failure to meet its obligations, and that property has also been put under the protection of the bankruptcy court to protect its mortgage and its creditors. Proceedings affecting this property are still in progress.

Gross earnings for the past fiscal year from the operations of the subsidiary companies, as compared with those of previous years, were:

Year ended June 30, 1912	$1,738,192
Year ended June 30, 1913	1,981,320
Year ended June 30, 1914	2,319,594
Year ended June 30, 1915	2,932,069
Year ended June 30, 1916	3,309,586
Year ended June 30, 1917	3,819,820
Year ended June 30, 1918	4,089,090
Year ended June 30, 1919	4,643,318

The total for the year ended June 30, 1918, in the foregoing table excludes $363,034 of earnings from the Holland City Gas Company and the Jackson Light & Traction Company, included in the last annual report, the adjustment being made for purposes of comparison.

B. R. T. Receiver's Certificates Offered

A group of bankers consisting of the Central Trust Company, the Bankers' Trust Company, the Chase Securities Corporation, Hayden, Stone & Company, and J. & W. Seligman & Company has purchased the $18,000,000 Brooklyn (N. Y.) Rapid Transit Company 6 per cent two-year receiver's certificates sold by Lindley M. Garrison, receiver.

These certificates are being offered for public subscription by bankers at 98 and interest. They are in denominations of $1,000 and are dated Aug. 1, 1919, and are due Aug. 1, 1921. They are redeemable at any interest date at par and accrued interest on thirty days notice.

The proceeds of not less than $13,000,000 and not more than $15,000,000 of the certificates are to be used principally to complete the subway contracts with the city of New York, and the proceeds of the balance will go to complete the power house improvements of the company required in connection with the new rapid transit lines.

The certificates will be secured by a pledge of not less than $13,000,000 nor more than $15,000,000 of the joint certificates of the receiver of the rapid transit lines (New York Municipal Railway Corporation and New York Consolidated Railroad) which are in turn secured by a first lien on all the property and income of these two companies being subject only to the underlying liens of the first mortgage of the Brooklyn Union Elevated Railway under which $22,967,000 of bonds are outstanding, also by a first lien on all property of the Brooklyn Rapid Transit Company, in possession of the receiver or subject to the administration of the court and on the income therefrom, subject only to the prior lien of the 4 per cent refunding mortgage of 1902, under which $27,621,000 bonds are outstanding; also by a pledge of $5,822,000 of various bonds including $5,092,000 of 4 per cent refunding bonds of 1902 and by a first lien on all the property susceptible of separation purchased with the proceeds of the certificates, principally the power house improvements.

Financial Briefs from St. Louis

Exceptions to the report of Special Master Henry Lamm, who investigated the receivership case of the United Railways, St. Louis, Mo., have been overruled by Judge D. P. Dyer of the United States District Court. The exceptions included objections to the recommendation of the special master that Rolla Wells, receiver, be authorized to issue more than $2,000,000 of receiver's certificates, payable in one year, the receipts from the sale of which were to be used to pay bonded indebtedness which has matured. The issuance of these certificates is now authorized.

One of the greatest transcripts of evidence ever prepared for a court in St. Louis will be submitted about Sept. 1 to attorneys in the suit of John W. Seaman against the directors of the United Railways for an accounting. The transcript contains about 1,250,000 words. A decision is not likely in the Seaman suit before Jan. 1, 1920.

Valuation of the physical property of the United Railways, on which the chance of higher fares depends, has been held up by the Public Service Commission because the State is short of funds. The valuation was to have been completed by June 1. The date was later put ahead to Sept. 1. Now, on account of the lack of funds, the commission is unable to employ engineers and it is doubtful if the valuation can be completed before next spring.

Five-Cent Fare a Failure

With a straight 5-cent fare during the month of July the Grand Rapids (Mich.) Railway lost $19,323, according to its monthly report submitted to the City Commission.

This loss is shown in the face of an increased net revenue of about $10,000 over the same month a year ago. The receipts for the month are shown at $120,183, against $109,279 for 1918.

A reduction of nearly $1,000 is shown in the general expenses over the same month a year ago. The total expense, however, is $90,757 against $77,172 for the same month a year ago. The increase is brought about through increased wages to employees and increased operating expenses.

The net operating income for the month was $29,426, but with interest depreciation and other items totaling $48,749 charged off the deficit is shown.

To date since Jan. 1, $87,500 has been charged off as a depreciation item. Of this amount $41,411 has been spent, leaving a balance of $46,088 in the depreciation fund.

When the commission, through the railway committee, requested a trial of the 5-cent fare during July Benjamin S. Hanchett, president of the company, estimated that the operating loss would be about $20,000, which is shown to have been just about correct. The company has reverted to a 6-cent fare with nineteen tickets for a dollar.

$635,395 Deficit in Columbus

In response to a resolution of the Chamber of Commerce of Columbus, Ohio, the Columbus Railway & Light Company, through president Charles L. Kurtz, has published the following statement covering the year 1918:

Operating revenue	$4,197,177
Operating expense (no depreciation	2,770,370
Net operating revenue	$1,426,807
Taxes	342,698
Operating income	$1,084,109
Non-operating income	67,309
Gross income	$1,151,418
Deductions from gross income	1,786,813
Deficit	$ 635,395

It is explained that the deductions consist of bond and note interest, liability on account of fare rebate coupons, back wages due employees under the award of the War Labor Board, depreciation and other usual and proper deductions, with no allowance for any dividends on preferred or common stocks.

Abandonment Threatened

According to the announcement from Homer Loring, chairman of the board of trustees of the Eastern Massachusetts Street Railway, the successor to the Bay State Street Railway, some of the cities and towns will lose their service because of the added burden of the increased wages to the employees under the recent decision of the War Labor Board unless they contribute to the cost of service, as provided in the public control act of 1918. The increased wage, it was reported, will mean a total increase of nearly $1,000,000 the first year.

Unless the communities contribute to its support the company will be compelled to abandon 200 miles of track. Service has been discontinued or will be discontinued on other lines, but the new announcement includes 200 miles additional to these places. Under the new edict the lines which will be affected are the New Bedford, Middleboro & Brockton line and the Georgetown Rowley & Ipswich line. The cities and towns which will be affected have been notified of the proposed abandonment of service unless they contribute to the road under the 1918 act.

Argentine Earnings Decline

The shareholders of the Anglo-Argentine Tramways, Ltd., met in London, England, on Aug. 14. The traffic receipts for the past year amounted to £2,909,375, so that, notwithstanding the continuance of abnormal conditions, there was an increase of £209,131 over the figure of 1917. The directors regretted that, having regard to the uncertain labor position and to the cost of current during the first five months of the present year, they were unable to recommend the distribution by way of dividend on the first preference shares of any part of the £83,042 standing to the credit of profit and loss.

For eighteen days, from May 27 to June 13, the service was entirely disorganized, and the receipts were reduced by £90,000, owing to a strike of the employees. In the end a full service was resumed on the understanding that the employees would be granted an eight-hour day and other advantages so soon as the municipality of Buenos Aires sanctioned the increase of fares.

Application was made to the municipality to sanction the increase, and a committee appointed to consider the matter had unanimously reported in favor of the application. The matter was still under consideration by the municipality, and the manager was hoping for a favorable decision. When the concession was granted, a uniform fare of 10 cents was sanctioned, upon the ground that it was fair in the interests of the city of Buenos Aires, and was sufficient to give them an adequate return upon the capital of the company.

Financial News Notes

Lighting Company Purchased.—The Alabama Power Company, which operates an electric railway in Anniston and Huntsville, Ala., has purchased the Selma (Ala.) Lighting Company.

East St. Louis Removing Track.—The East St. Louis, (Ill.) Railway will remove its tracks on St. Louis Avenue between Collinsville Avenue and Fifth Street. The double track on this street has been used very little.

Notes to Buy Cars.—The Springfield (Mass.) Street Railway has requested authority of the Public Service Commission to issue notes totaling $44,805 to pay in part for ten one-man cars which the company will soon put into operation.

Note Issue Asked.—The East St. Louis & Suburban Railway, East St. Louis, Ill., has filed a petition with the Illinois Public Utilities Commission for permission to reissue notes to pay off part of the original indebtedness of the company in the amount of $400,000.

Another Abandonment Threatened.—The Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has made application to the Public Utility Commission of Ohio for permission to abandon operation of its electric line between Niles and Mineral Ridge, 2½ miles long. Traffic revenues have not been sufficient to cover operating expense.

Threaten Abandonment.—The trustees of the Eastern Massachusetts Street Railway, Boston, Mass., have written to George A. Schofield, who is acting counsel for Ipswich, to the effect that it is their intention to stop operating the Georgetown, Rowley & Ipswich line on Sept. 1, unless the three towns make contributions to keep the line running.

City Asks for Receiver for Railway.—With the Hammond, Whiting & East Chicago Street Railway, Chicago, Ill., refusing additional service in exchange for permission to raise its fare to 7 cents, the city of Hammond on Aug. 22 filed a petition for a receiver for the railway in the Crown Point Circuit Court, after it had begun mandamus proceedings to force the company to resume the operation of its lines or lose its franchise.

Abandoned Road to Be Sold. — The properties, franchises, etc., of the Abilene (Tex.) Street Railway will be sold at public auction on Sept. 9, by W. G. Swenson, receiver. The sale is to be made to satisfy a judgment and foreclosure for $38,670, issued out of the District Court of Taylor County. The company owns about 5 miles of track in Abilene, but its cars have not been operated for some time, having been superseded by a motor bus system.

Suspension Threat in Oswego.—The Empire State Railroad, Syracuse, N. Y., has called a stockholders' meeting for Sept. 23 for the purpose of considering the advisability of abandoning its lines within the city of Oswego. This is frankly stated to be a movement resulting from the position taken by the city officials regarding matters of fare increase and public improvements. It in no way affects the operation of the company's lines between Syracuse and Oswego.

Chicago Receipts Increase 23.4 Per Cent.—A comparison of the results of operation on the Chicago (Ill.) Surface Lines for the first seven days following the strike with those of the seven days immediately preceding the strike shows that in place of the theoretical 40 per cent increase in revenue resulting from the increase in fares from 5 cents to 7 cents, the revenue has actually been increased 23.4 per cent. This comparison also shows that riding has decreased 11.31 per cent.

Prompt Interest Payment Planned.—The directors of the Quebec Railway, Light, Heat & Power Company, Quebec, Que., have decided to pay up the interest on the first mortgage issue in place of taking the full three months grace as has been the custom for some years back. The *Financial Post* of Toronto says that the annual statement of the company for the year ended June 30 will show a big improvement in earnings due to increased fares, increased rates for gas and electricity, etc.

Youngstown Doing Better.—The report of the Youngstown (Ohio) Municipal Railway, controlled by the Mahoning & Shenango Railway & Light Company, for the month of July, during which month a 6-cent fare was in effect, shows the deficit in the stabilizing fund cut from $24,182 for June, when a 5-cent fare was in effect, to $9,374. The 7-cent fare now in effect is expected to end the monthly deficit in this fund and perhaps show a profit. The report shows the gross revenue for July to be $130,335 against $112,482 for June.

Buses Will Supplant Railway—On account of the very high cost of operation and the small earnings the Southern Railway & Light Company, Natchez, Miss., is now dismantling 4 of the 6 miles of railway and has forfeited its franchise, except for the 2 miles of track that leads from the Ferry Landing through the center of the city. The cars with motors and tracks are being offered for sale as it is not probable that railway service will be resumed. The question of operating gasoline buses is being considered, and as soon as two suitable buses are purchased a trial will be made.

Foreclosure Sale Approved.—Judge George W. English in United States District Court has approved the sale of the property of the Southern Traction Company to H. D. Mepham, New York, N. Y., the original promoter of the road. The Southern Traction Company planned to build from East St. Louis to the coal fields near Belleville, Ill. William E. Lorimer, Chicago, Ill., and the Lorimer & Gallagher Construction Company were interested in the road and their insolvency contributed to the failure of the LaSalle Street Trust & Savings Bank, Chicago, a few years ago. Litigation over the railway was started in the United States District Court in 1914. The purchaser is to pay the full amount of the purchase price by Oct. 1.

Washington Merger Urged.—Resolutions advocating the merger of the Capital Traction Company and the Washington Railway & Electric Company, Washington, D. C., practically identical with those adopted by the public utilities committee of the Chamber of Commerce some weeks ago, were adopted by the chamber's board of directors at a meeting on Aug. 22. The board's resolutions set forth that a merger of the two companies would be for the best interests of the companies, stockholders, residents, employees and all concerned. A committee is to be named by President Robert N. Harper of the chamber to draw up a bill for presentation to Congress providing for the merging of the two companies.

A Road Reclaimed.—The Massachusetts Street Railway, successor to the Bristol & Norfolk Street Railway, is to resume traffic on the line between Holbrook Station, Randolph and Stoughton Square. The line has not been operated since Dec. 1, 1918, when, owing to financial loss, the cars were stored in the carhouse and partial dismantlement begun with the view of junking the road. A few weeks ago it was stated that the rails would be torn up and the wires taken down. This announcement caused a storm of protest which was followed by the demand of a heavy bond for the replacement of the streets in their original condition. A company has been formed by local men with the result that service will be resumed.

Iowa Railway & Light Notes—Harris, Forbes & Company, New York, N. Y., and the Harris Trust & Savings Bank, Chicago, Ill., are offering for subscription at 99 and interest, yielding more than 6½ per cent, $731,500 of two-year, 6 per cent collateral notes of the Iowa Railway & Light Company, Cedar Rapids, Ia. The notes are dated Aug. 15, 1919, and are due Aug. 15, 1921. The Harris Trust & Savings Bank is the trustee. The bankers offering the issue point out that the net earnings are more than one and three-fourths times the annual interest on the outstanding funded debt. The note issue is secured by the pledge of first and refunding mortgage bonds on the basis of 77 per cent of the face value of bonds pledged. The authorized issue of the notes is $2,000,000.

Another Long Island Abandonment.—The Public Service Commission for the First District of New York has been informed that the Long Island Electric Railway, which operates from Jamaica to Far Rockaway, is ready to ask the courts, through a receivership, to discontinue operation, wind up its affairs and sell its rails and other property to the highest bidder. The company is owned jointly by the Interborough Rapid Transit Company and by the Long Island Railroad, which have advanced numerous sums in recent years to provide its running expenses. The company has not paid interest on its bonds for many years and never has paid dividends on its stock. The parent companies refused longer to advance moneys for maintenance and operation, and officials of the road declare they must shut down.

Liquidates Back Dividend.—Directors of the Standard Gas & Electric Company, Chicago, Ill., on Aug. 20 declared the regular quarterly 2 per cent cash dividend on the preferred stock payable on Sept. 15 to stockholders of record of Aug. 30, and passed a resolution providing for the payment of 13 per cent cumulated dividends on the preferred payable in common stock of the company at par. The operating statement for the first six months of 1919 shows the full 4 per cent for the preferred and 3.52 per cent on the common shares, including the increased common stock due to payment of the accumulated dividends on the preferred. This is at a yearly rate of 8 per cent for the preferred and more than 7 per cent for the common, without taking into consideration any earnings from the Shaffer Oil & Refining Company, which company, the directors state, is progressing most satisfactorily.

Exception Taken to Report of Special Master.—Exceptions have been filed in the United States District Court to the report of Special Master Henry Lamm regarding the issuance and sale of receiver's certificates to take up a debt of $2,300,000 of the United Railways, St. Louis, Mo., which is due. Those who filed were John W. Seaman, who instituted the receivership suit against the company, and Elmyr A. and Robert T. Laughlin, intervenors in the suit. They object to language of the report, in so far as it refers to a "default" on the part of the company, in not taking up bonds issued in 1904 by the St. Louis Transit Company which leased the railways in St. Louis from the United Railways. They assert that there was no consideration for the indorsement by the United Railways of the Transit Company bonds and that therefore the indorsement is void. Judge David P. Dyer of the United States District Court will pass on the exceptions.

Property of Projected Road Sold.—The properties of the Eastern Texas Traction Company, including franchises for the construction of an interurban line from Dallas to Greenville, a distance of 32 miles, right-of-way on which the roadbed has been graded for considerable distances and other intangible assets, were sold at sheriff's sale recently to S. B. Brooks, Greenville, Tex. The sale was made to satisfy a judgment granted on June 10 on suit of Phil Karner, contractor, to recover $53,690 alleged to have remained unpaid for construction work on the right-of-way. R. R. Neyland, Mr. Brooks' attorney, of Greenville, said that the sale was in effect a formality intended to place the entire control of the property in Mr. Brooks' hands. As originally organized, F. E. White was president of the Eastern Texas Traction Company and J. W. Crotty was its vice-president.

Bay State Interest Not Earned.—The Boston *News Bureau* of Aug. 26 said: "Operating expenses of the Eastern Massachusetts Street Railway (Bay State System) have increased so rapidly in relation to gross receipts that the road will be unable to pay any interest this year on the refunding mortgage bonds. There are nearly $20,000,000 of these bonds outstanding, bearing interest at 4½, 5 and 6 per cent. Interest requirements on these bonds are in the vicinity of $900,000 a year. The failure to meet the interest due will not, however, operate as a legal default. It was provided as a part of the recent reorganization of the road that "any instalment of interest payable at any time prior to June 30, 1921, may be extended if there is no available income for payment thereof. Interest so extended, plus 20 per cent of its amount, shall be payable sixty days after the close of the first period ending June 30 or Dec. 31 in which available income shall have accrued for the payment thereof, but in no event later than Dec. 31, 1925." In other words, the company can, if required earnings are not available, defer until Dec. 3, 1925, the first two years' interest on the refunding mortgage bonds, being penalized, however, 20 per cent of the amount of interest that is so deferred.

Traffic and Transportation

Portland Wants More

Oregon Company Asks for Rate to Return Seven Per Cent on Commission Valuation

The Portland Railway, Light & Power Company, Portland, Ore., has filed with the Public Service Commission application for an increase in rates. This is pursuant to the company's intention as announced following the 12 per cent wage increase allowed the company's employees by the War Labor Board recently. This increase, the company's petition asserts, increases its annual expenses $350,000, and an increase in rates is sought sufficient to make a minimum return of 7 per cent upon the value of the railway property as determined by the commission.

The company makes representations that the net earnings of the system for the twelve-months period ended June 30, 1919, were insufficient to pay interest on its bonded indebtedness and its maturing street improvement assessments.

COMMISSION'S VALUATION

The value of the railway property as fixed by the Public Service Commission in its order of Nov. 19, 1918, was $18,568,073 as of Dec. 31, 1916. Between the latter date and July 31, 1919, the company alleges it has added improvements and betterments netting an additional valuation of $129,437, bringing the valuation up to $18,698,510.

The company asserted "that for the twelve-months period ended June 30, 1919, the net operating revenue of the railway system was $792,203, which is equivalent to 4.24 per cent on the value of the railway property established by the commission." It is further charged the net earnings provided no return whatever upon that portion of the value of the railway system represented by the investment of the stockholders.

The petition shows since the commission's order of Jan. 5, 1918, establishing a 6-cent fare, operating expenses have increased materially through conditions beyond control of the company. On that date the average wage of platform employees was approximately 43 cents an hour as established by a board of arbitration in October, 1917. Subsequent increases, says the company, have since increased wages periodically, and the war board's 12 per cent order will increase its operating expenses approximately $350,000 a year.

GREAT INCREASE IN COSTS

The application alleges that since the 6-cent fare order was rendered operating costs have increased greatly, so that notwithstanding an increase in traffic, net earnings have shown no tendency to increase.

As indicating that a material increase in traffic may not be expected in Portland in the immediate future the petition shows that for July this year gross earnings of the system were $3,000 less than for July last year, and it is estimated that gross earnings for the year ending June 30, 1920, will not exceed the gross earnings for the year ending June 30, 1919.

Assuming that the gross revenues for the next year will equal those of the past year, it is asserted that net earnings will not exceed $392,203, equivalent to only 2.1 per cent on the value of the railway property.

To show the increase in operating expenses, exclusive of taxes and depreciation, the application gives the following figures showing operating expenses since 1915, inclusive: 1915, $1,707,912; 1916, $1,697,586; 1917, $2,017,136; 1918, $2,890,228; for the twelve months ending June 30, 1918, $2,410,814; for the twelve months ending June 30, 1919, $3,119,791.

St. Louis Wants Ten Cents

Rolla Wells, receiver of the United Railways, St. Louis, Mo., has gone before the Public Service Commission of Missouri with an application for permission to charge a 10-cent cash fare and to sell metal tokens good for one fare at the rate of 7½ cents apiece. It had been indicated before the hearing that the company would ask for an 8-cent fare.

Col. Albert T. Perkins, manager for the receiver, is opposed to the idea, recently adopted in Kansas City, of varying fares, dependent on number of tickets purchased. Col. Perkins' plan is to sell the disks conveniently wrapped in flat packages and by an advertising scheme get merchants about St. Louis to dispose of the tokens as a convenience to their customers. He believes that the saving will induce 95 per cent of the passengers to use tokens. Colonel Perkins said:

> I am very anxious to get permission from the Public Service Commission to use one metal token, sold at one price, irrespective of the quantity bought. To make metal tokens popular with the public there must be a reduction in price from the cash fare. Use of these tokens, if they are made sufficiently attractive to the public, is certain to result in a decided improvement in the movement of cars. It will reduce the delay that now results while the conductors make change under the 6-cent fare.

In the hearing for increased fare Receiver Wells will show the State board that the recent granting of a 45 per cent wage increase to employees means an additional expenditure of $2,740,000 annually, plus $684,000 in back wages to June 1, which must be paid by March, 1920.

Six Cents in Birmingham

City Commission Allows Increase Following Request by Receiver—Reserves Right to Lower Fare

The City Commission of Birmingham, Ala., on Aug. 23 adopted a resolution allowing the Birmingham Railway, Light & Power Company to increase its fare to 6 cents. This action was taken in accordance with a written request filed by Lee C. Bradley, receiver for the Birmingham Railway, Light & Power Company, the Birmingham Tidewater Railway, and the Birmingham-Edgewood Electric Railway. The resolution provides that the 6-cent fare is temporary and is subject to modification on the part of the City Commission at any time and that the 5-cent fare may be restored on thirty days notice by the city.

All rights of the city under the franchise of the Birmingham Railway, Light & Power Company and the other companies are reserved to the city. The resolution provides that the 6-cent car fare shall become effective on the acceptance of the terms of agreement as set forth in the resolution and the reservations by receiver and their approval by the Federal Court.

RECEIVER ASKS FOR INSTRUCTIONS

Asking instructions as to what steps he should take in regard to the new wage contract presented by the local division of the Amalgamated Association, Mr. Bradley recently filed a petition in the United States District Court in which he stated that the income for the six months ending July 31 was $88,072 less than the total operating expenses, taxes, and interest on the funded debt. The present contract with the employees expires on Aug. 31 and must be renewed by Sept. 1. The receiver points out that the increase in operating expenses will amount to $791,311 per annum if the wages now asked are granted. In submitting their new pay agreement the men asked for a minimum wage of 60 cents an hour.

COURT RECOMMENDS INCREASE

The petition, which was filed on Aug. 16, was taken up by Judge William I. Grubb, of the Federal Court on Aug. 18. He ordered the receiver to take the matter up with the Public Utilities Commission and ask that body to grant such an increase in fare as would allow the operation of the property without the wasting of the estate.

He also ordered the receiver to take up the matter with the City Commission of Birmingham and to petition that body to waive the 5-cent fare limit as provided in the franchise in order that such a fare may be collected as will allow the operation of the property without loss. Receiver Bradley stated that until the wage demands of the men have been settled it could not be decided as to just what rate of fare will be asked for.

Key Route Fare Raised

Rate Across San Francisco Bay Made Fifteen Cents —Valuation Is Slashed

Because of the increased cost of labor and materials fares on the transbay service of the Key Route (San Francisco-Oakland Terminal Railways) were increased on Aug. 12 by authorization of the State Railroad Commission. Authority is granted to raise the one-way fare from 11 cents to 15 cents and the commutation rate from $3.30 to $4. The rates may be made effective within thirty days.

The commission briefly reviews the history of the company, how its fares were increased 10 per cent in June, 1918, in parallel with the increases on the Southern Pacific fixed by the federal administration, and how in August, 1918, the Oakland Traction division of the company was given an increase in fares from 5 cents to 6 cents. The commission, therefore, had remaining for consideration only the trans-bay rates under the application filed in July, 1917. This is the matter now decided.

The commission rejects the company's claim of a $46,000,000 investment value as unsound and prefers to recognize the estimates of the commission's engineers, which are $8,000,000 for the Key division property and $11,000,000 for the Traction division, a total of $19,000,000. The commission, however, holds that neither the investment nor the valuation can be considered the chief factor in determination of rates for this company.

DECREASE IN GROSS INCOME

A table showing the income of the company for the past four years shows an advance in gross operating revenue from $4,353,891, for the year ending June 30, 1915, to $5,160,385 for the calander year 1918. While this increase in gross operating revenue occurred a decrease in gross income was equally positive, the gross income dropping from $1,232,021 for the year ending June 30, 1915, to $882,924 for the calander year of 1918. Out of this gross income the payment of interest on funded and unfunded debt and the return on property investment is paid. During the period alluded to there were many increases in the cost of materials and particularly advanced wages for the many classes of employees. Comparing the period of Aug. 1, 1918, to June 30, 1919, with a similar period of the preceding year leaves, the commission says, a decrease in operating profit of $126,867 on the Key division alone.

In discussing the income showing of the company, the commission says:

> Were it not for the fact that there has been a remarkable increase in traffic during the last two years on both the Traction and the Key divisions of this system, the financial results would be much worse. There appears to be so healthy and rapid a growth in population in the territory served by this company that it is sound to estimate that this growth will further continue. This condition is taken into consideration in reaching our conclusions.
>
> Even with this condition obtaining it is apparent that the increased gross revenue from the increased traffic has failed to keep up with the increasing operating expenses.

In discussing the many increases in wages granted, the commission says:

> The commission has definitely adopted the policy to recognize as operating expense all increases in labor costs and this policy will be adhered to in this proceeding. It will not be necessary in this decision to go into the details of the increases in operating expenses and the reasons for such increases. The subject is a familiar and pressing one and has been dealt with exhaustively in a number of previous decisions made by this commission.

FINDINGS OF COMMISSION

The commission's conclusion on the company's finances is shown in the following declaration:

> A careful analysis of the applicant's financial condition leads to the conclusion that the margin between revenues and operating expenses is steadily growing less. This is true for the property as a whole, taking the Traction and the Key divisions together. It is also true to a lesser extent for the Traction System alone, although it is apparent that the street car operations of the applicant taken by themselves are still, even with the increased operating costs, returning a profit even though this profit on a fair rate basis is less than 8 per cent. The Traction division earnings now are, as they have been in the past, carrying the Key division's losses. Considering the Key division alone (and it must be remembered that it is the rates on the Key Division that we are dealing with in this decision), the point has almost been reached where the revenues are insufficient for operating expenses and taxes alone with no margin whatever for a return on any rate base.
>
> For the property as a whole, the net income after operating expenses, depreciation and taxes, is less than 5 per cent on the rate base.
>
> It is our estimate that with these fares, the applicant's revenues will be increased by approximately $400,000 per annum. The greater percentage of this amount will be a net increase. We believe that with this increase, the applicant will be enabled to render an entirely efficient and adequate service to the public.

In discussing the rate base the commission declares that the suburban service cannot be segregated from the other services of the company and that it is impracticable to have one set of rates for the Key Route and another for the competing Southern Pacific lines. The commission holds that "a fair decision both to the public and to the company should provide for increase in fares sufficient to place this company in a position where it can render adequate and efficient service to the communities on its lines."

A remedy for the financial condition of the company is suggested by the commission, which says:

> It has been repeatedly pointed out by this commission that the only permanent remedy for the financial difficulties of this company is a thorough-going reorganization of its finances. As long as the Key System rests on the present unsound financial structure, it is bound to continue in financial difficulties in the future as it has in the past. The rate increases will not effect a complete or permanent remedy of this situation. If it were practicable to do so, we would make reorganization one of the conditions of this order. The value and the cost of the service rendered by the company, in our opinion, justify an increase of interurban fares.

The commission criticises the depreciation reserve account of the company. It finds that it has been bookkeeping and not actually making money, and directs that in the future an adequate cash depreciation reserve be set aside equal to $100,000 a year for the Key division and $140,000 a year for the Traction division, accumulating by monthly installments of $20,000.

I. C. C. Favors I. T. S.

Upon application of the Illinois Traction System, Peoria, Ill., for an order requiring the establishment of through routes and joint rates between points on the lines of the Illinois Traction System on the one hand and points on the New York Central System on the other, the Interstate Commerce Commission has issued an order involving the following points:

> 1. That through routes should be established for the transportation of freight traffic except coal from and to all points on the line of the Illinois Traction System between Lincoln and Mackinaw, to and from all points on the New York Central System, and joint rates applicable thereto not higher than the rates contemporaneously applied on like traffic from and to Peoria.
> 2. That through routes for the transportation of freight traffic except coal should be established to and from Mechanicsburg from and to all points on the New York Central System, and to Fetzer from all points on the New York Central System, and joint rates applicable thereto not higher than the rates contemporaneously effective on like traffic to and from Springfield.
> 3. That through routes for the transportation of grain should be established from elevators located on the Illinois Traction System at points now served by defendant carriers to all points on the New York Central System, and joint rates applicable thereto not higher than the rates contemporaneously applied on grain from Peoria.

The case was submitted on March 7 and was decided on June 30. The order of the commission is to continue in force for a period of not less than two years from the date it goes into effect.

Eight Cents in Kansas City On Sept. 1

The Kansas City (Mo.) Railways, ordered by the Public Service Commission of Missouri to install an 8-cent rate on Aug. 20, has with the consent of the commission postponed the charging of 8-cent fares until Sept. 1. The company is charging only a 7-cent cash fare for the interim, and is recognizing as full fare the metal tickets already in circulation, for which patrons had paid 6 cents. The company has received a new form of metal ticket for sale under the 8-cent fare arrangement. These tickets are being put on sale now, and it is hoped will be generally bought before Sept. 1.

One reason for the 7-cent fare period was the lack of an adequate supply of the new 8-cent metal tickets. The old 6-cent tickets will be redeemed at face value by the company after Sept. 1. The present half-fare tickets were not used after Aug. 19, being redeemable at face value, 2½ cents. The company through the *Railwayan,* its own publication, circulated on the street cars, and through newspaper display space, gave wide publicity to the fare plan which it proposed to install.

Buffalo Case Closed

Briefs Are to Be Filed by Sept. 1 in Connection with Increased Fare Application

The question of increased fares in Buffalo, N. Y., was submitted to the Public Service Commission for the Second District on Aug. 20. Assistant Corporation Counsel Pierce may ask for another hearing if he deems it necessary to submit further evidence as the result of checking up certain expenditures of the International Railway upon which the company bases its application for higher fares. Briefs are to be filed in a week.

The hearing on Aug. 20 was devoted to Mr. Pierce's examination of the railway company's witnesses. Frank Fuller, who checked up the company's expenditures, gave the result of his investigation. He said the company's distribution of expenses between Buffalo and other parts of the system appeared fair to him except in the charges for accidents and damages credited to the Buffalo lines only and amounting to about $750,000.

Mr. Pierce told Chairman Hill that he would have no further proofs to submit as to the company's valuation.

It developed in the examination that the International Railway owned a coal mine in Pennsylvania. This it bought from the International Traction Company in 1918 for $300,000. The traction company acquired the coal mine in 1917 for $150,000. E. G. Connette, president, said the company bought the coal mine because of market conditions. The company got its coal from the mine and sold the coal to companies in Elmira and Lockport at cost plus $1 a ton. He said the buying of the mine was a life saver. The railway considered it a good purchase at $300,000 and the directors voted to buy it. Mr. Connette also told about financial transactions between the two companies.

Mr. Pierce questioned Charles A. Chavel, auditor, about the balance sheet and income account statements.

He was questioned in detail in regard to the intercorporate relations of the two companies included in the system at Buffalo and also with respect to the ownership and control of the securities by the companies included in the system.

H. C. Hopson, New York, N. Y., expert for the railway; H. E. Reixinger, engineer, and Henry C. Young, purchasing agent, were also examined by Mr. Pierce.

Seven-Cent Fares in Oshkosh

The Railroad Commission of Wisconsin on Aug. 10 handed down a decision granting the Eastern Wisconsin Electric Company a 7-cent cash fare on its Oshkosh city lines. The company's petition, which was filed early in the spring, originally asked for a 6-cent fare.

The commission's order calls for the sale of tickets in strips of six for 35 cents and of individual fifty-ticket books for $2.50. These books are good for one person only; that is, only one fare can be paid from each book at a time. The new rates have already gone into effect.

The City Council of Oshkosh has passed an ordinance relieving the railway from paving obligations. The city authorities and the public have shown willingness to co-operate with the railway, and the petition to the Mayor and the Council calling for relief from paving obligations was signed by more than 1500 persons. There was practically no opposition when the higher fares went into effect.

Jitney Service for Boston

Eight Companies Apply for Rights Under Recently Enacted Automobile Measure

Eight jitney bus companies, with plans for operating ninety-one buses with seating capacities ranging from ten to thirty persons each, have applied to the City Council of Boston, Mass., for licenses under the terms of an ordinance recently approved by Mayor Peters. The bus companies, one of which is incorporated for $100,000, propose to establish jitney service over a large number of routes throughout the city.

The prevailing fare over the shorter routes will be 5 cents, while 10 cents will be the charge for a longer ride. The applications are under consideration by the jitney committee of the Council.

The jitney ordinance, enacted recently, provides for the issuance of licenses by the Council. The fee is $5 and the license shall remain in effect until revoked by the Council. The license must specify the terminals, routes, stopping places, and hours and the fare to be charged. Before issuance of a license a prospective jitney operator must file with the city clerk a bond of $5,000 for a vehicle having a seating capacity of five persons or less, and $500 additional for each passenger seat in excess of five. A bond of $25,000 shall be deemed sufficient for all the vehicles operated by one licensee.

In addition to this license and the chauffeur's license issued by the Massachusetts Highway Commission, each jitney operator must obtain from the police commission of the city of Boston a special annual license, the fee of which is $5. Every licensee must file with the police commissioner a schedule of fares, and the seating capacity of each vehicle operated by him.

Every bus must have a printed sign stating the terminals of the route, the fare charges, the license number, and the schedule of hours. The schedule of operation filed with the application shall provide for regular operation over the route specified by this schedule, but the operator may make extra trips at certain hours or on special occasions.

Transportation News Notes

Coast Jitneys Boost Fares.—The City Commission of Atlantic City, N. J., has issued an order allowing jitney drivers to charge a higher fare. To certain points the drivers are allowed to charge as high as 20 cents. Double fare may be charged between midnight and 5 a.m.

Bus Line for Lawrence.—A bus line competing with the interurban electric railway between Lawrence and Salem, Mass., began operation on Aug. 21. The fare is 45 cents against 55 cents charged by the railway. The running time is reduced from ninety minutes to seventy-five minutes.

Six Cents in Evanston.—The Evanston (Ill.) Street Railway on Aug. 9 began charging a 6-cent fare. The increased rate will continue until Feb. 1, 1920, unless the company is directed by the Public Utilities Commission of Illinois to re-establish a 5-cent fare. Children's half-fare rates have not been raised.

Would Raise Fare Again.—Although an increase in fares was allowed only last January by creation of an additional fare zone, the East Taunton (Mass.) Street Railway has applied to the Public Service Commission for a fare increase on its four zones from 5 to 8 cents. The company operates about 11 miles of track through East Taunton and Middleboro.

Fare Revision at Holyoke.—The Holyoke Street Railway has notified the Public Service Commission of Massachusetts that on Sept. 20 it will put a revised fare system into effect. The zones will be shortened and the fare will be placed at 6 cents in each zone instead of 7 cents as at present. The recent wage award to the company's employees made by H. B. Endicott has made necessary an increase in revenue.

Advocates Freight by Trolley.—Governor William N. Runyon of New Jersey in an address before the Ocean County Grange on Aug. 21, advocated the use of the electric railway under State supervision in the distribution of freight to lower the cost of living. If re-elected Governor, he said that he would bring the subject of shipping freight by electric railway to the attention of the next Legislature.

Interurban Road Wants More.—The Washington-Virginia Railway, Washington, D. C., which operates lines to Mount Vernon, Clarendon, and other points in Virginia, on Aug. 22 petitioned the Interstate Commerce Commission for an increase in rates between Washington and points more than 2½ miles from that city. The company incurred a deficit of $20,768 during the first five months of 1919, according to the petition.

Fare Raised in Waltham and Newton.—Officials of the Middlesex & Boston Street Railway, Newtonville, Mass., have announced an increase in fares from 7 cents to 10 cents on all the lines of the company operating in Waltham and the line in Newton. The fare increase will go into effect on Sept. 20. The fare on these lines was not raised when the Public Service Commission recently allowed the company a 10-cent rate on its other lines.

Employees Taught Electric Railway Facts.—"Electric Railway Truths" is the title of a booklet prepared by John A. Britton, vice-president and general manager of the Pacific Gas & Electric Company, Sacramento, Cal., for distribution among the company's employees. The booklet outlines the general electric railway situation, points out facts generally overlooked by the public, and urges trainmen to pass this information along to riders.

Would Raise Interurban Rates.—Increases in passenger rates of from 15 to 20 per cent and in freight rates of from 5 to 20 per cent are sought in the application filed recently with the Public Utilities Commission of Kansas by the Kansas City, Kaw Valley & Western Railway. The new schedule would make the fare to Lawrence $1.08—an increase of 18 cents. Applications for similar increases on the company's Pittsburg-Joplin-Columbus lines are also before the commission.

Seven Cents Asked in Calais, Me.—The Calais (Me.) Street Railway, which operates a road 7 miles in length, has filed a new schedule of rates with the Public Utilities Commission, increasing the single fare from 6 cents to 7 cents, effective on Sept. 12. A 6-cent fare has been effective on this road since June 10, 1918. The present fare of 2½ cents for school children is retained under the new schedule.

Interurban Fares Raised by Court.—The Chicago & Interurban Traction Company, Chicago, Ill., may now charge 3 cents a mile between Chicago and Kankakee, under an order recently issued by Judge Carpenter. Attorney-General Brundage, the Illinois Public Utilitities Commission and the State's attorneys of Cook, Will and Kankakee Counties have been enjoined from interfering with the charging of 3-cent fares.

Asks Increase in Charleston, W. Va.—Increased rates are asked by the Charleston (W. Va.) Interurban Railroad in an application filed with the Public Service Commission of West Virginia. Forty per cent increase is asked for in the cash fares, and 30 per cent in the ticket prices. A rate of 7 cents for fare in the city limits is desired and the proposed rates for tickets are: Fifty for $3.25; 100 for $6.50; for school children, 100 for $3.50, and forty for $1.40. Hearing has been set for Sept. 9.

Fares Raised in Joliet and Rockford.—The Public Utilities Commission of Illinois has granted the Chicago & Joliet Electric Railway, Joliet, Ill., an increase of fare, allowing a 10-cent fare for adults, 5 cents for children between seven and twelve years of age and 3½ cents for children under seven years of age. The rate also applies to Lockport and Rockvale. The commission has also issued an order permitting the Rockford & Interurban Railway to charge 6 cents in Rockford.

Wants a Ten-Cent Fare.—The Corpus Christi (Tex.) Street Railway has made application to the City Council for authority to increase fares from 5 cents to 10 cents. Claude Pollard, Houston, Tex., attorney for the company, appearing before the City Council, said that if the city charter was not amended so that the increased fares could be authorized, the company would be compelled to discontinue its service. The petition of the company was taken under advisement.

Will Ask for Eight-Cent Fare.—The Aurora, Elgin & Chicago Railroad has announced that it will ask permission of the Public Utilities Commission of Illinois to raise fares in Aurora and Elgin to 8 cents and to increase interurban rates on its Fox River lines to 3 cents a mile to meet the 5 cents an hour increase granted the employees. The commission recently denied the company's petition for a 7-cent fare and ordered the present 6-cent rate continued to July 1, 1920.

Six-Cent Fare Extended in Springfield.—The Public Service Commission of Missouri has issued an order extending to Oct. 1 the 6-cent fare charged by the Springfield Traction Company since Feb. 1. Revenue statements submitted by the company to the commission showed that since the higher fare was authorized earnings had been inadequate to meet expenses, although conditions had improved during the last few months. The company's original petition for a 6-cent rate was supported by the citizens' committee headed by Judge John G. Sturgis, presiding judge of the Court of Appeals.

I. T. S. Wants Increased Rates.—The application of the Illinois Traction System, Peoria, Ill., for filing a schedule, increasing rates for interstate transportation of milk and a number of by-products between all stations on its lines in Illinois and St. Louis, Mo., has been approved by the Interstate Commerce Commission which has just handed down its decision in the case. The commodities for which increased rates are asked are milk, skimmed milk, buttermilk, curd, cream, condensed milk, evaporated milk and concentrated milk.

Ticket Holder Brings Suit.—An interesting case developing from the increased fares in Chicago, Ill., is pending in the courts. This is a suit brought by a passenger who had bought 100 elevated tickets at 6 cents each. One of these tickets was refused at a station without the payment of 2 cents additional. Inasmuch as the ticket bore the words "Good for one fare," the complainant insists that this was a contract for transportation regardless of any change in the rate of fare, and that he was entitled to a ride at the price he had paid for it.

Interurban Rates Modified.—An order recently issued by the Public Service Commission of Oregon provides for reduction of 7-cent fares on the interurban lines of the Portland Railway, Light & Power Company to 6 cents, and requires establishment of junior and joint through tickets. Under the so-called fifty-two-ride commutation ticket, effective between Portland and all stations south and east of Golf Junction, the fare is fixed at 6 cents as against 7 cents under the old schedule. This schedule applies only to passengers riding on commutation tickets, the cash fare remaining under the new tariff the same as at present. The rates become effective on Sept. 19.

Public Will Pass on Skip Stops.—The Dallas (Tex.) Railway has been ordered by the supervisor of public utilities to speed up its schedules which have been in effect in Dallas since the skip-stop system was discontinued on July 1. The supervisor found after careful checking of the schedules on all the important lines of the city that the company had lengthened its schedule too much, and was not giving the same relative service as before the skip stop was discontinued. For instance, on the Ervay line the round-trip schedule was ordered reduced from forty-eight to forty-five minutes. Under the skip stop this time had been forty minutes. Under the order passed by the City Commission the skip stop in Dallas was discontinued for a period of three months from July 1, after which there is to be a referendum and the railway patrons are to express their choice of the skip-stop or stop-at-every-corner plan of operating.

City Lacks Power Over Fares.—The dispute between the city of Columbia, S. C., and the Columbia Railway, Gas & Electric Company growing out of the establishment of a 7-cent fare on July 1, remains unsettled. Morris C. Lumpkin, Assistant Attorney General of South Carolina, has rendered an opinion in which he holds that the City Council has no authority to amend the franchise of the company so as to regulate street-car fares. An ordinance giving the Council such power had been introduced in that body, as noted in the issue of this paper for Aug. 16, page 363. The Attorney General's opinion holds as follows: The streets of Columbia are the property of the State and the original grant or franchise was given by the State Legislature. The original franchise was for a period of thirty years. This expired in 1912 and was then renewed in perpetuity, and any authority to interfere with rate making must come from the Legislature.

Legal Notes

IOWA — *"Scrambling Possession" at Crossing Does Not Determine Future Expenses of Construction and Maintenance*

Where the first steam railroad track at a crossing was laid years before the intersecting street railway track and the steam railroad started to lay a second track before the electric road, but the latter anticipated possession of the crossing from fifteen minutes to an hour prior to the steam road and proceeded to erect a second track at night, it was held that "scrambling possession" of the electric railway company conferred no rights upon it, and that it was liable for expenses of installing and maintaining the crossing. [Waterloo, Cedar Falls & Northern Railway *vs.* Chicago Great Northern Railroad, 173 Northwestern Rep., 81.]

LOUISIANA—*Ordinance Raising Street Railway Fares Does Not Impair the Obligation of Contracts and Citizens Cannot Enjoin Their Collection*

Contracts granting privileges, such as contracts between a city and a street railway company under express legislative authority and under the police power of the State and city, are always within the control of the State to change, modify, or revoke, so that an increase in street railway fares, authorized by ordinance, does not impair the obligation of contracts, in violation of Const. La., Art. 166, or Const. U. S., Art. 1, Sec. 10.

Contracts between a city and a street railway permitting an increase in fares as a war measure for a limited time, at the suggestion of national authorities, to avoid receivership, etc., were made for the public good, so that city taxpayers, not alleging any vested right or interest in the contracts and not alleging that the ordinance was unreasonable or in bad faith, or that their taxes would be thereby increased, and not referring to any law forbidding the city to modify the contract, had no interest to sue to enjoin the collection of the increased fares, and suit against the city would be dismissed, in view of Code Prac., Art. 15. [Black et al. *vs.* New Orleans Railway & Light Company et al., 82 Southern Rep., 82.]

MARYLAND—*Liability of Initial Carrier for Torts of Connecting Carrier*

Where a street car was operated to a certain point by one company and beyond such point and to the end of the trip by another company, with the same car employees, without charge of additional fare and without notice to the passengers that when the car reached such a point the latter company acquired control, and where both companies had the same officers, directors and employees and were parts of one railway system referred to as "the company," the former company is equally liable with the latter company for the conductor's failure to protect a passenger during that part of the trip when the car was operated by the second company. [Pugh *vs.* Washington Railway & Electric Co., 106 Atlantic Rep., 522.]

MASSACHUSETTS — *Motorman Starting From Temporary Stop*

Where a car stopped temporarily on account of a blockade and the motorman had no knowledge that a passenger would attempt to leave the car, the point not being a regular stopping place, he was not negligent in starting the car in relation to a passenger who attempted to alight, though no starting bell was given by the conductor. [Bush *vs.* Boston Elevated Ry., 123 Northeastern Rep., 613.]

MISSOURI — *Deficiency in Number of Passengers on Special Excursion*

Where persons attempting to get up an excursion for certain societies induced a railway company to publish a special tariff at a certain rate providing 400 passengers were transported and deposited $50 as evidence of their good faith, they are not liable for any deficiency arising under the tariff, in the absence of a contract by them guaranteeing the number of passengers carried. [St. Louis Electric Terminal Railway *vs.* Buechel et al., 213 Southwestern Rep., 177.]

NEBRASKA—*Public Service Corporation Is Entitled to a Fair Return on the Value of Its Property*

If, owing to changed conditions, the net earnings of the company, properly managed, are not a fair return upon the value of its property, the rates should be increased without imposing impossible or unnecessary conditions. When, under the rates allowed, dividends are fairly earned and declared, such dividends become the property of the stockholders, and, if used to make proper additions to the property, such additions should be considered in adjusting rates. The State Supreme Court, upon appeal, will not disturb findings of the State Public Service Commission, unless it appears that some requirements of the law have been violated or disregarded, or that the result reached cannot reasonably be derived from the facts proved. [In re Lincoln Traction Company (two cases), Lincoln Traction Co., *vs.* City of Lincoln et al. Same *vs.* City of Lincoln, 171 Northwestern Rep., 192.]

NEW JERSEY—*Injury at Public Crossing of Right-of-Way*

A pedestrian who attempts, at a public crossing, to cross the tracks of a trolley railway laid, not in a public street or highway, but on what is obviously its private right-of-way, is under a duty to look out for an approaching car, and if he neglects this duty, and is run into in consequence, there can be no recovery. [Merkl *vs.* Jersey City Ry. Co., 75 N. J. Law, 654; 68 Atl. 74, distinguished; Aquino *vs.* Morris County Traction Co., 106 Atlantic Rep., 802.]

NEW YORK—*Duty to Person Entering Car to Pay Fare for Passengers*

Where the plaintiff entered a car with lady passengers, whose fares he paid, and requested the conductor to stop at the next street crossing, and the conductor, learning for the first time that plaintiff was not a passenger, consented and signaled the motorman to stop, he recognized that the plaintiff was not wrongfully on the car and permitted his presence, so that the plaintiff was a licensee and not a trespasser. [Barrett *vs.* Brooklyn Heights Railway, 176 New York Sup., 590.]

NEW YORK—*Relocation of Subway Entrances and Exits a City Charge*

Where the board of rapid transit railroad commissioners, acting under authority of law, granted a certificate to a company to operate a subway under the streets of the city of New York, and the city consented to the use of sidewalks for exits and entrances to the subway and the company accepted these locations, it was held that a contract was created which conferred upon the company an irrevocable franchise. Hence the city was bound to recompense the company when it required the latter to change the entrances and exits. [City of New York *vs.* Hudson & Manhattan Railway, 177 New York Sup., 4.]

TEXAS—*Ordinances Reducing Fares Do Not Have to Be Confiscatory to Be Enjoined. Unreasonableness Is Sufficient Ground, but This Must Be Shown.*

To enjoin the enforcement of an ordinance reducing fares to be charged by a street railway, it was not incumbent upon the railway company to show that the reduced rate was confiscatory within the meaning of the federal constitution, but it was entitled to the injunction if the reduced rate was unreasonable, unjust and insufficient to maintain a fair return upon the value of the property.

Where, on account of the war, a city passed an ordinance increasing street railway fares, it cannot be said that the court abused its discretion in refusing an injunction to restrain the city from enforcing an ordinance repealing the ordinance, where the city officials made affidavit that when the armistice was signed most of the material necessary for the operation of the street railway had declined and that conditions which impelled the council to grant temporary relief had ceased to exist, that the "jitney" menace had then become nearly obliterated and that earnings of the company had reached practically the highest point in its existence, the street railway not having shown in its bill the actual statistics to support its allegation that the normal fare was unreasonable. [Houston Electric Co. *vs.* Mayor and City Council of City of Houston, 212 Southwestern Rep., 198.]

WISCONSIN—*Company Entitled to a Reasonable Rate of Return*

In an action to set aside an order of the Railroad Commission requiring the electric railway company to sell tickets in packages of thirteen for 50 cents instead of six for 25 cents, the evidence was held to show that at the time the order was entered in August, 1912, the rate was not unreasonable. A reasonable rate of fare is a rate which yields a fair return on the value of the property necessarily employed over and above expenses and depreciation, and a rate of 7½ per cent was approved by the court as a fair return. [Milwaukee Electric Railway & Light Co. *vs.* Railroad Commission of Wisconsin (City of Milwaukee, Intervener), 172 Northwestern Rep., 746.]

New Publications

Safe Practices in Fire Extinguishment

Fire Extinguishment, No. 24, of Safe Practices. Pamphlets of the National Safety Council, Chicago, Ill.

Industrial Standards Series

Issued by the Department of Commerce, Division of Publication, Washington, D. C., listed in the May, 1919, monthly list of publications of the department. Standard specifications for wrought iron, cast iron and steel bars, pipes, plates, bolts, wheels for electric railway service, etc.

Electrical Power Transmission

By Alfred Still, Professor of Electrical Design, Purdue University. McGraw-Hill Book Company, Inc., New York, N. Y. 403 pages.

This book is really a revision and amplification of the author's earlier and well-known book on "Overhead Power Transmission" and covers in addition to the context of the earlier book the subject of underground conductors. Much new material of value to the practicing engineer and of interest to the student of the subject has been incorporated in the new edition. A discussion of the electrical and economic principles and theories underlying the design of transmission lines, together with some cost data, occupies the first portion of the book.

In connection with this discussion some little space is given to the use of iron wires for transmission purposes and synchronous machines for phase modification and control. Other portions of the book deal with such subjects as overhead line insulation, lightning protection, underground cables and underground power transmission, and aerial line supports and the theory relating thereto.

One of the chapters is devoted to a brief discussion of the Thury high voltage direct current system and the appendix contains sample specifications of wood pole and steel tower transmission lines.

In its new form the book should constitute a valuable addition to the working library of the practicing engineer. Also its value as a college text book has been greatly enhanced by the revisions and amplifications.

Personal Mention

G. C. Estill General Manager

Named by Receiver Rushton to Have Charge of Montgomery Light & Traction Company

G. C. Estill has been appointed general manager of the Montgomery Light & Traction Company, Montgomery, Ala., by Ray Rushton, receiver for the company. Mr. Estill was born on a farm near Lexington, Ky., where he attended school. He was graduated from Kentucky University at Lexington in 1902 with an A. B. degree and later from Cornell University with the degree of mechanical engineer.

G. C. ESTILL

He was with the Nashville Railway & Light Company as foreman of bonding from October, 1907, to July, 1908, leaving to join the Birmingham Railway Light & Power Company where he served as motorman and conductor, helper in car shops and the power house, and in the meter and line department from 1908 to 1910. He was first assistant engineer of that company from May, 1910, to July, 1915. During the most of this time the engineering department had direct charge of all construction, track maintenance, and maintenance of all lines in the railway, power and light departments.

He became connected with the Cumberland County Power & Light Company, the Lewiston, Augusta & Waterville Street Railway, the York County Power Company and the Westbrooke Electric Company as chief engineer with headquarters in Portland, Me., in August, 1915. He resigned from those companies in April of this year.

John M. Stevens has been transferred by the Southern Public Utilities Company, Charlotte, N. C., from Greenville to Winston-Salem, where he will act as superintendent of lines.

J. Howard Sturge, Trenton, N. J., has been made division superintendent, in Bergen county, for the Public Service Railway, having been transferred from the southern division.

James E. Gibson, formerly general manager of the Kansas City (Mo.) Railways, has become associated with a firm of stock and bond dealers in Kansas City.

Rudolph Burkhalter, district superintendent in Orange, N. J., for the Public Service Railway, has been made division superintendent of the southern division, with headquarters in Trenton.

A. W. Macpherson, for the last fifteen years on the engineering staff of the San Francisco-Oakland Terminal Railways, Oakland, Cal., five of which he was chief engineer, has resigned to take up ranching.

Robert O. Bentley has been appointed division superintendent of the Public Service Railway, Newark, N. J., in charge of the Essex Division, which has been created by combining the Newark and Orange districts. He was superintendent in the Newark district.

E. G. Shoup, superintendent and traffic manager of the Peninsular Railway, San Jose, Cal., cousin of Paul Shoup, vice-president of the Southern Pacific and president of the Pacific Electric Railway, Los Angeles, was caught in the wreckage in a collision between two cars on that road, Aug. 3 and his left leg was amputated below the knee.

William B. Hartshorn has been appointed in charge of the central division of the distribution department of the Public Service Railway, Newark, N. J. He succeeds Jacob T. Barron, with headquarters at Elizabeth. Mr. Barron was recently made general superintendent of production. Mr. Hartshorne was with the Bergen division of the company.

Obituary

Theodore Cooper, civil engineer, who took part in the construction of the first elevated railroads built in New York, as assistant engineer in charge of construction, died at his home in New York City on Aug. 24 at the age of eighty-one years. Mr. Cooper was an authority on iron and steel construction. In 1872 he was superintending the erection of the St. Louis bridge across the Mississippi River and was later superintendent of the Delaware and the Keystone Bridge Companies.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Car Manufacturers Looking Ahead

Present Prices and Failure of Railways to Obtain Relief Responsible for Slow-Up in Building

Railway car manufacturers are experiencing a quiet season and are awaiting with interest the outcome of the present railroad situation. Some of the electric railway car builders still have work in their plants from the contract for 100,000 freight cars which was let by the government more than a year ago. While some are busy finishing up their orders, which came from the steam railway field, others are busy building one-man safety cars, though it is generally admitted that the majority of the plants are not working up to normal production.

It is believed that the electric railway plants may benefit from the steam railway field to a considerable extent within the next six months. It is expected that when the present railroad situation clears it will be found that there are almost 500,000 freight cars which are badly in need of repairs, and to avoid a possible car shortage these may be apportioned among all the railway car manufacturers, in which case electric railway car manufacturers would benefit in the same way as they did when the government awarded the contract for the construction of 100,000 steam freight cars.

Whether or not the electric railways will secure relief by the first of the year or early spring to the extent that they may place considerable orders for equipment is problematical. It is generally believed, however, that a considerable number of companies will have obtained relief by that time and that the car builders will have considerable business in view.

Wire and Cable Orders Indicate Unusual Activity

Heavy Demands for Insulated Wire with Deliveries Slower—No New Increases in Prices Noted

On account of the recent heavy demand for insulated wire, wire manufacturers are behind with their orders and are liable to become swamped if the present conditions continue as they have in the past month. A great deal of work has been deferred, but a considerable amount of work is ahead, and orders of considerable volume are being placed. This is especially true in insulated wire for all purposes although building operations are requiring more than any other line of work. Deliveries on large orders, which usually are quoted at four to six weeks, have slumped from two to three months. All electrical manufacturing plants are demanding more than the average amount of copper and wire.

For three weeks there has been little advance in wire base and no immediate increase is expected, although wire manufacturers are confident that the market will continue to rise. Rubber covered is quoted around 30 cents, weatherproof at 29 cents, while bare wire is offered at 27 cents. Electrical manufacturing plants are running up to normal production, with one or two exceptions, and the prospects for a good fall season are bright.

Trolley wire requirements are below normal, and the railways seem to be purchasing as little as possible. The volume of business, although more than it has been, is still considerably off, although it is known that a good many roads must soon come into the market, if the properties are to be properly maintained.

Copper demands for transmission purposes are light. There is not only a scarcity of large projects, but small installations of branch power lines have been held up and few extensions made, although a considerable amount is planned. The only demand along these lines is in the rail bond market, where large orders have been placed for fall requirements.

Sales of Shop Machinery Improving

Orders Coming In Are Still Light, However—Stock Available at the Present Time Would Last About Thirty Days Under Normal Buying

Electric railways are purchasing machine tools and special railway shop machinery in better amounts than a few months back. Although the financial condition of most roads is such that they have been able to purchase only a minimum of new equipment, still they have done a large amount of repair and rebuilding work in their own shops and have had to repair and renew their machinery to carry out this program. New machinery has been bought for this purpose and with the financial relief afforded some of the traction lines sales are beginning to pick up in a moderate degree. While the eastern part of the country seems to be rather quiet in this respect the West and Middle West have been more active in the machine tool and special machinery market.

Manufacturers of special machinery for use principally in railway shops are working to a pretty fair capacity in order to build up as large a stock as they are able to carry. The storage space is the main factor to be considered, as the weight and bulk of the special machinery is so great that large stocks cannot be accumulated on account of limited storage facilities available. This space has already been stretched about to its capacity through acquisition of new warehousing facilities, so that at the present time sufficient stocks of miscellaneous special railway shop machinery are available to withstand about thirty days of normal railway buying.

Manufacturers of shop equipment are satisfied that both steam and electric railways must soon start a buying movement on account of the condition of much machinery in their shops. It is a question of financial relief as to how soon this time will come. It is very probable that this opportunity will be presented to the railroads and electric railways pretty much at the same time and they will all endeavor to satisfy their needs at once. Present stocks will last for a short time when this buying begins, while in a very short time deliveries will begin to mount up to two or three or four months. The steam railway market, of course, has a considerable effect on the electric railway market because of the similarity of equipment required, and thereby will undoubtedly buy a bigger volume than that of the traction companies, so the market really hinges on early deliveries.

Price May Advance Next Month

Prices on machine tools and shop equipment have held steady for several months and at the present time are firm. Only from one source has come any intimation of a possible rise in price and that was a prediction of a 10 per cent increase in September. Other reports show no evidence of any advance in the near future.

Ordinary machine shop tools are selling in satisfactory volume and manufacturers are working to a fair capacity in order to satisfy the demand. It is expected that the disposal of the War Department's present stock of machine tools will have little effect on the general market.

Effect of Labor Unrest on Electrical Trade

Deliveries Lengthening So that It would Not Be Unwise to Accumulate Substantial Stocks

Increasing uneasiness of labor is having its effect on the electrical trade, all of which is proving to be cumulative. A railroad strike in New England, a walkout of brass and copper operations, a shutdown of some wire mills—all tend to lengthen deliveries. These, taken on top of a large consumer demand, a shortage in freight facilities and local labor troubles, are preventing the trade from doing a larger business.

With this condition today the industry is faced with the prospect of a railroad strike early next month and a strike in the iron and steel field. Should this latter strike come about with a large percentage of operatives out, the visible supply of conduit and other iron and steel products would quickly vanish. Electric railways, therefore, can well afford to carry stocks which right now might appear to be rather large, and even where possible make accumulations for some time in advance.

Rolling Stock

Ashtabula (Ohio) Rapid Transit Company purchased three Birney safety cars from the Kuhlman Car Company.

Milford, Attleboro & Woonsocket Street Railway, Milford, Mass., is remodeling two single-truck closed cars into safety cars.

Southern Public Utilities Company, Charlotte, N. C., has placed an order for twelve safety cars to replace a similar number of wornout cars of the old single-truck type.

Dallas (Tex.) Southwestern Traction Company, is expected to be in the market for equipment as soon as financial arrangements for the completion of this road have been made.

Sioux Falls (S. D.) Traction System, has ordered from the American Car Company, five completely equipped Birney safety cars. Delivery on these cars is expected in September.

City of Toronto, Canada, is having a report prepared by R. C. Harris, city engineer, for extension of the civic electric line and purchase of new cars, equipment, etc. The amount involved is about $5,000,000.

Municipal Railway of San Francisco, Cal., is to receive a sample railway passenger coach. The Board of Public Works of San Francisco has been authorized to advertise for bids and enter into a contract for constructing the car.

Eastern Massachusetts Street Railway Company, Boston, Mass., has just let a contract to the J. G. Brill Company for 100 safety cars. They will be equipped with General Electric Company's motors, Westinghouse air brakes and Safety Car Devices Company's safety equipment.

Southern Traction Company of Illinois, East St. Louis, Ill., which is expected to make connection between Belleville and East St. Louis within sixty days, will spend between $1,500,000 and $2,000,000 for rolling stock, most of which will be for coal cars.

Fort Smith Light & Traction Company, Fort Smith, Ark., is reported to have purchased eight new safety cars for delivery within sixty days. It is expected that the company will soon place orders for converting all cars now in operation into one-man safety cars.

Franchises

Montgomery, Ala.—The Montgomery Light & Traction Company has received a franchise from the City Council to construct an extension to the Aviation repair depot.

Los Angeles, Cal.—Bids will be received by the City Council of Los Angeles until Sept. 3 for a twenty-one year franchise to construct an electric railway on Maple Avenue from Seventh Street to Thirty-second Street.

Recent Incorporations

Tonopah Divide & Goldfield Electric Railroad, Tonopah, Nev.—Incorporated to construct an electric railway between Tonopah and Divide, 6 miles. Capital stock, $50,000. Officers: Charles S. Stout, Reno, president; Joseph H. Hutchinson, Tonopah, vice-president, and Lowell Daniels, secretary.

Carolina Beach Railway, Wilmington, N. C.—Incorporated to construct a line from Greenfield, a suburb of Wilmington, to Carolina Beach, 13 miles. It is planned to operate the line by electricity. Capital stock, $650,000. Officers: P. Q. Moore, president; E. T. Burton, vice-president and treasurer, and A. W. Pate, secretary and general manager, all of Wilmington.

Track and Roadway

Birmingham Railway, Light & Power Company, Birmingham, Ala.—An extension is being built by the Birmingham Railway, Light & Power Company from Fairfield to Westfield.

Petaluma & Santa Rosa Electric Railroad, Petaluma, Cal.—Plans are being made by the Petaluma & Santa Rosa Electric Railroad for the construction of an extension from Forestville to the Walls-Ford bridge across the Russian River.

Connecticut Company, New Haven, Conn.—Bids will soon be received by the Connecticut Company for the construction of about 1000 ft. of grooved rail, with several switches over State and Water Streets, Bridgeport, in connection with the new plaza. The cost is estimated at about $35,000.

Perry & Gulf Coast Traction Company, Perry, Fla.—Initial steps have been taken by Ellis Bartholomew of Palm Grove, Fla., and R. C. Flack of Canton, Ohio, toward organizing a company to finance a project of building an electric railway from Perry to the gulf waters. The company has a trackage contract with the South Georgia Railway and the Interstate Company for rights from Perry to Hampton Springs and the line will be built to Palm Grove and Boneta Beach. Later it is likely that the line will be extended down the coast to the mouth of Deamans's Bay, as provided in the proposed charter of the line.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—The Fort Wayne & Northern Indiana Traction Company will double track South Calhoun Street from Creighton Avenue to Pontiac Street.

St. Louis, Mo.—The City of St. Louis plans to build an electric railway belt line to connect the Municipal and McKinley bridges. An appropriation of $1,920,000 has been made and plans prepared by J. A. Hook, director, and C. S. Butts, engineer, both of the Board of Public Utilities, for laying 63 miles of track of the United Railways, extending the Natural Bridge line 1¾ miles to Pine Lawn, thence to Florrisant Avenue, north, also extending the Tower Grove line 1½ miles to Lindenwood, the Taylor line 3¾ miles south to Gravois Avenue, the Lee line 2 miles west and shortening the Cherokee line between Eighteenth Street, Twelfth Street and Geyer Avenue. Another appropriation of $1,300,000 will be made for the construction of elevated railway tracks and approach to the Municipal Free Bridge at the southern terminus, for which plans have been drawn.

Brooklyn, (N. Y.) Rapid Transit Company.—Transit Construction Commissioner John H. Delaney has received and opened bids for the construction of tracks on the section of the Culver Rapid Transit Railroad extending along Shell Road and West Sixth Street from Avenue X to Sheepshead Bay Road, Coney Island. The lowest bid was that of the Slattery Engineering Contracting Company, at $58,313. It is expected that an award will be made in the near future. The time for completion is four months.

Goldsboro (N.C.) Electric Railway.—Extensive improvements to its system are being planned at an early date by the Goldsboro Electric Railway, including the placing of new rails and the construction of an extension.

Shawnee-Tecumseh Traction Company, Shawnee, Okla.—Work has been begun by the Shawnee-Tecumseh Traction Company on the rehabilitation of its line between Shawnee and Tecumseh.

Toronto, (Ont.) Civic Railway.—Bids will soon be received by the City of Toronto for the construction of a double-track line on Bloors Street from Quebec to Runnymede Avenue. The cost will be about $160,000. A report is also being prepared by R. C. Harris, city engineer, for an extension of the civic electric line and the purchase of new cars, equipment, etc., to cost about $5,000,000.

Dallas (Tex.) Traction Company.—Surveys will be begun at once by the Dallas Traction Company for a proposed interurban line from Dallas to Greenville. It is planned to route the line via White Rock, the municipal water reservoir and summer resort.

Power Houses, Shops and Buildings

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Tecumseh Trail, a resort owned by the Fort Wayne & Northern Indiana Traction Company on the Wabash River near Lafayette, Ind., was the scene of a destructive fire when the large casino and other buildings were destroyed by fire. The loss is $20,000, partly covered by insurance. The buildings were erected on the site of an old Indian village, the company developing it for a pleasure park and for many years it was the principal picnic ground in the vicinity of Lafayette.

Duquesne Light Company, Pittsburgh, Pa.—A large electric power plant will be built at Cheswick by the Duquesne Light Company, which supplies energy to the Pittsburgh Railways. The initial installation will have a capacity of 60,000 kw. and the building will provide for an output of 129,000 kw. The ultimate capacity of the Cheswick plant, it is expected, will be about 300,000 kw. The contract for the construction of the station has been awarded to Dwight P. Robinson & Company, Inc., New York, N. Y.

Dallas (Tex.) Railway.—Work is now under way on an addition to the Interurban Building of the Dallas Railway. The addition will contain 26,000 sq.ft. of floor space and will give the building a total of 99,400 sq.ft.

Ohio Valley Electric Railway, Huntington, W. Va.—Improvements are being made by the Ohio Valley Electric Railway amounting to about $200,000. These improvements include the erection of a substation at Ashland to cost about $75,000; the installation of a cooling system which will increase the capacity of the Johnston Lane substation at Huntington to cost about $30,000, and betterments at Kenoba to cost about $60,000 and at Russell, Ky., to cost about $8,000.

Intermountain Power Company, Spokane, Wash.—By an arrangement recently completed, the Intermountain Power Company, which has contracted for power to operate the Chicago, Milwaukee & St. Paul Railway from Othello to the Sound terminals, has made a connection at Taunton with the Puget Sound Power Company, which in turn is connected with the Olympia Light & Power Company. The Intermountain Power Company obtains all its power from the Pong Lake plant of the Washington Water Power Company.

Trade Notes

Chicago Pneumatic Tool Company announces the appointment of J. L. Canby as district manager of sales at Chicago, succeeding Nelson B. Gatch, who has been transferred to New York as district manager of sales.

Roller-Smith Company announces that an agency arrangement has been made with L. B. Gottschall, 211 N. St. Paul Street, Dallas, Tex., who will handle the company's lines of instruments, meters and circuit breakers in Texas, with the exception of a small portion in the western part of the state.

Acme Wire Company, New Haven, Conn., announces that owing to the increasing volume of its business in the Middle West and the desirability of keeping in closer and more frequent touch with the requirements of customers, it has opened an office at 521 Guardian Building, Cleveland, Ohio, where it will be represented by J. T. Crippen.

Edward Marshall Syndicate, Inc., Times Square, New York City, announces that it has on the ground in Germany, England, France, Sweden and Italy, able men competent to watch every detail of the foreign trade situation, to cover the European commercial field in every way for different trades and to supply complete information with regard to American opportunities in Europe.

Trade Directory of South Australia.—To meet the requirements of American business men who wish to make connections with houses in South Australia, the Bureau of Foreign and Domestic Commerce, Washington, D. C., has prepared a directory of manufacturers, wholesale dealers, retail dealers, agents and exporters in that state. Only the most important firms have been included, and the list has been carefully checked and rechecked.

Page Steel & Wire Company has opened a branch office in Chicago at 29 South La Salle Street. This office will handle all Armco iron products, including welding rods, twisted pairs, plain and galvanized strand, bond wires, barbed wire and fence manufactured by the company. This company has another new branch office in the Book Building, Detroit. Distribution in Canada is in the hands of Taylor & Arnold, Ltd., Montreal, Toronto and Winnipeg.

The Duff Manufacturing Company, Pittsburgh, Pa., is constructing a 160 x 80 ft. steel and brick addition of the Austin type at its Pittsburgh plant to accommodate the forge shop and heat-treating department. Provision has been made for installing sixteen steam hammers, with an equal number of trimming presses. This department will be equipped with furnaces of the latest type and will be completed about Oct. 1, enabling the production of jacks to be greatly increased.

Green Engineering Company, East Chicago, Ind., announces the appointment of the firm of Bull & Livensparger as its sales representatives in Chicago and northern Illinois territory. They have taken charge of its Chicago sales office, 14 East Jackson Boulevard, serving in all matters pertaining to proposals for Green chain-grate stokers, "sealflex" arches, steam-jet ash conveyors, cast-iron ash tanks and allied products and replacements. E. H. Bull has served the company as an engineer for the past seven years, and D. A. Livensparger has been a member of the sales force for the past nine years.

Wellman-Seaver-Morgan Company of Cleveland, Ohio, manufacturer of hoisting engines, hydraulic turbines, mining and other heavy machinery, has recently received an order from the Hydro-Electric Commission of Ontario for two turbines of 52,500 hp. each, the largest in the world, for installation at Niagara Falls. In the last four years the company's business has increased enormously. The gross business in 1915 amounted to $1,038,945; in 1916 to $2,491,518; in 1917, to $4,687,929 and in 1918 to $7,559,488. Unfilled orders on hand Jan. 1, 1919, amounted to $4,670,995. The company states that the net earnings for the first four months of the current year compare favorably with the earnings for the same period of last year, and the orders in hand and under negotiation gives assurance of a satisfactory volume of business in profits for the coming year. The officers of the company are: Edwin S. Church, president and general manager; S. H. Pitkin, first vice-president; George Burrell, second vice-president, and W. H. Cowell, secretary and treasurer.

New Advertising Literature

United States Light & Heat Corporation, Niagara Falls, N. Y.: Bulletin 700 illustrating and describing electric welding apparatus.

Association of Manufacturers of Chilled Car Wheels, Chicago, Ill.: Booklet on the chilled-iron car wheel gives manufacturing practice, tests, etc.

Vulcan Soot Cleaner Company, Dubois, Pa: Bulletin 451 illustrates and describes the Vulcan diagonal method for cleaning soot from the tubes of horizontal water-tube boilers.

Manganese Track Society and Manganese Steel Founders Society, 122 South Michigan Avenue, Chicago, Ill.: Booklet No. 8 gives rules and detailed design for laying out rail bound manganese steel frogs.

Electrical Engineers' Equipment Company, Chicago, Ill.: A comprehensive bulletin wherein are described and illustrated cable end bells, switchboard and bus-rack structural devices, copper connections, indoor switching and protective equipment, insulating supports, outdoor switching and protective equipment and insulator pins.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, September 6, 1919 *Number 10*

The Railway Industry—An Opportunity for Young Men

A GREAT danger that confronts us as we struggle through and out of the "slough of despond" is that the electric railway business will cease to attract young men of the caliber needed to solve the increasingly difficult problems of electric railway transportation. This must be met by the use of every effort to show these men that if the right stuff is in them the very difficulties that are to be overcome make the work the more fascinating. A man who has had long and varied experience in all phases of electric railway work said recently that had he a son that son would be trained for the electric railway business. His idea was that there is a great future for the rising generation because many of the pioneers now approaching the age of retirement must sooner or later give place to the men trained in the school of present-day rather than early experience. Just as soon as a rising man demonstrates that he can handle the situation better than those now in control the latter willingly or perforce will step out and let him do it. The ambitious youngster has little to lose and all to gain in this field even if the gain should peradventure prove to be largely in experience which will fit him for usefulness elsewhere. Go to it, young fellow, and make a place for yourself!

Boost the Salaries of Efficient Department Heads Also

A WELL TRAINED, efficient official or department head can contribute a great deal toward an increased net income for his company, but he cannot be expected always to remain at his post for love of the work. Unless he receives compensation for his services comparable with that which he can realize in other fields, he will join the procession of those who are leaving for "fresh fields and pastures new."

The men higher up may be tempted to throw up their hands in despair at the suggestion of paying more for technical and administrative talent. But the number of men possessing this qualification are not numerous, and but a slight effect on the gross expenses would be involved in following this plan. The wage earner has received increases at least commensurate with the increased cost of living; the salaried man has not.

In one department of a certain railway there are 150 men and forty foremen. To hold these men increases in wages have ~~had to~~ be granted which in the year 1918 amounted to $3,645 per month, or $43,740 for the year. Increases for all departments amounted to at least $100,000 for the year, a very substantial sum. It would not seem out of the way to distribute, say, a tenth of this amount among the department heads. The "boss" should be entitled to at least an equal increase with his subordinate.

Applying Salesmanship to the Engineering Standards

EITHER the work of the several technical committees of the Engineering Association is worthy of more practical appreciation than it has so far received, or it does not justify the effort that has been made during the sixteen years of the association's existence in formulating standards of construction and operation. In other words, if one were to judge of the value of these standards by the extent to which they are used today he would be apt to conclude that they are not worth while. This would be a mistaken conclusion, for the standards have not yet been given a fair trial. This is at least partly due to a lack of information as to what the standards are, and what they could do, if they receive a fair chance, in the way of reducing costs and facilitating prompt delivery.

The announced intention of the standards committee, to endeavor to "sell" the standards to industry, is to be commended and fostered. The managers and other executives are the men who need to be reached. It is a little surprising that the engineers themselves have not been able to do more in the way of influencing their respective managements than they have, but probably the standards need to be "sold" to them as well as to their employers.

Obviously, the manufacturers are anxious to see the standards developed. They can make more money as well as give better service if the number of details which they must look after is reduced. But they cannot urge the adoption of standards unduly lest they be accused of "having an axe to grind." The man who is spending the money for railway supplies, *i.e.*, the president or the general manager, is the one who in the long run will dictate what he is to get; hence it is necessary to convince him that he will get essentially what he wants at a lower price and more promptly, by backing up his engineers in their desire to use standard products. He ought to be easier to convince, now that money is so scarce.

To our mind the development of standards, the formulation of recommended specifications and practices and the publication of miscellaneous practices that may prove helpful to the industry, taken together, form a group of functions of the Engineering Association which are second only in importance to the function of promoting a general spirit of co-operation. After laboriously getting this material together, however, it appears that the association must ~~organize~~ itself as an advertising agency to disseminate the facts as to what it has accomplished. A good start in this direction will be made at the convention, where every effort will be exerted to show the extent to which the standards have been useful. Once they become so generally adopted that a marked saving in first cost follows their use, less effort will be required to popularize them.

What Importance Should Attach to Car Clearance in Special Track-Work Layouts

THE subject of a standard system of track spirals, which has had no little discussion recently, has an affinity for the correlated subject of car clearance in special track work, *i.e.*, double track branch-offs, plain curves and connecting curves at crossings. Spiral curves are used in such layouts almost universally and mainly to provide car clearance. There is a secondary but almost equally important use for the spiral in all curves except those of very large radius. This has reference to the easement provided by the spirals which the plain curve of one radius does not give. The easement, by overcoming the objectionable sway of a car which occurs when it is suddenly required to change its direction, tends to promote the comfort of passengers and also conduces to less rapid wear of the curved rails.

It is probably quite true, however, that car clearance has been the greatest single factor in promoting and continuing the use of spiral clearance curves. At the low speed, which good special track-work maintenance and careful operating require over special track-work, most cars will pass around sharp, well-greased curves of single radius without undue annoyance to passengers and unreasonable wear on curves. If these were the sole considerations it is very likely that spirals could be eliminated to a large degree. Sometimes it is absolutely necessary to use spirals to dodge fixed obstructions in the street.

With the provision of clearance as the principal factor, it becomes worth while to consider whether we may not have been making an expensive fetich of this clearance matter. The use of spirals or other means to get clearance is generally accompanied by a greatly increased distance between the tracks at the center of the curves and longer over-all tangents are required. Both of these factors lead to extraordinary increases in paving areas which the companies must maintain. In addition, new clearance layouts almost always require extra expense for setting back curbs and sewer inlets, relocating poles and similar work which must be done to permit the installation. This leads to the consideration of such questions as, (1) To what extent is car clearance desirable? (2) How much of the extra installation and maintenance expense involved is warranted? (3) What unit of measure can be adopted to serve as a guide in selecting points for clearance? (4) What weight shall be given to such factors as car headway, through routes and street traffic congestion? (5) Is it always economical to adopt and use clearance layouts on all parts of a system?

One of the largest systems in the East has answered these queries along the following lines: The need for clearance in special work is not universal on the system. Its cost in many places would be prohibitive, owing to the expense in shifting and altering obstructions such as elevated railroad columns, parts of bridge structures and large terminal building details. On the other hand, certain locations do require clearance under very frequent headways and congested street conditions. The car schedules, the difficulties, probable cost of installation and the traffic conditions are duly considered and the superintendent of transportation, jointly with the engineers, decides when and where clearance shall be insisted upon. It is surprising to observe the lack of operating difficulty with some very close headways under which no-clearance layouts are in service on the road referred to.

Another feature which makes all clearance plans somewhat futile is the increasing tendency to frequent changes in car design. Many times the track engineers have made pretty clearance layouts only to have them practically thrown into discard by new cars, purchased more than once without consideration as to whether they would clear on layouts which would clear existing equipment. Further, no management would be inclined not to use a better car design, simply because clearance could not be had in the special track work.

Publicity Campaign Needed More Than Ever Now

HON. WILLIAM D. B. AINEY, chairman of the Public Service Commission of Pennsylvania, whose friendly attitude and consistent fairness to and interest in the general well-being of the utilities has been the subject of comment in this paper before, took occasion in his address before the Federal Commission week before last to criticise the character of the publicity which the hearings have received. His impression was that the newspaper reports had served more to confuse the public mind than to clarify it upon the crucial conditions of the electric railway industry and the vital interest it has in this situation.

Undoubtedly, some of the news of the testimony at the hearings has appeared in such form as to give an incomplete and distorted impression of the railway case. Nevertheless, we believe that the net result of the hearings thus far, viewed purely from the publicity which they have received in the daily press, has been of great benefit to the electric railway industry.

In the first place, the frequent reference to the Federal Electric Railways Commission hearings in Washington by the newspapers all over the country has emphasized in the public mind the fact that there is an electric railway problem. In many cases the existence of a local railway problem was realized, but the fact that the situation was national was not appreciated. This is in itself a great gain. But probably the greatest benefit has been derived from the many editorials which have been inspired by the investigation at Washington. It is notable, also, that these editorial comments on the part of the newspapers have been very largely of a sympathetic tone, and further they are not often subject to the criticism of inaccuracy that has been applicable to the news reports.

Some erroneous impressions have undoubtedly been caused by misleading headlines and the giving of undue emphasis in some newspaper offices to isolated instances, statements and opinions of some witnesses, the headlines being the principal offenders rather than misstatements in the body of the article, in the instances which have come to our attention. But admitting these weaknesses, it must be remembered that the publication of extended technical accounts of the testimony presented daily before the commission has hardly been within the province of the daily papers. Those who want reports of this kind seek them in the technical press.

Thinking ahead, then, on the assumption that the publicity gained thus far as the result of the activities of the publicity committee of the Committee of One Hundred, A. E. R. A., has been of a character beneficial to the industry, the question arises whether this program of publicity should be concluded with the completion of the testimony before the commission. It seems to us that the opening for publicity which has been afforded by these national hearings, should be made only the beginning of a carefully planned and well-executed national publicity campaign in behalf of the street railway industry, and this on a scale that will compel attention. That the problem of the railways is very largely a question of education of the public to an appreciation of the facts as they are to-day and to an understanding of how vitally interested it is in the integrity and prosperity of the local transportation company, was repeated over and over again by the witnesses before the Federal Commission. We have on several occasions during the past three years endeavored to encourage such a campaign, and we believe it would have served a very helpful purpose and perhaps alleviated the present situation. Now, more than ever, does this educational publicity campaign seem desirable in order to set before the public in the simple plain manner admonished by Mr. Ainey, what the railways now want, and perhaps a little later what the Federal Commission recommends.

In the final analysis the public is the court of last resort, and it is only through this court that any recommendation favorable to the industry which the Federal Commission may see fit to make, can be executed. An endeavor should therefore be made to educate the public in the same thorough manner with which the railway case has been placed before the commission.

Any Fare Scheme Must Keep the Traffic Cream

THE electric railway operator knows without elaborate argument that the short-haul rider furnishes the cream of the traffic. It is, therefore, remarkable that so few fare adjustments have taken that fact into consideration. The central-area plan did so to a degree, but as no very simple plan was apparent for collecting correspondingly low fares for short-haul passengers in the outer districts large losses were experienced there. In addition, the central-area scheme lacked flexibility and fairness because there are many areas within most cities with well-defined neighborhood centers in addition to the main downtown district. When we see that a 40 per cent increase in fare has brought a 20 per cent increase in revenue, we cannot ignore the unpleasant fact that the operating cost per passenger has also gone up with the fare because the loss of the short-haul riders has greatly increased the average length of ride of the remaining passengers. The seat-use factor which follows may prove to be so poor that the operator is tempted either to cut service or to notch up the fare again, with disastrous consequences to the railway.

As a company cannot continue this sort of thing very long without becoming insolvent, a solution is absolutely necessary. If we cannot make the short rider pay his fair share of higher costs, we must necessarily seek some means of creating a new kind of service, say by short-route cars, which will bring the needed increase from the *voluntary* riding of the public wherever short-haul low-fare riding (be it only of four or five blocks) can be built up for less than it costs to get it. Let no man say it cannot be done until he has taken account of the pedestrians who are now passing up the opportunity to take short rides because there is no appeal to the bargain instinct inherent in every human being.

Unit Construction of Modern Cars

THE development of the electric railway car is an evolution from the simple to the complex—from the K controller to multiple unit, from the hand brake and hand sander to the air brake and air sander, from the hand-operated door and step to the door engine, etc. For each of these changes there is ample reason because of the increased car mileage or higher earning power which these and other devices give. For a company to give up any of these automatic mechanisms because they may cost more to maintain would be to take an inexcusable step backward.

However, the need for automatic devices does not exclude us from seeking ways and means for simplifying their upkeep. Such seeking is especially necessary in the case of smaller or isolated properties which cannot afford to employ a specialist in each class of equipment. Even the outlying divisions of a large system are at a disadvantage as regards the maintenance of their apparatus to the same high standard as is possible at the larger shops of the system. What can be done in cases of this kind?

To a degree the answer is furnished by an example of steam railroad practice. The triple valve goes to the manufacturer rather than to the railroad shops. In this case, a prime reason is that where equipment is subject to continual interchange from road to road the railroad making the last repair would not care to be blamed for an accident following the use of the repaired apparatus on another road. Steam railroads also do not attempt to repair at the roundhouse such complex but standardized unit devices as injectors, lubricators and air compressors. These are replaced always by units already repaired and tested up to standard at the central plant. But, in answer to our question, we can find an example nearer home in the practice of several makers of fare-collection devices who take care of all repairs and replacements in their rental agreements.

If it were possible to build up a car of standard units, just as complete houses are now being sold, the user of the car would have no other concern than that of keeping the parts up to a certain standard of inspection. With standardized cars in use, he would always have certain spare parts on hand for replacement while the replaced part was off for repair or renewal. For example, switch groups could be sent off complete after they had made a specified mileage or suffered in an accident, instead of attempting to make a complete overhaul with imperfect facilities at home. The scheme could be carried further than the repairing and maintaining of moving equipment up to the manufacturer's standard. In the case of doors, steps, sash and other parts of a car, it ought to be possible for the user to advise the car builder that Pieces 4A, 6B, 5C of Car Type A1 are required for replacement, and the parts shipped ought to fit in as a matter of course. After all, some such plan as the foregoing is already in practice to a degree and very much to the advantage of all.

W. H. Hewlings' recent statement before the Federal Electric Railways Commission that the safety car, because standardized, had increased only 50 per cent in cost compared with a 100 per cent increase in non-standardized cars shows what standardization means to the purchaser regardless of the maintenance economies outlined. Further progress along this line should bring still better results.

The Zone Fare in Practice

CROYDON

The Great Southern Suburb of London Where the Principle of the Zone Fare Is Shown at Its Best in Capturing the Walker—Nearly 80 Per Cent of the Riders Pay the Minimum Penny Fare — No Hesitation in Eliminating an Unprofitable, Unnecessary Service — The Important Difference Between a Zone-Fare Transfer and a Universal-Fare Transfer Is, at Croydon, the Difference Between Making Money and Losing It — Why Buses Can Create Havoc

BY WALTER JACKSON

THERE are about 182,000 people in Croydon, and two-thirds of the breadwinners work in London. The workers go to and fro, chiefly, on the suburban trains, making no use of local facilities except in so far as they can be induced to ride the short distances between the steam railway station and their homes. It follows, then, that the Croydon Corporation Tramways must look for the bulk of its everyday traffic in in-town, short-distance riding, more particularly the riding to and from the local shopping district. On Saturdays, Sundays and holidays there is an accretion due to pleasure riding, but the real state of affairs is expressed by the fact that between 75 and 80 per cent of the passengers are penny riders—and a penny now (April, 1919) means a ride of 1.8 miles or less.

CROYDON, TOO, HAS A FLATIRON BUILDING

In regard to the route layout of the Croydon Corporation Tramways, shown in the map on page 468, attention is directed first to the shortest one, the line from Addiscombe station to the through line at Crown Hill. It is only 1½ miles long. Everyone knows what the fate of this line would be under the universal fare system. It would be simply a "sucker" for transfers to and from the through line. Few would care to pay full fare for so short a maximum ride, so that the bulk of the passengers would simply be people who were getting something extra for their money. By and by the management would realize that there was nothing in that sort of business and would seek to have the costly stub eliminated.

But under the short-ride fare system, a residential line like this simply needs at one end a shopping district, or anything else that sets up a current of travel, to make it both a self-sustaining line and a feeder to the connecting through line. Hence at Croydon such a line never gets less than five-minute service, normal headways of three to four minutes and holiday (Saturday) headways of two minutes. It does not figure on the books as a line with 80 to 90 per cent unproductive transfers, but as an earner of weekly averages of 35 cents per car-mile and Saturday averages of 40 cents per car-mile with corresponding traffic densities of 16.72 and 20.92 passengers per car-mile. Even when some 30 per cent allowance is made for the absence of bus competition, the Addiscombe line is still the star route of the Croydon Corporation Tramways. The Addiscombe line draws good traffic all the time, but it is exceptionally popular in wet weather when the "seasons," as commuters are called, do not care to walk up the side streets to their fine residences.

From this example of profitable development of a short line due to short-ride fares, we pass to the direct opposite—the abandonment of a portion of line that could not be made to pay under any circumstances. There is no more reason for holding on to an unprofitable piece of track than for holding on to a grocery or tobacco shop when there are not enough customers. This was Mr. Goodyer's point of view. Even though the system was the property of the municipality, he saw no reason why the public should be taxed for the sake of a very small minority, particularly as that minority had an alternative service.

The section abandoned on March 8, 1913, and since used as a quarry for supplying renewal material for other lines, was a 3960 ft. stretch (see map). It served a very poor district where Saturdays and Mondays were the only worth-while days. The management tried through cars, short headways and everything else it could think of, but there were not enough patrons under any scheme. The fact that the line was losing money did not deter opponents to abandonment from asserting that it ought to be continued on the grounds of general community development, public convenience, etc. The people in the district, however, had alternative routes by way of the Thornton Heath line and the "Cloister"-Portland Road line, the longest additional time for any patron on account of the greater walk not being more than eight minutes.

Moreover, Mr. Goodyer held fast to the principle that every route should be self-sustaining. To emphasize his arguments, he communicated with eighty-eight municipal tramways to learn what they had done in similar cases. The gist of his investigation is presented in Table I. The evidence collected clearly indicated that the managers of British municipal tramways look at their work in an entirely businesslike manner. They do not go into a panic at the thought of giving up an unprofitable line.

After the submission of Mr. Goodyer's report on Nov. 26, 1912, the section in dispute was operated intermittently until the final shut-down on March 8, 1913. From the time of its opening in November, 1906, to March, 1913, the capital expenditure had been £9,000, and sinking fund and interest payments had totaled £461.

CROYDON ROUTES AND SERVICES

The total trackage of the Croydon Corporation Tramways is approximately 17.5 miles measured as single track. Of this about 4.2 miles are operated as single-track owing to the narrowness of certain streets. There is a stretch of single track on Crown Hill, the busiest part of the system. Here it is necessary to have a traffic regulator control the movement of cars by throwing a hand switch-light signal to permit one to three cars to go by at one time. The same starter also controls a semaphore which notifies passengers from the through line that an Addiscombe car is waiting.

The main route, known as the Norbury line, runs from the London County Council terminus at Norbury to Purley, 5¾ miles distant. The terminus-to-terminus service on this line is from two and one-half to five minutes. In war days there was a certain amount of early morning traffic for munitions business, but now that normal conditions have been restored the periods of heaviest loading are 8 to 9.30 a.m., 12.30 to 2 p.m., and 5.30 to 8 p.m. As elsewhere, cars are run from 5 a.m. to 12 o'clock midnight (pre-war, 1 a.m.). While a schedule speed of 8 to 9 m.p.h. is possible, the deterioration of the track, the large number of new motormen and other causes connected with the war have made it desirable to set the schedule speed at 7.74 m.p.h. There are no turnbacks on the Norbury line, as traffic is fairly consistent throughout, but crossovers are provided to take care of emergencies due to breakdown of vehicles and the like. Stops (far-side) are 600 to 900 ft.

TABLE I—CROYDON QUESTIONNAIRE REGARDING ABANDONED LINES

Number of systems communicated with	88
Number of systems replied	88
Number of systems having lines not in operation at all	13
Number of systems having lines operated only in part	15
Number of systems having lines with reduced service	6

(a) SYSTEMS HAVING LINES NOT IN OPERATION AT ALL

Population	Length in Yards	Particulars	Capital Cost	Annual Charges
32,000	1,232	Line has been shut down for some time, owing to revenue not meeting operating expenses	*	*
36,000	2,200	Two sections of line not operated, owing to revenue being unremunerative	£12,500	£750
42,000	1,100	When line was operated, a loss of £15 per week was involved	£4,500	£270
46,000	150		*	*
50,000	440		£2,000	*
80,000	250	Operation of line resulted in a constant loss	*	*
97,614	300	Service on this portion discontinued recently as an experiment	*	*
100,000	1,320	Not operated for between six and seven years. But recently in connection with a short extension, about one-third has been operated	*	*
110,000	714	Operation of line resulted in serious loss	£3,770	£200
135,000	1,320	With the exception of two early morning workmen's journeys, line has been closed down for seven years	*	*
164,458	1,320	Operation of line resulted in a serious loss	£9,047	£462
180,000	1,290	Line not operated since 1904, owing to operating results being unsatisfactory	£7,200	£193.12.5
200,000	*	Several sections not operated. Manager says there are several sections which in his opinion ought also to be closed down, as they are simply a burden to the finances of the undertaking. In his view they should never have been constructed	£20,000	£1,200

(b) SYSTEMS HAVING LINES OPERATED ONLY IN PART

Population	Length in Yards	Particulars	Capital Cost	Annual Charges
31,000	*	One line not operated until twelve noon, owing to scarcity of passengers, but line pays well during remainder of the day	*	*
38,000	175	Used only on Saturdays and other special occasions	*	*
40,000	700	Run only between 1 p.m. and dusk	*	*
40,000	660	Operated occasionally, viz., on Saturdays to convey passengers to and from football matches, and during the summer for musical entertainments in public parks	£4,580	£240
86,767	393	Operated only on Saturday afternoons	*	*
120,000	1,000	Operated only during winter time on Sundays. During a few months in summer, line is worked on week-days for a few hours in the afternoons, and on Saturdays from noon until evening, and all day on Sundays	£18,656	£1,076
120,000	880	Operated only during summer months	*	*
122,000	440	Line operated only on Sundays at church times, and on bank holidays	£2,000	£120
130,000	*	Four separate stretches of track are operated only occasionally; three have never been regularly operated	£14,00	*
178,000	1,672	Operated during summer months only	£5,600	£336
178,000	*	One route to Sea Beach used only for summer traffic	*	*
200,000	1,100	Used only six hours on Saturdays; lying idle sixty hours per week	£14,500	£800
244,255	880	Line worked only Saturday and Sunday all day, and Wednesday part of day	£7,500	£412.10s.
328,000	840	Morning and evening operation for workmen's traffic	£3,233	£194
470,950	*	Line not in regular use	£4,714	£260

(c) SYSTEMS HAVING LINES WITH REDUCED SERVICES

Population	Length in Yards	Particulars	Capital Cost	Annual Charges
30,000	985	This length of line has been working at a loss. Services now running seven hours daily, instead of fifteen, as formerly. No service on Sundays	£6,500	£240
45,000	*	Forty minutes service on ordinary days; twenty minutes' service on Saturdays and Sundays. Results pay operating expenses, but not annual charges	*	*
200,000	*	Two sections upon which half-hour services are operated. As they do not meet operating expenses, manager thinks that they should be closed down altogether	*	*
122,000	1,320	Line formerly operated with six-minute service, but now twenty-four minute service	*	*
350,000	*	Services reduced to twenty minutes during week days on one or two unremunerative routes		
838,000	*	On two short routes, owing to financial results proving unsatisfactory, services have been reduced	£13,000	£243

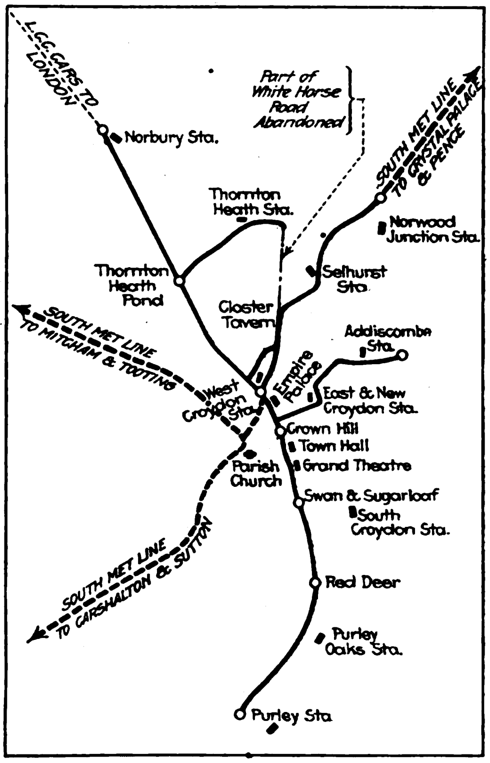
* Data not given.

(d) SOME MANAGERIAL VIEWS AS TO DEALING WITH UNREMUNERATIVE LINES

Population	Views of Manager
14,600	I quite agree that if a line does not pay operating expenses, the best thing to do is to "cut" the loss. One has, however, to overcome strong local prejudice in shutting down a line, and municipal tramways are run more on "sentimental" than on business lines.
45,000	If a line will not even pay operating expenses, I think it is far better to let it lie idle and "cut" the loss.
86,767	There is no doubt that it is better to "cut" the loss than to throw good money after bad in making a further loss by running cars that are not wanted by the traveling public.
135,000	In my opinion, it is better to pay the yearly capital charges without incurring an additional heavy loss through the operating expenses.
200,000	Personally, I see no course open, from a business point of view, but to close down sections where the receipts do not meet the actual running charges.
200,000	I certainly agree that it is better to "cut" the loss by paying the capital charges than to increase such loss by operating unremunerative sections.
400,000	If I had a line which had no traffic, I should ask the tramways committee to "take it up." While it lies in the street there will always be everlasting demands from selfish people that it be operated, even if the system loses heavily thereby.
500,000	If a line loses money in operation, it is certainly always better to face the loss on interest and sinking fund, rather than increase it by loss in operating expenses.

The service on one part of the Norbury line is supplemented by other cars. For the 1¾ miles between Thornton Heath Pond and Crown Hill, the passenger has the choice of either the Norbury or the Thornton Heath cars all day long; and to Purley, after 12 o'clock noon. This second route, the Thornton Heath line, is 4¼ miles long and has a five-minute service.

The third route, or Norwood line, is operated from a loop in the center of Croydon to the Penge entrance of the famous Crystal Palace, which, however, has not been open to the public during the war. The total length of this route is 5.08 miles, 2.58 miles of which is on track of the Croydon Corporation Tramways and the remainder on track of the South Metropolitan Tramways. The Croydon service of five-minute service way to Penge is supplemented by the five-minute head of the South Metropolitan Company beginning at High Level, Crystal Palace. Consequently, two and one-half minute headways, and better on holidays, prevail over the greater part of this route. The fourth or Addiscombe route has been previously described.



CROYDON ROUTE PLAN, SHOWING WHY A TRANSFER MEANS TWO HALF-FARES COLLECTED AT ONE TIME

The foregoing services are handled with three types of cars, as follows: Thirty-five cars, with reverse stairways, which seat twenty-two below and thirty above; thirty single-truck cars, which seat twenty-two below and thirty-two above; ten double-truck cars, used on main line only, which seat thirty passengers below and thirty-eight above. Owing to the large amount of pleasure riding, the upper decks are open. They are fitted with cross seats, which is the usual custom in Croydon, with the seating arrangement on top decks.

In ordinary times single queues are used in loading cars at busy places. On bank holidays the rush of people from London has made it necessary to handle queues four or five persons abreast.

CHANGES IN FARE HAVE NOT HURT THE RIDING HABIT PERMANENTLY

The first increase in fare, which became effective on Aug. 1, 1916, equalized the fares throughout the northern and southern parts of the borough. It also shortened the stages, as shown in Table II. At the time this revision went into effect, practically 90 per cent of the passengers were paying 1d. fares. As far as this class was concerned, the increase would have approximated 30 per cent. It was assumed, however, that enough passengers would drop off to make the increase in revenue only 8 per cent, or £7,472. The actual increase was 12 per cent, or £13,000.

By May, 1918, the continued advance in costs forced a second increase, averaging 28.3 per cent for all classes of passengers. This was attained by shortening stages (see Table II, lower part), eliminating odd fares like 1½d., 2½d., etc. (as elsewhere in the London district), and raising the maximum fare from 3d. to 4d. The workmen's fares, however, were not affected by the second increase. Mr. Goodyer believes that ordinary-rate riding will go up when the shorter workday comes into effect, because the workmen will have more leisure in the afternoon and evening.

As with the first revision, the results in revenue were better than anticipated. It was hoped that if one passenger in four averaged 25 per cent more fare, the increase in revenue would cover the war bonuses, which were estimated at £7,717. If all passengers were retained at the higher rate, the increase in revenue would have been £30,840. The actual results for the full fiscal year ended March 31, 1919, show a 21 per cent increase in revenue, or £23,407 on the basis of eleven months' operation under the increased fares.

Table III shows the rapid recovery of traffic for the fiscal year ended March 31, 1918, following the first fare increase, and Table IV shows the comparatively small drop in travel in May, 1918, following the second fare increase. These results were far more favorable than can be shown by American electric railways. They bear witness to the fact that the temptation of the Croydon short-haul rider to walk was soon overcome by the force of his habit of riding early, late and often.

Tables V and VI, page 473, show the weekly returns for the weeks ended Aug. 16, 1918, and Jan. 31, 1919, for each day of the week and for each of the four routes. These figures give an excellent idea of the high earning power possible with a graduated fare in what is practically a non-industrial community. In August, when holiday and pleasure travel is at its best, the earnings of the Norbury line connecting with London averaged 22.04d. (44.08 cents), reaching a maximum of 27.13d. (54.26 cents) on Sundays with a density of 13.45 passengers per car-mile. The January return gives a better idea of the traffic for which Croydon residents alone are responsible. In this case the earnings of the Norbury line for the week averaged 13.52d.; and the traffic, 9.6 passengers per car-mile. For the system as a whole the summer figures were 20.36d. and 13.55 passengers per car-mile, as contrasted with 14.03d. and 10.59 passengers per car-mile in January. Yet it will be admitted that the winter figures alone show respectable business! The exceptional position of the 1½-mile Addiscombe line has previously been discussed.

A banner day, demonstrating that somehow the conductors do get the money for their employer under the zone system, is afforded by the record of Whitsuntide, May 20, 1918, when £1,002 were collected from 118,754 passengers. As the total car-miles operated that day were 8,057, the number of passengers per car-mile amounted to 14.7 and the earnings per car-mile, 2s. 5.87d., or 59 cents.

For the year ended March 31, 1918, the average num-

GEORGE STREET, ONE OF CROYDON'S BIG SHOPPING THOROUGHFARES

CLIMBING A HILL ON BUSY HIGH STREET—NOTE THE TROLLEY OFFSET

ber of passengers per car-mile was 10.34; the average fare paid per passenger, 1.15d., and the average returns per car-mile, 11.95d. This was on the basis of 1.69 miles average distance for a penny, 2.29 miles for 2d. and 3.44 miles for 3d. These distances have since been decreased an average of 30 per cent.

TICKETS, INCLUDING UN-AMERICAN TRANSFERS

The ordinary rate tickets of the Croydon Corporation Tramways are of the usual kind, bearing identification numbers, names of stages, etc. In order to save paper, the ordinary rate 3d. and 4d. tickets are available either on the Norbury line or on the line to Penge reached via the South Metropolitan Tramways. Ordinary 1d. and 2d. through tickets are also issued jointly by the two undertakings between stages on the sections of the Penge line owned by each one. Earnings from these through tickets are divided equally, and then the Croydon Corporation Tramways gives 5d. to the South Metropolitan for the excess car-miles run by that undertaking as an allowance for everything except power, overhead line and permanent way.

In addition to the through tickets named, there is a two-part ticket sold at 4d. which gives the passenger the right to continue the journey from High Level, Crystal Palace, on to London by bus. This ticket, after being punched, is retained by the passenger as long as he is on the first car. When he reaches the "Robin Hood," the point of transfer to High Level, he surrenders the serially numbered top coupon to the conductor of the second car. On reaching High Level, he surrenders the rest of this ticket for an exchange ticket. This last type of bus-car ticket will be described in a later article on the London General Omnibus Company's practices.

There are no special low-rate tickets for children, but the workmen's rate still lives. Workmen's return

TABLE II—FARE REVISIONS OF THE CROYDON CORPORATION TRAMWAYS, AUG. 1, 1916

		Per Cent of Increase
From an average of 2 miles, 870 ft. for 1d. to 1 mile	4280 ft.	19.56
From an average of 1 mile, 4719 ft. for 1d. transfer to 1 mile	1084 ft.	18.87
From an average of 2 miles, 4218 ft. for 1½d. to 2 miles	1773 ft.	18.52
From an average of 2 miles, 4773 ft. for 1½d. transfer to 2 miles	1095 ft.	33.33
From an average of 4 miles, 1890 ft. for 2d. to 3 miles	2544 ft.	23.91
From an average of — for 2d. transfer to 3 miles	2175 ft.	.....
From an average of 5 miles, 429 ft. for 2½d. to 4 miles	630 ft.	16.33
From an averageof 5 miles, 3960 ft. for 3d. to 5 miles	3030 ft.	3.85
From an average of 2 miles, 4386 ft. for 1d. workman to 2 miles	2064 ft.	20.00
From an average of — for 1½d. workman to 2 miles	4620 ft.	.....
From an average of — for 2½d. workman to 5 miles	3030 ft.	.....
From an average of 5 miles, 3240 ft. for 2d. return		.....
May 1, 1918		
From an average of 1 mile, 4280 ft. for 1d. to 1 mile	1935 ft.	24.28
From an average of 1 mile, 1084 ft. for 1d. transfer to 1 mile	783 ft.	27.51
From an average of 3 miles, 2544 ft. for 2d. to 2 miles	3804 ft.	21.86
From an average of 3 miles 2175 ft. for 2d. transfer to 2 miles	3120 ft.	24.06
From an average of 5 miles, 3030 ft. for 3d. to 4 miles	780 ft.	25.58

TABLE III—CROYDON PASSENGERS AT VARIOUS RATES OF FARE FOR YEARS ENDED MARCH 31, 1916–1918

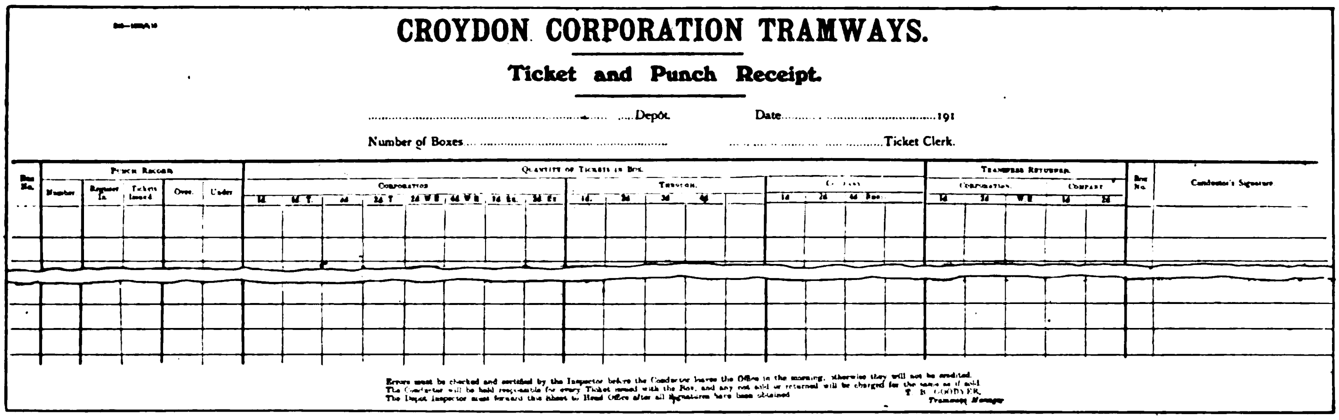
	1916		1917		1918	
Fare, d.	Passengers, Number	Per Cent	Passengers, Number	Per Cent	Passengers, Number	Per Cent
1	18,412,490	88.0	15,297,110	81.0	17,109,479	75.0
1½	1,350,224	6.0	2,354,967	12.0	3,498,773	15.0
2	983,893	4.7	1,042,391	5.3	1,491,380	6.96
2½	93,902	0.4	126,662	0.7	230,337	1.0
3	189,566	0.9	229,277	1.0	407,832	2.0
4	....	.....	....	.....	9,439	0.04
	21,030,075	100.0	19,050,407	100.0	27,747,240	100.0

TABLE IV—COMPARATIVE TRAVEL IN CROYDON IN MAY, 1916–1918

Year	Month	Total Passengers
1916	May	1,416,840
1917	May	2,056,322
1918	May	1,950,041

CROYDON LOCAL SHOPS REACHED FOR A PENNY FARE

AT THE "SWAN AND SUGAR LOAF" IN CROYDON—NOTE THE FLEET OF BUSES



CROYDON CORPORATION TRAMWAYS.

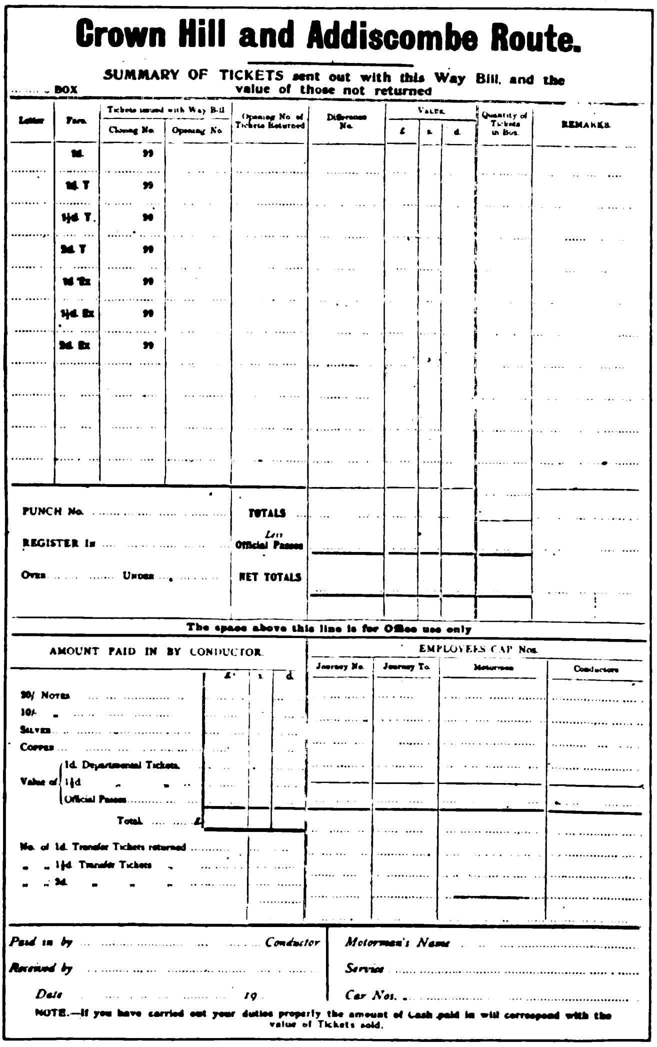
Ticket and Punch Receipt.

.... Depôt. Date.................................191

Number of Boxes.................................. ....Ticket Clerk.

SUMMARY OF PUNCH AND TICKETS—RECEIPTS SIGNED BY CONDUCTORS

tickets for rides on four cars are issued in two denominations, 2d. and 4d. This ticket has three coupons, each bearing the serial number of the ticket and a numeral to show the order of use, as illustrated. When the passenger presents the ticket for the first half of the first journey, the conductor punches the destination on the light or a.m. side, as in the case of an ordinary one-way ticket. When the workman boards the second car, the same stage is punched again on the same side, but this second conductor takes off the bottom coupon as the equivalent of the registration counted by his punch and he makes due entry of the coupon on his waybill. When the passenger presents the rest of the ticket on the first car homeward in the afternoon, the third conductor removes the coupon marked "3" and enters it on his waybill after having punched the destination on the dark or "p.m." side of the ticket. The fourth conductor punches the same side and removes coupon "4" to square his count. What is left is the passenger's standard fare receipt. Naturally, the serial number on the ticket is good as a check only on the first car of the day, but it does not pay to put day and time limits on a ticket of this character. The same ticket may be used as a two-car ticket, in which event no coupon is removed by the morning conductor, but all are taken off by the afternoon conductor. This multi-coupon ticket was gotten out as a special concession to war workers, and the railway hopes to do away with it at an early date. In no case are the return-ride privileges available on holidays.



Crown Hill and Addiscombe Route.

SUMMARY OF TICKETS sent out with this Way Bill, and the value of those not returned

.... BOX

Letter	Fare	Tickets issued with Way Bill: Closing No.	Tickets issued with Way Bill: Opening No.	Opening No. of Tickets Returned	Difference No.	Value: £	Value: s.	Value: d.	Quantity of Tickets in Box	REMARKS
	1d.	99								
	1d. T	99								
	1½d. T.	99								
	2d. T	99								
	1d. Ex	99								
	1½d. Ex	99								
	2d. Ex	99								

PUNCH No. .... TOTALS

REGISTER In .... Less Official Passes

Over .... Under .... NET TOTALS

The space above this line is for Office use only

AMOUNT PAID IN BY CONDUCTOR

	£	s.	d.
20/ Notes			
10/- "			
Silver			
Copper			
Value of 1d. Departmental Tickets			
Value of 1½d. " "			
Value of Official Passes			
Total £			

No. of 1d. Transfer Tickets returned ....

" " 1½d. Transfer Tickets " ....

" " 2d. " " " ....

EMPLOYEES CAP Nos.

Journey No.	Journey To	Motormen	Conductors

Paid in by .... *Conductor*

Received by ....

Date *19*

Motorman's Name ....

Service ....

Car Nos. ....

NOTE.—If you have carried out your duties properly the amount of Cash paid in will correspond with the value of Tickets sold.

CONDUCTOR'S WAYBILL MADE FOR A SPECIFIC ROUTE IN CROYDON

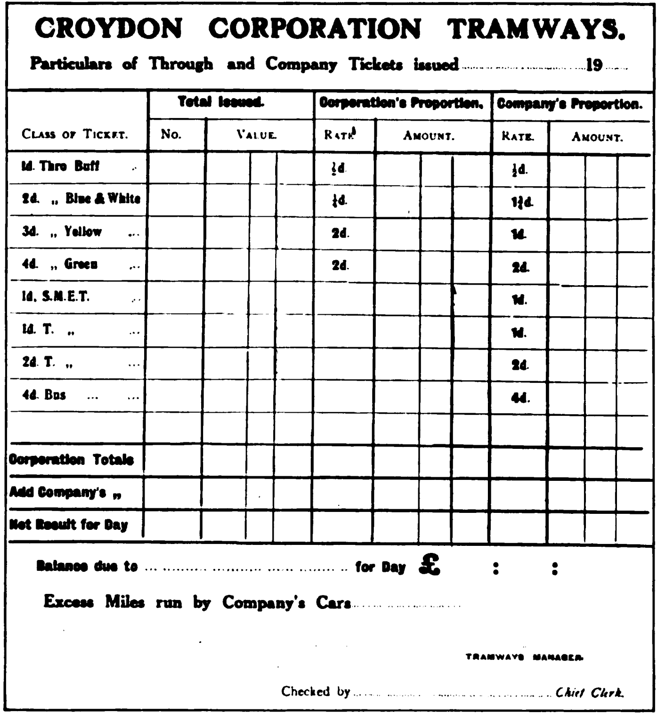
All workmen's tickets must be sold no later than 7.30 a.m. The ordinary 1d. ticket with special extensions of ride is available in the case of workmen's one-way trips in the morning.

It is now in order to explain the use of transfers for the ordinary-rate passenger. These are not transfers in the usual American sense of fare receipts giving the passenger an extension of his journey on a second car with no increase in fare. The simplest way to express the idea of what is accomplished by a Croydon transfer is to say that it sells two ½-d. rides for 1d., two 1d.-rides for 2d., and so on, wherever it would be unwise to attempt to sell the rides separately because the distance would be so short as to make it seem to the passenger hardly worth while to board the second car. The prospective passenger is led to think of his trip as a unit even though he has to use two cars to make the journey. Instead of receiving more for his money, however, the transfer passenger in actual practice gets a little less. Another advantage of the transfer is that it keeps a certain number of people who live on the branch lines from patronizing the buses because once they buy a through ticket they use it on both the branch and the main-line cars. Passengers who purchase a transfer ticket give it up for an exchange ticket on boarding the second car, the second conductor punching the same stage on the exchange ticket as the one he observes on the transfer ticket. As soon as possible, however, the exchange ticket will be abolished in favor of the plan of having the second conductor cancel the transfer against further use by means of a non-registering punch.

At one time an effort was made to place a limit of at least one day on the transfer ticket by using code letters. The complications thus involved did not prove justified, especially in view of the fact that the transfer was not a free privilege in the American sense but something that was paid for. The 1d. and 2d. transfer tickets of the South Metropolitan Tramway system, however, still carry such markings. In the case of the 2d. coupon transfer used within that company's area, the first conductor punches the letter selected for the day; the second conductor punches the time nearest to the receipt of the ticket and retains the serially-numbered top coupon as an accounting for the registration of his punch.

In addition to relying upon seven ticket inspectors (one of them a woman) for the proper issuance and use of tickets, the management has the conductors examine tickets at the end of every fare stage as a check against over-riding. The latter rule, of course, simply takes advantage of the fact that the conductors at Croydon are ordinarily not kept too occupied to do this. Placards for passengers as posted in the cars cover three important points in connection with the fare system: Rates of fare, a suggestion that upper-deck passengers pay on the platform, and a warning as to the statutory penalty for failure to pay proper fare.

To conclude the discussion relative to tickets, it may be of interest to mention the departmental tickets bought at full face value by different departments of the municipality. Each token, which is exchangeable for a standard ticket on the car, is marked with the initials of the department which uses them, as "T. C." for town clerk, "B. E." for borough engineer, "E. L. D." for electric light department, "R. S." for road surveyor, "F. C." for food controller (of blessed memory), etc. Those tickets which are good for use after office hours are surprinted "A. O. H." The departments interested receive regular statements, as shown, of the tickets used by them. One of the advantages of supplying the employees with tokens instead of cash is that they are no longer tempted to use their employer's competitor—the motor-bus.



CROYDON CORPORATION TRAMWAYS.

Particulars of Through and Company Tickets issued..........................19....

Class of Ticket.	Total Issued. No.	Total Issued. Value.	Corporation's Proportion. Rate.	Corporation's Proportion. Amount.	Company's Proportion. Rate.	Company's Proportion. Amount.
1d. Thro Buff ..			½d.		½d.	
2d. " Blue & White			½d.		1½d.	
3d. " Yellow ...			2d.		1d.	
4d. " Green ...			2d.		2d.	
1d. S.M.E.T. ..					1d.	
1d. T. " ...					1d.	
2d. T. " ...					2d.	
4d. Bus					4d.	
Corporation Totals						
Add Company's "						
Net Result for Day						

Balance due to .... for Day £ : :

Excess Miles run by Company's Cars..........................

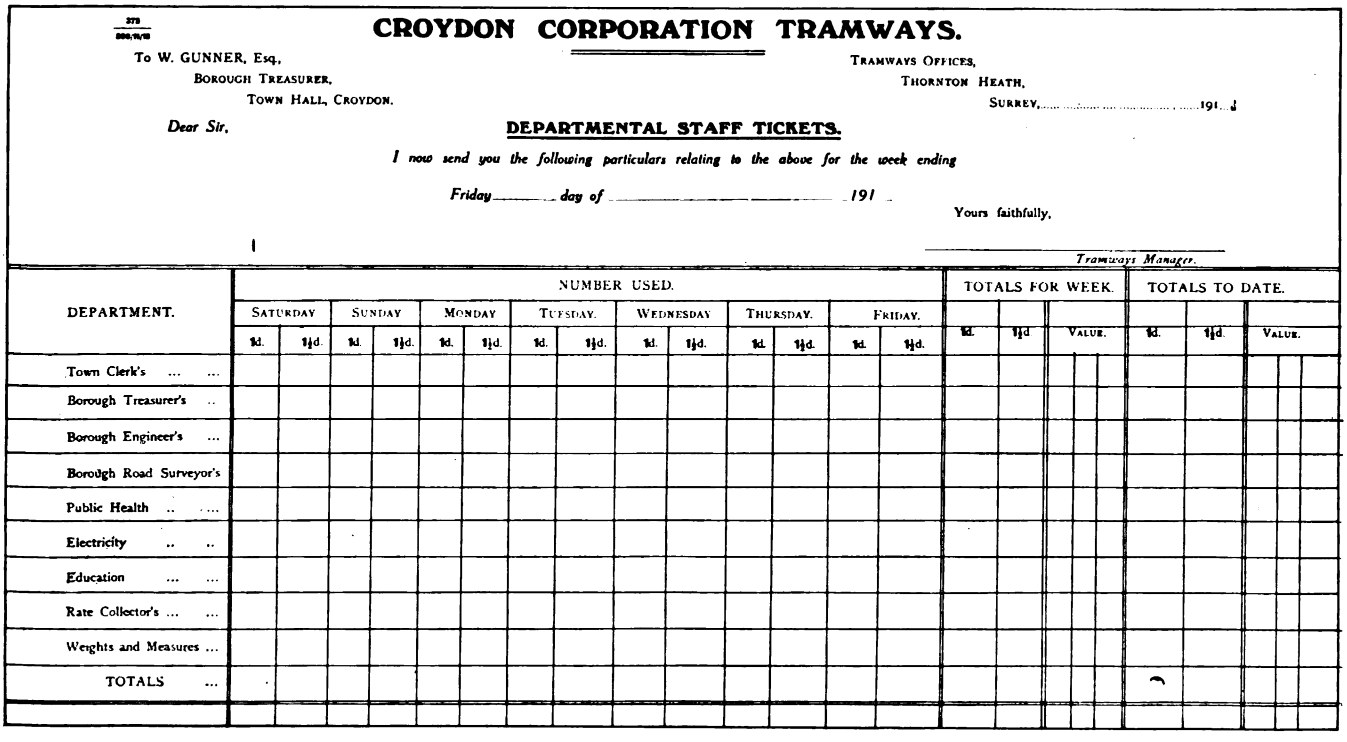
TRAMWAYS MANAGER.

Checked by.. Chief Clerk.

DAILY SUMMARY OF TICKETS ISSUED

THE TICKET DEPARTMENT

Although tickets are supplied from a common stock, they are issued according to continuous serial numbers, and the conductors must always work off their own remainders. The ticket department and not the conductor estimates the quantity of each kind required. The department records on the waybill the initials, the opening and the closing numbers, the quantity, etc. The



CROYDON CORPORATION TRAMWAYS.

To W. GUNNER, Esq.,
Borough Treasurer,
Town Hall, Croydon.

Tramways Offices,
Thornton Heath,
Surrey,..................................191..

Dear Sir,

DEPARTMENTAL STAFF TICKETS.

I now send you the following particulars relating to the above for the week ending

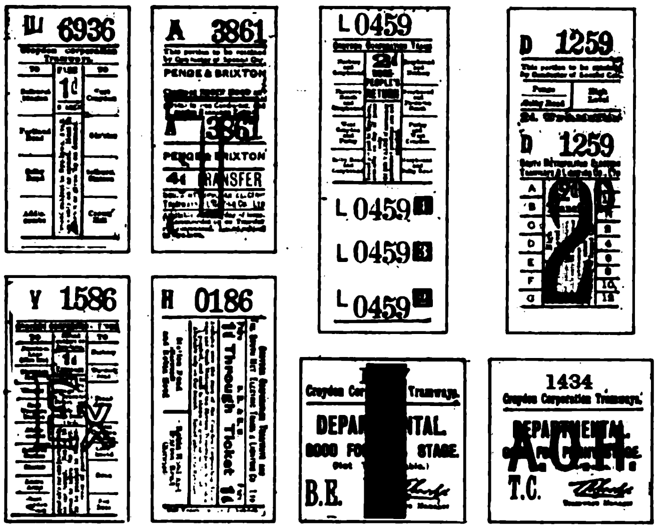
*Friday*________ *day of* ______________________ *191* _

Yours faithfully,

____
Tramways Manager.

Department.	Number Used. Saturday 1d.	Saturday 1½d.	Sunday 1d.	Sunday 1½d.	Monday 1d.	Monday 1½d.	Tuesday. 1d.	Tuesday. 1½d.	Wednesday 1d.	Wednesday 1½d.	Thursday. 1d.	Thursday. 1½d.	Friday. 1d.	Friday. 1½d.	Totals for Week. 1d.	Totals for Week. 1½d.	Totals for Week. Value.	Totals to Date. 1d.	Totals to Date. 1½d.	Totals to Date. Value.
Town Clerk's																				
Borough Treasurer's ..																				
Borough Engineer's ...																				
Borough Road Surveyor's																				
Public Health																				
Electricity																				
Education																				
Rate Collector's																				
Weights and Measures ...																				
TOTALS ...																				

WEEKLY SUMMARY OF TICKETS ISSUED FOR ACCOUNT OF OTHER MUNICIPAL DEPARTMENTS



SOME VARIETIES OF CROYDON TICKETS, INCLUDING TRANSFERS, INTERCHANGE TICKETS AND MUNICIPAL EMPLOYEES' TICKETS

conductor puts down the opening or top numbers of the tickets returned and fills in on the bottom of the waybill the data concerning money and tickets returned. Cash and tokens are turned in by the conductors to the receiver stationed from afternoon to midnight at each of the two depots. These receivers sign for the value received and bank the money without having it go to the ticket department. The inner side of the waybill prepared for each route is arranged to show the ticket numbering at various points along the route. Obviously a report like this is not accurate enough for the busy hours, but it is helpful to the ticket inspector in conducting his check.

The registering punch used is made by the Bell Punch & Ticket Company. Few counts of the punchings are required either through inaccurate returns or out-of-order punches. Hardly more than one count a day is made with eighty to ninety conductors in service. With regard to the check on the cars, it may be said that although the ticket inspectors have other traffic duties, they average sixty to seventy checks a day.

Several forms used by the ticket department are reproduced herewith, such as the waybill, the statement of departmental tickets, the summary of receipts for tickets and punches given to the individual conductors, and the daily summary of cash and tickets. Neither the three employees who prepare traffic summaries nor the cash receivers are charged against the ticket system, as they would be needed anyway. The ticket department itself has but four employees—namely, the chief clerk, two boys who make out the waybills, and one boy who empties and resets the punches. That the Croydon Corporation Tramways should have such good traffic as described earlier in this article is all the more extraordinary in view of the powerful competition of the motor bus, particularly on the Norbury main line. This line would probably enjoy 30 per cent more traffic if the buses were absent. It has to compete with three bus routes over its full length in addition to other buses which go over the same route from West Croydon station and Crown Hill to the "Red Deer." For example, on Sunday, March 2, 112 buses were operating as compared to fifty cars.

In view of the many pros and cons on this subject, it may be of value to set forth some of the reasons why the bus has proved so dangerous a competitor. Mr. Goodyer has given much thought to this subject, and while the following figures from two of his reports (1913 and 1914) may not be correct to-day, the comparison of burdens still holds good.

COMPARISON OF PUBLIC BURDENS BORNE ANNUALLY BY TRAMCARS AND MOTOR BUSES AT CROYDON

Items	Car			Motor Bus		
	£	s.	d.	£	s.	d.
License duties	2	15	0	5	18	0
Taxes on track	43	8	9	..	..	.
Maintenance of road	92	11	9	..	..	.
Petrol tax	...	..	.	43	0	0
	138	15	6	48	18	0

"Croydon is Goodyer and Goodyer is Croydon" would be one way of expressing the state of affairs at Croydon. Since December, 1901, **THOMAS BOYCE GOODYER** has been the tramway executive in that city, first as general manager for the British Electric Traction Company, Ltd., when it was lessee of the Croydon Corporation Tramways; then from the termination of the lease in May, 1906, as tramways manager for the municipality.

Continuity in office under such radical change in control indicates that Mr. Goodyer must have achieved that object so difficult for an electric railway manager—popularity. Indeed, one does not have to spend many hours with him to learn that the general public want to lay their troubles before him only. He would no more allow a complainant to leave unsatisfied than a good salesman would allow a prospect to get out of the shop without buying. A community like Croydon, where so much of the traffic comes from women shoppers, needs and gets this personal cultivation. Mr. Goodyer's popularity is equally great among his fellow managers, as instanced by his election last year to the presidency of the Municipal Tramways Association. This honor he fully deserved for the hearty, hustling way in which he throws himself into any matters of general welfare to the industry.

Mr. Goodyer's birthplace was Glasgow, but he was educated at the Royal High School, Edinburgh. On leaving school he spent several years with D. W. Paterson, solicitor, and for many years secretary of the Edinburgh Street Tramways, of which Mr. Goodyer's father was traffic manager. In 1884, Mr. Goodyer joined the traffic office staff of the London Road Car Company, Ltd., and some months later became manager and secretary of the Northampton Street Tramways. His next appointment was that of manager of the West Metropolitan Tramways, part of which is now the London United Tramways. In October, 1887, he resigned to become assistant traffic manager of the Birmingham Central Tramways, which kept him busy with horse cars, cable cars, accumulator cars, steam cars and omnibuses! In 1894 he was appointed traffic manager. In 1896 a new company called the City of Birmingham Tramways was formed to take over and operate the Birmingham Central. Mr. Goodyer remained with the new company until April, 1898, when he resigned to become the general traffic superintendent of the British Electric Traction Company, Ltd., when that great concern was operating several score properties, aggregating many miles of electric, steam and horse lines. During 1900 he spent several months in the United States and Canada to get a first-hand view of American practices. When the office of general traffic superintendent was abolished in December, 1901, Mr. Goodyer was appointed general manager at Croydon as noted above.

Mr. Goodyer has been a member of the executive council of the Municipal Tramways Association for several years and is also a member of the council of the Tramways and Light Railways Association, which is composed of privately-owned undertakings. Since 1907 he has been honorary secretary to the Metropolitan Association of Electric Tramways Managers, and he has also acted in a similar capacity to the tramways (Board of Trade) local advisory committee for No. 1 area, Metropolitan and East Coast.

TABLE V—TRAFFIC RETURNS IN CROYDON FOR WEEK ENDED AUG. 16, 1918

	Norbury						Thornton Heath						Norwood						Addiscombe						Totals					
	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers Per Car-Mile	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile
Saturday...	26	2,888	277	23.10	39,348	13.62	22	1,960	158	19.40	24,868	12.69	9	1,299	114	21.13	19,823	15.26	10	777	72	22.27	17,164	22.09	67	6,952	625	21.58	101,208	14.56
Sunday.....	23	2,260	255	27.13	30,417	13.45	16	1,390	131	22.68	18,133	13.05	7	938	79	24.39	13,253	14.14	7	508	37	17.79	8,869	17.46	53	5,096	504	23.75	70,678	13.87
Monday.....	26	2,630	238	21.75	34,248	13.02	8	882	72	19.62	12,055	13.67	7	1,048	82	18.19	14,437	13.75	8	651	52	19.18	12,263	18.84	49	5,211	444	20.49	72,973	14.00
Tuesday....	25	2,632	228	20.80	33,233	12.62	8	882	66	18.12	11,012	12.49	7	1,048	76	17.55	13,581	12.96	8	651	49	18.16	11,691	17.96	48	5,213	420	19.36	69,517	13.34
Wednesday.	25	2,626	247	22.59	34,425	13.11	8	882	68	18.72	11,543	13.09	7	1,036	76	17.72	13,430	12.96	8	651	45	16.90	10,889	16.73	48	5,320	445	20.10	70,287	13.21
Thursday...	25	2,632	242	22.09	35,184	13.37	8	882	67	18.33	11,294	12.80	7	1,043	77	17.89	13,590	13.03	8	651	49	18.25	11,737	18.03	48	5,438	449	19.83	71,805	13.20
Friday......	26	2,680	195	17.51	30,472	11.37	8	883	64	17.60	10,855	12.29	7	1,048	67	15.38	12,369	11.80	8	651	48	17.92	11,559	17.76	49	5,262	376	17.15	65,255	12.40
Total......	25	18,348	1,684	22.04	237,327	12.93	11	7,761	629	19.46	99,760	12.85	7	7,460	574	18.49	100,464	13.47	8	4,540	355	18.44	84,172	18.54	52	38,492	3,266	20.56	521,723	13.55

TABLE VI—TRAFFIC RETURNS IN CROYDON FOR WEEK ENDED JAN. 31, 1919

	Norbury						Thornton Heath						Norwood						Addiscombe						Total					
	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Miles	£	Pence per Car-Miles	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Miles	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile	Cars	Car-Mile	£	Pence per Car-Mile	Pas-sengers	Pas-sengers per Car-Mile
Saturday...	25	2,724	195	17.16	32,838	12.06	24	2,088	141	16.21	22,983	11.01	9	1,251	106	20.36	18,617	14.88	10	810	71	21.01	16,944	20.92	68	6,873	513	17.91	91,382	13.30
Sunday.....	20	2,013	10	12.01	16,091	7.99	16	1,666	68	9.85	11,248	6.75	7	868	47	13.12	8,458	9.70	7	514	27	12.65	6,415	12.48	50	5,061	244	11.55	42,212	8.34
Monday....	20	2,495	146	14.09	25,219	10.11	17	1,668	95	13.59	15,829	9.49	8	1,103	68	14.90	12,624	11.45	9	706	50	16.91	11,837	16.77	54	5,972	359	14.43	65,509	10.97
Tuesday....	20	2,514	134	12.81	23,193	9.23	17	1,660	90	13.07	15,245	9.18	7	1,088	63	13.84	11,730	10.78	8	662	46	16.72	10,966	16.56	52	5,924	333	13.84	61,134	10.32
Wednesday.	20	2,513	134	12.80	22,980	9.14	18	1,763	90	12.29	15,280	8.67	8	1,067	59	13.26	11,211	10.51	8	669	46	16.57	10,974	16.40	54	6,012	329	13.15	60,445	10.05
Thursday...	20	2,518	143	13.67	24,447	9.71	16	1,565	91	13.88	15,140	9.67	8	1,114	66	13.82	12,116	10.88	8	663	46	16.85	11,086	16.72	52	5,860	346	14.18	62,789	10.71
Friday......	20	2,490	119	11.50	20,869	8.38	17	1,682	90	12.86	15,192	9.03	7	1,061	55	12.52	10,600	9.99	8	718	46	15.52	11,060	15.40	52	5,951	311	12.55	57,721	9.70
Total....	21	17,267	972	13.52	165,637	9.60	18	12,092	665	13.20	110,917	9.17	8	7,552	464	14.79	85,356	11.30	8	4,742	332	16.85	79,282	16.72	55	41,653	2,435	14.03	441,192	10.59

In addition to the foregoing items, the Croydon cars for the preceding year had contributed an average of £51 14s. 6d. each toward the taxes, thus giving a sum of £190 10s. per annum per car run or a gross total of £11,095 16s. 7d. as a contribution to the local revenue.

After pointing out that most of the wages earned by the Croydon Tramway employees were spent in the community, Mr. Goodyer showed the following:

HOW TRAMCARS IN THE METROPOLITAN AREA ARE HANDICAPPED IN COMPARISON WITH MOTOR BUSES

	Tramcars	Motor Buses
Control	Permitted to run only on routes sanctioned by Parliament	Free to go anywhere at their option
Track	Provided and maintained by the tramway system. Damage done by motor buses and other traffic repaired at cost of trams.	Provided and maintained from taxes. Repairs paid for by the general taxpayer.
Workpeople's Fares	On all routes	None
Tax on track	Tax paid on track	None

In concluding his 1913 report, Mr. Goodyer quoted a former official of the Board of Trade who stated in a report on "Means of Locomotion and Transport in the Metropolitan Area": "Where the streets have ample width and the conditions are otherwise favorable, the tramway has no rival for the safe, convenient and cheap transport of large numbers of people."

Penalty for avoiding payment of fare, or for wilfully travelling beyond the distance paid for—Forty Shillings.

(Tramways Act, 1870)

PAYING FARES ON PLATFORM

Passengers upon joining Cars at non-busy points and intending to travel on the outside, are respectfully requested to pay their fares on the platform.

FEBRUARY, 1919.

TWO IMPORTANT CAR CARDS USED IN CROYDON

In his report of June, 1914, Mr. Goodyer again directed attention to the depredations of the bus and quoted verbatim testimony which showed how destructive the bus was proving to the roadways of London, in one case the cost of maintenance having doubled. The report stated that following the initiative of Croydon, the communities of East Ham, West Ham, Leyton, Bexley and Walthamstow had passed resolutions to be submitted to the Prime Minister and the President of the Board of Trade recommending legislation that would place motor omnibus companies on terms of equality in regard to public obligations with the municipal tramway authorities in the metropolitan area.

In connection with evidence presented before the select committee on motor traffic in 1913, it had been stated that if the London motor omnibus proprietors had to pay a contribution towards track and road maintenance, and a tax on the track, equivalent to what the London County Council Tramways had to pay (£200 per vehicle), it would amount to about £600,000 per annum. It was asserted that the existing conditions were manifestly and monstrously unfair.

The work of impressing such facts upon the government, so as to secure remedial legislation, was interrupted by the war. Efforts are now being made, however, to bring the subject to the attention of Parliament.

European Electrification Proposals

British Plans in Abeyance, Pending Government Action — France Has Commission at Work — Belgium Has Approved Several Undertakings

By Alexander McCallum
London

THE subject of electrification of steam railways is engaging earnest attention at present in Great Britain, France and Belgium. In the first of these countries, however, nothing can be done pending the passing of legislation now before Parliament. In France the subject is complicated by its forming part of a gigantic scheme of national reconstruction. In Belgium only does it seem likely that a very early start will be made.

Great Britain

The conversion to electric traction of steam railways in England and Scotland, where such a course seems advisable, is a part of the policy of the present British government. There is, however, no prospect of anything definite being done until two bills now before Parliament have been passed and until the administrative machinery which they set up has been got into working order. These measures are the Ministry of Ways and Communications bill and the electricity supply bill. As most readers no doubt know the former creates a ministry which will have charge of all means of public locomotion and the latter establishes a national electric supply which will also be under the supervision of the new ministry. The ways and communications bill is now being discussed by the House of Lords, many of the members of which show a hostile spirit to it and it is not at all certain that there will not be a conflict between the Lords and the House of Commons on the subject. The electricity bill as yet has not got beyond the House of Commons and it also is meeting with much criticism. In the end of July the government adopted an important amendment under which railway companies' existing generating stations will be exempted from the general transfer of power stations to the national scheme.

British railway companies, in the meantime, will do nothing to inaugurate electrification. They are and will be for two years under government control and at the end of that period no one knows what will happen. That is to be decided in the interval by the new minister. Hence no avoidable capital expenditure will be undertaken by the companies. But if the two bills are passed without substantial wreck, the minister is expected, in collaboration with the companies, to inaugurate electrification. No definite plans have yet been formulated; in fact, the heads of departments who have been provisionally nominated for the ministry do not really exist as such until the bills have been passed. An early scheme will no doubt be the electrification of the main line from London to Southend, a distance of about 40 miles, for which Parliamentary powers already exist. Another definite plan will be the conversion of the South Eastern Railway from London to Dover, more than 70 miles, provided that the Channel tunnel scheme goes forward as it promises to do. The French authorities have just approved it. As for the rest, the prospect seems to be one of suburban electrification gradually carried further and further out from the great cities, and in some cases at least ultimately meeting and joining up. Under the electricity supply bill £20,000,000 is provided for the erection of super-power stations and main transmission lines to be used for all power purposes, and £25,000,000 is allotted for financing the proposed district electricity boards and joint electricity authorities who are to take over existing generating stations and main transmission lines and work them into the scheme of great new stations to form a national system.

As to the method of traction which will be employed, there can hardly be a doubt that in very many cases at least it will be the direct-current system, though nothing has been formally decided. Apart from a short local line at Morecambe in Lancashire, the only example of single-phase system of traction in Britain is that on the suburban lines of the London, Brighton and South Coast Railway. Though this has been in highly successful operation for several years, the steam railway electrifications which succeeded it like those which came before it have all been direct current.

France

Nothing very definite has emerged in France. An elaborate report by the Higher Council of Public Works was issued last spring dealing with many subjects besides railway electrification. Numerous committees are carrying on investigation on a variety of subjects and one of them, as already reported in this journal, has been investigating electric railways in the United States. The conversion of thousands of miles of main-line railways in France is contemplated, but according to the latest information no definite steps have yet been taken.

Belgium

It is different in Belgium, despite the way in which that country has been ravaged by the war. The Belgian government has had several reports with regard to power distribution. Though interrupted by the war a commission has long existed for the study of the electrification of the Belgian State Railways. In the early part of this summer the Belgian government approved a report by this commission in favor of carrying out the change. Four experts were appointed to work on the subject, and it is expected that the railways first to be dealt with will be those from Brussels to Antwerp, Brussels to Luxembourg and Brussels to Ostend. There is talk of the work of conversion being begun next year. Direct-current traction is to be employed at 2400 volts and either third-rail or overhead conductors will be used, according to circumstances. A very frequent service of trains is contemplated.

In connection with the Eighth Annual Safety Congress which is to be held in Cleveland Oct. 1 to 4 inclusive, the safety exhibit will be held in Grays' Armory. The entire space has been contracted for, and there will be seventy booths in which will be shown types of safety equipment applicable to every industry. A feature which will be of particular interest to electric railway men will be a shop-lighting exhibit to be conducted by the National Lamp Works, to which has been assigned the entire stage of the armory. A shop will be shown in operation, with three lighting installations varying in quality from the point of view of safety engineering.

Progress on the Midi Railway Pyrenean Electrification*

An Ultimate Electrical Mileage of More than 500 Is Involved in This Important Development, Which Was Greatly Hampered by the War

BY LUCIEN A. H. PAHIN
Pontoise, France

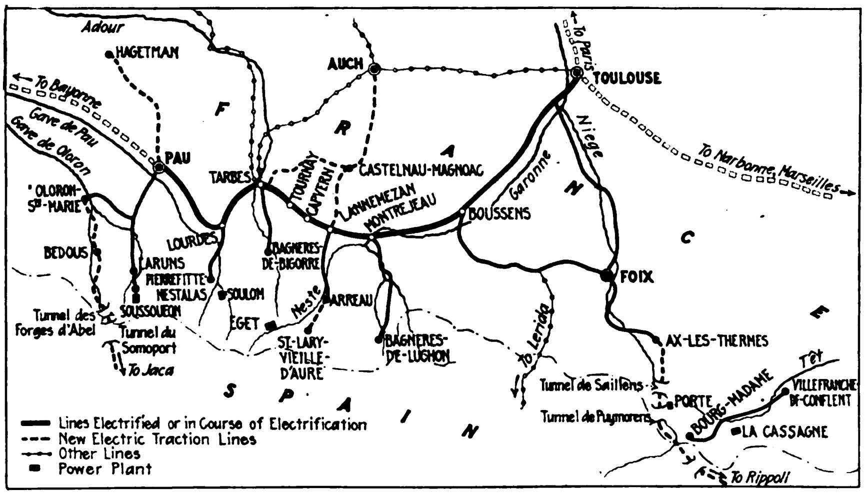
FOLLOWING the negotiations which resulted in the concession making possible the railway line across the Pyrenees Mountains, the Midi (Southern) Railway in France undertook, in 1905 and 1906, the preparation of electrification projects of which a part are now completed. Electrical operation was decided upon because many of the grades involved would have been insurmountable by steam locomotives. While the new lines were being developed, in order to insure the most rational development of the main line between Toulouse and Bayonne (on the Atlantic coast) and its branches, it was decided to substitute electric traction for steam on a number of lines of the system already in operation.

On the accompanying map may be seen the following lines or sections of lines which have been electrified up to the present time: (1) Foix to Ax-les-Thermes and to the Spanish frontier, 50½ miles, the French part of the Trans-Pyrenean line from Ax-les-Thermes (France) to Ripoll (Spain). (2) Montréjeau to Pau, 70 miles, a section of the line between Toulouse and Bayonne. (3) Montréjeau to Bagnéres-de-Luchon, 22 miles. (4) Lannemezan to Arreau, 15½ miles. (5) Tarbes to Bagnères-de-Bigorre, 13½ miles. (6) Lourdes to Pierrefitte-Nestalas, 13 miles. (7) Pau to Oloren—Ste. Marie and to Laruns-Eaux-Bonnes, 34 miles. (8) Auch to Lannemezan, 43½ miles. (9) Arreau to Saint-Lary and Vieille-d'Aure, 7 miles. (10) Pau to Hagetman, 33 miles. (11) Oloron-Ste. Marie to Bedous and the Spanish frontier, 32½ miles, the French part of the line across the Pyrenees between Bedous and Jaca.

The sections next to be completed will be those from Montréjeau to Toulouse, 64½ miles; from Toulouse to Foix, 52 miles, and from Boussens to Foix, 50 miles. Most of these lines contain grades up to 4½ per cent.

All of the above track is standard gage. The lines, however, connect with two of meter gage (3 ft. 3.4 in.), that between Villefranche-de-Conflenz and Bourg-Madame, and that between Castlenau-Magnoac and Tarbes.

The Midi Company adopted for power supply to the trains single-phase current at 12,000 volts, distributed over an aerial line with catenary suspension.


Adour
HAGETMAN
AUCH
TOULOUSE
To Paris
To Bayonne
Gave de Pau
Gave de Oloron
F
R
A
N
C
E
PAU
TARBES
TOURNAY
CAPVERN
CASTELNAU-MAGNOAC
LANNEMEZAN
MONTREJEAU
Garonne
Niege
To Narbonne, Marseilles
OLORON-Ste-MARIE
BOUSSENS
LOURDES
BEDOUS
LARUNS
BAGNERES-DE-BIGORRE
FOIX
PIERREFITTE-NESTALAS
SOULOM
ARREAU
Neste
SOUSSOUEON
Tunnel des Forges d'Abel
Tunnel du Somoport
To Jaca
EGET
ST-LARY-VIEILLE-D'AURE
BAGNERES-DE-LUCHON
To Lerida
AX-LES-THERMES
Têt
Tunnel de Saillens
PORTE
BOURG-MADAME
VILLEFRANCHE-DE-CONFLENT
Tunnel de Puymorens
LA CASSAGNE
To Rippoll
S
P
A
I
N
Lines Electrified or in Course of Electrification
New Electric Traction Lines
Other Lines
Power Plant

MAP OF PYRENEAN SYSTEM OF MIDI RAILWAY, SHOWING ELECTRIFICATION PROGRESS

On the important lines the passenger and freight trains will be drawn by electric locomotives equipped with motors of 600 hp. or the equivalent, and weighing about 88 tons (2000 lb.) of which 59 tons is carried by the three driving axles.†

The type of chassis of the locomotive, number of axles, wheel arrangement, etc., were specified by the railway company. As was covered in the technical press before the war, the railway company and the manufacturers were at the time studying carefully the details of electrical equipment best fitted for the operating program prescribed by the railway, but necessarily the tests which were then under way were interfered with by the beginning of hostilities.

On the branch lines, as well as for the local trains on the Toulouse-Bayonne line, the railway expects to use single-phase, multiple-unit cars equipped each with four 125-hp., 285-volt, 15-cycle motors. These coaches, of which a number are to be furnished by the French Westinghouse Company, will weigh about 61½ tons.

As a whole the work undertaken by the Midi Company, in co-operation with the government, for the electrification of the Pyrenees system involves nearly 530 miles of route. The undertaking may be considered, in magnitude, as one of the most important in Europe.

The results obtained to date on the electrified parts of the system are excellent, but actual operating data are not yet available because since 1914 the train service given on all of the French lines has been quite abnormal. Furthermore, the power plants of the Midi Company have furnished electric power to various factories working for the national defense, hence they have operated under conditions different from those normal in a railway power plant. Later it will be possible to obtain data of value regarding regular operation, and as a result of the tests which were interrupted, or at least disturbed, by the outbreak of hostilities on Aug. 1, 1914.

---

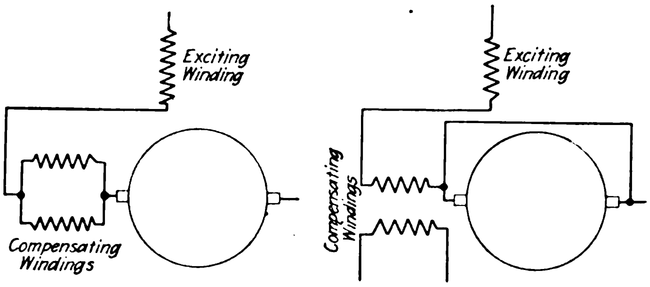
*For more detail regarding the pre-war status of this electrification see ELECTRIC RAILWAY JOURNAL, Feb. 15, 1913, page 288; May 3, 1913, page 792; June 14, 1913, page 1067; June 3, 1916, page 1040.

†NOTE.—We assume that the power capacity of the locomotive is subject to modification in the light of the experience now being had with the electric locomotives which are in service.—EDS.

The electric power supply for the Midi system involves a number of plants, principally of the hydraulic type. The Pyrenean region abounds in water powers of high heads, well located for the purposes of the railway system. Some detail of the principal hydro-electric plants will be given in a later article.

THE THREE TYPES OF LOCOMOTIVE NOW IN TRIAL USE

Readers of this paper will remember that preliminary tests of six types of locomotives were held by the Midi Company near Villefranche in 1911 and 1912. As a result three types were selected as satisfactory, and machines of these types have been in service during the war period. In view of the importance of these service trials it will be well to review briefly the principle characteristics of the locomotives.



Series Operation Repulsion Operation

SCHEMATIC DIAGRAM OF SERIES COMPENSATED MOTOR CONNECTIONS FOR MIDI RAILWAY LOCOMOTIVE

The locomotives now in use were purchased from three companies, which for brevity may be termed the Jeumont, the French Thomson-Houston, and the French Westinghouse companies respectively. The characteristics of their machines are detailed briefly in Table I. All of the locomotives have the 2-6-2 wheel arrangement, but differ in method of connecting the driving wheels and motors, and in other details.

The Jeumont drive involves three 400-hp. motors geared to the driving axles through flexibly-mounted quills. This drive was described and illustrated in the issue of the ELECTRIC RAILWAY JOURNAL of Feb. 15, 1913. The Thomson-Houston locomotive contains two 600-hp. slow-speed motors. Each drives a jackshaft through cranks, and the jackshaft cranks are connected at the ends of the connecting rods which also tie the three driving axles together.

In the Westinghouse machine each of the two 600-hp. motors drive a jackshaft through gearing, and the two jackshafts are crank-connected to the connecting rods which join the drivers. The Thomson-Houston and Westinghouse drives were shown in detail in the issue of this paper for May 3, 1913.

The program of operation laid down by the railway specified that the locomotive should be capable of drawing a 440-ton train up a 1.7-per cent. grade, and of attaining a minimum speed of 25 m.p.h. with a 308-ton train and of 37 m.p.h. with a 110-ton train.

In descending a grade the motors were required to act as generators, returning power to the line, and the speed in descending a grade was to be capable of control from that fixed by the ascent of this grade to one-half of this speed.

TABLE I—CHARACTERISTICS OF MIDI RAILWAY ELECTRIC LOCOMOTIVES

(Approximate Data)

	Jeumont	Thomson-Houston	Westinghouse
Length of locomotive over bumpers	46 ft. 9½ in.	45 ft. ½ in.	37 ft. 3 in.
Length of cab	41 ft. 4 in.	....	34 ft. 11 in.
Height of cab above rail	11 ft. 6½ in.	....	12 ft. 8 in.
Height over pantograph, raised	21 ft. 4 in.	....	....
Height over pantograph, lowered	14 ft. 9½ in.	....	....
Diameter of driving wheels	4 ft. 7 in.	4 ft. 3½ in.	3 ft. 11 in.
Diameter of pony wheels	3 ft. 3½ in.	2 ft. 9½ in.	....
Distance between centers of outside motor axles	11 ft. 10 in.	12 ft. 10 in.	13 ft. 1½ in.
Weight per driving axle, tons of 2000 lb	19.8	....	19.8
Total weight, tons	95	97	89
Maximum speed, m.p.h.	46.6	48.5	46.6

MOTORS ARE OF THE SERIES COMPENSATED TYPE

Although the details of the motors and controls were discussed in the European technical press when the preliminary tests had been completed, and an abstract from an article in the *Elektrotechnische Zeitschrift* was printed at the time in the ELECTRIC RAILWAY JOURNAL, it is worth while at this time to summarize the control principles employed particularly because the method by which the locomotive is made to regenerate power is of great interest. The Jeumont control may be taken as typical; it operates briefly as follows:

The motors are of the series compensated type, and the rotor does not differ in construction from the armature of a direct-current machine. The stator, however, comprises three distinct windings: A series winding of one turn per pole, a compensating winding and a commutating winding mounted in the same slots as the compensating winding. The accompanying figure shows in simplified form the motor connections. It will be seen the commutating winding is connected in parallel with the compensating winding and the number of turns in each is so arranged that when the currents which flow in the windings superimpose their magnetic fields they produce a suitable commutating field in the armature turn which is short-circuited under the brush. This field, of course, opposes the field which is produced by the short-circuited turn. By proper designing it has been possible to secure good commutation over wide limits of current.

In the series connections of the motors it is possible by means of the control to subject each to a voltage varying from 67 to 230. For use in starting and running at low speed the connections are so arranged that the motors act as repulsion motors.

The commutating windings of the motors are connected in parallel and produce a rigid electrical coupling. If one motor tends to revolve faster than the other, its commutating winding becomes the source of a voltage higher than that in the corresponding winding of the other motor. A circulating current results in the commutating windings in such a direction as to speed up one motor and restrain the motor of higher speed until speed equality is re-established.

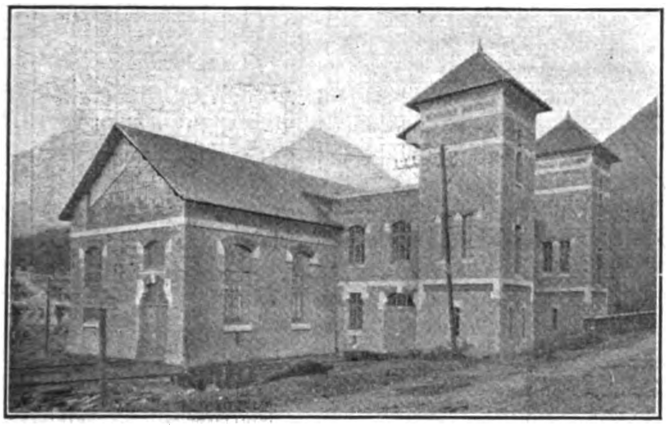
For regenerative operation there is substituted for the series excitation of the motors an independent excitation, which however forms an integral part of the system. The motors operate as shunt generators with the frequency of the exciting current, which is the same as that of the line, producing a voltage determined by regulators whose voltage determines their speed of operation.

In regenerating, as the motors operate in parallel with the alternators of the system, it is necessary that their voltage have a proper value and phase relation with respect to the line voltage, as well as a proper relation to the speed of the locomotive. For control of voltage magnitude an induction regulator, automatically operated, is employed.

SOME IMPORTANT PHASE RELATIONS

The phase control is roughly as follows: The electromotive force induced in the motors by rotation is in phase with the exciting flux, and this is itself in phase with the current in the inductors, displaced about 90 deg. from the voltage at the terminals of the latter. The exciting voltage in the inductors of the motors is therefore displaced by 90 deg. from the line voltage by the aid of an auxiliary winding placed on the stator winding of the compressor motor at 90 deg. space displacement from the power or torque-producing winding fed by the system. There is thus impressed on the terminals of the motor inductors a voltage nearly in phase with that of the low-tension side of the transformers.

When the motors are supplying current as generators, the reactance of their winding throws their voltage out of phase with that of the line. The reactance of the motor circuit, of course, includes that of the transformers also. This reactance is about three times as great as the resistance, so that as generators the motors operate with a powerful de-phasing effect, considerably reducing the torque.



SOULOM POWER PLANT OF THE MIDI RAILWAY, SOUTH-WESTERN FRANCE

To reduce the phase displacement between current and flux, the motors are excited with a voltage displaced more than 90 deg. from that of the line. This result is obtained automatically by the use of a compounding transformer which displaces the phase of the primary voltage of the transformer.

SOME TEST RESULTS SECURED

Some tests were made to determine the resistance of the Jeumont locomotive by determining the loss in speed while traversing a course of given length under its own momentum. Results are shown in Table II, which gives the resistance in pounds per ton. Obviously the resistance thus obtained includes all components including that due to irregularities in the track.

TABLE II—LOCOMOTIVE RESISTANCE AT VARIOUS SPEEDS

Speed in m.p.h.	3.1	6.2	9.3	12.4	15.5	18.7	21.8	24.9	28.0	31.1
Resistance in pounds per ton	7.5	7.6	7.8	8.2	8.6	9.0	9.5	10.0	10.7	11.8

TABLE III—LOCOMOTIVE TEST DATA

Weight Moved, in Tons	Spend in m.p.h.	Power Absorbed, in Kw.	Line Voltage	Current in Amp. High-tension	Current in Amp. Low-tension	Power Factor, per cent	Low-tension Voltage
309	25.5	1,100	10,300	120	1,625	90.0	650
110	37.9	850	11,300	83	1,100	91.5	700

Results obtained in drawing loads on a 1.7-per cent grade, containing a number of curves, are given in Table III. With the voltage raised to 12,000 the corresponding speeds were 22 m.p.h. and 30 m.p.h. for the two train weights respectively. The power factor was slightly better also.

With a 280-ton train the power returned to the system was about 400 kw. on a grade of 1.7 per cent. The power absorbed in driving the same train on the same grade and at the same speed was 1020 kw. Thus the coefficient of regeneration or recuperation was 39.2 per cent.

The Westinghouse locomotive produced a tractive effort of 33,000 lb. or more, and the following results were obtained with a 280-ton train: speed, 26 m.p.h.; power developed at the wheel tread, 950 hp.; power absorbed, 970-kw.; line voltage, 11,000; current, 100 amp.; power factor, 88 per cent; efficiency, 72.4 per cent; approximate tractive effort, 13,500 lb.

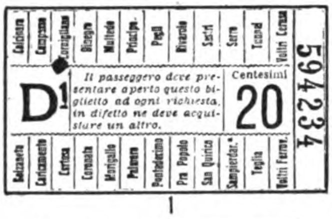
New Franchise in Paducah

SOME new features as regards an electric railway franchise are contained in a settlement measure passed by the board of commissioners of the city of Paducah, Ky., on April 4, 1919. The franchise has not been accepted by the Paducah Traction Company, the electric railway in that city, because the company is now in the hands of a receiver. The reorganization managers for the bondholders' protective committee are Stone & Webster, and the property is being operated by A. S. Nichols. The company was consulted in the draft of this franchise, however, and it is expected that the franchise will be accepted after the company has been reorganized.

With the exception that a maximum fare of 6 cents for the first year is specified, the franchise is on the service-at-cost basis, with a review of the earnings every twelve months to determine the fare to be charged during the next twelve months. In this determination the ordinance provides that the company is to receive a sufficient sum to pay operating expenses and a reasonable rate of return on the capital invested, all earnings over this amount to be paid to the city. The city has the right to regulate the service, provided such regulation does not "impair the present or future ability of the company to earn a reasonable return on the value of its property."

No paving is required except that the company must provide the pavement foundation between its rails and for 1 ft. each side, the surface paving being provided by the city. Another important feature of the franchise is the specification that the cars shall be entitled to a right-of-way on its tracks, and vehicles on or close to the tracks must turn out whenever a car approaches. In case of refusal to do so when signaled or requested by the trainman, the driver of any vehicle is subject to a fine of $10. Also, the right is reserved to abandon unprofitable lines upon proof of the fact and approval by the city authorities.

Typical Zone Tickets from Abroad

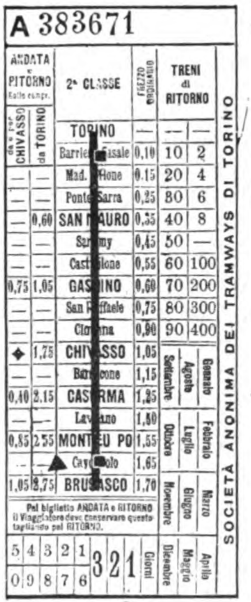

D1

Il passeggero deve presentare aperto questo biglietto ad ogni richiesta, in difetto ne deve acquistare un altro.

Centesimi 20

594234

1


A 383671

ANDATA e RITORNO

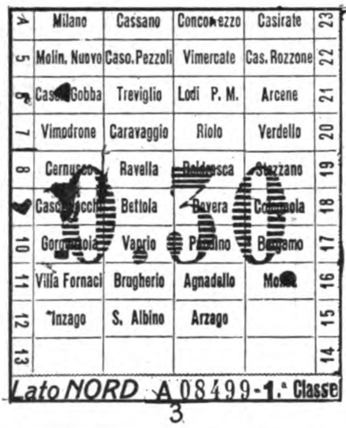
2ª CLASSE

TRENI di RITORNO

TORINO

SOCIETÀ ANONIMA DEI TRAMWAYS DI TORINO

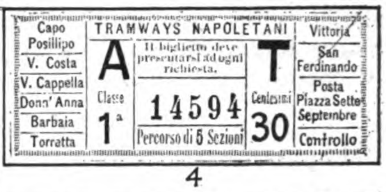
2


Milano | Cassano | Concorezzo | Casirate

Molin. Nuovo | Caso. Pezzoli | Vimercate | Cas. Rozzone

Lato NORD A 08499 1.ª Classe

3


TRAMWAYS NAPOLETANI

Il biglietto deve presentarsi ad ogni richiesta.

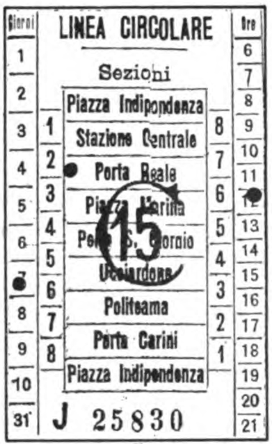
A Classe 1ª

14594

Percorso di 5 Sezioni

T Centesimi 30

4


LINEA CIRCOLARE

Sezioni

Piazza Indipendenza

Stazione Centrale

Porta Reale

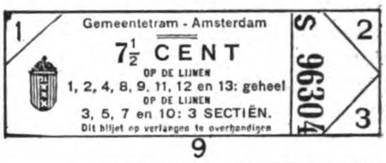
Politeama

Porta Carini

Piazza Indipendenza

J 25830

5


Gemeentetram - Amsterdam

7½ CENT

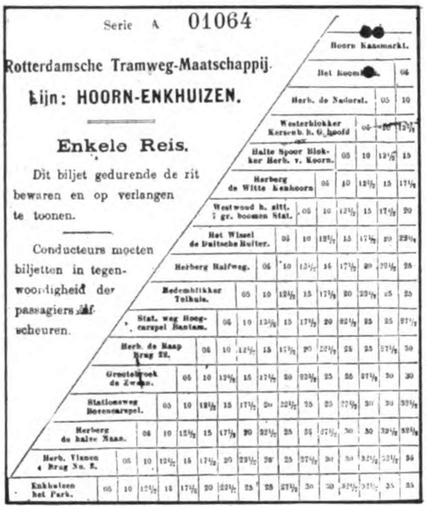
OP DE LIJNEN 1, 2, 4, 8, 9, 11, 12 en 13: geheel

OP DE LIJNEN 3, 5, 7 en 10: 3 SECTIËN.

Dit biljet op verlangen te overhandigen

S 96304

9


Serie A 01064

Rotterdamsche Tramweg-Maatschappij.

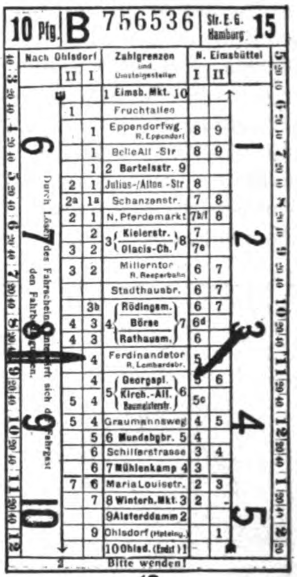
Lijn: HOORN-ENKHUIZEN.

Enkele Reis.

Dit biljet gedurende de rit bewaren en op verlangen te toonen.

Conducteurs moeten biljetten in tegenwoordigheid der passagiers afscheuren.

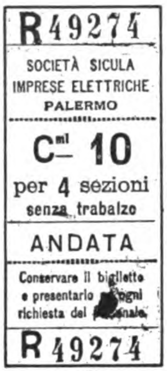
10


10 Pfg. B 756536 Str. E.G. Hamburg 15

Nach Ohlsdorf | Zahlgrenzen und Umsteigestellen | N. Eimsbüttel

Bitte wenden!

12


R 49274

SOCIETÀ SICULA IMPRESE ELETTRICHE PALERMO

Cmi 10

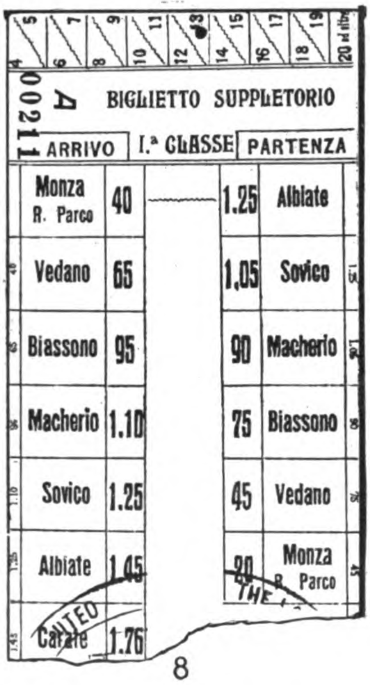
per 4 sezioni senza trabalzo

ANDATA

Conservare il biglietto e presentarlo ad ogni richiesta del personale.

R 49274

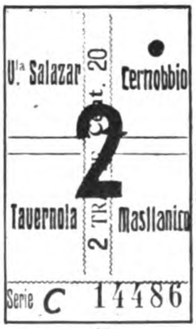
6


BIGLIETTO SUPPLETORIO

ARRIVO | I.ª CLASSE | PARTENZA

Monza R. Parco	40	1.25	Albiate
Vedano	65	1.05	Sovico
Biassono	95	90	Macherio
Macherio	1.10	75	Biassono
Sovico	1.25	45	Vedano
Albiate	1.45	20	Monza R. Parco
Carate	1.75		

8

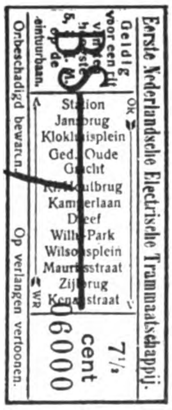

V.la Salazar | Cernobbio

2

Tavernola | Maslianico

Serie C 14486

7


Eerste Nederlandsche Electrische Trammaatschappij.

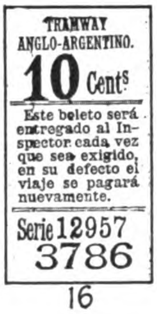
Geldig voor een rit

Onbeschadigd bewaren. Op verlangen vertoonen.

7½ cent

6000

11


TRAMWAY ANGLO-ARGENTINO.

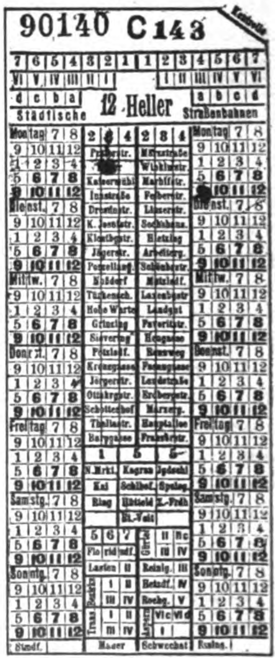
10 Cents

Este boleto será entregado al Inspector cada vez que sea exigido, en su defecto el viaje se pagará nuevamente.

Serie 12957

3786

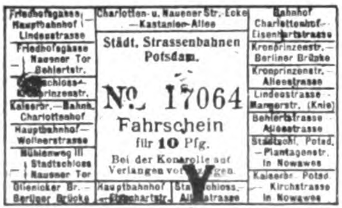
16


90140 C 143

12 Heller

Städtische Straßenbahnen

17

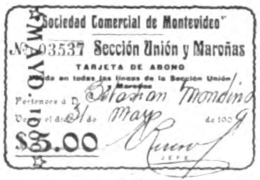

Städt. Strassenbahnen Potsdam.

No. 17064

Fahrschein für 10 Pfg.

Bei der Kontrolle auf Verlangen vorzuzeigen.

13

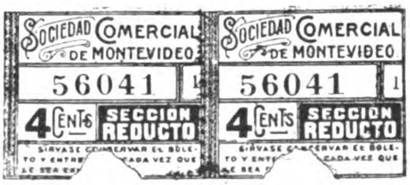

Sociedad Comercial de Montevideo

No. 03537 Sección Unión y Maroñas

TARJETA DE ABONO

$3.00

14


SOCIEDAD COMERCIAL DE MONTEVIDEO

56041

4 CENTS SECCION REDUCTO

SOCIEDAD COMERCIAL DE MONTEVIDEO

56041

4 CENTS SECCION REDUCTO

15

No. 1—Unione Italiana Tramways Elettrici, Genoa, Italy.
No. 2—Societá della Tramvie di Torino, Turin, Italy.
No. 3—Tramvie Interprovinciali, Milan, Italy.
No. 4—Neapolitan Tramways, Naples, Italy.
Nos. 5 and 6—Sicilian Electric Service Company, Palermo, Italy.
No. 7—Societá Elettrica Comense, Como, Italy.
No. 8—Lombardy Road Railways, Milan, Italy.
No. 9—Municipal Tramways, Amsterdam, Netherlands.
No. 10—Rotterdam (Netherlands) Tramways.
No. 11—First Dutch Electric Tramway, Haarlem, Netherlands.
No. 12—Hamburg (Germany) Electric Street Railway.
No. 13—Municipal Tramways, Potsdam, Germany.
No. 14—Commutation Ticket, La Sociedad-Comercial, Montevideo, Uruguay.
No. 15—Ordinary Ticket of Same Company.
No. 16—Anglo-Argentine Tramway, Buenos Ayres, Argentine.
No. 17—Municipal Tramways, Vienna, Austria.

Typical Zone Tickets From Abroad

Exhibits from Europe, Asia and South America Show Use of Three General Types—"Duplex," "Check-Stub" and "Fixed-Amount, Ride-Limit"

BY FERDINANDO C. CUSANI
Milan, Italy

THE necessity of adopting a zone fare to meet ever-increasing costs has brought many American operators face to face with an abrupt change from the almost automatically computable and easily collectible universal fare to the complicated zone fare. And the zone fare, unless it be carefully tackled, threatens to impair the efficiency of prepayment in all of its different forms.

The only zone plan that can be easily effected, without considerable change to the existing prepayment cars and their fare collection equipment, seems to be the "pay-enter-pay-leave" advocated by Professor Richey, with two zones, and one or two registers, depending on whether the zones have the same or a different price.

The plan of using a multiple fare register, while it may be the most simple solution from a purely technical standpoint, does not appear perfect, as it does not afford absolute protection from overriding. Such a plan gives no proof that any individual passenger has paid his fare up to the point where he wants to leave the car.

On the other hand, the system of making passengers pay the initial zone fare first, and of collecting additional zone payments at the beginning of each successive zone by means of a portable register, may be perfectly good on old-type cars. It would be, however, a rather difficult practice on modern cars, where the door and step control and other safety devices require that the conductor be always stationed on the platform.

The Public Service Railway front-entrance rear-exit postpayment plan, though requiring totally different and rather cumbersome fare registering equipment, seems the only way of dealing correctly with the situation, provided four-door cars be available. As this does not always happen to be the case, many electric railway operators seem inclined to take up the European plan, by which a receipt is issued to each passenger upon collection of the fare.

A review of the most used types of tickets or fare receipts, therefore, may be of interest to these officials and, in general, to anybody connected with the fixing of fares and the supervision of rapid transit traffic. The receipts shown herewith will give a fair idea of the efforts of many properties to handle the zone-fare problem. It has been deemed inadvisable to include a description of the British stage-ticket plan, inasmuch as this has already been dealt with in both a pleasant and a very exhaustive way by Walter Jackson in his series of articles on "The Zone Fare in Practice."

THREE GENERAL FORMS OF TICKETS

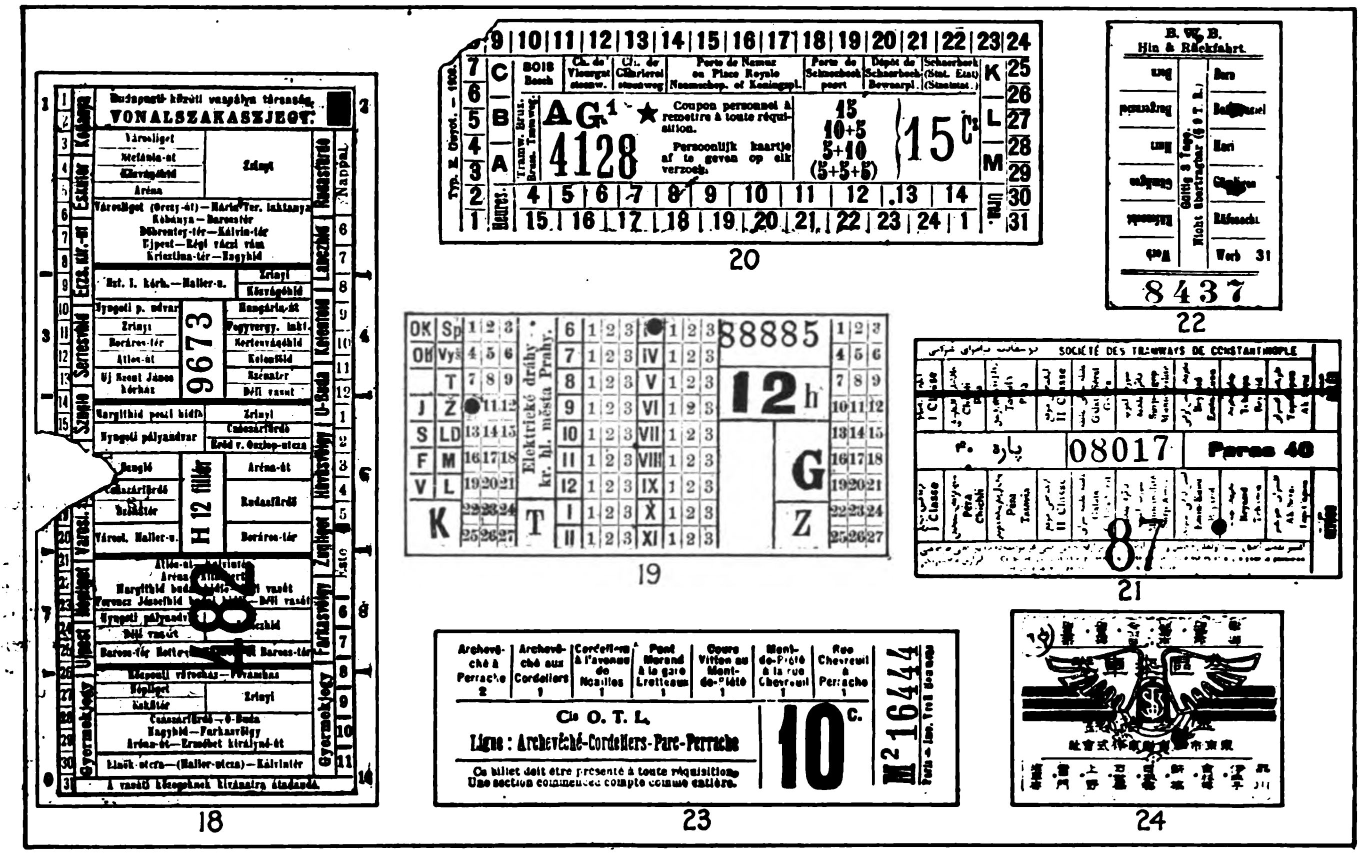
All zone tickets can be traced down to three general forms, *viz.*: the "duplex," the "check-stub" and the "fixed-amount, ride-limit." The first type consists of two tickets printed in such a way that when the first is folded against the second and punched all punches appear also on the second, which remains in the ticket book for checking and accounting purposes. The second type, which is much similar to a ticket widely used on American railroads as a conductor's receipt for fares collected aboard the trains, the value of the fare collected, being determined by the point at which the stub is made when the receipt is torn off. The third type requires as many tickets as there are different rates of fare, each bearing printed marks for punching to show the limit of ride.

Receipt No. 1, issued by the Italian Union of Electric Tramways, Genoa, Italy, is of this last type, a single punch being required to show the limit of ride. Receipt No. 2 is a duplex universal ticket used by the Turin Tramways on one of its interurban lines. The two square punches, which were made by the conductor at the moment of sale, showed what the ticket was worth as a single-trip receipt; the triangular hole, punched by the traveling ticket examiner just before the passenger reached his destination, indicate that the receipt was void thereafter. If this same ticket had been used as a round-trip ticket, the conductor would have punched either in the first column on the left, showing return rates to and from Chivasso, or in the second, giving the same from Turin. In each case he would also have had to punch the month and the day of issue (this last by using one of the three big and one of the ten small numerals at the bottom of the slip). On the return trip the conductor of the second train would have punched the returning train's schedule number under the heading "Treni di ritorno." Receipt No. 3 is a duplex ticket used by the Interprovincial Tramways, Milan, Italy. It is good for a 30 centesimi ride between the two stations punched; a time limit punch is provided, and the date is rubber stamped on the back.

Receipt No. 4, of the Neapolitan Tramways, Naples, Italy, is of the ride-limit type; it has a zone-fare tariff printed on its back. Receipt No. 5, of the Sicilian Electric Service Company, Palermo, Italy, is a zone-fare transfer from a belt line to a radial line; it carries both a time and a date punch. Receipt No. 6, from the same city, gives the right to a continuous ride on four zones, the number of sections in which the line is divided being shown on the back. Receipt No. 7, of the Como (Italy) Electric Power Company, is a simple two-zone ticket with a ride-limit punch.

Receipt No. 8, of the Lombardy Road Railways, Ltd., Milan, Italy, is a "check-stub" receipt requiring a pair of scissors for use. Tickets of this sort have been nicknamed "pair of pants" by the employees. Nobody seems to like them much, for they require high calculating powers for issuance, payment and checking. The price is the difference between the amount printed near the point of origin and that shown near the point of destination. The time limit at the top is punched by the ticket examiner. Only part of this ticket is shown.

Under the old plan used by this same company, the conductor would issue a ticket for a given number of zones, and the ticket examiner immediately following him would punch it and remember the passenger to whom it had been issued. This same examiner would pass before reaching every station and gather in all tickets due at that station. In case of any dispute arising between the examiner and the passenger as to the limit, a look at the day card, on which the conductor had been required to write down, after passing through the train, the top numbers of all the ticket books, would suffice to show after which stop the receipt had been issued. This plan, although requiring two employees (the light railways laws required, anyhow, that on steam interurban trains without air brakes at least two train employees be provided), was very simple from the checking and accounting standpoint, as it entailed only the checking of the opening and the closing numbers of each ticket book. It was abandoned on account of the company passing under the control of another interurban systems where the "pair of pants" forms were already used.


18
19
20
21
22
23
24

No. 18—Budapest (Hungary) Tramways.
No. 19—Prague Czecho-Slovachia Tramways.
No. 20—Tramways Bruxellois, Brussels, Belgium.
No. 21—Constantinople (Turkey) Tramways.
No. 22—Berne-Muri-Worb Tramways, Berne, Switzerland.
No. 23—Lyons Tramways & Omnibus Company, Lyons, France.
No. 24—Tokyo (Japan) Motor Bus Service.

Typical Zone Tickets from Abroad

Receipt No. 9 shows a 7½ cent ticket of the Municipal Tramways, Amsterdam, Netherlands, the three numbers in the corners being those of the sections in which the lines are divided. Receipt No. 10 is a duplex of the Rotterdam (Netherlands) Tramways used on the Hoorn-Enkhuizen suburban line. Advice to the passenger reads as follows: "Conductors must tear off tickets in sight of the passenger"—which may mean that the double-punch trick (punching the ride ticket in one way and the stub ticket in another, and pocketing the difference) must be an art not totally unknown to the Dutch conductors. Receipt No. 11 is a 7½-cent zone ticket "good for one ride of at most three kilometers" on the belt railway of Haarlem, Netherlands.

Receipt No. 12 is for a 10 pfennig zone on the Hamburg (Germany) Electric Street Railway; it may be used as a straight fare receipt or as a transfer from route 15 to any connecting line. The zone numbers are shown in red, and a time limit is provided in the outer columns. Tickets in Dresden, Frankfurt, a./M., Mainz and Cologne are, more or less, of the same pattern, but the Potsdam Municipal Tramways tickets (Receipt No. 13) are of the simple zone-limit form.

Receipt No. 14 is a monthly commutation card for section "Unión y Maroñas" of the Montevideo (Uruguay) Commercial Company, and Receipt No. 15 is a zone ticket. The fare inception point is ascertained through reading the day cards ticket sales record, which must be filled in after the passing of each section limit. The right-hand half of the ticket may be torn off by a traveling ticket examiner. Receipt No. 16 is a straight fare ticket of the Anglo-Argentine Tramway, Buenos Ayres, Argentina, its distinction lying in the fact that it is issued through a device—resembling the British bell punch—which is carried by the conductor.

The Municipal Tramways, Vienna, Austria, receipt (No. 17) shows what appears to the writer to be a useless complication, all the time-punch numerals being printed under each of the week days. In fact, these tickets do require a lot of patience and attention on the part of both the conductor and the rider. The

Budapest (Hungary) Tramways ticket (No. 18) has zone number marks on the outside, a thirty-one day and a 6 a.m. to 11 p.m. time limit column, route indications and, in the inner part, ride-limit and transfer-point marks. As with a number of other tickets, the conductor indicates the point to which fare has been paid by tearing a piece out of the fare receipt. The Prague (Czecho-Slovachia) Tramways ticket (No. 10) shows day, hour and thirds-of-an-hour limits.

Receipt No. 20, a transfer used by the Brussels (Belgium) Tramways, is remarkable inasmuch as the fare can be split up in a number of rides, as shown by the numerals with plus marks. The Constantinople (Turkey) receipt (No. 21) is worth a fixed amount and is good both for first and second-class travel, giving a right to ride on longer zones in the second than in the first. The Berne-Worb (Switzerland) tickets (No. 22) are duplexes; the conductor must punch both parts under the eyes of the passenger and tear off the check part, putting it into a sealed box which he carries and which will be opened upon his return to the carhouse. The Lyons (France) ticket (No. 23) is a simple ride-limit receipt; the Lyons Omnibus & Tramways Company uses a special time printing stamp for canceling transfers.

As for the Tokyo (Japan) Omnibus ticket, it may be understood that it contemplates the fixing of zones; but as it happens to be, well, plain Japanese to the writer, he will be glad to give up its full interpretation to some of his more learned readers.

The Graduated Fare at Brisbane, Australia

By J. S. BADGER
Managing Director Brisbane Tramways Company, Ltd.

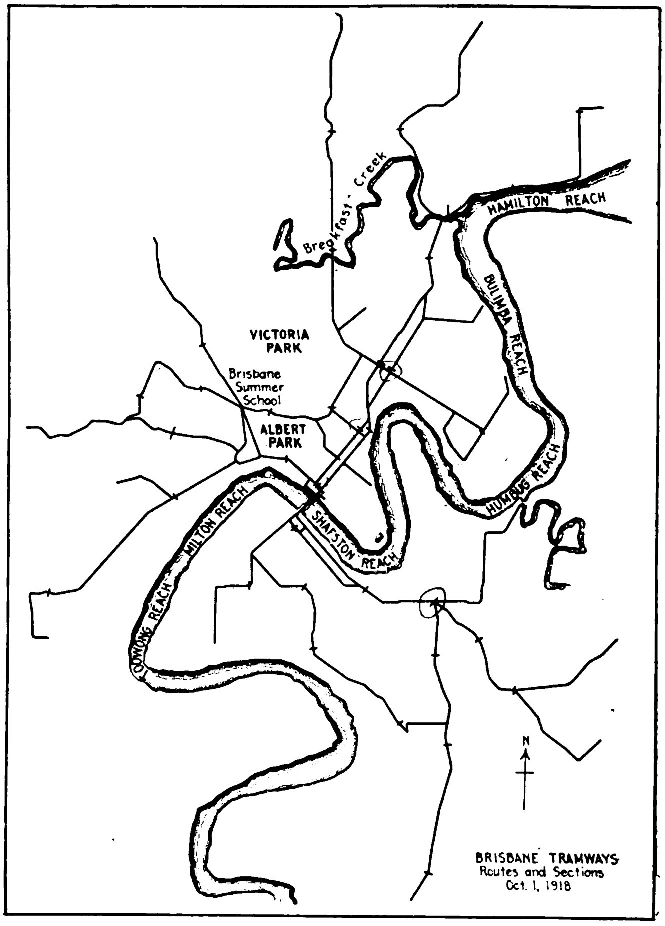
Mr. Badger Says That the Adoption of the Universal Fare Would Provoke a Riot! In 1918, Collections Were 45.15 Cents Per Car-Mile With 60 Per Cent of the Riders Paying Only 2 Cents Each

I WANT to emphasize first that the section fare system, as in operation in Brisbane, Sydney, and English and Continental towns is, strictly speaking, different from the "zone" (central area) system as discussed in America. The section system simply means that the passenger pays according to the distance that he travels. Certain points called "section points" or "stations" are established with a uniform fare of 1d. (2 cents) between any two points. We endeavor to make these sections or stages as nearly 1 mile in length as practicable, but in order to locate these at points where traffic naturally concentrates there is necessarily some variation. The general rule in Brisbane and Sydney is that the outlying or suburban sections are rather longer than in the center of the city in what is properly the retail shopping district, from any point in which the through fare in any direction is only 3d. (6 cents) if paid at one time, although the distance may cover three to five sections.

The accompanying map shows the Brisbane Tramways lines, together with the section points. The various routes correspond with the chart, on page 482, which shows the routes and section points all drawn to the same scale.

As a rule, cars stop at all intersecting streets except in a few cases, and in the middle of long blocks in the center of the city. Our stopping places average about fifteen to the mile in the city. Our purpose is to encourage the short rider and to make the tramway approach as nearly as possible to a moving sidewalk. All section points are compulsory stops. Other stops are made only on signal.

In operation the section system tends to concentrate traffic at a few principal points, especially morning and night, when many passengers—particularly working people—will walk a short distance to a section point in order to save 1d., which they would pay for riding part of a section. But by properly locating section points in the business district, we encourage short riding on the part of shoppers and business people during the day.

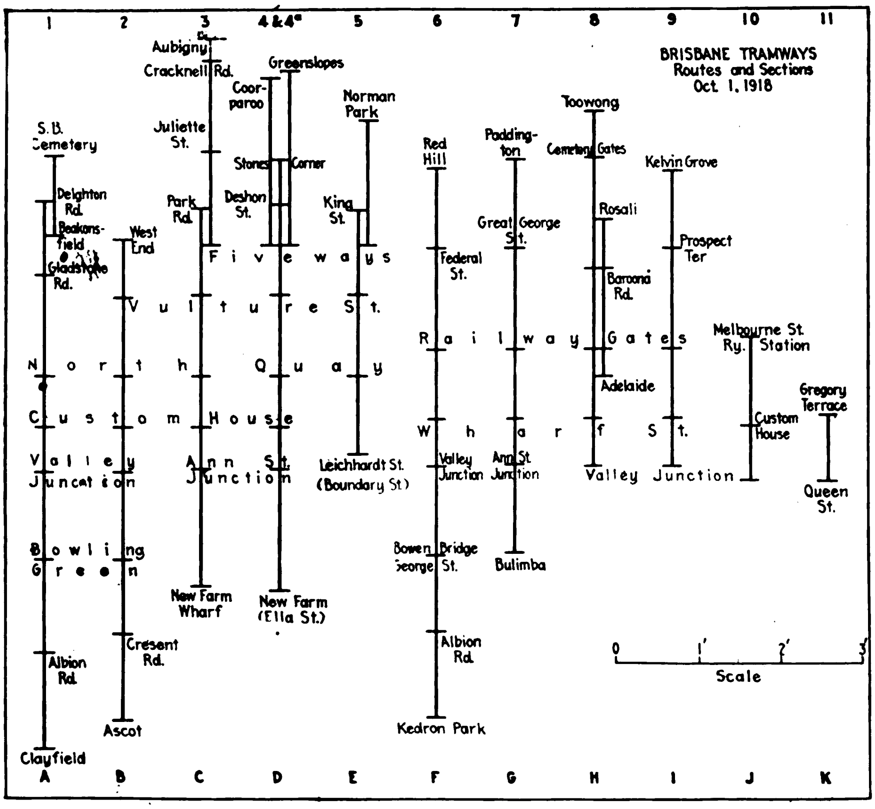


BRISBANE TRAMWAYS AND SECTION POINTS

If anyone objects that Brisbane, with its 170,000 population, is not a fair example, I would say that Sydney with more than 750,000 people has substantially the same system. In either city, a change to the old straight fare system, as in vogue in the United States, would result in riots.

We maintain a regular headway of not less than ten minutes on all lines all day. This is supplemented during the rush hours of morning, noon and night by short trippers covering one or two sections. During the busy hours of night we have an outbound car from the business district on an average of less than fifteen seconds and at times less than ten seconds. The seating capacity of our cars varies from thirty-four on some of our old-style single-truck cars to fifty-six for our more modern, double-truck center-aisle cars.

For the year 1918, our traffic receipts were 45.15 cents per car-mile, and 60 per cent of the fares came from penny (2-cent) passengers. For 1919, until the influenza epidemic struck the country, the receipts approached 40 cents a car-mile. Of course, there are no transfers. If a person wishes to ride on two lines he pays the proper fare on each line. For 1918, we carried 13.1 passengers per car-mile at an average of 3.36 cents per passenger. According to the United States method of accounting, this would really mean "passengers including transfers."


1
2
3
4 & 4*
5
6
7
8
9
10
11
BRISBANE TRAMWAYS
Routes and Sections
Oct. 1, 1918
Aubigny
Cracknell Rd.
Greenslopes
Coorparoo
Norman Park
Toowong
S.B. Cemetery
Juliette St.
Red Hill
Paddington
Cemetery Gates
Kelvin Grove
Stones Corner
Delighton Rd.
Beaconsfield
Gladstone Rd.
Park Rd.
Deshon St.
King St.
Great George St.
Rosali
West End
Prospect Ter
Five ways
Federal St.
Baroona Rd.
Vulture St.
Railway Gates
Melbourne St. Ry. Station
North Quay
Adelaide
Gregory Terrace
Custom House
Wharf St.
Custom House
Valley Junction
Ann St. Junction
Leichhardt St. (Boundary St.)
Valley Junction
Ann St. Junction
Valley Junction
Queen St.
Bowling Green
Bowen Bridge
George St.
Bulimba
New Farm Wharf
New Farm (Ella St.)
Cresent Rd.
Albion Rd.
Albion Rd.
Scale
0
1'
2'
3'
Ascot
Kedron Park
Clayfield
A
B
C
D
E
F
G
H
I
J
K

VARIATIONS IN LENGTHS OF PENNY SECTIONS ON BRISBANE TRAMWAYS

FARE RECEIPT SYSTEM WITHOUT BRITISH BELL PUNCH

Brisbane uses no bell or registering type punches. They were in use years ago, but we found them a source of irritation to the conductors and of slight value. The registering mechanism was inaccurate, a fact which the conductors soon learned, and counting the disks (ticket punchings) was an interminable job. As noted hereinafter, all our tickets are numbered consecutively, and as it is an easy matter to keep account of the tickets issued to each conductor and of the number sold, we see no utility in a registering punch. Tickets are printed by the company in its own office, and errors in numbering or putting them up are very rare.

Now as to the details of operation. We use three kinds of tickets: 1d., 2d. and 3d., one of which is reproduced. These tickets are put up in packages of fifty, wire stitched at the end, with perforations which permit them to be easily detached. Only complete packages are issued to the conductors, all broken packets being destroyed, even if but one ticket has been used. We found that the clerical labor involved in the reissue of partial packets cost more than the tickets.

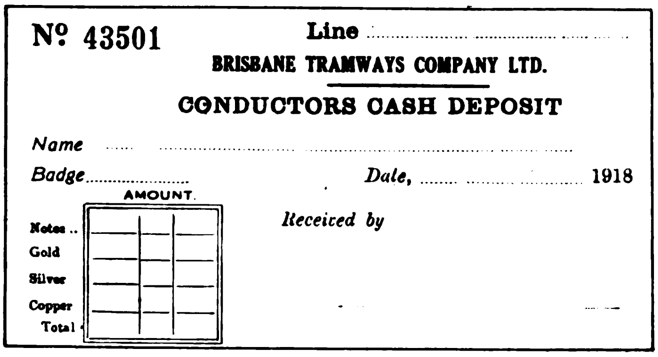
The 1d. ticket is for one section, the 2d. ticket for two sections and the 3d. ticket for three or more sections. The points between which a passenger is entitled to ride and the direction in which he is traveling are indicated by a punch mark in the margin of the ticket opposite the proper designation. Each conductor is provided with a punch having a special die, and he keeps that punch all the time. If a person should pick up a ticket on the street, the conductor who issued that ticket could be identified at once, and by reference to his waybill it would be possible to tell very closely the place where the ticket was issued and the time it was issued. The conductor enters the starting number of each kind of ticket on his waybill, on each half trip. Tickets wrongly punched are not issued but are turned into the office with a report where they are credited to the conductor's account.

Ticket inspectors board the cars at various points to check up and see that all passengers have their tickets. Under our by-laws a passenger is obliged to produce his ticket whenever called upon. Failure to produce the ticket, even though he has paid his fare, is an offense for which he may be fined. Of course, we had some trouble in the beginning to get passengers to keep their tickets until they left the car, but a few prosecutions brought them to a realization of the situation, so that now we have no difficulty. If an inspector finds a passenger without a proper ticket he requires him to pay the fare. We never eject a passenger for nonpayment, but get his name and address with witnesses. Prosecution follows.

All counting of cash and checking of tickets is done at the head office where all cars pass. Conductors pay in at this office about every third trip, using a returns envelope with the lettering shown in the reproduction on page 483. Conductors are not expected to pay in any fractions of 1s. These payments are entered on the waybill where the envelope number is entered, and this is initialed by the officer who receives the envelope. This does not guarantee that the amount is correct, but that an envelope purporting to contain a certain amount was received. When the conductor finishes his day's work, he turns in his waybill, all unsold tickets and cash to balance. The method of making this up will be seen plainly from the waybill reproduced.

Conductors are provided with little printed cards showing the amount representing any number of tickets sold, so that they do not have to do any calculating themselves. They are required to settle according to the number of tickets sold and are expected to make up any "shorts." All "overs" are returned to the conductors. A conductor, who, according to the individual record of "shorts" and "overs" shows above a certain percentage of errors is dispensed with. A series of "shorts" means prompt action. We do not demand "blind" returns, for conductors simply will not make them. There is no use in having a rule which we all know is easily evaded.

We have two classes of inspectors—traffic inspectors and ticket inspectors. The former are engaged principally in handling the traffic and generally in supervising operation outside. They are expected to attend promptly and report all accidents, and in case of injury to a person, they must see that aid is promptly rendered. They may suspend any motorman, conductor or other outside traffic employee, when deemed necessary in the interests of the company, reporting the same at once by telephone to the superintendent and following this message with a written report. They may also at times perform the duties of ticket inspectors.



N° 43501 Line

BRISBANE TRAMWAYS COMPANY LTD.

CONDUCTORS CASH DEPOSIT

Name

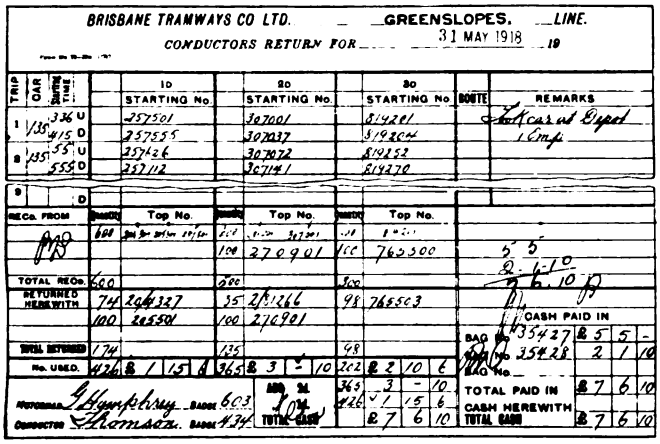
Badge Date, 1918

Received by

AMOUNT			
Notes			
Gold			
Silver			
Copper			
Total			

CONDUCTOR'S CASH DEPOSIT FORM

The chief duty of the ticket inspectors is to examine the tickets of passengers to ascertain if the proper fares have been paid and the tickets issued and punched correctly. All violations of the company's regulations, either by employees or passengers, are reported and such action taken by the management as is deemed advisable.



BRISBANE TRAMWAYS CO LTD. GREENSLOPES. LINE.

CONDUCTORS RETURN FOR 31 MAY 1918 19

TRIP	CAR	Starting TIME			10 STARTING No.		20 STARTING No.		30 STARTING No.	ROUTE	REMARKS
1	1/35	336	U		257501		307001		814201		[illegible] car at Depot
		415	D		257555		307037		819204		1 Emp.
2	1/35	55	U		257626		307072		819252		
		555	D		257112		307141		819270		
9			D								

REC'D FROM	Quantity	Top No.	Quantity	Top No.	Quantity	Top No.	
MB	600	[illegible]	200	[illegible] 307001	[illegible]	[illegible]	
			100	270901	100	765300	5 5 -
							2 1 10
TOTAL REC'D	600		200		300		7 6 10
RETURNED HEREWITH	74	204327	35	281266	98	765503	
	100	205501	100	270901			CASH PAID IN
							BAG No. 35427 £5 5 -
TOTAL RETURNED	174		135		98		BAG No. 35428 2 1 10
No. USED	426	£1 15 6	365	£3 - 10	202	£2 10 6	BAG No.

MOTORMAN G Humphrey BADGE 603

CONDUCTOR Thomson BADGE 434

TOTAL CASH

365	3	-	10
426	1	15	6
	£7	6	10

TOTAL PAID IN £7 6 10

CASH HEREWITH

TOTAL CASH £7 6 10

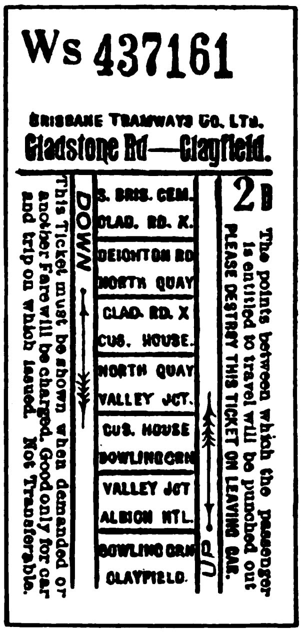
CONDUCTOR'S ACCOUNTING OF TICKETS ISSUED AND SOLD

The company employs no "spotters," relying entirely upon its uniformed staff of inspectors to correct all irregularities. Reports from other employees are discouraged. It is understood that when the manager is riding on a car he is not looking for slips on the parts of the employees.

The cost of living is considerably less than in the United States, but I think that the wages paid on the Brisbane system are relatively higher than in the United States. Forty-eight hours is the standard working week, and we reduce overtime to the smallest possible amount. No man works more than six days out of seven in any one week. In the power house and all other departments where continuous operation is required, there are three eight-hour shifts each day, and no man works more than six shifts in any one week. Of course, accidents may require a variation of this rule, but they are an exception.

The operating day of a car is sixteen to seventeen hours. The rule is, early out, early in. There are two shifts per car, with two meal reliefs. Conductors and motormen alternate, taking an early shift one week and a late shift next week, and work all the different time-tables in rotation. If a regular time-table is less than forty-eight hours in one week, the conductor is paid for forty-eight hours. If it is over forty-eight hours, he is paid overtime rates for the excess. As to the actual standard of living, I think that the workingman in Australia enjoys a rather higher standard than his mate in the United States.

I have been much amused at reading learned discourses in the electric railway papers about the insuperable (?) obstacles in the way of adopting the sectional zone system in the United States. Most of the objections urged against the system are such as to indicate that the objector knows very little about the subject. The system has been in use in Brisbane for about twenty-five years and was modeled largely upon that in use by the London General Omnibus Company, with certain modifications to suit local conditions and to reduce clerical labor in accounting. When the Sydney Tramways were electrified, the same general system was adopted there with some differences in details to suit individual ideas.



Ws 437161

BRISBANE TRAMWAYS CO. LTD.

Gladstone Rd—Clayfield.

2D

This Ticket must be shown when demanded or another Fare will be charged. Good only for car and trip on which issued. Not Transferable.

DOWN

S. BRIS. CEM.	GLAD. RD. X.
DEIGHTON RD	NORTH QUAY
GLAD. RD. X	CUS. HOUSE.
NORTH QUAY	VALLEY JCT.
CUS. HOUSE	BOWLING GRN
VALLEY JCT	ALBION HTL.
BOWLING GRN	CLAYFIELD.

UP

PLEASE DESTROY THIS TICKET ON LEAVING CAR.

The points between which the passenger is entitled to travel will be punched out

FARE RECEIPT FOR 2-PENNY FARE

In operation, this system is simplicity itself but is not well adapted to the pay-as-you-enter cars. Of course it requires a little more work on the part of the conductor sometimes, as he is obliged to check up his car to a certain extent after leaving each section point, but our experience is that conductors become so expert in keeping track of their passengers that our losses from uncollected fares are very small. Sometimes we find it necessary to put two conductors on a car when leaving the city at rush hours, but the extra conductor rides only a short distance. The checking of cars by inspectors is done at irregular intervals and a different places, so that neither the conductor nor the passengers know when an inspector will board the car.

From my point of view, the principal difficulty in the way of a reasonable readjustment of street railway fares in the United States is the unwillingness of the American operator and the public to profit by other peoples' experience.

I can heartily indorse the following excerpts from Walter Jackson's article on the "Zone Fare in Practice —Glasgow," published in your paper for Feb. 22, 1919, reading: "The most casual investigation *on the ground* will show that the connection between the distribution of population and the system of fare charging is a minor rather than a major factor in the development of municipalities."

Our experience is that higher rents counterbalance the lower fare for the interior districts and that lower rents and lower property values counterbalance the higher fares in the outlying districts. This is distinctly so in Brisbane, where by far the greater part of the laboring population lives in the outlying districts.

Publicity for Zone Fares

What Public Service Is Doing to Inform Car Riders and Employees of the Details of Its New Fare Schedule

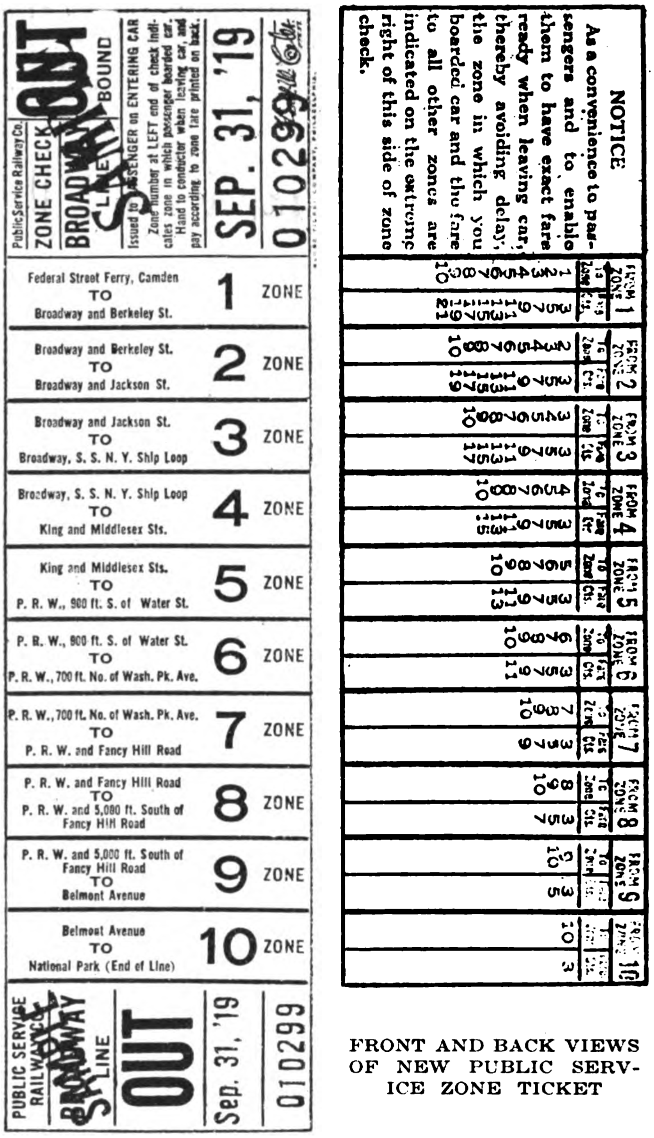
INFORMING both the public and its own organization of the details of the zone-mile system of charging fares, which will go into effect on Sept. 14 on the Public Service Railway system, has been a task in which the company has been engaged since last spring, from the moment, in fact, that the zone plan called for by the Board of Public Utilities Commissioners of New Jersey was submitted by the company on Mar. 11.

The importance of this task was magnified by the fact that the zone plan about to become operative is the first of its kind to be instituted on a street railway system in this country, and that in its operation it revolutionizes certain methods, and materially changes the habits of the riding public. Therefore, in order that the plan should receive a fair start, the railway company has devoted every means at its disposal toward conveying to all persons interested the complete details of the system.

First, the public had to be told the reasons for the submission of the zone plan. The Utilities Board had directed that the company present a plan whereby the method of charging fares in force might be revised over its entire territory so as "more properly to relate the cost of service with the length of haul and value of service." The company faced the necessity of securing additional income, and the zone plan presented the fairest method known of securing this additional revenue. The public had to be told these facts.

Therefore, with the submission of the zone plan to the State body the company began the publication in the newspapers of a series of advertisements, a new advertisement each week in daily and weekly publications throughout its entire territory. The first ten of these advertisements, captioned, "Fare Zones for Street Cars," and continuing to include the week of June 1, discussed various phases of the zone plan. "Standby" and "Movement" costs were explained, the company's financial situation, the increased costs of labor and materials and restricted revenues were set forth, and the fairness of the "pay-for-what-you-get plan" under the zone-mile basis, was emphasized. The saving to a large proportion of riders under the zone plan was also pointed out.

Throughout these advertisements and subsequent series there was continued the thought that the zone system was the fairest method known as it applied to the rider and to the company.



Public Service Railway Co.
ZONE CHECK
BROADWAY LINE
BOUND

Issued to PASSENGER on ENTERING CAR

Zone number at LEFT end of check indicates zone in which passenger boarded car. Hand to conductor when leaving car, and pay according to zone fare printed on back.

SEP. 31, '19
010299

Federal Street Ferry, Camden TO Broadway and Berkeley St.	1	ZONE
Broadway and Berkeley St. TO Broadway and Jackson St.	2	ZONE
Broadway and Jackson St. TO Broadway, S. S. N. Y. Ship Loop	3	ZONE
Broadway, S. S. N. Y. Ship Loop TO King and Middlesex Sts.	4	ZONE
King and Middlesex Sts. TO P. R. W., 900 ft. S. of Water St.	5	ZONE
P. R. W., 900 ft. S. of Water St. TO P. R. W., 700 ft. No. of Wash. Pk. Ave.	6	ZONE
P. R. W., 700 ft. No. of Wash. Pk. Ave. TO P. R. W. and Fancy Hill Road	7	ZONE
P. R. W. and Fancy Hill Road TO P. R. W. and 5,000 ft. South of Fancy Hill Road	8	ZONE
P. R. W. and 5,000 ft. South of Fancy Hill Road TO Belmont Avenue	9	ZONE
Belmont Avenue TO National Park (End of Line)	10	ZONE

PUBLIC SERVICE RAILWAY
BROADWAY LINE
OUT
Sep. 31, '19
010299

NOTICE

As a convenience to passengers and to enable them to have exact fare ready when leaving car, thereby avoiding delay, the zone in which you boarded car and the fare to all other zones are indicated on the extreme right of this side of zone check.

	To Zone	Fare Cts.
FROM ZONE 1	1 2 3 4 5 6 7 8 9 10	3 5 7 9 11 13 15 17 19 21
FROM ZONE 2	2 3 4 5 6 7 8 9 10	3 5 7 9 11 13 15 17 19
FROM ZONE 3	3 4 5 6 7 8 9 10	3 5 7 9 11 13 15 17
FROM ZONE 4	4 5 6 7 8 9 10	3 5 7 9 11 13 15
FROM ZONE 5	5 6 7 8 9 10	3 5 7 9 11 13
FROM ZONE 6	6 7 8 9 10	3 5 7 9 11
FROM ZONE 7	7 8 9 10	3 5 7 9
FROM ZONE 8	8 9 10	3 5 7
FROM ZONE 9	9 10	3 5
FROM ZONE 10	10	3

FRONT AND BACK VIEWS OF NEW PUBLIC SERVICE ZONE TICKET

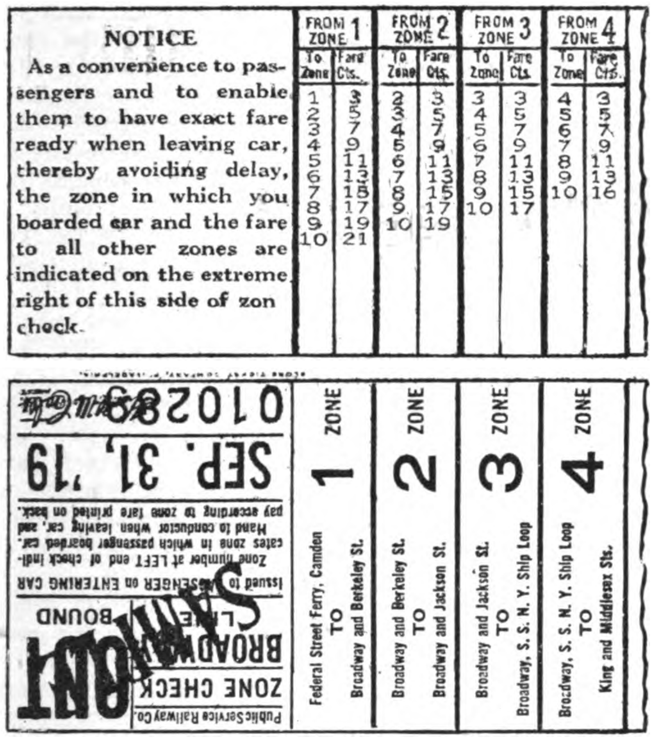
The ten advertisements were followed by a series of eight shorter ones, each taking a single point previously discussed and briefly reiterating it. This series continued up to and including the week of Aug. 8.

In the meantime the Public Utilities Board was holding hearings upon the company's zone report which, under conditions which obtained at the time the report was filed, set up a fare of 5 cents for the first zone-mile, 1 cent for each additional mile and a penny for a transfer as a rate which would meet the company's requirements.

The National War Labor Board, however, in an award which became effective as of May 1, granted an increase in the wages of trainmen which amounted to $1,150,000 annually in the company's payroll. This necessitated a revision in the fare rate to meet the additional cost, and the State Board, on Aug. 1, directed the placing of the zone plan in operation on Sept. 14, under a rate of 3 cents for the first zone-mile and 2 cents for each additional zone-mile or for any part thereof.

With a definite zone-mile rate and a time for its operation set, the company could proceed to instruct its own forces as well as continue its publicity for the benefit of the public.

Accordingly a new series of advertisements was inaugurated, reverting to the larger size space of the



NOTICE

As a convenience to passengers and to enable them to have exact fare ready when leaving car, thereby avoiding delay, the zone in which you boarded car and the fare to all other zones are indicated on the extreme right of this side of zon check.

FROM ZONE 1		FROM ZONE 2		FROM ZONE 3		FROM ZONE 4	
To Zone	Fare Cts.	To Zone	Fare Cts.	To Zone	Fare Cts.	To Zone	Fare Cts.
1	3	2	3	3	3	4	3
2	5	3	5	4	5	5	5
3	7	4	7	5	7	6	7
4	9	5	9	6	9	7	9
5	11	6	11	7	11	8	11
6	13	7	13	8	13	9	13
7	15	8	15	9	15	10	16
8	17	9	17	10	17		
9	19	10	19				
10	21						

Public Service Railway Co.

ZONE CHECK

BROADWAY LINE BOUND

OUT

Issued to PASSENGER on ENTERING CAR

Zone number at LEFT end of check indicates zone in which passenger boarded car. Hand to conductor when leaving car, and pay according to zone fare printed on back.

SEP. 31, '19

010289

ZONE 1 Federal Street Ferry, Camden TO Broadway and Berkeley St.

ZONE 2 Broadway and Berkeley St. TO Broadway and Jackson St.

ZONE 3 Broadway and Jackson St. TO Broadway, S. S. N. Y. Ship Loop

ZONE 4 Broadway, S. S. N. Y. Ship Loop TO King and Middlesex Sts.

TORN END SHOWS ZONE AT WHICH PASSENGER ALIGHTED AND FARE TO FOLLOWING ZONES

first, in which the various methods of boarding and leaving cars and paying fares under the new plan were explained. It was pointed out that the new plan of boarding cars by the front end and leaving by the rear platform, and paying fares at the end of the ride, was simply a change in habit, reversal of former procedure. This series of advertisements will be continued as long as the necessity for public information through the press is seen.

DETAILS OF EDUCATIONAL PROGRAM

Immediately upon the issuing of the State Board's order establishing the zone plan, the company began informing the rank and file of its organization of what would take place. The original zone report, although it had been predicated upon the "5 and 1" rate, formed a working basis. It was necessary to revise details of mechanical devices and to prepare zone checks, tickets and accounting forms to meet the "3 and 2" plan, and this was speedily done. Between Aug. 1 and Sept. 1 division heads and supervisory forces had been instructed in the workings of the new system and the instruction of trainmen had begun. In the latter connection there was first prepared and issued a pamphlet, "Facts About the Zone System," which briefly explained the chief points to motormen and conductors, while cards giving the zone points on each line were issued to the operating men. These will be followed by booklets giving the zone points on all lines for permanent use. An extensive supplement to the trainmen's rule book has been printed, covering the working of the plan in detail.

All zone points were indicated by marking wide yellow bands on poles, with the zone numbers stencilled in 6-in. black letters on the face of the pole. More than 1000 poles were so marked.

As an additional means of informing the public, a series of posters was printed. The first, which made its appearance on the platforms of cars on Aug. 31, and so placed as to meet the eye of the boarding passenger, reads as follows:

Riders Will Board
Cars at
FRONT END
and Leave at
REAR END
Under the Zone Plan
Effective Sept. 14

On Sept. 7 the foregoing posters will be replaced by the second of the series, reading:

Beginning Sept. 14

PAY-AS-YOU-LEAVE
Under the Zone Plan
Instead of
Pay-as-You-Enter

The third of the series will appear on Sept. 14 and will read:

GET ZONE CHECK
From Motorman
Give to Conductor
When Paying Fare
PAY-AS-YOU-LEAVE

Every car as it starts out on the line after midnight on Sept. 14 will carry dash signs, front and rear, reading:

ENTER FRONT
EXIT REAR
PAY AS YOU LEAVE

these signs being of letters of sufficient size to be easily read by persons on the sidewalks.

Three million leaflets, separated as to lines, have been printed, bearing the zone points. These were placed on the cars beginning Sept. 1. On the reverse side of each leaflet appears information as to the method of boarding and leaving cars, use of zone checks and zone indicators and the fare rates. These leaflets are being supplied in receptacles on which the sign "Take one" appears, and overhead signs reading "Zone limit leaflets in boxes; Take one," supplement the signs on the boxes.

As another means of acquainting the public with the operation of the zone plan, moving pictures were taken under actual operating conditions, showing each step the passenger takes boarding cars, getting zone checks upon entering, paying fare and leaving car. Views of zone points showing poles, and "close-ups" of zone checks, zone indicators, and the method of fare registration were taken, and the whole story in proper sequence will be shown in moving picture houses so far as is possible throughout the State before the plan becomes effective.

The newspapers have been kept informed of the news features of the new plan and stories have appeared illustrating the use of the zone check and telling the procedure of the riders on and after Sept. 14. There will be forthcoming additional matter to describe various features of the plan, such as the location of places where strip tickets may be purchased, new forms of school tickets in such parts of the system where these are in use, and the operation of pay-as-you-leave terminals where the same are to be established at congested points.

Briefly, the plan provides that passengers will board by the front door and that the motorman will issue a zone check as illustrated. This check is torn from a holder to indicate boarding point and on the reverse side for convenience there is tabulated the fare to succeeding zones. Fares are paid on leaving and rung up on a cash register.

Paris Tramways in War Time

Municipality Has Shown Reluctance to Give Real Aid to Tramways for Lightening War's Burdens

THE large part which Paris played in the European War and its dangerous nearness to the battle lines caused the life of its tramways to be eventful. A general description of the experiences of the Parisian surface and rapid transit lines during war time is given in a recent issue of the *Electric Railway & Tramway Journal.*

The outbreak of the war was promptly followed by Paris being deprived of all its motor omnibuses. in which a large section of the French army was rushed to the front. Thereafter Paris was subjected to almost innumerable air raids by Zeppelins and Gothas and, later on, to long-distance bombardment. These attacks naturally kept the nerves of the inhabitants on edge and interfered with the performance of electric railway service. Despite these attacks, however, and the drastic recruiting for the army, a highly creditable service was rendered by the tramways and (in due course) by the motor buses after the initial shock had been survived.

RISING COST HIT ALL LINES

Most of the surface transportation service of Paris is carried on by the Compagnie Générale des Omnibus de Paris, which pays to the city an annual rental and a fixed proportion of its receipts. This company was entrusted a few years ago by the city authorities with a big scheme of tramway reconstruction and extension. It had to reconstruct all the tramways within the central area on the conduit system, and outside that area on the overhead system, thus abolishing the compressed air, accumulator and steam traction previously in use. This scheme of reconstruction had not been completed when the war broke out.

In spite of the difficulties involved, however, the company re-established and maintained its tramway services and four lines of motor omnibuses. For the rolling stock, etc., requisitioned by the government the company received an indemnity of $893,890.

Like other railways, it is said, this company has suffered during the last few years from the high prices of labor, fuel and materials. The public administration, in spite of the suggestions of the ministry of public works, has tried to hide its responsibilities behind a proposal which the company summed up in these words: "It is proposed that the companies should borrow eventually the capital repayable after the war, at 6.81 per cent per annum, so as to permit them to lose the money in operations conducted at a loss."

The official figures for 1918 have not yet been issued, but those for the preceding three years follow:

	1914	1915	1916	1917
Revenues	$8,762,807	$5,237,266	$6,147,803	$7,349,208
Working expenses.	7,349,577	3,651,876	4,892,324	6,040,020
Net revenues.......	$1,413,230	$1,585,390	$1,235,479	$1,309,182

That the financial results for 1914, it is stated, were not poorer was due to the progress made in the first seven months before the war broke out. The revenues for the year, however, were $2,984,026 less than in 1913.

The Compagnie du Chemin de Fer Metropolitain, which operates the rapid transit lines in Paris, had its full share of troubles after the outbreak of the war, not the least being those arising from disagreement with the city of Paris. Throughout the war period the company's receipts continued to rise, the increase for 1916 being 13 per cent above the best pre-war figures, and for 1917 19 per cent over 1916. The higher costs of coal, labor and materials, however, were such that despite an increase in receipts of $2,500,000 the net benefits decreased by nearly $200,000. The total receipts in 1917 were $14,278,149, and the expenses $7,272,258. The city of Paris took $4,765,220. The rapid transit traffic in 1917 amounted to 398,241,116 passengers.

It is suggested that one of two plans is now reasonably realizable: (1) An increase in fares that will cause the passenger to pay the increased cost of transportation, or (2) a modification of the rights of the city so as to make it share the higher expenses. The public administration and the Municipal Council have been sheltering themselves behind the stipulations in the company's concession, but the company asserts that the theory of the "unforeseen" is plainly applicable to the situation.

The city at one time agreed, under certain conditions, to advance money sufficient to enable the company to pay dividends not exceeding 4 per cent, the advance to be repayable after the war with interest. The company, however, saw no advantage in accepting a proposition which meant simply that it would find itself eventually face to face with the city instead of private financiers.

War-Time Progress in Swiss Railroad Electrification

A CORRESPONDENT of the *Engineer*, London, writes to that paper that Switzerland has begun to prepare for the electrification of her railways much more earnestly than ever before. During the war it was impossible to do much and even the electrification of the Gothard line, which ought to have been complete by now, can hardly be finished for two years. Some idea of the enormous cost of the electrification in Switzerland at present is given by the figures in connection with the line from Berne to Thun, not quite 20 miles in length. This is so far advanced that electric trains may be able to run over the entire distance long before. The cost has run to nearly $47,000 per mile, not including generators, etc. This line adds a link to the chain of already electrified lines, for at Scherzligen it joins the Lötschberg line which has always been electrified. When the Berne-to-Thun line is completely electrified it will be possible to go from Berne through the Simplon tunnel to Domodossola by electric traction. As Italy is pushing the electrification of the stretch from the latter point to Milan, if the eastern railways of France consider it to their advantage to use the Lötschberg Line for Franco-Italian traffic it is possible that the line from Delle to Berne via the Grenchenberg tunnel will be one of the next to be electrified.

Even with the present high cost of materials and labor it is calculated that it would be cheaper to use electricity on the railways than to continue with steam, as coal costs in Switzerland about eight times as much as before the war. Before the war the German coal mine owners did their utmost to put difficulties in the way of electrification of the Swiss railways. Now one of the great arguments in favor of it is that it would free Switzerland from dependence upon foreign nations for its coal supply.

Fireproof Construction for Substations

Program for Construction of a New Type of Substation as Inaugurated on Pacific Electric Lines in Southern California

By C. A. Elliott

Cost Engineer, Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

During 1918 the Pacific Electric Railway undertook the construction of several new substations at locations where they were most needed on its lines. The first was erected at Wilmington Junction where three of the company's lines converge. These are the San Pedro main line, the Long Beach-Wilmington line and the City of Los Angeles Municipal Harbor belt line. This belt line serves several large shipbuilding plants as well as many other industries and warehouses located at Los Angeles Harbor, which was formerly known as San Pedro Harbor. Wilmington Junction is 2.6 miles from San Pedro Harbor.

The type of substation construction employed in the past was brick. The new type is also brick construction but the exterior walls are plastered and sand-finished and the construction is fireproof throughout. The roof is of reinforced concrete.

The building is 47 ft. 10 in. long, 32 ft. 10 in. wide and 23 ft. high from floor level to bottom chord of truss. The steel portions of the structure consist of two 32-ft. cross trusses and eight 8-in. channels for purlines, supporting the reinforced concrete roof.

Lighting and ventilation have received very careful consideration in these new structures. The windows with steel sash are placed at a sufficient height to give a good distribution of light. Louver galvanized-iron ventilators are installed at the floor level, and on the roof there are three 36-in. Swarthout ball-bearing rotary ventilators.

The equipment of this substation at the present time comprises a Westinghouse motor-generator set capable of carrying a load of 1000 kw. continuously and momentary swings up to 3000 kw. The energy is received from a three-phase circuit at 15,000 volts and feeds to the trolley line at 600 volts, direct current. The substation equipment is protected against lightning and other high-voltage surges by an electrolytic lightning arrester installed in the 15,000-volt alternating current line as it enters the substation. A lightning arrester is also installed in the direct-current feeder. For the present the substation will be manually operated, but later it will be converted for automatic operation.

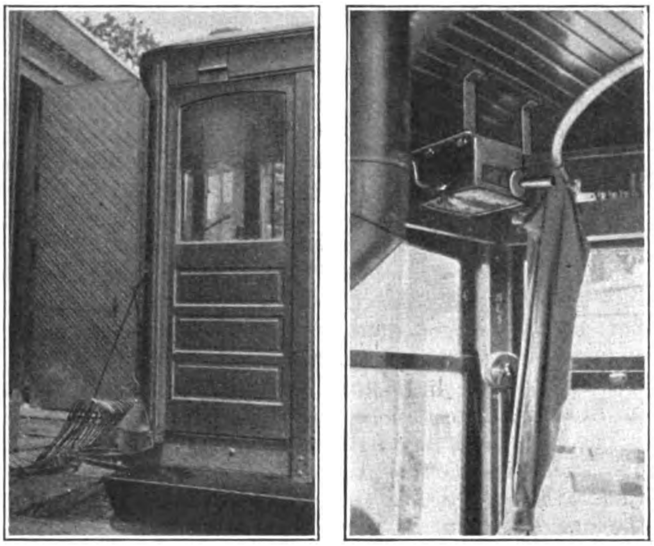
A substation building of the same type as that at Wilmington Junction has been erected at Slauson Junction, where the double-track Whittier line branches off from the four-track Long Beach main line. This substation will be automatically operated from the start, and the gallery has, therefore, been omitted in the building construction.

As there is great need of improvement in the power facilities at Los Angeles Harbor due to the heavy freight hauls and the frequent increases in passenger traffic, the construction of a new substation at San Pedro is to be undertaken immediately. In general this type of construction will be the same as at Wilmington. The building will be 70 ft. long, 36 ft. wide, and 24 ft. high from floor level to bottom chord of truss. Only two 36-in. Swarthout ball-bearing rotary ventilators will be installed in the roof of this structure, as ventilators are to be placed in the steel sash. As this substation will be manually operated, a gallery will be provided.

Plans have also been completed for the erection of a substation within a few months at Maple Avenue, Los Angeles, on some property adjoining the company's main terminal passenger station. More than 1800 electric interurban trains move to and from this terminal building daily and this new substation will considerably increase the power facilities for handling this extensive service. This substation will be of the same type as those already described and will correspond in dimensions to that of the large substation to be erected at San Pedro. This contemplated substation is to be automatic.

Open-Air Exhaust for Circuit Breakers

The usual location of the circuit breaker on the car is above the motorman's head in the cab. Every time the motors become overloaded and the breaker operates there is naturally a flash and report which is often startling to passengers, especially those who may be standing on the forward platform. There have been occasions also when the blowing out of the breaker has thrown particles of carbon into the eyes and on the clothes of a passenger, and occasionally the motorman gets a hot spark down his neck which is not only annoying but may interfere with operation.



AT LEFT, OUTLET FOR CIRCUIT BREAKER FLASH AND REPORT. AT RIGHT, THE BREAKER IS SUSPENDED UPSIDE DOWN BY BRACKETS

To eliminate all of these objections the Des Moines City Railway is now relocating the circuit breakers on all of its cars so that the flash and report occur on the outside of the car. As shown in the accompanying illustrations the breaker has been turned upside down and suspended by brackets from the roof at the side of the vestibule. An outlet has been cut through the letterboard and lined with asbestos board. The outside shield shown in the illustration is light sheet iron lined with asbestos.

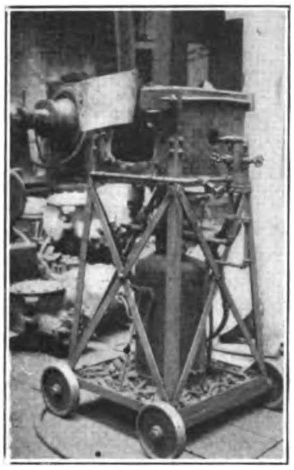
Eight or more cars have had the breaker relocated in this manner at present. When the cars come into the shop for repairs or overhauling this change will be made until the entire system is changed over. The new arrangement has worked very satisfactorily.

Portable Rivet Heater for Shop Use

Des Moines City Railway Has Built Portable Equipment for Use in Any Part of Shops—Burns Kerosene and Is Great Time Saver

RIVETING has to be done in many parts of the ordinary railway shop. A forge is generally available only in the blacksmith shop so it becomes necessary to do one of two things, either take all riveting work to the blacksmith shop or devise some portable heating equipment so that the work can be done wherever it is most convenient. The Des Moines City Railway favors the latter method and has designed and constructed a portable forge or rivet heater.

The stand of the heater is built up from 1½-in. x 1½-in. angle corner posts cross braced by ¼-in. x 1¼-in. iron straps. The bottom angles are the same size as the corner posts and the floor is No. 12 sheet iron. The fire box is built of fire brick lined with fire clay mixed with common salt and the whole is incased in No. 12 gage sheet iron. The fire box rests in 1½-in. x 1½-in. angles bolted the corner posts and these latter extend about half way up the sheet iron sides of the fire box and are bolted to them. The top of the box is clamped as shown in the illustration, but a better method would be to carry the angle-iron corners all the way up and fasten the ends with angles in the same way that the bottom of the box is supported. The heater complete is 4 ft. 5 in. high, 44 in. square at the base, 18 in. square at the bottom of the fire box and 17 in. square at the top. The box is 15 in. high.



PORTABLE RIVET HEATER MADE AND USED IN DES MOINES SHOPS

The fuel tank is of 10 gal. capacity and was part of an old pre-heater equipment. Kerosene is used as a fuel. There are four pipes in the top of the tank, the one shown at the left with a valve is for filling purposes. The second is for attaching the hose line from the shop air connection which forces air into the tank at 90 lb. pressure. The air outlet through the top is a ½ in. pipe and in addition there is an exhaust pet cock. The oil-supply line consists of a ⅜-in. pipe which enters the tank near the bottom. Both the air and the oil lines are equipped with valves for the proper adjustment of the mixture necessary to give the desired heat. The two lines merge near the nozzle which throws a flame of intense heat through an opening in the side of the fire box. An auxiliary air line of ⅜ in. pipe extends around to the front of the box and is perforated under the door opening. By adjustment of the valve this air keeps the flame within the fire box. It will be noticed also that there is a shield to protect the face of the operator when rivets are being inserted or withdrawn.

This equipment is mounted on four solid-cast wheels 8 in. in diameter and is easily wheeled about the shop by one man. The use of the heater is confined mainly to rivet work but it is used also for heating bushings for G.E. Nos. 57 and 67 motors and other similar work. Air connections are conveniently placed throughout the shops and by means of an ample length of hose the heater can be used in practically any location. It has been a great time saver and convenience.

Swing of Radial Coupler on Curves

Formulas Developed for Use Do Away with the Necessity for Special Layouts

By L. F. SEELAR
Chief Engineer St. Louis Car Company, St. Louis, Mo.

ONE of the conditions which has always been a source of much trouble and vexation to those engaged in the construction of electric cars is that of determining the swing of the radial coupler. The usual method is to employ special layouts, which are often very inconvenient and take a considerable time to make. Few draftsmen can readily figure the swing of the coupler, and in order to assist in such calculations, I developed the following formulas for this use. These formulas require only an elementary knowledge of trigonometry and the use of a table of squares similar to that of Smoley or Hall. When Smoley is used, the parallel table of logarithms greatly simplifies calculations.

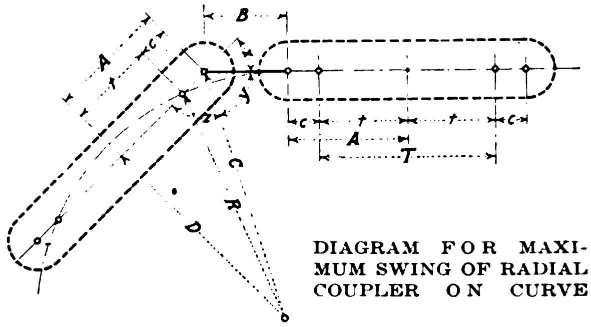


DIAGRAM FOR MAXIMUM SWING OF RADIAL COUPLER ON CURVE

Referring to the accompanying diagram, let us consider two cars, one of which is on a curve and the other car with the pivotal point of its coupler at the point of tangency. The maximum swing of the coupler occurs with the cars in this position.

Let

A = Distance from center of car to pivotal point of coupler
B = Length of two couplers
R = Radius of curve
T = Truck centers
t = One-half truck centers = $\frac{1}{2}T$
c = Distance from center of truck to pivotal point of coupler
X = Maximum swing of coupler

Then

(1) $D = \sqrt{R^2 - t^2}$

(2) $C = \sqrt{A^2 + D^2}$

(3) $Z = \mathrm{Tan}^{-1}\dfrac{D}{A}$

(4) $Y = \mathrm{Cos}^{-1}\dfrac{B^2 + C^2 - R^2}{2BC}$

(5) $X = 180^\circ - (Z + Y)$

To show the application of these formulas let us consider a case with A = 19 ft. 10 in., B = 9 ft. 10 in., R = 35 ft., t = 14 ft. and C = 5 ft. 10 in.

Then from formula (1) D will be 32 ft. $\frac{15}{16}$ in. and from formula (2) C = 37 ft. 8$\frac{9}{16}$ in. Z will be 58 deg. 16 min. 11 sec. and Y will be 66 deg. 5 min. 20 sec. X will then be 55 deg. 38 min. 29 sec.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Convention Exhibit Notes

SECRETARY BURRITT has written to all member companies calling attention to the unusual activity among the manufacturer members in preparing for exhibits, and recommending that delegates be prepared to spend as much time as possible in making a systematic study of these exhibits. To assist delegates in preparing permanent reports of their observations, the exhibit committee will distribute a combined directory and notebook. A full page in this book will be assigned to each exhibitor, on which his name and address will be printed and a description of his exhibit given. Names will be alphabetically arranged and exhibit space numbers indicated.

The entertainment committee has formulated final plans for the entertainment part of the program. Subcommittees are at work making arrangements for music, etc. One evening will be set aside for a dance and another evening for a carnival. During these evenings special features will be introduced by professional dancers and other performers. Arrangements have also been made for daily aeroplane flights at a reasonable fee.

Engineers and electric railway contractors are showing appreciation of the Hall of Engineers; a new feature this year.

Manufacturers Draft Constitution for Affiliated Association

A MEETING was held at Association headquarters on Sept. 3, of the committee appointed by the American Association to draft a form of organization for a proposed affiliated association of manufacturers. Those present were Thomas Finigan, Chicago, Ill., Chairman; S. M. Curwen, Philadelphia, Pa.; E. D. Kiburn, New York City, representing Guy E. Tripp; E. B. Burritt, New York City, and H. H. Norris, ELECTRIC RAILWAY JOURNAL, representing James H. McGraw.

The committee put the finishing touches upon a draft of a constitution and by-laws, which had been prepared earlier in the year. This will be put into the hands of manufacturer members of the association for consideration in advance of the convention.

Canvass on Wages and Labor Conditions

THE bureau of statistics and information of the American Association is collecting first-hand data regarding the wages and labor situation. A bulletin will be issued at once showing name of company, wage scale and date in effect. The information requested on working conditions will be tabulated and kept on file for the use of companies on request. Data Sheet No. 193 is being used in collecting the information. In connection with the questionnaire some attention is also being given to traffic conditions in so far as they affect labor and wages.

The subject covered by this canvass is in such a state of flux that the compilation of data is difficult. The association, therefore, requests prompt co-operation in the return of the sheets. This is doubly timely and important in view of the coming hearings before the Federal Electric Railways Commission at which the labor and living conditions in the industry will be presented by the Amalgamated Association.

Letter to the Editors

Stimulating Sales of Metal Tickets

BROOKLYN, N. Y., Sept. 3, 1919.

To the Editors:

In a certain town, whose name I prefer not to mention, it became necessary in the course of distressing events to raise the fare from 5 cents cash to 6 cents cash. At the same time, the 6-for-25 ticket went into the discard. The immediate result—nay the permanent result—was a terrific drop in noon-day riding to and from the largest factory in the city. Yet the men employed in this factory were highly-skilled mechanics whose wages had risen far more than the rate of fare.

This unhappy result surely was the consequence of a mistake in psychology. These men did not resent paying an increased fare so much as they resented being deprived of a little discount from whatever happened to be the established rate of fare. As four-time-a-day riders instead of two, they held that they were entitled to a little cut from the figure established for the casual rider—all the more so as they knew that much of the noon-day riding cost the railway less than regular rush-hour service.

To raise and lower the fare at one and the same time seems a queer performance, but it is good business if properly stimulated. The trouble with most companies that claim that they cannot see any good in selling the metal ticket at a discount is that they have never really tried intensively to sell such tickets. When we find only 10 or 15 per cent of the riders offering tickets, we may be certain that little publicity has been given to putting the metal ticket over. Thus, instead of relieving the conductor of the worries that the odd fare has added to his platform life, such systems simply make him fill out a couple more blanks on his trip sheet for the occasional metal ticket that some passenger offers in much the same spirit as a person passes counterfeit money. It was my experience recently to enter a waiting room and, upon offering to purchase metal tickets, to be gazed at in wonder and to be told that "they hadn't had any sales in weeks!"

It seems to me that two things are necessary to get all the good that there is in the metal ticket: First, to sell the tickets in packages at a price averaging ½ cent below the cash rate; second, to place the tickets in every store that will handle them as a convenience for customers, backing up this campaign by a series of placards that will emphasize both the saving and the convenience. When at least 50 per cent of the riders present metal tickets, the railway can say that it has really tried to sell them; otherwise it has failed to use the one best means of saving platform time and minimizing fare losses since the 6, 7, 8, 9-cent, etc., fare came into our disturbed midst.

A BELIEVER IN TRANSPORTATION SALESMANSHIP.

Recent Happenings in Great Britain

Important Legislative Measures Still Before Parliament—Orders Placed in America for Rails Provoke Discussion

(From Our Regular Correspondent)

The two great legislative measures of the government which have a direct bearing on transport are still struggling through Parliament. The Ministry of Ways and Communications bill completed its course in the House of Commons before the middle of July, and as a result of concessions made by the government the third reading was agreed to without a division. These concessions are chiefly in the direction of limiting the powers of the Minister, the most notable being in connection with docks and harbors.

A WARM RECEPTION

When the bill came before the House of Lords toward the end of the month it met with a very hostile reception. Bureaucratic control and nationalization were the principal scarecrows which were vigorously waved about, and a strong demand was made that the operation of the bill should be confined to railways only. A second reading was granted, however, without a vote being taken, and the government solemnly warned the militant peers against making any attempt to put a knife into the bill.

A little later a party in the House of Lords attempted to have the bill divided into two bills, one dealing with railways and the other with other means of locomotion, and the former to be dealt with immediately and the latter postponed. This wrecking proposal was defeated by a two-to-one majority. The committee stage of the bill was concluded early in August and several changes were made against the wishes of the government. Any which the latter consider vital will doubtless be rectified by the House of Commons, and the bill will probably pass into law about the middle of the month.

ELECTRICITY BILL DRAGGING

Protracted proceedings on the electricity supply bill went on during July. The measure was before a standing committee of the House of Commons and an enormous number of amendments were discussed. For some time the bone of contention was where district electricity boards to take over and operate the power stations and to provide new ones should be constituted for each district into which it is proposed to divide the country. There was no objection to the setting of the general administrative body called the electricity commissioners, but much was urged against compulsory district boards. The government offered a compromise under which district boards should only be formed where authorized undertakers and local authorities failed to produce a satisfactory scheme themselves. This was agreed to. The alternative bodies are to be called joint electricity boards. Another change of importance, this one being made at the instance of the government, was to exclude existing railway (as distinguished from tramway) power stations from the operation of the bill. Such stations will accordingly not be transferred to the districts boards. Early in August the committee on the bill adjourned till after the summer recess. The resumption will be in October or November.

The prospective heads of branches of the Ministry of Ways and Communications are largely railway men. The consultant mechanical engineer is Sir John A. F. Aspinall, formerly general manager and now a director of the Lancashire & Yorkshire Railway. On the system he has had much experience with electric traction. The regular acting head of the mechanical engineering department is Lieut.-Col. L. Simpson, D.S.O., R.E., late traction superintendent of the Buenos Aires & Pacific Railway. Sir Philip Nash, who is at the head of the traffic department, was assistant manager of East Indian Railway. Statistics and accounts are to be under the charge of Sir J. George Baeharrell, D.S.O., assistant goods manager of the North Eastern Railway. The secretarial and legal work will be managed by Sir Francis Dunnell, secretary and solicitor of the North Eastern Railway. H. G. Burgess, traffic manager for Ireland, of London & North Western Railway, will be director of Irish transport.

MR. DALRYMPLE A DISSENTER

An example of one of the tramway problems likely to arise under the ways and communications bill after it has become an act is furnished in a memorandum prepared by James Dalrymple, general manager of Glasgow Corporation Tramways. In this he gives some facts relating to the Glasgow tramway power station and points to questions which would arise if the station is taken over in connection with the national power scheme. The load is carried by three turbo-generators of a total capacity of 14,000 kw. and the whole plant is more than ordinarily efficient. The station, distribution system, and substations cost together £1,200,000, but the whole of the capital has been repaid and current is produced simply at works cost. If the station is taken over the Council will have to consider what sum it should receive and at what rate the tramways should be charged for current by the new authority. It would be very bad business to scrap such a fine station. The taking over of the high-tension distribution system is strongly opposed by Mr. Dalrymple, as the high-tension and the low-tension feeders must be operated by the same authority.

There are a number of other large efficient tramway power stations in the country which are in a similar position to that of Glasgow except that in their case the capital has as yet been only partially repaid. In the case of a still larger number the problem will be further complicated because these stations have lighting and general power loads as well as tramways to provide for. The whole future under the national power scheme is in fact very misty, and it must remain so until the new Ministry has been at work for some time. In the committee on the electricity bill recently some reassurance was given to tramway authorities by the government. If and when their power stations are taken over municipalities will have the option of receiving annuities to discharge the outstanding indebtedness on the stations, or of receiving a sum representing cost less depreciation.

LABOR OUTLOOK UNCERTAIN

The labor unrest, ever-increasing wages, shorter hours, a serious coal-miner's strike in Yorkshire, and an increase in the cost of coal of 6s. per ton are having their serious effect on electric traction as well as on other undertakings. The future is not at present bright.

One or two authoritative figures were given by the Board of Trade in reply to a question in the House of Commons on July 17 regarding the order by the Glasgow Corporation to an American firm for 5000 tons of tramway rails. Mr. Bridgeman, for the Board of Trade, stated that the order was placed abroad because home firms were unable to deliver the rails in time for the necessary renewals of track which had to be carried out before winter. The difference in price between the American and the lowest British tender was more than £10,000, and the American company undertook delivery at an earlier date. The value of the contract was more than £100,000,

LONDON ORDER FOR UNITED STATES

Early in August some talk arose over the fact that the London United Tramways had also ordered rails from America, but as this was a case of a company, and not a local authority less was said about it. The company has bought 2500 tons of rails from the United States Steel Products Company at a price including delivery of about £40,000. Only one British tender was received, and though it was not much higher than the American one there was a stipulation for raising the price should the cost of labor increase. The British offer also could not promise delivery on a definite date.

Under an arrangement come to between the two tramway associations and the National Transport Workers' Federation, tramway employees on duty on July 19 (the peace celebration day) were paid double time and were granted an extra day's holiday with pay.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Advises Taking Over G. T. R.

Sir Adam Beck, Head of Electric Commission, Urges This as Advantageous to Government

In addressing a meeting of representatives of municipalities, to the number of seventy-five, from Western Ontario, at Stratford, Ont., on Aug. 29, Sir Adam Beck, chairman of the Ontario Hydro-Electric Commission, advocated the taking over of the system of the Grand Trunk Railway and its electrification as a public utility.

The occasion of the meeting was the formal opening of the Stratford municipal electric power station and the remodelled waterworks. Sir Adam recalled that Stratford was one of the original twelve municipalities that entered into the contract when the Niagara power scheme was first broached.

Giving figures for the activities of the Hydro Commission, Sir Adam spoke of twelve systems now being operated by the commission, serving in all 234 municipalities, developing 336,000 hp. He also spoke of the Chippewa government undertaking and said that the original plan calling for the initial 200,000 hp. at Niagara Rapids has been changed to double the quantity, so that 400,000 hp. will be developed at that point.

In speaking on the subject of hydro radials, Sir Adam said that no action would be taken to parallel the Grand Trunk Railway tracks until the question of taking over the railway was settled, but that surveyors were at work estimating the costs, so that work could be rushed when a decision was reached. He quoted the London-Port Stanley line as an example of a municipally-owned road that was paying its way handsomely.

Sir Adam stated that making electricity readily available for domestic use would have a great effect on farm life, in the keeping of young people on farms and getting people back to the land. He thought 100,000 hp. could be sold in six months time if the commission had it to furnish to customers.

Jackson Lays Down Franchise Terms

The City Commission of Jackson, Miss., has declined to adopt a franchise for the Jackson Light & Traction Company submitted for a prospective purchaser of the property, which is now in the hands of a receiver. The Mayor and the Commissioners say, however, that they are willing to adopt a franchise which conforms to the one now in existence. They argue for a valuation basis of less than $1,000,000 for the property. The Mayor said:

> It was shown on the trial in the Federal Court that, while the value of the company's property was less than $1,000,000, the company has issued, not upon the value of its property, but upon its earning capacity, $930,000 of first mortgage bonds, $216,000 second mortgage bonds, $140,000 of promissory notes, $600,000 of preferred stock, and $1,000,000 of common stock, or about $3,000,000 of total capitalization, and upon which interest and dividends were to be paid, and upon which stock, to the sacrifice of maintenance, dividends have heretofore been paid. If the rates upon gas or electric lights, or the railway are deemed by Mr. Grossman, if he concludes his purchase, to be too low, the city would consider an application touching an increase or application could be made to the Railroad Commission of Mississippi to fix rates for the railway.

An Interurban Manager on the Interurban Outlook

Charles J. Finger, receiver and general manager of the Columbus, Magnetic Springs & Northern Railway, Delaware, Ohio, contributed a letter to the *New Republic* for Aug. 20 on "The Passing of the Interurbans." Mr. Finger apparently sees clearly the inexorable law of the survival of the fittest hard at work in the transportation field, with the prospect of many small roads being pushed to the wall by the auto. After reviewing the passing of the turnpike companies, supplanted by the steam railroads, Mr. Finger says in part:

> To-day the interurban electric lines and some short steam railroads are in much the same position that horse transportation companies were in then. They are being pushed aside in great measure, by the automobile and the truck in rural communities.
>
> An examination of electric railroad statistics of passengers carried reveals the fact that, with war service eliminated, the past six years have shown a steady decrease in the number of revenue passengers carried.
>
> During the past two years, many railroads, both electric and steam, have surrendered their charters and ceased operation. In Ohio at least eight roads have vanished from the map, and others must follow. Nor does it seem that the communities which these roads served have suffered. Where small villages have been left railroadless, auto bus lines have been established.
>
> Obviously then, to attempt to persuade those in Washington that the plight of the interurbans can be bettered by an increase of rates, is foolish. Such an increase would only serve still further to decrease patronage, and exacerbate the troubles complained of, by driving still more people to the automobile and truck.
>
> The probable outcome will be that the interurban will be replaced by the more serviceable automobile, with its cousin, the auto truck. Such interurbans as operate between cities of considerable population will survive, but even they cannot, without ultimate disaster, raise their rates to any appreciable extent. Their hope is in economy, but not that false economy that makes for inferior maintenance. Revenue could be increased by selling current to farmers along the right-of-way. Old ties and bridge timbers, poles and posts, could be sold for fire wood, instead of being burned. Finally, bondholders, who in small interurbans are more often than not the owners, should voluntarily reduce their holdings, and thus lighten the burden of interest payments.

Pittsburgh Men Return

Accept War Board Award "Under Protest"—Men Apparently Glory in Their Shame

After a two weeks interruption of service, Pittsburgh's striking railway men returned to their posts the morning of Friday, Aug. 29, accepting "under protest" the 6-cent raise awarded them by the War Labor Board, against which they had struck in violation of their contract.

Decision to acknowledge defeat was reached by the men at a mass meeting on Thursday afternoon, Aug. 28, at which the impossible situation their conduct had thrust them into was pointed out to them in vigorous terms by William B. Fitzgerald, international vice-president of the Amalgamated Association. The terms upon which the strikers returned to work are:

> That all should be reinstated to their former positions and seniority. (Exception: Men against whom informations have been lodged to be dismissed if convicted.)
>
> That the contract prevailing on and prior to Aug. 14 shall be reinstated
>
> That the receivers drop their suit against the men for $900,000, claimed as damages suffered by reason of an unlawful strike.

This basis of agreement was reached after numerous conferences on Aug. 28 between the receivers of the railway and the wage scale committee of Division 85, with whom Mr. Fitzgerald sat.

The spirit of the meeting at which the strikers finally voted to return to work made plainly evident that they were not persuaded to do so by any feeling of repentance for their outrage of their contract.

Mr. Fitzgerald informed the receivers before leaving Pittsburgh that he would reopen negotiations shortly to obtain for the men the full wage demanded in the case submitted to the War Labor Board—a 12-cent advance. The receivers did not commit themselves on this proposition, but no one has any idea they will concede anything.

Altogether the strike and the two weeks suspension of service is estimated to have cost Pittsburgh about $15,750,000, divided as follows:

Loss of business by mercantile enterprises	$14,000,000
Loss to travelling public as result of being forced to ride in jitneys and trains	750,000
Loss to Pittsburgh Railways	750,000
Loss to men in wages	250,000

The strike breakers brought in by the company, whose first and only attempt to operate cars brought on riots, as described in the ELECTRIC RAILWAY JOURNAL of Aug. 30, were shipped out immediately after the strikers voted to return to work, and before the first cars were taken out. No further trouble occurred.

Spokane Men Abide by Agreement

On the advice of the international union, the platform men of the Spokane Traction Company, controlled by the Spokane & Inland Empire Railroad, unanimously voted recently to reject the appeal of the striking shopmen, machinists, blacksmiths and electricians for sympathetic support, holding that their contract with the company, under which they were granted an increase of wages several weeks ago, barred them from walking out.

Conductors and motormen in the employ of the traction division of the Inland system have not changed their attitude as to the strike on the Inland because of the adverse decision of their claims for back pay, filed in the Federal Court by Oscar Cain, master in chancery in the receivership case. According to Everett J. Parker, president of the local union, the platform men will continue on the job and in the meantime prosecute a further effort in the Federal Court to secure back pay.

In the decision of the master in chancery the claims of the Inland employees are not only denied priority, but are entirely disallowed as valid claims against the company. Failure of the company to pay the back wages, based on an award or recommendation by the Federal War Labor Board, is one of the things that brought on the strike.

The special committee appointed by the Central Labor Council to investigate and report on the request by the striking Inland employees that the company be placed on the unfair list, rejected the request for emergency action by a vote of four to one. They will refer the matter back to the Central Labor Council, where it is to come up for discussion.

Ottawa Electric Railway Wages Settled

The dispute between the Ottawa (Can.) Electric Railway and the union of employees has been settled. A wage scale for motormen and conductors has been accepted by both parties which carries the following pay per hour:

First-year men	39 cents
Second-year men	41 cents
Third-year men	43 cents
Subsequent years	45 cents

The new arrangement took effect on Aug. 1. The conciliation board which had been appointed automatically went out of existence.

The new agreement regarding wages and working conditions between the company and its employees has been signed by all parties. It confirms the new wage scale as announced some time ago. The agreement is not a majority report of the conciliation board, but is the agreement reached between the company and its men on July 25, without the aid of the board of arbitration. There will be no report from the conciliation board, its functions having ceased when an agreement was reached between the two parties.

The company guarantees that no discrimination will be used against any man in its employ because he belongs to an association or union of employees.

London Traffic Committee Reports

The report by a committee of the House of Commons which had been inquiring into the problem of London traffic congestion was issued in the end of July, and locally, at least, it has caused some little sensation. The report savors more of modern daily journalism making a case than of the calm, judicial, well-thought-out type of document to which one is accustomed in the case of Parliamentary committees.

The main recommendation is in principle only a repetition of that of the Royal Commission of 1905—namely, the formation of a traffic board for London to control and co-ordinate all public means of locomotion and to develop and extend them. Dispute will arise as to the proposed composition of the board, especially in regard to the recommendation that the London County Council should be represented on it, seeing that the body as the owner of tramways is an interested party. The wisdom of the committee may be judged by the fact that one of its recommendations is that fares should be reduced. Apparently congestion is to be diminished by encouraging people to ride by means of cheapening fares. And this at a time when most undertakings are in difficulties despite increased fares.

Wages Increased in Texas

The Dallas (Tex.) Railway has granted a wage increase of 4 cents an hour for all conductors and motormen. This makes the scale from 42 cents to 46 cents an hour. During the first three months men are paid 42 cents an hour; for the next nine months they receive 44 cents an hour, and thereafter they will receive 46 cents.

Wage increases for conductors and motormen of the Galveston-Houston Interurban Railway, the Houston Electric Company and the Galveston Electric Company, have just been announced. The new wage scale will be from 42 cents to 46 cents an hour.

The Eastern Texas Electric Company, Beaumont, Tex., has granted an increase of 4 cents an hour for its conductors and motormen.

M. J. Loftus, superintendent of the lines in Sherman, Tex., owned and operated by the Texas Electric Company, Dallas, notified the motormen and conductors that they would receive an increase in wages of 4 cents an hour, making the scale 42 cents to 46 cents an hour, instead of 38 cents to 42 cents.

The El Paso (Tex.) Traction Company has announced a wage increase for trainmen amounting to 2 cents an hour. The new scale will run from 42 cents to 46 cents an hour.

In every case the new rates are effective from Sept. 1.

Vancouver Men Present Demands

The railway employees of the British Columbia Electric Railway, Vancouver, B. C., on Aug. 8 submitted a proposed new wage schedule together with notice of the reopening of the present agreement, which will, therefore, automatically expire thirty days from that date. The new scale for city motormen and conductors as proposed by the men is 55 to 65 cents an hour, reached in twelve months in place of 40 to 51 cents an hour reached in eighteen months. For interurban men the proposed scale is 65 to 69 cents reached in twelve months instead of 40 to 53 cents, reached in eighteen months.

A totally new provision is for the payment of 70 cents an hour to city motormen and conductors on night runs, which the men propose shall be those after 6.30 p.m., except when completed before 8.30 p.m.

The proposed agreement provides for a guarantee of an eight-hour day for week days, and six hours for Sundays, instead of a minimum of six hours on week days under the old contract. The spread is proposed to be reduced from eleven hours to ten hours.

Under the terms of the old agreement, either party could reopen it on giving one month's notice. It will, therefore, be necessary to come to some conclusion before Sept. 8. The matter will in all likelihood go before an arbitration board under the Lemieux act.

M. O. Proposal Defeated

On Aug. 11 the ratepayers of Guelph, Ont., by a majority of 437, defeated the proposed agreement between the city and the Grand River Railway (controlled by and operated in the interest of the Canadian Pacific Railway), providing for the taking over of the local railway line and making an extension to Puslinch Lake and Hespeler to connect at the latter town with the present system of the Grand River Railway (formerly the old Galt, Preston & Hespeler Railway).

The campaign was an exciting one, in view of the fact that while the citizens at first were in favor of giving the Canadian Pacific Railway the right to take over the local railway line and obtaining much-needed connections with other towns, the Hydro-Electric Commission was opposed to the agreement, perceiving that it would place the Canadian Pacific Railway in a strategic position by giving to the railway surface rights over the streets of Guelph and handicap the present projected Ontario Hydro Radial Railway system, which is to cover western Ontario from Niagara to Toronto and to Windsor.

Following the vote on Aug. 11 Sir Adam Beck, chairman of the Hydro-Electric Commission, received an invitation from the railway and manufacturers' committee of the City Council of Guelph to be present at a meeting to be held there on Aug. 21 to consider the prospects of an electric line from Guelph to Hespeler.

Puget Sound Will Use Electricity from Spokane

Electric energy from Spokane is now penetrating every part of the vast electric distributing system of the Stone & Webster interests from Tacoma on the south to Everett and Bellingham on the north. The Washington Power Company transmits the energy to the Coast by means of the transmission lines of the Intermountain Power Company. The latter company carries the power from Long Lake to Taunton on the Milwaukee, where it is retransmitted to Cedar Falls and then to Snoqualmie, where it is fed into the whole Puget Sound electric distributing system.

The Intermountain Power Company is the company which buys power from various power companies and sells it to the Chicago, Milwaukee & St. Paul Railroad, the Stone & Webster interests and other customers. From Taunton, the eastern terminus of the Milwaukee's Puget Sound electrification, current is carried into the Puget Sound country over the transmission lines of the Milwaukee Railroad.

The Puget Sound unit of electrification of the Chicago, Milwaukee & St. Paul Railroad between Taunton and Seattle and the Sound is ready for operation and during the winter the Milwaukee road plans to operate all its transcontinental trains from Taunton to Seattle, Tacoma and way points by means of electricity.

The contract with the Washington Water Power company is a permanent affair. The company agrees to furnish power to the Intermountain Power Company, which transacts the commercial business with the Coast concerns and the Milwaukee.

From Long Lake to Taunton the distance is 112 miles; from Taunton to Cedar Falls, 139.2 miles; from Cedar Falls to Snoqualmie, 10.6 miles, making a total of 262 miles before the Spokane-generated power reaches the distributing system of the Puget Sound country.

Safety Cars Legalized at Terre Haute

Ordinances are no novelty which forbid the operation of one-man cars, but one is which expressly stipulates their use. Such an ordinance was passed by the Common Council of Terre Haute, Ind. By it the Terre Haute, Indianapolis & Eastern Company is permitted to run Birney safety cars in accordance with the American Car Company's specification No. 100. The first installation of these cars was described in the issue of this paper for June 28, through the courtesy of E. M. Walker, general manager. The exact wording of this ordinance follows:

> Whereas, the city of Terre Haute has requested the Terre Haute, Indianapolis & Eastern Traction Company to improve the street car service in said city, and in response thereto said company has undertaken to comply with the city's said request in that behalf. said company in a written communication has advised the city that it has conditionally arranged for the purchase and use in the said city of thirty (30) new street cars of the type commonly known as the quick service or safety cars, which are particularly described in the American Car Company's specifications No. 100 and in such specifications called the Birney safety cars. Believing that it is in the public interest the city desires to meet the conditions specified in said company's communications respecting such matter, reference to which is hereby made. Therefore:
>
> Section 1. On and after the adoption of this ordinance by the Common Council of the city of Terre Haute and the approval thereof by the Mayor of said city it shall be lawful for the Terre Haute, Indianapolis & Eastern Traction Company, its grantees, successors and assigns, to operate in, along and upon the streets of said city either exclusively or in connection with the use and operation of the type of street cars now and heretofore used and operated in said city, the type of street cars commonly known as the quick service or safety cars and of the general type designated by the American Car Company's specifications No .100 and particularly called the Birney safety car, with only one operative for each such car.
>
> Section 2. All ordinances and parts of ordinances in conflict with the provisions thereof are hereby repealed.
>
> Section 3. An emergency is hereby declared to exist for the immediate taking effect of this ordinance and the same shall therefore be in full force and effect on and after its adoption by the Common Council of said city and its approval by the Mayor of said city.
>
> Dated, July 5, 1918.

Normal Service Resumed in Los Angeles

Both the Pacific Electric Railway, which gives interurban service in four counties and street car service in ten towns, and the Los Angeles Railway, which serves the major part of Los Angeles, Cal., were giving normal daylight service on Sept. 4 and substantially normal night service up to 10 p.m., with a promise of complete restoration within a week's time. The public is riding very heavily in full sympathy with the electric railways.

A mass meeting of twenty-three principal business organizations of Los Angeles and vicinity representing practically all commercial, industrial and manufacturing interests has pledged support to the electric railways and to the 200,000 working men in Los Angeles who do not belong to any union. The Labor Day union parade had 8700 men in line. There was little or no enthusiasm. Moreover, there was no violence of any consequence anywhere. The situation on the steam railroads, where there was a sympathetic demonstration in which the national administration took a hand, is again normal.

The strike was called in all departments of the electric railways, but the effect was not noticeable except in connection with motormen and conductors. The men who left work in the shops, substations, and electrical overhead departments were immediately replaced. The companies have stopped advertising for employees except motormen and conductors. The two companies are short only 20 per cent of the normal number now.

The chief lesson from the experience of the Pacific Electric Railway during the last year and a half is that steam line brotherhoods cannot be tolerated on electric railways. Their ideas as to wages and working conditions are impossible of fulfillment on lines that depend for their revenue chiefly on city and suburban fares and that must be operated in competition with private and public automobiles and motor trucks.

In the case of the Los Angeles Railway it has been demonstrated again that an electric railway cannot be half union and half individual and that in southern California the sentiment is 90 per cent against union domination. It has also been established that this sentiment is militant and willing to fight to maintain freedom from government by unions.

United We Stand; Divided We Fall

The Massachusetts Northeastern Street Railway, Haverhill, Mass., has addressed an open letter to its employees explaining briefly the weight of the high cost of living on the electric railway business. The employees are urged to interest themselves in the solution of the difficulties of the company and to help inform the public of the crucial situation. A condensed table of facts gleaned from the testimony presented at the electric railway hearings in Washington is presented to the employees in the open letter.

The management of the company declares in the statement that inasmuch as the United States government has recognized the principle that every business is entitled to a fair and just return on the money invested in the business, the electric railway must have this fair and just return or it cannot pay wages and upkeep. The final declaration of the management is:

> If the authorities who control railway fares do not apply the same fair principle applied by the United States government to the steam railroads, the electric railways must quit business. The Massachusetts Northeastern Street Railway is one of the electric railways facing this situation. You as employees of the company are just as interested in the solution of our difficulties as is the company. If we lose our job, you lose yours, too.

Post-War Rehabilitation Program

The Interstate Public Service Company, operating between Indianapolis, Ind., and Louisville, Ky., is planning to expend from $350,000 to $500,000 as a part of its after-the-war rehabilitation. Bert Weedon, general freight and passenger agent of the company. states that the work of improvement will be begun at once. A central shop to cost about $100,000 will be built, but the location of this shop has not been determined. The establishment of a uniform voltage of 600 is contemplated to take the place of the present voltage of 600 and 1200. The company now plans to run freight trains of from five to ten cars each. A number of all-steel cars have been ordered for the company and additional limited service is to be provided, with probably one or two limited runs providing only one stop between Indianapolis and Louisville.

News Notes

Riot Insurance Taken Out.—The Cleveland (Ohio) Railway has taken out an insurance policy in Chicago, said to be the largest ever written, for $10,110,000 against "riot and civil commotion." The premium was $37,110.

Advance in Wages in Bristol—Wages of the employees of the Bristol & Plainville Tramway, Bristol, Conn., were advanced 5 cents an hour, effective on Aug. 24. New men will receive 44 cents and older men 50 cents an hour.

Interurban Men Want More.—Trainmen of the Illinois & Iowa Railway at Clinton, Ia., are demanding an increase in wages from 40 cents to 90 cents an hour. Rules governing working conditions have also been drawn up for presentation to the company.

Wage Award Acceptable.—The award of the Public Service Commission of Missouri of a 45 per cent wage increase to employees of the United Railways, St. Louis, Mo., was read to the men at a union meeting during the week ended Aug. 30 and accepted.

Claim Made for Electrolysis Damage.—The Memphis (Tenn.) Telephone Company has filed a suit against the Memphis Street Railway in the Chancery Court to recover $3,700, which it claims represent damage to its cables due to electrolytic action of the railway return circuit.

Wage Increase Granted.—The Toledo, Bowling Green & Southern Traction Company, Toledo, Ohio, has granted a wage increase of 5 cents an hour demanded by the employees. About 200 employees between Findlay and Toledo are affected. Under the new rate they will receive 48 cents an hour.

Queens County Wages Increased.—W. O. Wood, president of the New York & Queens County Railway, Long Island City, N. Y., on Aug. 26 announced a voluntary increase of 25 per cent in the wages of the employees in the operating and transportation departments. Conductors and motormen who have been receiving 41 to 49 cents an hour will get 52 to 62 cents.

Banquet to Herbert Hoover.—The engineers of America, under the auspices of the American Institute of Mining and Metallurgical Engineers, will give a dinner to Herbert Hoover in New York, at the Waldorf-Astoria Hotel on Sept. 16, on the occasion of his arrival from abroad. W. L. Saunders is chairman of the banquet committee.

Wages Raised on Ohio Interurban.—The directors of the Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, a part of the old Cincinnati Street Railway, have granted demands of the employees for a wage scale of 48 cents an hour. The Town Councils of Bowling Green, Portage and Maumee had previously refused the company's request for an increase in fare.

Franchise Talk at St. Paul.—Upon request of Horace Lowry, president of the St. Paul (Minn.) City Railway, a hearing has been called for consideration of a cost-of-service franchise for that city by the Council. At the suggestion of one of the commissioners Sept. 9 was set for the first date. A tentative franchise has been submitted by the company, but no action has been taken.

North Shore Wages Adjusted.—Employees of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., have accepted the compromise increase in wages offered by the company. The settlement is said to have been at 67½ cents an hour on the basis of a ten and one-half hour day. The men formerly were receiving 45 and 50 cents an hour. The men had asked for an increase to 75 cents an hour.

Proposed New Line in Canton.—The municipality of Canton, China, is offering a franchise for the construction of an electric railway 10 miles long around the city, upon the site of the old city walls, which are being demolished. A copy of the terms upon which the franchise will be granted can be obtained from the Far Eastern Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. (Refer to file No. 119,907.)

Civil Service Examinations Announced.—The New York State Civil Service Commission has announced the following examinations for Sept. 27, 1919: Bridge designer, office of Transit Commissioner, salary $1,500 to $2,100; five years of practical experience in drafting required. Junior engineer, Grade 7, salary, $1,200 to $1,500; two years of practical experience required. The positions are open to non-residents as well as residents of the State.

Border Strike Settled.—The strike on the Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont., which tied up the Niagara district for three days, ended on Aug. 24 in a compromise. Strikers voted to return to work after a committee had reported that Superintendent Oliver had agreed to give them the information they asked regarding reasons for discharging Conductor William Bell, the union business agent.

Employee-Director in St. John.—In order that the employees may be kept more closely in touch with the company's affairs, and to promote a better mutual understanding, it has been decided to give the employees of the New Brunswick Power Company, St. John, N. B., the right to elect an employee as a member of the board of directors of the company, with all the authority and privileges enjoyed by other directors. This director is to be elected by a popular vote of all the employees.

Track Repairs Planned at Toledo.—The Toledo Railways & Light Company, Toledo, Ohio, has resumed work on track repairs, which was stopped when the City Council passed the ouster ordinance on June 30. The tracks on Superior Street between Jackson Street and Madison Avenue will be renewed. The management has announced that the company will proceed with permanent improvements on Adams Street, where new track will be laid. The work on Front Street is also to be completed.

Wants Decision Rendered—Louis Fridiger, counsel for the Amalgamated Association, appealed to Justice Robert F. Wagner of the Supreme Court on Sept. 2 for judgment on the pleadings against the Third Avenue Railway, New York, N. Y., in its suit to restrain the Amalgamated Association and thirty-four others from inducing or trying to induce employees of the railway and its subsidiary companies to join the union.

St. Louis Employees Heard.—The Public Service Commission of Missouri gave a rehearing on Aug. 26 to the United Railways, St. Louis, on the subject of increased wages to electricians in the employ of the company. These employees were included among other employees of the company in the arbitration of increased wages, and at present have the same standing in the award as other employees. The company called the attention of the commission to the fact that these employees are under contract to the company.

I. T. S. Labor Conference.—Representatives of the employees of the Illinois Traction System, Peoria, Ill., and officials of that system were scheduled to meet Sept. 2 in the office of Superintendent E. D. Bell in St. Louis to arrange for the transfer of the contract by which the company and the employees are now bound. At the time of the drawing of the contract the men were members of the Brotherhood of Interurban Trainmen, while they now belong to the Amalgamated Association. The question of wages was also to be taken up at the meeting.

Conference Between Officials.—With a view to preparing a franchise similar to the one held by the Cincinnati (Ohio) Traction Company, Hubert A. Mathonet and J. W. Whitemore of the Chamber of Commerce of Kansas City, Mo., conferred recently with W. C. Culkins, Street Railroad Director of Cincinnati. They expressed considerable satisfaction with the ordinance governing the operation of cars in Cincinnati and extended an invitation to Mr. Culkins to address the members of the Kansas City Chamber of Commerce on the subject at an early date.

Portland Men Dissatisfied.—The organized employees of the Portland Railway, Light & Power Company, Portland, Ore., have expressed by vote their disapproval of the award of 12½ per cent increase in wages made by the War Board. According to an agreement between the company and the employees decisions of the War Board will be accepted during the period of the war, or until the peace treaty is signed. The union is expected to adhere to this agreement and the company will not protest the decision of the War Labor Board.

Shore Line Strike Broken.—The Shore Line Electric Railway, Norwich, Conn., has resumed service on all its lines after a strike. One by one, division after division was started with new men. For the first time in nearly five weeks a car was operated between Norwich and Willimantic on Aug. 18. The men are being paid 37½ cents, 39 cents, and 42½ cents an hour, the latter rate being said to apply to former employees who returned to the service of the company.

Wants Public to Attend Wage Discussion.—Rankin Johnson, president of the Trenton & Mercer County Traction Corporation, Trenton, N. J., has requested the public to attend the conference to be held between the company and employees relative to a demand for a 25 per cent increase in pay. President Johnson says the wage question is one of general public interest and he wants the public to know what is being paid the men and what the company's income is at this time. The date of the hearing has not been set.

Proceedings to Oust Road from Highway.—Walter S. Ruff, prosecuting attorney of Starke County, on Aug. 12 brought *quo warranto* proceedings against the Northern Ohio Traction & Light Company in the Supreme Court of Ohio to compel the company to vacate the public road between Canton and Massillon. It is claimed the franchise has expired and that the company will not sign another one prepared by the County Commissioners, which contains a rate of fare objectionable to the management. The petition alleges that the entire road space is needed for vehicular traffic.

Mexican Interurban Talk.—A press dispatch from Mexico City, Mex., is to the effect that a contract has been entered into by the Department of Communication and Public Works of the Mexican government with the Mexico Tramways, Ltd., for the resumption of the construction of the interurban electric railway which will operate between the city of Mexico and Pueblo, about 130 miles. The construction of this line was begun some years ago, but before much progress had been made the revolutionary activities caused a suspension of work.

Wage Adjustment in Atlantic City.—Through an agreement signed between the employees of the Atlantic City & Shore Railroad, Atlantic City, N. J., and A. J. Purinton, general superintendent and receiver of the corporation, a wage increase approximating 10 cents an hour has been granted. This is a compromise, the men having asked for a raise approximating 24 cents an hour. The new agreement became effective at once and will run until March 1, 1921. The trouble over the shop rules and recognition of the union was also amicably settled.

Nashville Strike Settled.—The strike of the trainmen of the Nashville Railway & Light Company, Nashville, Tenn., has been settled. The men were out twenty hours. The agreement which resulted in the settlement was reached at a conference attended by the Mayor, a committee of the strikers and officers of the company. The company has agreed to recognize the union and to reinstate all former employees. The men have agreed not to present any new demands for a year. Both sides have agreed to arbitrate all differences in the future.

Wage Increase in Binghamton.—Conductors and motormen employed by the Binghamton (N. Y.) Railway are on a new salary schedule. An increase of 3 cents an hour, an average of 30 cents a day, $2.10 a week, providing they work seven days, was voluntarily granted by William G. Phelps, receiver for the company. No demand for higher pay had been made by the platform men. Conductors and motormen had been receiving an average wage of 31 to 35 cents an hour. Pay will now range from 34 to 38 cents an hour. Previous to the war the maximum rate was 24 cents an hour.

Service Being Gradually Resumed.—During the second week of the strike in Louisville, Ky., the Louisville Railway managed to keep ten lines in operation from 7 o'clock in the morning until 6 in the evening, service gradually improving until cars were running on four to ten-minute schedules. The company has refused to arbitrate with the union, agreeing to talk with individuals, and discuss matters with city officials and representatives of business men's organizations. A federal labor conciliator arrived in the city during the week, but discovered that there was nothing that he could do.

Mutual Insurance for Ottawa Employees.—A plan of mutual insurance is under consideration by the board of directors of the Ottawa (Ont.) Electric Railway and will be put in force in the near future. The company proposes to pay half the premium on a $1,000 policy taken out by any employee with the understanding that he shall receive $10 a week in case of sickness. If a man leaving the employ of the company desires to continue to carry his policy, he will be permitted to do so, and any man retiring on account of age will receive either a paid-up life insurance policy or a cash payment based on the amount of money paid by himself and the company.

So the People May Know.—In announcing a number of changes in routing for the betterment of the service, the Cincinnati (Ohio) Traction Company has published an explanation of the service-at-cost plan, under which it is now operating. It expresses the hope that the peak of increasing cost of operation has now been reached and that it will now be possible to make some of the improvements that are desired and needed. At the same time, care in the expenditure of money is necessary, since every dollar expended is reflected in the rate of fare. Some comparisons are made between the rate of fare in Cincinnati and fares in other places.

Wage Increase in Johnstown.—All motormen and conductors of the Johnstown (Pa.) Traction Company received a substantial increase in wages effective on Sept. 1. According to the new rates, motormen and conductors for the first three months will receive 45 cents an hour; next nine months, 47½ cents; after the first year, 50 cents. Under the former rates, an employee the first three months with the company received 40 cents an hour; from the third to the sixth month, 41 cents; from the sixth to the twelfth month, 42 cents; from the twelfth to the eighteenth month, 43 cents; from the eighteenth to the twenty-fourth month, 44 cents, and after twenty-five months, 45 cents an hour.

B. R. T. Employees Accept Increase.—The employees of the Brooklyn (N. Y.) Rapid Transit Company on Aug. 29 voted to accept the agreement of their representatives with the officers of the company providing for an increase in wages of 25 per cent and leave other questions to arbitration. Among matters still in dispute are the demand for a nine-hour day, instead of ten as at present, and the reduction of the term of employment before maximum wages are paid from ten years to five. An arbitration committee of three will take up these matters. Patrick J. Shea of the Amalgamated will represent the workers, and Lindley M. Garrison, receiver for the Brooklyn Rapid Transit System, the company. The third party, it was said, will be Lewis Nixon, Public Service Commissioner.

Short Strike in Peoria.—Cars are operating in Peoria, Ill., after a strike which for a time threatened to tie up the entire industrial life of the city, inasmuch as the strikers demanded that all workers in the city leave their employment and join the strike. Strikers at the time threatened violence to the cars and property of the Peoria Railway, but police interference prevented disorder. The trouble was caused by a strike among the miners. It spread to a number of other industries, including the railway. Motormen and conductors ran their cars into the carhouse and went quietly to their homes for fear that labor insurgents engaged in the general sympathetic strike would do damage to the rolling stock. The railway men were persuaded in a few hours to resume their duties.

Program of Meeting

Western Society of Engineers

A meeting of the Western Society of Engineers will be held Sept. 8 in Chicago. The subject will be "The Economic Future of Transportation Utilities." There will be several speakers.

Financial and Corporate

Municipal Railway Profit

Seattle Road Reported to Have Been Operated at Profit of $6,808 for First Three Months

Seattle's electric railway system netted a profit of $6,808 for the first three months of operation under municipal ownership, according to figures submitted by Thomas F. Murphine, superintendent. Revenues from all sources amounted to $1,299,039, a gain of $163,916 over the quarter ending March 31, 1919. Total known operating expenses are shown by the report to have been $1,052,727, to which Mr. Murphine adds an estimate of $40,722 for industrial insurance and damage claims, making a total of $1,093,449 as compared with $857,118 in the quarter ending March 31, 1919. In discussing the report Mr. Murphine said in part:

> Extraordinary expenditures in the way of maintenance during the quarter more than offset the depreciation, as shown by the statement in the financial report that an average for depreciation would ordinarily be $75,000. Owing to the fact, however, that our maintenance charges are heavier by $98,743.93 than the same period last year we feel that we have appreciated the property and that no depreciation should be charged.
>
> The total maintenance expenditure of $230,540 for this quarter is at the rate of $922,163 a year, or approximately 6 per cent of the value of the street railway properties. The various items for interest, industrial insurance and damage claims, deducted from the gain, would leave a net profit during the quarter of $6,808.
>
> It will be noted from the statement that we operated during this quarter a total of 442,572 car-hours, which is 95,212 more car-hours than were operated during the corresponding quarter of the previous year by the combined lines of the Puget Sound Traction, Light & Power Company and the Municipal Railway divisions A and C.
>
> It is also shown that we operated 760,499 more car-miles than in the corresponding quarter of the previous year by both railway systems.
>
> The fact that the car-miles operated, which show an increase in excess of 22 per cent over the car-miles operated in the same quarter of the previous year, taken in conjunction with the fact that there has been a great increase in the use of the automobile as a method of transportation, indicate that the people are now getting an increased service in excess of the increased growth of the population of the city.

Mr. Murphine estimates that revenue derived from the operation of the municipal railway during the year 1920 will aggregate $7,017,000. Budget estimates submitted by Mr. Murphine to the Council call for a total expenditure of $7,002,250 during the year, making the net revenue for the year $14,750 on the basis of Mr. Murphine's figures. Revenue receipts as itemized by Mr. Murphine will be as follows:

Passenger fares, $6,225,000; freight, $60,000; sale of advertising contracts, $20,000; common user rights, $157,000; sale of power, $25,000; safety campaigns, $10,000; miscellaneous, $20,000; stores to construction, $500,000.

While the city will receive $25,000 from the sale of power, it will pay the Puget Sound Traction Company approximately $700,000 during the year for current. The $10,000 safety campaign allowance is expected to result from the inauguration of "safety first" measures which will reduce the budget estimate for medical aid and industrial insurance that amount. The $500,000 stores to construction item represents supplies to be bought during the year out of maintenance funds that will be used in construction work and will be chargeable to the bond construction fund.

Ohio Abandonment Sanctioned

On Aug. 28 the Ohio Public Utilities Commission ruled that the Cincinnati & Columbus Traction line between Owensville and Hillsboro could be dismantled and junked, but that the section between Owensville and Norwood must be kept in operation. The consumers of current along the abandoned portion will be supplied until some other arrangement can be made for them. The evidence showed that the auto truck and automobile have been big factors in damaging the line.

The order was made on the application of the Union Savings Bank & Trust Company, Cincinnati, trustee for the first mortgage note holders, to abandon the entire line. The petition was filed under the Gilmore act of 1917.

Operation of the road was begun in 1903. Common and preferred stock to the amount of $2,500,000 each was issued, together with $600,000 of first and $86,000 of second mortgage bonds.

The destruction of the Little Miami River bridge by a flood in 1913 threw the company into the hands of a receiver. In 1918 the losses had become such that the courts ordered the property sold, and the Union Savings Bank & Trust Company bid it in at $200,000 as trustee for the first mortgage bondholders.

During the receivership the net earnings varied from $6,253 to $32,430, but they were never sufficient to pay the fixed charges. The commission found that the enormous increase in operating expenses had played a big part in bringing the property to its present condition. In 1913 it was found that operating expenses and taxes were $88,467, while in 1918 they had increased to $172,130 or almost 100 per cent.

The commission expressed the belief that the present owners should endeavor to operate the portion of the road that is paying best until the loop in Cincinnati is completed, when interurban cars will be able to reach the business portion of the city. After that, it was stated, there can be little question of the future prosperity of the line.

Receiver for Berkshire

Company, Beset by Labor and Fare Troubles, May Resume Service in Part

A partial resumption of service on the Berkshire Street Railway in Pittsfield and North Adams, Mass., is hoped for early realization following the appointment of Clinton Q. Richmond, general manager, as receiver of the company. The road has been tied up for about four weeks by a deadlock regarding revenue and wages.

In Massachusetts the company operates about 114 miles of track and is the chief source of electric transportation from north to south, and vice versa in western Massachusetts.

A revised schedule of fares has been proposed by Mr. Richmond, in which the 5-cent fare is to be retained within a 2-mile radius in the cities of Pittsfield and North Adams, with an outside zone rate of 2.5 cents per mile.

Mr. Richmond has offered to increase the wages of car-service men 12 per cent provided the Massachusetts Public Service Commission grants the new rate schedule. The men demand a 33 per cent increase, claiming that their rates of pay should be on the same basis as the Springfield Street Railway. The company's officials maintain that a 12 per cent wage increase would place the men on the same basis as the employees of the Connecticut Company and of the local systems at Albany and Troy, N. Y.

Petition for Receiver Filed Aug. 22

Three petitions for a receiver were filed on Aug. 22. The applicants were the New York, New Haven & Hartford Railroad, and W. F. Gilbert & Company, New Haven, Conn. The New Haven Railroad is the owner of the stock of the Berkshire Company ($5,398,100) and of debenture bonds of $200,000 issued in 1905, the interest on which has been defaulted since March 1, 1918. Gilbert & Company are coal dealers and creditors of the Berkshire Company to the extent of $48,000. The company is also indebted to the New Haven road on notes for $3,357,500, and in further sums for which no notes have been issued for cash advanced to finance construction and to meet interest and other expenses.

Many industries are dependent upon the company's service and there is a strong disposition in the district to bring about a more satisfactory schedule of rates which will at least enable the more essential lines to resume operation. The refusal of the employees to return to their posts, even upon the basis of the 12 per cent increase suggested, is proving a stumbling block in the restoration of local service, but it is expected that in the city districts covered it will be possible to start operations soon if the new rate schedule is sanctioned. The company will probably employ safety cars to a considerable extent on these lines.

$42,790,000 Required

This Is Cash Requirement of I. R. T. for Five Years, in Addition to Earnings

The committee representing the holders of the 4½ per cent collateral trust gold bonds of the Interborough-Metropolitan Company, New York, N. Y., has received from Stone & Webster a report on the affairs of the Interborough Rapid Transit Company supplementary to one made previously.

In the circular of Aug. 13, to which reference was made in the ELECTRIC RAILWAY JOURNAL, for the committee representing the security holders it was pointed out that the estimate of Stone & Webster as to the probable deficits of the Interborough Rapid Transit Company for 1920 to 1924 inclusive was "based upon the scale of wages now prevailing in New York City and the present prices for materials and supplies."

Since that circular was issued the company has granted a 25 per cent increase in wages to a large proportion of its employees and has agreed to submit to arbitration various questions of difference between the company and its employees affecting wages, hours and conditions of work, etc.

Stone & Webster now advise that the 25 per cent increase in wages, if continued, supposing other conditions to continue as at present, will result in increasing their estimates of probable deficits, and that the estimates are in substantial accord with the figures of the officers of the company.

A table submitted by the engineers shows that although under the old wage scale the deficit would decrease progressively yearly, and thus in 1924 a surplus of $864,000 would be shown, the 25 per cent increase in wages would result in the following annual deficit: 1920, $8,778,000; 1921, $8,678,000; 1922, $7,155,000; 1923, $5,993,000; 1924, $4,786,000.

Stone & Webster estimate, therefore, that the company will require before July 1, 1924, under the new wage scale in force, in addition to about $7,400,000 needed for capital purposes, $35,390,000 for deficits, making cash requirement for that period in addition to earnings $42,790,000.

The engineers point out that although present wages, cost of materials and supplies and other operating expenditures continue, and the 5-cent fare is in force, the company will not be able to earn its fixed charges for many years after 1924. They state also that the increased wage scale just granted to the employees of the New York Railways will make it impossible for the surface lines to earn their operating expenses and taxes unless there is a substantial increase in gross earnings.

The investigation carried on by Stone & Webster, in co-operation with Price, Waterhouse & Company, certified public accountants, covered the city-owned subways operated by the Interborough and the elevated lines operated by that company under its own franchise and its lease from the Manhattan Railway.

The preliminary report, dated Aug. 11 and made public on Aug. 13, showed that a deficit would exist under the old wage scale up to 1924, when for the first time a slight surplus would be shown. The report on which the present letter is based takes into consideration the 25 per cent increase granted after the recent strike.

Sells Direct to Investor

$3,600,000 of Five-Year 7 Per Cent Notes Have Been Sold to Home Investors at Milwaukee

The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., is another public utility that has demonstrated that it is possible to dispose of a considerable issue of public utility securities through a direct offering by the company itself to local investors. Up to July 24 nearly $3,500,000 of an issue of $3,600,000 of five-year 7 per cent bond-secured notes had been bought in small lots by 4750 investors, mostly Milwaukee men and women.

The sale started on Dec. 18 last and is still in progress, less than $100,000 of the issue remaining to be sold. The company felt from the beginning that it could sell the notes at less cost through advertising in the local papers than through the usual bankers' syndicate. This has proved true.

The advantages of such a sale from the standpoint of the company through the ties that it makes among local people of material advantage to the company are too readily apparent to need reiteration. The saving in marketing the issue will work indirectly, of course, to the benefit of the company's customers, for they are concerned in all the savings and economies effected by the company. It might be remarked, however, that the new investors have brought the company a good many new customers.

Another phase of the matter is that the campaign of advertising conducted in connection with the placing of the securities has introduced the company to the habit of advertising regularly and fairly liberally, with a resulting good effect upon the mental attitude of all home papers toward the business. Most of the advertisements about the note sale have been coupled up in the same column with advertisements of the company's electric railway service, its electrical appliance business, its interurban express service, and its public relations generally, with notably good results in all of these fields. In short, the advertising has not only sold the notes at home, but is believed to have gone far to "sell" the company into the good-will of the public at the same time.

The price of the notes is par for cash. In the case of those who invest in the notes and need their money before the maturity date, the company has agreed to create a market by putting the notes on sale any time after the sale of the original issue closes.

Sept. 1 Dividend Postponed

Indianapolis Company Decides on This Course After Conference With Public Service Commission

After discussing the matter with the Public Service Commission of Indiana, the directors of the Indianapolis Street Railway have decided to postpone temporarily the Sept. 1 installment of dividend on the Indianapolis Street Railway stock. In a letter to the stockholders, dated Aug. 30, Robert I. Todd, president of the company, calls attention to bond interest charges due since April 1 and July 1, 1919, which have to be met; also to an additional annual cost of operation estimated at $125,000 resulting from the recent wage increases granted to the employees of the company. It is stated in the letter to the stockholders that a petition will be presented to the commission within a few days for permission to charge 1 cent for transfers on the city lines.

Following the conference with the directors, the Public Service Commission addressed a commendatory letter to the railway stating that it was not the function of the commission to direct the payment or non-payment of dividends. This letter follows in part:

> The commission is informed that the company has made rapid and satisfactory progress in the matter of extensions and service. The company has shown a disposition to meet all the requirements of the commission, and the general attitude of the company with respect to all matters which have been before the commission is to be commended.
>
> In the matter of the capitalization of the consolidated company the officers and directors have shown a spirit of compliance. The commission is informed that the consents of bondholders to the temporary discontinuance of direct payments into the bond-sinking funds and the discontinuance of payments of interest on bonds in the sinking funds are now being secured. The commission's order required that these consents be secured by Sept. 1. Our information is to the effect that it will be impossible to secure the necessary consents by Sept. 1 and that perhaps thirty days additional time will be necessary apparently laying a sound financial basis for future operation.
>
> The commission is of the opinion that no dividends should be paid on Sept. 1 for the reason that while the company has made satisfactory progress in fulfillment of its franchise obligations there is still considerable work to be done.
>
> In view of this fact, the commission is not in a position to hold that there has yet been a substantial compliance with the franchise requirements or the orders of the commission, although the company will undoubtedly within a short time be able fully to comply with all such requirements.
>
> This attitude of the commission should not be interpreted by the stockholders of the company as indicating a disposition on the part of the commission to permit no dividends to be paid; on the other hand, the commission is of the opinion that the payment of dividends should be resumed at the earliest date consistent with the company's welfare and its franchise obligations. The commission is fully of the opinion that a return on investment is absolutely essential to the establishment of credit which will make it possible for the company to render proper service. We are advised that within the next two or three months the company will have complied with all of the requirements in question. The commission, therefore, can see no reason why the payment of dividends cannot be resumed when such requirements have been met.
>
> Among other things, the purpose of this letter is to dispel any thought that the commission is opposed to the payment of dividends or that the commission believes that the payment of dividends should be postponed for a long period of time. This information is given to the company and its stockholders in order that they may not be misinformed about the commission's attitude.

Fare Returns for May Give Promise

Reflect a Belated Readjustment of the Industry to Unfavorable Conditions Rather Than to Any Improvement in Conditions Themselves

There is a promise of better conditions for the future in the operating returns of electric railways for the month of May as made by companies reporting to the Information Bureau of the American Electric Railway Association. Compared with May, 1918, a slight improvement is shown, which if it continues, should eventually lead the industry back to a self-sustaining basis.

RETURNS ANALYZED

The returns for May offer the first opportunity in a long time for making a fair comparison with the corresponding month of the preceding year; that is, it is the first month that has occurred in a long time in which generally normal conditions prevailed in two successive years. In May, 1916, the heavy storms which crippled operation in the East, South, and Middle West during the winter and spring were well over and the roads had about gotten back to normal operation. And there was no influenza epidemic at the time in either year such as defeated all attempts to make comparisons during the months of October, November and December, 1918. It is fair to assume, therefore, that the figures in the accompanying tables reflect general conditions as they affect electric railways.

A short study of the accompanying tables leaves the impression that the slight improvement noted above is due to a belated readjustment of the industry to unfavorable conditions rather than to any improvement in conditions themselves. The improvement shows principally in the net income per car-mile which for the country generally increased 0.35 per cent. That this improvement is not due to favorable operating conditions is shown by the relative increases in operating revenues and operating expenses. The revenues per car-mile increased 22.87 per cent while the expenses went up 33.59 per cent, producing a decrease in the net revenue of 0.39 per cent. This is the smallest decrease in net revenue that has been returned in many months, and that it is not larger can be attributed to the numerous fare increases which are beginning to produce the increased revenue that was expected of them.

Taxes increased 9.42 per cent and deductions from income 8.95 per cent. The situation was saved, however, by the increase in non-operating income and the development of revenue from auxiliary operations which was not available in 1918, all of which confirms the impression that the slight improvement noticed is due to a belated readjustment to abnormal conditions. The companies are securing new fare increases and they are realizing on past increases. And in addition they are developing sources of revenue outside of strictly railway operations.

Another source of increased revenue should not be overlooked, and that is the demobilization of the army. Several million men have been returned to private life from abroad and from the training camps, and it is safe to assume that a large proportion of these are now daily riders. In addition, as somebody has pointed out, this class of men are responsible for a great deal of the pleasure riding.

In Tables III and IV on page 499 details of the operating expenses are given; Table III showing the amounts in dollars and Table IV showing the amounts in cents per car-mile.

Heavy increases in the cost of materials are implied in the two maintenance accounts, way and structures and equipment. In the former the cost per car-mile jumped from 2.66 cents to 4.64 cents, an increase of 74.44 per cent. This is for the country as a whole. The greatest increase is in the East where the cost of maintenance of way and structures rose from 3.38 cents per car-mile to 6.61 cents, an increase of 95.56 per cent. In the South and West increases in this account were more moderate, being 20.95 per cent and 27.78 per cent respectively.

OPERATING EXPENSES SHOW INCREASE

The cost of operating the cars, that is principally the wages of trainmen, increased for the country as a whole from 9.94 cents to 12.97 cents per car-mile, or 30.48 per cent. The heaviest increase in this account was also in the East where the actual cost per car-mile is already greatest, being 10.18 cents per car-mile in 1918 and 13.81 cents per car-mile in 1919, an increase of 35.66 per cent. In the South and West the increase was practically uniform, being 23.79 per cent in the South and 23.89 per cent in the West.

The cost of power for the country as a whole was 3.32 cents per car-mile in 1918, and 3.93 cents in 1919, an increase of 18.37 per cent. The greatest increase in the cost of power was in the South where it amounted to 97.87 per cent, rising from 0.94 cent per car-mile to 1.86 cents per car-mile. However, a number of companies in the South include the cost of power under conducting transportation which accounts for the smallness of the amount and also in part for the large ratio of increase.

As in the past, the returns from both city and interurban companies have been classified according to the following geographic grouping: Eastern District—east of the Mississippi River and north of the Ohio River; Southern District—south of the Ohio River and east of the Mississippi River; Western District—west of the Mississippi River. The figures in italics in the tables indicate a decrease.

TABLE I--INCOME STATEMENT OF FORTY-FOUR ELECTRIC RAILWAYS FOR MAY, 1919, COMPARED WITH MAY, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918
Railway operating revenue	$9,915,162	$7,976,269	$6,303,234	$4,867,624	$1,190,642	$1,053,590	$2,421,286	$2,055,055
Railway operating expenses	7,375,150	5,456,419	4,916,532	3,480,975	781,454	629,480	1,677,164	1,345,964
Net operating revenue	2,540,012	2,519,850	1,386,702	1,386,649	409,188	424,110	744,122	709,091
Net revenue: Auxiliary operations	79,260	....	70,441	....	1,012	....	7,807	....
Taxes	513,643	462,133	295,431	252,907	94,601	95,173	123,611	114,053
Operating income	2,105,629	2,057,717	1,161,712	1,133,742	315,599	328,937	628,318	595,038
Non-operating income	558,962	414,008	242,897	222,389	171,437	144,027	144,628	47,592
Gross income	2,664,591	2,471,725	1,404,609	1,356,131	487,036	472,964	772,946	642,630
Deductions from gross income	1,967,340	1,784,133	1,143,893	1,010,702	281,062	264,684	542,385	508,747
Net income	697,251	687,592	260,716	345,429	205,974	208,280	230,561	133,883
Operating ratio (per cent)	74.38	68.41	78.00	71.51	65.63	59.75	69.27	65.50
Car-miles operated	24,500,401	24,223,264	14,010,100	13,803,099	3,504,239	3,484,715	6,986,062	6,935,450

A Profit Replaces a Loss

The city authorities of Ocean City, N. J., are meeting with success in the operation of the Ocean City Electric Railway following the refusal of the company to operate because of the expenses being too great. William E. Massey, trustee of the railway, who was appointed to the position by Chancellor Edwin Robert Walker, reports that since the line has been in operation this summer the increase in net travel with a 7-cent fare has been 34 per cent. The same number of cars is in operation as was used during 1918. The road was operated during the summer of 1918 and the board of directors suspended operation on Nov. 1.

Residents of the city, especially those who spent the summer months there, demanded that the road be placed in operation again and Mayor Champion and others had a bill passed by the Legislature, allowing the city to operate the line. The municipality advanced a small amount of money so the road could begin operations this summer, and this amount has already been paid back. The road is more than meeting its operating expenses and from present indications there will be a balance in the treasury by Oct. 1, the date to which the order permits operation under the trustee.

TABLE II—INCOME STATEMENT IN CENTS PER CAR-MILE OF FORTY-FOUR COMPANIES APPEARING IN TABLE I, FOR MAY, 1919, COMPARED WITH MAY, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Railway operating revenue	40.46	32.93	22.87	44.99	35.26	27.59	33.98	30.23	12.40	34.66	29.63	16.98
Railway operating expenses	30.10	22.53	33.59	35.09	25.22	39.13	22.30	18.06	23.48	24.01	19.41	23.69
Net operating revenue	10.36	10.40	*0.39*	9.90	10.04	*1.40*	11.68	12.17	*4.03*	10.65	10.22	4.21
Net revenue: Auxiliary operations	0.32	....	.....	0.50	....	.....	0.03	....	.....	0.11	....	....
Taxes	2.09	1.91	9.42	2.11	1.83	15.30	2.70	2.73	1.10	1.77	1.64	7.93
Operating income	8.59	8.49	1.18	8.29	8.21	0.97	9.01	9.44	*4.56*	8.99	8.58	4.78
Non-operating income	2.28	1.71	33.33	1.73	1.61	7.45	4.89	4.13	18.40	2.07	0.69	200.00
Gross income	10.87	10.20	6.57	10.02	9.82	2.03	13.90	13.57	2.43	11.06	9.27	19.31
Deductions from gross income	8.03	7.37	8.95	8.16	7.32	11.47	8.02	7.59	5.66	7.76	7.34	5.72
Net income	2.84	2.83	0.35	1.86	2.50	*25.60*	5.88	5.98	*1.67*	3.30	1.93	70.98
Operating ratio (per cent)	74.38	68.41	8.73	78.00	71.51	9.08	65.63	59.75	9.84	69.27	65.50	5.75
Car-miles operated	24,500,401	24,223,264	1.14	14,010,100	13,803,099	1.50	3,504,239	3,484,715	0.56	6,986,062	6,935,450	0.73

TABLE III—OPERATING EXPENSES OF *SIXTY ELECTRIC RAILWAYS FOR MAY, 1919, COMPARED WITH MAY, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918
Operating expenses	[1]$8,405,046	[4]$6,290,277	[2]$5,443,493	[3]$3,906,378	$1,065,650	$845,665	$1,895,903	$1,538,234
Way and structures	1,324,283	751,761	1,036,250	522,505	122,858	101,028	165,175	128,228
Equipment	996,373	780,511	642,551	525,013	125,906	83,059	227,916	172,511
Power	1,120,761	935,723	734,194	665,444	90,162	45,075	296,405	225,204
Conducting transportation	3,696,717	2,803,592	2,165,869	1,574,120	595,050	477,255	935,798	752,217
Traffic	29,833	35,063	16,960	22,516	3,194	3,783	9,679	8,764
General and miscellaneous	1,036,445	921,922	640,669	534,907	128,480	135,465	267,296	251,550
Transportation for investment — Cr.	....	*567*	....	*127*	....	....	*6,366*	*240*
Car-miles operated	28,510,907	28,216,829	15,679,622	15,460,800	4,844,433	4,806,341	7,986,852	7,949,688

* NOTE—This table includes the expenses of the forty-four companies shown in Tables I and II and in addition sixteen other companies which are not included in Tables I and II, because of the fact that they do a power and light business and do not separate their railway taxes and fixed charges from the taxes and fixed charges of their other business.

[1] Includes $207,000 undistributed depreciation.

[2] Includes $207,000 undistributed depreciation.

[3] Includes $62,000 undistributed depreciation.

[4] Includes $62,000 undistributed depreciation.

TABLE IV—OPERATING EXPENSES IN CENTS PER CAR-MILE OF SIXTY COMPANIES APPEARING IN TABLE III, FOR MAY, 1919, COMPARED WITH MAY, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating expenses	[1]29.48	[4]22.29	32.26	[2]34.72	[3]25.27	37.40	21.99	17.59	25.00	23.74	19.35	22.69
Way and structures	4.64	2.66	74.44	6.61	3.38	95.56	2.54	2.10	20.95	2.07	1.62	27.78
Equipment	3.49	2.77	25.99	4.10	3.40	20.59	2.60	1.73	50.29	2.85	2.17	31.34
Power	3.93	3.32	18.37	4.68	4.30	8.84	1.86	0.94	97.87	3.71	2.83	31.09
Conducting transportation	12.97	9.94	30.48	13.81	10.18	35.66	12.28	9.92	23.79	11.72	9.46	23.89
Traffic	0.10	0.12	*16.67*	0.11	0.15	*26.67*	0.06	0.08	*25.00*	0.12	0.11	9.09
General and miscellaneous	3.64	3.27	11.31	4.08	3.46	17.92	2.65	2.82	*6.03*	3.35	3.16	6.01
Transp. for investment — Cr.	....	....	.....	....	....	.....	....	....	.....	*0.08*	....	......
Car-miles operated	28,510,907	28,216,829	1.04	15,679,622	15,460,800	1.41	4,844,433	4,806,341	0.79	7,986,852	7,949,688	0.47

[1] Includes 0.71 cent per car-mile for undistributed depreciation.

[2] Includes 1.33 cents per car-mile for undistributed depreciation.

[3] Includes 0.40 cent per-car mile for undistributed depreciation.

[4] Includes 0.21 cent per-car mile for undistributed depreciation.

TABLE V—INCOME STATEMENT OF *124 RAILWAYS FOR MAY, 1919

	United States	East	South	West
Railway operating revenue	$24,351,664	$17,765,877	$1,500,461	$5,085,326
Railway operating expenses	17,685,039	13,085,552	996,539	3,602,948
Net operating revenue	6,666,625	4,680,325	503,922	1,482,378
Net revenue: Auxiliary operations	642,271	358,953	82,467	200,851
Taxes	1,358,926	951,445	126,757	280,724
Operating income	5,949,970	4,087,833	459,632	1,402,505
Non-operating income	708,545	368,895	175,399	164,251
Gross income	6,658,515	4,456,728	635,031	1,566,756
Deductions from gross income	4,960,540	3,374,242	369,906	1,216,392
Net income	1,697,975	1,082,486	265,125	350,364
Operating ratio	72.62	73.65	66.42	70.85
Car-miles operated	62,201,377	43,713,616	4,387,876	14,099,885

* Includes the companies shown in Tables I to IV and others for which the 1918 figures are not available.

TABLE VII—DETAILED STATEMENT OF OPERATING EXPENSES OF *150 RAILWAYS FOR MAY, 1919

	United States	East	South	West
Operating expenses	[1]$19,730,914	[2]$13,658,135	$1,288,338	$4,784,441
Way and structures	2,743,462	2,039,808	150,388	553,266
Equipment	2,455,905	1,660,179	152,833	642,893
Power	2,882,600	2,027,200	118,423	736,977
Conducting transportation	8,756,013	5,912,218	[3]698,128	2,145,667
Traffic	93,794	51,112	5,279	37,403
General and miscellaneous	2,542,488	1,701,081	163,287	678,120
Transportation for investment — Cr.	*10,407*	*522*	....	*9,885*
Car-miles operated	71,104,119	46,129,165	5,768,673	19,206,281

* NOTE—This table includes the expenses of the 124 companies shown in Tables V and VI and in addition twenty-six other companies which are not included in Tables V and VI because of the fact that they do a power and light business and do not separate their railway taxes and fixed charges from the taxes and fixed charges of their other business.

[1] Includes $267,059 undistributed depreciation and freight department expenses.

[2] Includes $267,059 undistributed depreciation and freight department expenses.

[3] Includes some power.

TABLE VI—INCOME STATEMENT OF TABLE V, IN CENTS PER CAR-MILE

	United States	East	South	West
Railway operating revenue	39.20	40.63	34.20	36.07
Railway operating expenses	28.50	29.93	22.71	25.55
Net operating revenue	10.70	10.70	11.49	10.52
New revenue: Auxiliary operations	1.03	0.82	1.88	1.42
Taxes	2.19	2.17	2.89	2.00
Operating income	9.54	9.35	10.47	9.95
Non-operating income	1.14	0.85	4.00	1.16
Gross income	10.68	10.20	14.47	11.11
Deductions from gross income	7.98	7.72	8.43	8.63
Net income	2.70	2.48	6.04	2.48
Operating ratio	72.62	73.65	66.42	70.85
Car-miles operated	62,201,377	43,713,616	4,387,876	14,099,885

TABLE VIII—DETAILED STATEMENT OF THE OPERATING EXPENSES OF THE 150 COMPANIES APPEARING IN TABLE VII, SHOWING THE AMOUNTS IN CENTS PER CAR-MILE

	United States	East	South	West
Operating expenses	[1] $27.75	[2] $29.61	$22.33	$24.91
Way and structures	3.86	4.42	2.61	2.88
Equipment	3.45	3.60	2.65	3.35
Power	4.05	4.39	2.05	3.84
Conducting transportation	12.31	12.82	[3] 12.10	11.17
Traffic	0.13	0.11	0.09	0.19
General and miscellaneous	3.58	3.69	2.83	3.53
Transportation for investment — Cr.	*0.01*	....	....	*0.05*
Car-miles operated	71,104,119	46,129,165	5,768,673	19,206,281

[1] Includes 0.38 cent per car-mile for undistributed depreciation and freight department expenses.

[2] Includes 0.58 cent per car-mile for undistributed depreciation and freight department expenses.

[3] Includes some power.

Indianapolis Merger Legal

Court Upholds Proceedings in Connection With Consolidation of Street Railway and Terminal Company

Judge Ferdinand A. Geiger, serving as special judge in the Federal Court for the district of Indiana, on Aug. 29 handed down a decision approving the legality of the recent merger of the Indianapolis Traction & Terminal Company and the leased lines of the Indianapolis Street Railway. He also sustained the motion of the defendants in the suit brought by certain minority stockholders for an injunction against the new consolidated Indianapolis Street Railway and affiliated properties.

The complainants in their bill contended that conditions which were required by the Public Service Commission of Indiana when it approved the merger agreement on June 28, as reported in the issue of the ELECTRIC RAILWAY JOURNAL for July 5, page 42, made fundamental changes in the merger contract and consequently were of such character that the directors of the two companies were without authority to accept what amounted to a new contract. It was also contended that the proceedings at the meeting of the stockholders of the Indianapolis Street Railway were without lawful effect, and that the Indianapolis Traction & Terminal Company had violated certain conditions of its lease of the street railway property.

1899 LAW SUFFICIENT

Judge Geiger decided that the law passed by the Indiana Legislature of 1899 authorizes domestic street railways to consolidate, and is not restricted to consolidations in which a company operating to the State line and there connecting with a line of another state is a party. He referred to the decision of the Indiana Supreme Court in the case of Norton *vs.* Union Traction Company of Indiana, wherein a merger was upheld, and gave great weight to that decision.

The judge found that the Norton case forecloses the contention of the complainant in the present suit that a unanimous vote of the stockholders, or a greater preponderance than was shown at the stockholders' meeting of the Indianapolis Street Railway is necessary to authorize a consolidation. In the Norton case it was decided that a vote of the holders of a majority of the stock was sufficient.

The court found that there was an unusually large attendance of stockholders, either in person or represented by proxy, at the meeting of the Indianapolis Street Railway when the merger was approved, and Judge Geiger's view was that the stockholders considered the wisdom of the consolidation and reached a conclusion, and as there were no facts presented "to enable the court to point out when or wherein the power of the majority stockholders to further or adopt the merger plan either broke down or was oppressive or unconscionably exercised," a court would be slow to upset the judgment of the stockholders as represented by the present merger.

Financial News Notes

Sale Under Foreclosure Postponed.—United States Judge Frank H. Rudkin at Spokane, Wash., has entered an order postponing the sale of the Spokane & Inland Empire Railroad under foreclosure, from Oct. 1 to Nov. 1.

Receiver for Alabama Company.—The North Alabama Traction Company, Albany, Ala., operating in Albany and Decatur, has been adjudged bankrupt on petition of New York bondholders. A. A. Hardage has been made receiver.

Would Abandon Short Line. — The Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has applied to the Public Utilities Commission of Pennsylvania for authority to abandon operation of its electric lines between Knowles and Mineral Ridge, about 2½ miles.

Funds for Memphis Interest Payment. — The receivers of Memphis (Tenn.) Street Railway on Sept. 2 deposited with Central Union Trust Company, New York, N. Y., funds for the payment of the July 1, 1919, interest on the consolidated 5 per cent mortgage bonds of that company together with two months interest thereon at 5 per cent.

Aid for Kansas City Railways.—A special dispatch from Kansas City, Mo., says that a loan of $1,000,000 by Armour interests saved the Kansas City (Mo.) Railways from receivership on Sept. 1, the time limit for the payment of interest defaulted on July 1. The recent increase of fares to 8 cents is expected to provide enough revenue to meet the interest charges in future.

Mr. Garrison Made Permanent Receiver.—Judge Julius M. Mayer in the Federal District Court has made permanent the appointment of Receiver Lindley M. Garrison of the Brooklyn Rapid Transit Company as receiver of the surface lines in Brooklyn. At the same time the court also ordered the consolidation of the foreclosure and general creditors' suits against the Brooklyn Rapid Transit Company and subsidiaries.

Receiver for Small Pennsylvania Company.—The Title Trust & Guarantee Company, Johnstown, Pa., has been made receiver for the Penn Central Railway, Johnstown, formerly the South Fork & Portage Company, with a hearing to be held soon on the question whether the order shall be made permanent. The capital stock of the railway is $250,000. There was a reorganization about a year ago. O. P. Thomas then became head of the concern.

Colorado Springs Bondholders Act.—The Colorado Springs & Cripple Creek District Railway, Colorado Springs, Col., defaulted on the interest due on Jan. 1, 1919, on the first mortgage 5 per cent bonds dated Jan. 1, 1900. The company also defaulted on the July 1, 1919, interest, and the sinking fund installments due Jan. 1 and July 1, 1919. In consequence the Central Union Trust Company, New York, N. Y., trustee, at the request of $1,183,000 out of a total of $1,225,000 of the bonds, has declared the principal of all the bonds issued and outstanding to be immediately due and payable in accordance with the terms of the indenture under which the bonds are secured. George M. Taylor has been appointed receiver.

Seeks to Capitalize Expenditures.—The Georgia Railway & Power Company and the Georgia Railway & Electric Company, Atlanta, Ga., have petitioned the Georgia Railroad Commission for permission to issue more than $500,000 of bonds. According to the petition $489,000 is wanted by the power company to reimburse it for expenditures made since April 1, 1914, for construction work, such as power houses, dams, buildings needed for the hydroelectric plant in the process of development, and for other property acquired. The $105,000 asked for by the electric company is, the petition states, 75 per cent of expenditures for additions and extension to the plant made since Jan. 1 of this year.

Interurban Offers Notes. — Halsey, Stuart & Company and the National City Company, New York, N. Y., are offering for subscription $1,100,000 of 6 per cent gold notes of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., divided as follows: $600,000 series A, due on Aug. 1, 1920, offered at 99.29 and interest, yielding 6.75 per cent, and $500,000 of 6 per cent equipment gold notes, due $50,000 on Aug. 1, 1920, and $25,000 each year in February and August thereafter to Aug. 1, 1929, at subscription prices varying according to maturity to yield between 6.50 per cent and 6.75 per cent. The series A notes are secured by deposit with the trustees of $857,200 par value of the company's first mortgage 5 per cent gold bonds, which are pledged at approximately 70 per cent. The equipment gold notes are secured by a first lien on fifteen steel interurban motor cars, fifteen steel interurban control trailer passenger cars, twelve parcel dispatch motor cars and ten one-man safety cars. The total cost of the equipment is at the rate of $100 of equipment for each $70 of notes issued. The statement of earnings for the year ended June 30, 1919, shows a net income available for interest charges, depreciation, etc., of $906,872. The annual interest charge on the securities now offered is $316,450.

Traffic and Transportation

Zones and Higher Fares

Commissioner Nixon Raises Rates on New York & North Shore Road—Shutdown Had Been Threatened

Public Service Commissioner Lewis Nixon, of the First District of New York, on Aug. 28 took action to preserve the operation of the New York & North Shore Traction Company, Roslyn, N. Y., to the traveling public, by issuing an order, on the recommendation of Deputy Commissioner Alfred M. Barrett, permitting the road to establish a zone system of fares from Flushing to Whitestone, and from Flushing to Little Neck in excess of the existing 5-cent fare. Evidence had been presented to the commission that the company's cars might stop running on Aug. 29 if the officials of the road were not assured of some means of additional revenue.

Had Threatened Shutdown

The stockholders of the company recently announced that they could no longer stand the losses entailed by operation of the road at a 5-cent fare. The new fare system which has been worked out provides for four zones, the initial fare in each of which is 6 cents. The fare from Flushing to Little Neck will be 10 cents. The fare in any single zone will be 6 cents, save in zone 4, where it will be 7 cents. For a passenger making a continuous trip from zone 1 to and into zone 3, 2 cents will be added to the original 6-cent fare in each zone to bring the total up to 10 cents.

Commissioner Nixon's act in raising the fare is the first occasion on which the Public Service Commission of the First District has increased a rate of fare. It is contended that the commission has the power to raise as well as to lower fares under the recent Court of Appeals decision in the Buffalo case. The courts will probably be called upon to settle the North Shore rate question as a test case.

City Fights Increases

Acting under directions from the Mayor, Corporation Counsel William P. Burr, on Sept. 2, served notice on George A. Stanley, president of the railway, forbidding him to put the higher fares into effect. At the same time the Corporation Counsel's office requested a rehearing of the case. Commissioner Nixon has said that the authorization was an emergency measure, and that if the city requested a rehearing the case would be reopened.

The commissioner set the rehearing for Friday evening, Sept. 5, in the Flushing Town Hall. He announced that he would be glad to answer the questions of Mayor Hylan and other city officials who cared to attend.

Mayor Hylan had already sent a letter to Public Service Commissioner Nixon declaring that his action in allowing the establishment of the zone system and the increase in fares was illegal, and contrary to the decision of the Court of Appeals. The Mayor demanded that the commissioner rescind his action. During the hearing on the company's petition, at which were representatives of the city of New York and of the communities interested in the case, no one entered an objection to the fare increase.

The Mayor on Sept. 3 instructed the Corporation Counsel to take steps to secure from the courts a writ of prohibition restraining the company from collecting the righer rates.

The Mayor has since issued an appeal to the people of New York calling for the formation of a Citizens' Vigilance Committee of 1000 to oppose any attempt to increase fares on the part of the New York rapid transit lines. The Mayor's plea calls for a canvass of all candidates for the State Legislature to ascertain their views on the fare question. At the organization meeting of the vigilance committee the Mayor was chosen honorary chairman.

Service at Cost May Be Tried in Denver

Pursuant to the agreement of the city of Denver, Col., allowing a 6-cent fare to be charged by the Denver Tramway until an election is held to decide upon a permanent plan, two plans are to be submitted at the election to be held early in November.

1. The "elastic" 6-cent fare sponsored by the company would continue the present 6-cent fare until the average wage in five other cities, viz.: St. Louis, Kansas City, St. Paul, Omaha, and Milwaukee, had fallen below the present wage of 48 cents an hour for trainmen.

2. The service-at-cost plan, urged by the citizens' committee of fifty-five, would cause the fare to fluctuate based on earnings of the tramway.

Under the elastic fare plan the control of wages would be in the hands of a regulatory board of three members, one appointed by the Mayor, one by the City Council, and one by the tramway company.

The employees are still urging their demands for a wage scale of 70 cents an hour.

The company has filed petitions, bearing the signatures of thousands of Denver citizens, asking for the submission of the two plans at the November elections.

Zone Plan Recommended

Engineer of California Commission Reports Favorably on System Proposed for San Diego Lines

Establishment of a two-zone system with a 5-cent fare for a ride between any two points in the same zone and a 10-cent fare for one between points in the different zones, is recommended for San Diego, Cal., in the report recently submitted to the State Railroad Commission by Richard Sachse, the commission's chief engineer after a thorough investigation.

Mr. Sachse's report was prepared following hearings before the commission on April 29 and June 17 into the application of San Diego Electric Railway for an increase in fare. Hearings are to be resumed early in September. The report advocates the fare system, suggested by the company, referred to in the issue of the ELECTRIC RAILWAY JOURNAL for May 17, 1919, page 983.

Sees Need of Increase

Mr. Sachse states in his report that some plan of increased fares is necessary if the company is to continue operation. The proposed zone plan contemplates a central zone about 1 mile in radius embracing the business and a great part of the industrial sections of the city.

The 5-cent fare for a ride in any one zone would carry with it free transfer privileges to any point in the same zone, thus permitting a ride of about 3½ miles on a nickel fare. The 10-cent fare for a ride in the two zones would also carry the transfer privilege.

The proposed plan makes provision for regular patrons of the company. Those riding twice a day would be entitled to the following commutation rates:

Round-trip tickets in blocks of four tickets: Good betwen any point, in inner and outer zones, with transfer privilege to inner and outer zones. Good for bearer; sold at 30 cents per block of four tickets, equivalent to 7½ cents per ride.

Ticket book at rate of $4, equivalent to 6⅔ cents per ride. Good for bearer of individual ticket and good for two rides or one round trip each day of the calender month; good for the date printed on the ticket; limited to current month. Transfer privileges in inner and outer zones.

Reasons for Zone Plan

Mr. Sachse gives a number of reasons for urging the establishment of a zone system, among them the following:

In a city of such large area as San Diego (79 square miles) it is a practical impossibility to adhere to the "one city, one fare" plan.

The zone limits proposed for San Diego will give the benefit of the 5-cent fare to the bulk of the population, including the working population.

A zone system will tend to build up the territory within the 5-cent zone, a result that is of benefit to the city as a whole and is more to be desired than the continuing of indiscriminate real estate development within a very large one-fare radius.

The adoption of a zone system is much more likely to secure to the company the necessary additional revenue than a flat increase. This is true because a large amount of short-haul business would be lost to the company under a flat increase, while under the zone system this most profitable part of the business will remain and will continue to increase

St. Louis Presents Its Case

Company Wants Further Fare Advance Until Question of Valuation Has Been Finally Settled

The Public Service Commission of Missouri has completed hearings on the petition of the United Railways, St. Louis, to increase the fares from 6 cents to 7½ cents, when paid in tokens and 10 cents when paid in cash, to abolish the double transfer system and to establish zones on its St. Louis County lines. The United Railways side was presented by Col. Albert T. Perkins, general manager of the company for the receiver, under cross-examination by members of the commission, attorneys for the city and for the Citizens' Referendum League.

Rolla Wells, receiver of the company, had asked the increase immediately after the commission granted a 45 per cent wage increase to all employees. This wage advance, the receiver estimated, would cost $2,740,000 annually. Since the company was losing money on the present 6-cent rate sufficient increase was asked to take care of the additional wage burden.

Mr. Wells claimed that the establishment of the metal token system would simplify the duties of conductors and make returns to the receiver more sure. Under the metal token system the fares for children would be 3 cents by token and 5 cents cash. The double transfer system was attacked on the grounds that it is much abused and is a source of loss. Under these revisions it was estimated that the increase in revenue would approximate $2,075,000 in six months.

Asked how the receipts under the proposed increase would be used, outside of taking care of the increased wages of the employees, Colonel Perkins said that if sufficient funds could be obtained the company would make extensive improvements, give the people better cars, more rapid transportation and all necessary extensions. He said that extensive replacements must be made if the public is to have efficient service.

The question was then asked whether it was true that the deficit of $380,000 for the year ended May 31, 1919, was artificially created, by putting 10 per cent of the gross revenue aside on the books as a reserve and then not holding it in a separate fund, but spending it for other purposes. Colonel Perkins said that if the company set aside 10 per cent of the gross revenue for depreciation that did not necessarily mean there was that amount on hand to expend for the purpose of keeping up the property. The company might have been forced to take some money that was intended for the purpose of replacement and improvement and use it in some other manner. He said that the company had no voice in the matter, for the Public Service Commission of Missouri and the Interstate Commerce Commission arranged a certain form which the company must follow in making its reports. The Interstate Commerce Commission arranged the form and when the Public Service Commission came into being it adopted the same form.

COLONEL PERKINS ON MR. MITTEN

A matter brought up was the statement by Mr. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, to the effect that he wanted more riders at 5 cents, not fewer riders at higher fares. When asked about this, Colonel Perkins said that he was not in possession of the facts and did not care to express an opinion on them. Conditions might be different in Philadelphia, he said.

In his testimony Colonel Perkins touched on the condition of the county lines, saying that they would have had to go out of business long ago if they had been depending on their own revenues. It is proposed to establish fare zones on these lines, under the operation of which it will cost 45 cents to make a round-trip between St. Louis and the more distant suburbs. It now costs 22 cents.

ONE-MAN CARS SUGGESTED BY CITY ENGINEER

Maj. C. E. Smith, consulting engineer for the city, presented the case for the city against the railway. Major Smith declared that he would stake his reputation as an engineer that he could operate the United Railways successfully on the present 6-cent fare. He outlined his plan for operating the railway as follows:

1. Issue receiver's certificates and purchase $1,000,000 worth of one-man street cars of about thirty passenger capacity to take the place of the large, heavy cars now in operation on some of the lines. There should be at least 200 one-man cars operated, thus saving in wages, depreciation and power costs.
2. Make the county lines pay their own way and, if they failed, issue receiver's certificates to make up the difference.
3. Inaugurate the skip-stop system which should have been retained in operation as during the war-time period.
4. Reroute some of the cars, inaugurating changes in that regard to expedite their movement by cutting down their winding about town.
5. Consolidate trackage where possible.
6. Change the form of keeping the accounts, which now show a deficit where none really exists.

After Major Smith had been subjected to a rigorous cross-examination by attorneys for the company and the attorney for the Citizens' Referendum League had made an argument in which he said the people would bitterly resent the increased fare, the commission adjourned and the members departed for Jefferson City. City Counselor Dawes was given two days in which to prepare a brief for the city. There will be no oral arguments at the final hearing in Jefferson City. The railway officials are anxious for an early decision because the wage increase, estimated at $235,000 a month, went into effect on Sept. 1, and back wages, amounting to $684,000 must be paid by March 1, 1920.

Unlimited Rides for Racinians

An Experiment in Fares that Is Something New and Promising—Plan May Be Extended

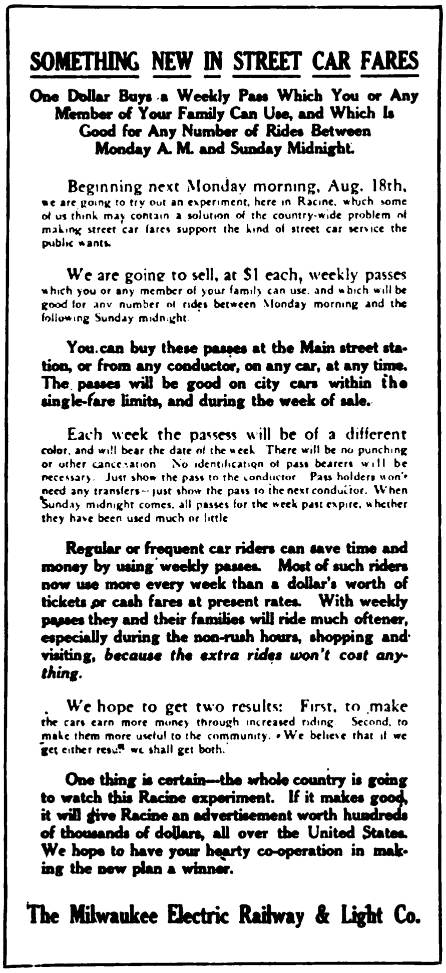
On Monday morning, Aug. 18, the Racine division of the Milwaukee Electric Railway & Light Company started an experiment in selling transportation, particularly in the off-peak hours, through the use of a weekly pass. The cost of the pass is $1, which is only 28 cents more than a passenger would have to pay for twelve trips a week at 6 cents a trip. Therefore the person who pays this difference secures all riding in excess of twelve rides a week at a cost which decreases directly as the number of rides increase. By means of this pass it is hoped that people who are now using the cars only for compulsory long riding during the rush hours will be tempted to ride the shorter distances in off-peak hours when riding from home to the shopping districts, to theaters, to make personal visits, etc. A pass-holder also is not inconvenienced by the need for securing change, which is enhanced on a railway that is being operated at an odd fare, nor does the pass-holder have to ask for a transfer.

The passes are of cardboard and of a different color for each weekly period from Monday morning till the following Sunday midnight. The passes are on sale at the central office of the company, on all the cars and through various stores. All sellers of passes, whether conductors or merchants, are charged 98 cents for each weekly ticket. This gives a profit-sharing feature for the conductor. So far as the merchants are concerned, they are at liberty to sell the passes at as low a price as they see fit, to encourage personal patronage and traffic.

A holder in boarding simply shows his pass and goes on into the body of the car. No attempt is made to count the number of rides taken on passes, although this could be done for the traffic checks, auditing, etc. The conductor merely observes the color of the ticket and the date of the week. Everything possible has been done to make the use of the pass frictionless for both the holder and platform man.

In introducing the pass the company published on Aug. 16 the accompanying newspaper advertisement. In addition it secured editorial notice in the local press. Car cards were also used to draw attention to the sale of the passes.

The first week the total number of passes sold was 798, of which 757 were sold the first day. The number sold for the week beginning Aug. 25 was 962 of which 937 were sold on Monday. The week beginning Labor Day, Monday, Sept. 1, was of course abnormal, but nevertheless 644 passes were sold on the holiday and 188 the following day making a total of 832. It has been observed that the largest purchasers are those who get on the car about 8 a.m., as this class is much more likely to avail itself of lunch-hour riding than men who go to work earlier at the factories and who may have only thirty minutes for the luncheon period. Steps are being taken to show this class of riders how they or their families can benefit from the use of the ticket.



SOMETHING NEW IN STREET CAR FARES

One Dollar Buys a Weekly Pass Which You or Any Member of Your Family Can Use, and Which Is Good for Any Number of Rides Between Monday A. M. and Sunday Midnight.

Beginning next Monday morning, Aug. 18th, we are going to try out an experiment, here in Racine, which some of us think may contain a solution of the country-wide problem of making street car fares support the kind of street car service the public wants.

We are going to sell, at $1 each, weekly passes which you or any member of your family can use, and which will be good for any number of rides between Monday morning and the following Sunday midnight.

You can buy these passes at the Main street station, or from any conductor, on any car, at any time. The passes will be good on city cars within the single-fare limits, and during the week of sale.

Each week the passess will be of a different color, and will bear the date of the week. There will be no punching or other cancellation. No identification of pass bearers will be necessary. Just show the pass to the conductor. Pass holders won't need any transfers—just show the pass to the next conductor. When Sunday midnight comes, all passes for the week past expire, whether they have been used much or little.

Regular or frequent car riders can save time and money by using weekly passes. Most of such riders now use more every week than a dollar's worth of tickets or cash fares at present rates. With weekly passes they and their families will ride much oftener, especially during the non-rush hours, shopping and visiting, *because the extra rides won't cost anything.*

We hope to get two results: First, to make the cars earn more money through increased riding. Second, to make them more useful to the community. We believe that if we get either result we shall get both.

One thing is certain—the whole country is going to watch this Racine experiment. If it makes good, it will give Racine an advertisement worth hundreds of thousands of dollars, all over the United States. We hope to have your hearty co-operation in making the new plan a winner.

The Milwaukee Electric Railway & Light Co.

ONE OF THE RACINE ADVERTISEMENTS

In making its announcement the company said that it was going to try out an experiment which might contain the solution of the country-wide problem of making fares support the kind of service the public wants. If it made good it would give Racine an advertisement all over the United States worth hundreds of thousands of dollars.

Study Cincinnati Plan

Street Railway Director W. C. Culkins has been requested by the city authorities of Vancouver, B. C., to send them a copy of the Cincinnati Street Railway ordinance.

Employees' Service Code

One Prepared by W. H. Boyce Gives Valuable Pointers for Trainmen

Codes are popular these days. Every organization has one, from the political party to the local chapter of the Red Cross. Especially are they favored by followers of the road. The carmen of the Beaver Valley Traction Company, New Brighton, Pa., have a code of their very own. Theirs was written by W. H. Boyce, superintendent of the company, and if they live up to it, travel on the Beaver Valley lines must be pleasant indeed. Anyway, they read it, and probably stayed home from the movies to do so. Codes are very important, but, like most important things, are usually dull. Mr. Boyce's code is the exception. Here are some extracts to prove it:

> The greatest *service* existing in your work is the *service* the passenger gives you. Funny, isn't it? True though. I said he paid your wages. That's mighty important to you—mine are to me anyway. So, every *service* you can give the passenger will not be any more than he is entitled to—remember that.
>
> But few of the passengers consider you except in the way you serve them in their transportation needs. Do your duty by every one and when the day comes to a close you can in content spend the evening with the folks at home. Violate the rules and circulate your grouch and things won't be pleasant here nor at home.
>
> Let me tell you that the passengers are more valuable to us than you are. We cannot get along without the passengers. So, put in the background or shelve any idea you may have or had, that you are the king pin. You are not—neither am I—the passenger is the important party. Don't forget it.
>
> You represent this company on the cars. From the stockholders down to the smallest official this company is clean, frank and has nothing to conceal. Representing the company you will understand that cleanliness in person, appearance, language, and mind is essential. While the company may be in financial straits yet you receive your wages regularly. Nothing should prevent you from having well appearing uniforms. Pressing and cleaning will help in appearance. Soap and water is the best eliminator for dirt and germs on hands and face.
>
> Never say don't to a passenger of yours. Children are made incorrigible through constant "don'ts" of loving but unthoughtful parents. Don't is argumentative and tends to arouse a desire to do just what is forbid. Never say to a lady, "Don't get off the car backwards." For right away she will think "I'll get off the car that way if I want to and it is none of your business."
>
> You will get better results if you say, *"Pleace get off the car facing the front."* Too, "move forward" does not mean anything to the people standing in the aisle right at the entrance door. They are on the car and don't realize there is any one else to get on. It is better to say, *"Please step forward in the car so that others may get aboard."*

Service Resumed at Muskegon

Service was resumed on Aug. 20 on the lines of the Muskegon Traction & Lighting Company, Muskegon, Mich., after an interruption lasting two weeks. The company had ceased operation temporarily as the result of riots which followed an attempt to install a 7-cent fare.

Under the temporary agreement reached by the traction officials and the city, the fare case will be submitted to the State Railroad Commission, the fare remaining at 6 cents for one month from the date of the resumption of service. If at the end of thirty days the commission has rendered no decision the railway may charge a 7-cent fare, issuing refund slips to all those passengers paying the extra cent. The Muskegon City Council is at present considering the question of a new franchise for the company. The conditions leading to the interruption of service were described in the issue of this paper for Aug. 16, page 362.

Another New York Line Wants Increased Fares

Following the example of the New York & North Shore Traction Company, which has been granted an increased fare and a zoning system by Public Service Commissioner Nixon, as noted elsewhere in this issue of the ELECTRIC RAILWAY JOURNAL, the Manhattan & Queens Traction Corporation, operating in Queens Borough, New York City, on Sept. 2 also petitioned for increased rates. Immediate cutting off of the service was threatened if higher fares were denied.

The receivers now charge a 5-cent fare from Long Island City to Jamaica, with an additional 3 cents for local service across the Queensborough Bridge. The company proposes to zone its 10-mile line. From the Manhattan terminal of the bridge to Grand Street in Elmhurst, the fare would be 5 cents, while from Elmhurst to the terminus at Sutton Park, 8 cents would be charged.

The petition sets forth that on Aug. 1 its operating loss for the year was $2,784, and its total deficit $284,104. The receivers assert the 5-cent fare is "unjust, unreasonable and confiscatory." The employees of the road are said to be continuing to work only in expectation of an increased fare giving the company enough funds to meet their increased wage demands.

Commissioner Nixon has referred the petition to Mayor Hylan of New York City for action, declaring that it would be an object lesson in the efficient handling of a difficult situation to let the Mayor handle the problem. In announcing this move, the Commissioner said in part:

> The Manhattan & Queens Traction Corporation matter was referred to the Board of Estimate and Apportionment yesterday through the Mayor. This system serves a section housing laboring men, and an interruption of service will work great hardship to them, as there is no elevated or other line they can use.
>
> In the North Shore Line case a great community faced inconvenience and loss and immediate action was necessary that service might be maintained. Efforts are making to break down this aid, in direct opposition to the demands of the people served.
>
> Since the city government has seen fit to oppose the aid given the North Shore, it will be an object lesson in efficient handling of a difficult situation to let the Mayor take up the Manhattan and Queens problem. I had intended to refer this to the city, and the minute the papers arrived did so.
>
> No one is more weary of the daily screeds than myself, unless it is the public.

Just what action the Mayor will take is uncertain. He had said recently:

> Increase of fare really seems to have become an obsession with the Public Service Commissioner, and he is apparently prepared to grant an application of this character on the slightest provocation.

Transportation News Notes

Fares Raised in Chickasha, Okla.—The Chickasha (Okla.) Street Railway has been authorized by the Corporation Commission of Oklahoma to increase its fares from 5 cents to 7 cents, with one-half fares for school children. The increased fares apply only within the city limits.

Eight Cents in Girard.—By the terms of an ordinance at Girard, Ohio, accepted by the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, fares between Youngstown and Girard were increased on Aug. 28 from 5 cents to 8 cents with fourteen tickets for $1. Fares to Girard will be 1 cent higher than charged on the Youngstown City Line, and will vary according to the cost of service.

Seven Cents in Hammond.—Service was resumed by the Hammond, Whiting & East Chicago Street Railway on Aug. 29, when the Council of Hammond authorized the company to increase its fares to 7 cents. As a result the company raised the wages of the men to the same scale in effect on the Chicago (Ill.) Surface Lines. This was satisfactory to the trainmen, who had been on strike, and they returned to work.

Way Opened for Seven-Cent Fares.—Ray Rushton, receiver for the Montgomery Light & Traction Company, Montgomery, Ala., has been authorized by the court to apply to the Public Service Commission of Alabama for a 7-cent fare. The court order permits the receiver to install a nine-hour day and to increase wages up to 12 cents an hour if an increased fare is allowed by the commission. The present 6-cent fare was established last September.

Must Restore Low Interurban Fare.—The Michigan Railroad, Kalamazoo, Mich., has been ordered by the Circuit Court to restore 10-cent cash fares between the center of Grand Rapids and Grandville, Wyoming Park and intermediate points. Proceedings against the company for contempt of court were dropped following the announcement that the Michigan Railway, against which the action had been brought, had become the Michigan Railroad.

Aid of Employees Asked.—The Connecticut Company, New Haven, Conn., has addressed an open letter to its employees calling their attention to the fact that their interest is inseparable from that of the company, since they receive 2.9 cents out of every 6-cent fare collected from passengers. The letter, which is in leaflet form, contains charts showing how the company's revenue is spent. Carmen are asked to devote themselves to "selling transportation."

Higher Fares for Ohio Interurban.—The City Council of East Liverpool, Ohio, has passed an ordinance permitting the Steubenville, East Liverpool & Beaver Valley Traction Company to raise fares on its main line under a schedule providing for a 5-cent fare between most of the communities affected. Because of the interlocking interests of East Liverpool and Wellsville, the traction ordinance does not become effective until a similar ordinance is enacted by the City Council of Wellsville.

Will Abolish Half-Fare Tickets.—An opinion has been filed by Judge Youman of the District Court of Appeals at St. Louis, Mo., permitting the Dubuque (Ia.) Electric Company to discontinue the sale of workingmen's half fare tickets. Pending the issuance of the decree the company will continue the sale of such tickets. The electric company operates under a franchise which makes it mandatory for it to allow workingmen, working girls and children who work to ride on the cars during certain hours for a fare of 2½ cents.

Pittsburgh Fare Hearing Sept. 24.—The whole problem of the Pittsburgh (Pa.) Railways will be laid before the Public Service Commission of Pennsylvania at a hearing this month, probably on Sept. 24. The report of the board of valuation engineers is now before the commission. It is expected that the commissioners will have studied its contents before the hearing, so that they will be able to consider the numerous complaints before them, including the protest against the recent increase of fare to 7½ cents, in the light of the valuation report.

Cutting Out the Duplications.—Complete rerouting of the various railway lines of the city of Dallas, Tex., just announced by L. B. Milam, supervisor of public utilities, will result in better service in all parts of the city, it is claimed. The new routings are to go into effect on Sept. 8, and are the result of extensive investigations. The new routings will remove 1594 cars daily from Commerce Street, which was the most congested street of the city. The biggest mileage saving to be effected by the new routings is on the Main-Elm-Lamar loop.

Seven Cents in Montreal.—The Montreal Tramways Commission on Aug. 29 authorized the Montreal (Que.) Tramways to raise its fare from 6 cents to 7 cents. Tickets are to be sold at four for 25 cents instead of five for 25 cents. Five workmen's tickets will be sold for 25 cents. The company's franchise provides for a service-at-cost system under which fares are regulated at the discretion of the commission. The 6-cent fare was authorized in July, 1918. The operation of the franchise agreement was described at length in the ELECTRIC RAILWAY JOURNAL for July 13, 1918, page 78. The new schedule will go into effect eight days after public notice of the advance.

Increased Fares on Michigan Interurban.—The Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich., has received permission from the Railroad Commission of Michigan to increase fares on its interurban lines. The advance in rates is made under the terms of the State law which went into effect on Aug. 14 allowing interurban roads earning less than $8,000 a mile to raise fares to 2½ cents a mile. Under the new schedule the rate from Benton Harbor is raised from 30 cents to 38 cents, while the fare between other points has been advanced proportionately.

Rather Serious Misconduct.—Rolla Wells, receiver of the United Railways, St. Louis, Mo., has refused to be influenced by the recommendation of an arbitration board that heard the case of a conductor discharged for alleged theft of fares and suggested he be merely suspended. Mr. Wells decided not to re-employ the man after the board in its findings admitted that the conductor had been guilty of "misconduct," but advised only temporary separation from his job. This was the first of twenty-six cases that are to be heard by the board.

Seven Cents Asked in Springfield, Ill.—A cash fare of 7 cents with eight tickets for 50 cents is asked by the Springfield (Ill.) Consolidated Railway in a petition filed recently with the Public Utilities Commission of Illinois. The commission last September authorized a 6-cent cash fare and a ticket rate of nine tickets for 50 cents, effective for one year. In support of its plea for a further increase the company cites the fact that in the last year it has had to meet three wage increases, its payroll rising from $149,000 to $223,000 a year. Taxes have nearly doubled during the same period. The Council of Springfield has passed a resolution instructing the city attorney to take steps to oppose the fare increase.

East St. Louis Will Seek More.—It is expected that officials of the East St. Louis & Suburban Railway, East St. Louis, Ill., will prepare a petition for increases in passenger fares. It is not known definitely whether a 7-cent or an 8-cent fare will be asked for the east side lines. The East St. Louis, Columbia & Waterloo Railway will not be in a position to seek increases in rates because the maximum allowed by the Illinois law, 3 cents per mile, is now in effect on that road. Last year the East St. Louis Railway carried more than 14,000,000 passengers. It is estimated an increase of 1 cent in the city fare will add $140,000 annually to the total revenue. The railway companies must meet salary increases which will total $180,000.

Providence Hearings On.—Hearings are in progress before the Public Utilities Commission of Rhode Island into the application of the Rhode Island Company, Providence, for an increase in fares. The company, which presented three tentative plans of relief at the opening of the hearings, now urges the adoption of Plan B, under which the present zones would be retained and the fare in each zone would be raised to 6 cents. According to the company's officials this plan offers the only hope of preserving operation of the lines until permanent relief can be given by the General Assembly. The proposed system is acceptable to the city of Providence, but is opposed by the suburban towns.

New Publication

Man-to-Man: The Story of Industrial Democracy

By John Leitch. B. C. Forbes Publishing Company, New York, N. Y., 249 pages. Price $2.

This is the brief record of Industrial Democracy wherein the author, as the inspiring force behind the scenes, narrates the solution of the labor problem brought about by himself in twenty large corporations.

Mr. Leitch's method takes for granted that there are two sides to every labor story and the first indispensable requisite to any satisfactory results from it is sheer honesty of purpose both from employer and employee.

From this humble premise, the beginnings of democracy are created by the adoption of a jointly moved business policy for the organization which has nothing less than the religious yet petrified Golden Rule employed practically under the terms: Justice, Cooperation, Economy, Energy and Service. This is the preamble of the business constitution.

The whole idea is based upon our own federal government. The workers are constituted into a voting population who choose from among their peers a House of Representatives; the heads of each department make up the Senate by virtue of their position; and the Cabinet consists of the executive officers of the company, with the president of the company acting as its chairman.

Through this plan of organization, the workers in the corporations in every instance have improved the quality of the product, increased the output from 30 per cent to 300 per cent, and secured bigger pay for labor and bigger profits for capital. Moreover, labor antagonism and dissatisfaction have been eliminated and the whole relation between employer and employee has been put on a new basis. Corollary to these results have come the complete settlement of the hiring and firing problem, the elimination of the strike and lockout; while the *raisons d'etre* of unions have been effaced.

In a larger sense, this form of democracy does not stop as an industrial union, but, as an Americanizing force, automatically takes care of the emigrant question and instills into the minds of the bosses, as well as the workers, a practical knowledge and true regard for genuine American customs and principles.

Personal Mention

Mr. Eagan Made Superintendent

Takes Over Operation of Brooklyn Rapid Transit Line Formerly Under Mr. Dempsey

J. F. Eagan has been appointed superintendent of transportation of the New York Consolidated Railroad, which operates the rapid transit lines of the Brooklyn Rapid Transit System. Mr. Eagan will have charge of transportation, devoting his time to that work exclusively, and taking over part of the duties of J. J. Dempsey, who resigned recently as vice-president in general charge of operation of all the lines in the Brooklyn Rapid Transit system.

J. F. EAGAN

Mr. Eagan joined the Brooklyn Rapid Transit organization as a guard on Jan. 18, 1904, and during his fifteen years of service with the company has risen through every grade in the transportation department of the elevated and subway lines to the head of the department. He was made an inspector in June, 1904; an assistant trainmaster in May, 1907; a trainmaster on Sept. 1, 1913; division superintendent on Sept. 1, 1916, and superintendent of transportation on Sept. 1, 1919.

Mr. Eagan was division superintendent on the southern division of the system before taking charge of the eastern division, and so has a thorough knowledge of all branches of the rapid transit lines of which he is to be chief transportation official.

Before joining the Brooklyn Rapid Transit Company Mr. Eagan secured his groundwork in railroading with the New York, New Haven & Hartford Railroad, working for a time in the New Haven shops. He was born in Hartford, Conn., thirty-eight years ago.

Bayard L. Kilgour has resigned as president of the Toledo, Bowling Green & Southern Traction Company, Toledo, Ohio, on account of pressure of other business.

W. L. Whitlock, formerly office engineer of the Denver (Col.) Tramway, has been appointed superintendent of way of that property. Mr. Whitlock has been in the employ of the Denver Company for the last eleven years, having served in various capacities from rodman in the engineering department to his present position. At various times he has acted as chief clerk of the engineering department, division track foreman, second assistant in charge of track, and office engineer. On July 1 Mr. Whitlock was appointed acting superintendent of way to fill the vacancy made by the resignation of A. M. Evans. His appointment has now been made permanent. Mr. Whitlock has contributed to this paper many interesting and instructive articles on the maintenance-of-way work of the Denver Tramway.

W. H. Timbie, who during the past year has been editor-in-chief for the committee on education and special training in the United States War Department at Washington, has been appointed associate professor of electrical engineering in the Massachusetts Institute of Technology. He will have supervision of the co-operative course in electrical engineering which is carried on by the institute in association with the General Electric Company. Professor Timbie was graduated from Williams College in 1901, shaping his studies with a view to adopting teaching as a profession. Shortly after graduation he took up his work in the applied science department of the Pratt Institute of Brooklyn, and upon the establishment of the Wentworth Institute in Boston he became head of the department of applied science in that institution. He has been very successful in the preparation of books on practical electrical engineering and is active in the A. I. E. E., A. S. M. E., S. P. E. E., and other national engineering and educational societies.

Obituary

William Anderson, an electrical engineer, formerly with the Brooklyn (N. Y.) Rapid Transit Company and the Public Service Commission, died on Aug. 28, at his home in Brooklyn, N. Y. He was graduated from Cornell University in 1911.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Car Equipment and Tool Specialties Market

Many Inquiries and Some Orders Received After Long Inactivity—Prices Up With Good Deliveries

Orders for car accessories, such as forgings, armature and field coils, brush-holders and electrical repair tools, show considerable improvement over previous months. No large individual orders have been placed, although the aggregate of all the orders is fair. With few exceptions the material now being ordered is practically all for maintenance work. In some few cases certain articles have not increased in price for a considerable number of months, but this is largely due to a surplus of raw materials, which were obtained before prices were forced up. Although prices of raw materials are considered high, little difficulty has been experienced from shortages in these lines.

A great number of orders are of the rush variety in which the railway operator has waited until the last moment to order and then requires a certain casting or forging by express. With the exception of malleables, prompt deliveries can be had on almost all car accessories and tools. A good volume of orders for car accessories has been placed recently, but these resulted from a number of large orders for cars which have been placed in the East within the last eight weeks.

Overhead Fare Recorder Sales Increase

Business Picking Up Gradually With Prospects of Good Fall and Winter Season

A decided improvement has been noted recently in the condition of the market for fare recording devices. This is especially true for such equipment as has been particularly adapted for use in interurban service. Business continues to be good and contracts for registers for the first six months of 1919 show an increase over the corresponding period of 1918. Furthermore, current sales of these devices, it is learned, are showing a regular increase which manufacturers expect will continue throughout the fall and winter. Prices of one of the best-known lines are firm and no advance has been made.

One manufacturer reports orders during the past few weeks for 193 registers of the interurban type from three railway companies in the Pittsburgh and Louisville districts. In addition a number of smaller orders to companies scattered throughout the Middle West have been reported.

The raw material market is fair and so far as could be learned products are coming through satisfactorily. Deliveries are good and orders on at least one line can be filled from stock.

Wool and Cotton Waste Prices Advance

Heavy Domestic and Foreign Demand Expected to Deplete Stocks by Winter with Probable Price Rise

The market in cotton and wool waste has advanced 2 cents a pound. Heavy buying, both foreign and domestic, has been given as the factor causing the advance. Ordinary white cotton waste for wiping purposes is quoted at 12½ to 14½ cents a pound, cotton waste for journal packing 10 to 14½ cents a pound and mixed colored wool waste for journal packing at 16 to 19 cents.

Supplies at present are ample to meet the demand, but a still higher demand is anticipated in the fall when it is likely that more shipping space will be available for export trade. This increase is expected to diminish greatly the supply with a consequent rise in price about December. England and Scandinavian countries are still buying large quantities of waste for working over into cloth, and it would not be surprising to find Germany the ultimate consumer of that waste going to Scandinavia.

The domestic demand is good and increasing, and more wool is being used for packing. This will continue to be the case as the prices of wool and cotton waste come closer together.

Encouraging Outlook in the Brass Market

Electrical Manufacturers' Demands Are Well Handled — Effect of Recent Labor Disturbances Exaggerated

Electrical manufacturers have little cause for anxiety at present in regard to the supply of brass, notwithstanding recent increases in time of delivery due to labor disturbances in the Naugatuck Valley of Connecticut and elsewhere. An ELECTRIC RAILWAY JOURNAL representative visited this section last week, getting in touch with leading manufacturers of brass. In general it appears that the production rate of the brass mills is now substantially the same as in June. The labor troubles in the brass industries, which began at Ansonia and extended into Waterbury and the adjacent district early in the summer, culminated in a maximum of about 10,000 persons being out of work, whereas about 40,000 others employed in brass making and allied manufactures in the Naugatuck Valley remained loyal. At Waterbury, which produces not far from one-half the brass goods of America, strikes were on for about two weeks, but most of this time the large mills were kept going and the newspapers greatly exaggerated local disturbances of the peace.

LABOR COSTS HIGHER

The prices of copper and of labor have both advanced during the summer, and the former would have necessitated an increase in the price of brass even had labor costs remained stationary. In the Waterbury district unskilled labor in the brass industry received a general increase of 10 cents per hour, following an investigation of living costs, applying to workers earning up to 40 cents per hour. Skilled workers, receiving from 40 cents per hour upward, were granted an increase of 25 per cent, based on the wages of June 1. In general the eight-hour basic day has been established in Waterbury, with an excess allowance of time and one-half. The mills are running ten hours a day in the main, which means that a worker receiving 60 cents per hour before June 30, and earning $6 per day, now draws $8.24 for ten hours. About half the labor is skilled in this industry.

COPPER HOLDING STEADY

The price of copper has risen during the summer from 15 to 24 cents in the ingot. At the time of the strikes in the Naugatuck Valley copper was selling for 18 cents. Plating supplies advanced in price, as did zinc and spelter (the latter up 2 cents). It may be estimated that from 75 to 85 per cent of the selling price of brass is due to the cost of copper, and there is no question that the future prices of brass and the deliveries which can be made in sheets, rods, tubes and in finished products depend far more upon the cost of copper than upon any other single item. For nearly a month now copper prices have been fairly steady. If a further advance should get under way, orders would pour into the brass mills at a rate which would probably upset present deliveries very badly; but if the price remains steady and labor continues to work as at present, it is likely that by the end of this year deliveries will be back to normal.

The following table shows how the base prices of brass and copper as used by electrical manufacturers increased from June 15 to Sept. 4:

BASE PRICES IN CENTS PER POUND

	June 15 1919	Sept. 4 1919
Sheet Metal:		
High brass	20¾	27¾
Low brass	34	30½
Wire:		
High brass	20¾	27¾
Low brass	23	30½
Commercial bronze	14½	32½
Rods:		
High brass	19¾	26¾
Low brass	23¾	31¼
Commercial bronze	25½	33½
Brazed tubes:		
Brass	31¾	39
Copper and commercial bronze	36¼	44¼
Copper:		
Sheet	25½	33½
In rolls	23¼	31¼
Drawn-copper shapes	22¼	30¼
Copper wire, bare (f.o.b. mill)	20	26¾

These prices include delivery from the mills up to 50 cents per 100 lb. freight rate.

The foregoing base prices illustrate quotations before and after the strikes in the Naugatuck Valley, but the advances are due to the rise in copper cost and only to a small extent to the wage increases. Brass workers at Bridgeport, Conn., received a 10 per cent wage increase in the late spring, but the advance in the copper price was so great that it is doubtful if labor cost has increased the price of brass by more than 1 cent or 1.5 cents per pound in the Naugatuck Valley.

The rising price of copper stimulated the demand of electrical manufacturers upon the brass mills, and in some cases lengthened deliveries by about thirty days. Factory stocks are low, both in finished brass products and in sheets, tubes and rods. The mills are having little difficulty, however, in getting either raw copper or labor, despite a slight shortage of unskilled help reported by one of the larger Waterbury mills. Orders are now being generally accepted with price guarantee to Nov. 1 and sometimes into December.

Most of the mills have at least three months supply of raw materials on hand. Representative deliveries recently quoted are thirty days on seamless tubing, sixty days on sheet metal, four to six weeks on brass wire, and sixty to ninety days on copper wire. The demand for condenser tubing is low at present. The mills did not run full time for several months after the armistice, and were keeping orders well in hand at the time of the strikes. One of the largest mills in the Waterbury district reported last week that the effect of recent labor trouble *per se* on production and deliveries is a thing of the past.

Rolling Stock

Olympia Light & Power Company, Olympia, Wash., is converting all of its cars to safety cars.

Duluth (Minn.) Street Railway expects to put into service within a short time the six Birney safety cars ordered from the American Car Company.

Indianapolis (Ind.) Street Railway has placed an order with the Cincinnati Car Company for twenty-five double-truck prepayment cars similar to the ones now in use.

Lincoln (Neb.) Traction Company, will soon place in service ten single-end Birney safety cars recently purchased from the American Car Company. They will be equipped with Brill American Car Company's 78-in. truck with 26-in. wheels, 258-A motors, G. E. compressor, Peter Smith 3 P. O. heaters, Hunter signs and American Car seats.

Fort Smith Light & Traction Company, Fort Smith, Ark., noted in last week's issue as having purchased some equipment, has placed an order with the National Safety Car & Equipment Company, St. Louis, Mo., for eight safety cars and has also purchased from the Safety Car Devices Company sufficient equipment to change over all cars in service to safety type.

Franchises

Goldfield, Nev.—The Tonopah Divide & Goldfield Electric Railroad has asked the Board of County Commissioners of Esmeraldo County for a franchise to construct a line in Goldfield.

Silverton, Ore.—The Portland & Southeastern Electric Railway has received a fifty-year franchise from the City Council of Silverton for the construction of a line in that city in connection with its proposed line from Mount Angel to Bend. I. W. Foster, Portland, construction engineer. (Aug. 16, '19.)

Jacksonville, Fla.—The Jacksonville & St. Augustine Public Service Corporation has obtained an extension of

NEW YORK METAL MARKET PRICES

	Aug. 12	Sept. 2
Copper, ingots, cents per lb	21.50	22.37½
Copper wire base, cents per lb	26.00	26.00
Lead, cents per lb	6.00	6.00
Nickel, cents per lb	40.00	41 00
Spelter, cents per lb	7.65	7.85
Tin, cents per lb	70.00	55.75 to 56.00
Aluminum, 98 to 99 per cent, cents per lb	31.00 to 33.00	32.00 to 33.00

OLD METAL PRICES—NEW YORK

	Aug. 12	Sept. 2
Heavy copper, cents per lb	18.00 to 19.00	18.50 to 19.00
Light copper, cents per lb	15.00 to 15.50	15.00 to 15.50
Heavy brass, cents per lb	10.00 to 10.50	10.50 to 11.00
Zinc, cents per lb	5.00 to 5.25	4.75 to 5.00
Yellow brass, cents per lb	9.00 to 9.50	9.00 to 9.25
Lead, heavy, cents per lb	5.12½ to 5.25	5.00 to 5.10
Steel car axles, Chicago, per net ton	$29.00 to $30.00	$26.00 to $27.00
Old carwheels, Chicago, per gross ton	$26.00 to $27.00	$25.50 to $27.00
Steel rails (scrap), Chicago, per gross ton	$25.00 to $26.00	$22.75 to $23.75
Steel rails (relaying), Chicago, gross ton.	$29.00 to $30.00	$26.50 to $27.50
Machine shop turnings, Chicago, net ton	$10.00 to $11.00	$9.25 to $9.75

ELECTRIC RAILWAY MATERIAL PRICES

	Aug. 12	Sept. 2
Rubber-covered wire base, New York, cents per lb	30	30
Weatherproof wire (100 lb. lots), cents per lb., New York	33	33
Weatherproof wire (100 lb. lots), cents per lb., Chicago	30.75	30 75
T rails (A. S. C. E. standard), per gross ton	$49 00 to $51 00	49 00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47 00 to $49 00	47 00 to 49 00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45 00 to $47 00	45 00 to 47.00
T rail, high (Shanghai), cents per lb	3	3
Rails, girder (grooved), cents per lb	3	3
Wire nails, Pittsburgh, cents per lb	3.25	3.25
Railroad spikes, drive, Pittsburgh base, cents per lb	3 35	3 50
Railroad spikes, screw, Pittsburgh base, cents per lb	8	7.50 to 9.00
Tie plates (flat type), cents per lb	2.75	2 75
Tie plates (brace type), cents per lb	2.75	2 75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb	3	3
Angle plates, cents per lb	3.90	3.90
Angle bars, cents per lb	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb	4 35	4.50
Steel bars, Pittsburgh, cents per lb	2 35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4 20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.25	5.25
Galvanized barbed wire, Pittsburgh cents per lb	4 10	4.10
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70 to 3.80	3 70
Car window glass (single strength), first three brackets, A quality, New York, discount †	80%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	77%
Car window glass (double strength, all sizes AA quality), New York discount	81%	79%
Waste, wool (according to grade), cents per lb	14 to 17	16 to 19
Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	10 to 14½
Asphalt, hot (150 tons minimum), per ton delivered	.....	.....
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	.....	.....
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl	$2.90	$2.90
Cement (carload lots), Chicago, per bbl.	$3.05	$3.05
Cement (carload lots), Seattle, per bbl.	$3.13	$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal	$2.25	$2.25
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$2.27	$2.27
White lead (100 lb. keg), New York, cents per lb	13	13
Turpentine (bbl. lots), New York, cents per gal	1.80	$1.80

† These prices are f. o. b. works, with boxing charges extra.

its franchise granted several years ago for its proposed line between Jacksonville and St. Augustine, about 35 miles. Grading has been completed on 7 miles of line and three miles of tracks have been laid. T. R. Osmond, St. Augustine, general manager. (Feb. 17, '17.)

Track and Roadway

Davenport, Springfield & Southern Electric Railway, Springfield, Ill.—An application for a certificate of convenience and necessity for the construction of an electric railway has been filed by the Davenport, Springfield & Southern Electric Railway with the Public Service Commission of Illinois. The main line of the road, which will be constructed first, will extend from Rock Island to Moline, Galesburg, Lewiston, Havana, Petersburg and Springfield, thence to Hillsboro, Greenville, Carlyle, Nashville, Clancyville, Cartersville, Vienna and Metropolis. The proposed road is intended for both passengers and freight. Among those interested are Robert B. Barker, Phillip J. Delaney and Harry Leek, all of Chicago. (Aug. 2, '19.)

Southern Traction Company of Illinois, East St. Louis, Ill.—According to an announcement made by H. D. Mepham, new owner of the Southern Traction Company of Illinois, electric railway connection between East St. Louis and Belleville will be made within the next sixty days. Tracks will be laid to mines in the Belleville district. Bridges are being rebuilt and the roadbed placed in good condition. Plans are under consideration to extend the road to Duquoin. About $1,500,000 will be spent for new rolling stock.

Detroit, (Mich.) United Railway.—The following extensions will be made by the Detroit United Railway in the near future: The Twelfth Street extension; the St. Jean extension; an extension on Warren Street from Berwick to St. Jean and an extension of the Stephenson line to Royal Oak.

Power Houses, Shops and Buildings

Houghton County Traction Company, Houghton, Mich.—A new garage is being built by the Houghton County Traction Company for the accommodation of its electric buses.

Brooklyn (N. Y.) Rapid Transit Company.—Plans are being made by the Brooklyn Rapid Transit Company for the construction of a power station at Kent Avenue and South Sixth Street.

Third Avenue Railway, New York, N. Y.—Plans have been prepared by the Third Avenue Railway for improvement and alternations in its one-story shop at 251 East 133d Street, to facilitate operation. The cost is estimated at $6,000.

Oklahoma, (Okla.) Railway.—Plans have been completed by the Oklahoma Railway for the reconstruction of its terminal station at Oklahoma City, to cost approximately $250,000.

North Coast Power Company, Vancouver, Wash.—A contract has recently been awarded by the North Coast Power Company to N. A. Strand, Kelso, for the construction of a new brick substation near its office building. The company has also begun the reconstruction of its power line from Kelso to Kalama, increasing the carrying capacity to 66,000 volts.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—Plans are being made by the Wisconsin Traction, Light, Heat & Power Company for the extension of its transmission lines to Dale, Medina and Sherwood.

Trade Notes

American Conduit & Manufacturing Company, New Kensington, Pa., has increased its capital from $540,000 to $600,000.

Chicago (Ill.) Pneumatic Tool Company announces the removal of its Cincinnati office from the Mercantile Library Building to the Walsh Building, Pearl and Vine Streets, where a service station with a complete stock and repair parts will be maintained.

Abrasive Company, Philadelphia, Pa., announces that it has discontinued the use of the name Boro-Carbone as applying to its aluminous abrasive. Hereafter this product will be marketed under its new registered trademark, "Borolon." The company's silicon-carbide abrasive will continue to be trademarked "Electrolon."

Edward N. Lake has organized the Lake Engineering Company which will be located at 139 North Clark Street, Chicago, Ill. He was formerly manager of the Krehbiel Company and also a resident engineer for Stone & Webster. The new company, of which he will be president, will engage in general engineering work.

Van Dorn & Dutton Company, Cleveland, Ohio, recently exhibited a Gleason spiral double gear cutting machine in actual operation of cutting gears from forged steel blanks on the corner of East Ninth Street and Euclid Avenue, Cleveland, Ohio, in a space belonging to one of Cleveland's foremost banks. Gears which were produced on the corners were being made for actual orders. This is only one of the methods used to educate the public.

The American Steam Conveyor Corporation, Chicago, Ill., announces the appointment of Morton McI. Dukehart & Company as its representative in Baltimore and the surrounding territory, including all of Maryland and the District of Columbia and a few counties in Pennsylvania, Delaware, West Virginia and Virginia. This concern consists of Mr. Dukehart and E. S. Denise, both power-plant and sales engineers.

American Malleable Castings Association, 1900 Euclid Avenue, Cleveland, Ohio, maintain a research department for investigations and experiments and for the testing of an analysis of the daily output of each member of the association. Impartial tests are made and the results, together with directions for improvement, are forwarded to respective members. When a member's products have daily met the requirements of the prescribed standard for three months, a certificate of quality is issued that member, who may designate his output as "Certified Malleable Castings."

E. L. Sullivan has been appointed to represent the Green Engineering Company in the Pittsburgh district including western Pennsylvania, eastern Ohio and western West Virginia. Mr. Sullivan has been a special representative for the McDonough Regulator Company for the past ten years in Chicago and in Pittsburgh, and has devoted all of his time to special investigations pertaining to the securing of more efficient boiler and furnace operation. Mr. Sullivan will maintain present offices at 2545 Oliver Building, Pittsburgh, where he will serve in all matters pertaining to the sale of Green chain grate stokers, sealflex arches, steam-jet ash conveyors, cast-iron ash tanks, and replacements for the same.

American Car & Foundry Company, New York, N. Y., announces that James M. Buick, formerly vice-president and general manager, has assumed the direction of the sales division of the company and will be known as vice-president in charge of sales. The production division will be directed by William C. Dickerman, who will be designated at vice-president in charge of operations. He will be assisted by Frederick A. Stevenson, assistant vice-president, who will be head of the manufacturing section, and have charge of production in the car plants, rolling mills and foundries. There will also come under Mr. Dickerman's supervision the engineering, improvement and research, patent and industrial relations sections. The headquarters of both divisions will be at the general offices of the company, 165 Broadway, New York.

New Advertising Literature

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin on rails, switches, frogs, ties, etc.

Arrow Electric Company, Hartford, Conn.: New 1919 catalog with prices entitled "Wiring Specialties."

W. Roy McCanne, 1050 University Avenue, Rochester, N. Y.: Illustrated folder on reinforced concrete pole bases.

Economy Electric Devices Company, Chicago, Ill : Bulletin No. 60, giving a description of the Economy railway meters, including the type with inspection dials to indicate when car equipment is to be inspected. Facts are also given on proper acceleration and methods of energy saving.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, September 13, 1919 *Number* 11

The Eight-Hour Day on the Electric Railway

WE HAVE referred several times in these columns to the growing demand for an eight-hour day for electric railway trainmen, and now that this principle has been conceded with certain restrictions in the new Chicago agreements, it will be interesting to see how the arrangement works out. The contracts agreed upon by the surface and elevated companies in Chicago, following the recent strike, were alike except in a few minor particulars. The former provides that the work day for all employees "shall be eight hours with time-and-a-half for all time worked over eight hours—not less than 60 per cent of the runs to be 'straight' time—the balance to be completed within fourteen consecutive hours."

New time tables on an eight-hour basis are to be prepared as rapidly as possible, all to be effective before Jan. 1, 1920. While these changes are being made, time-and-a-half is to be paid for all time over the time called for by the respective runs on present schedules, and any runs extending over eleven hours are to receive time-and-a-half for such excess.

Officials in the Amalgamated Association refer to this settlement as "the first eight-hour day, with time-and-a-half for overtime, ever received by any body of car men." The Boston Elevated eight-hour day, as we understand it, calls for no "straight" runs and the men get a bonus only when the "spread" exceeds eleven hours. It has frequently been insisted that the straight eight-hour day is impracticable in street railway schedules, and after a hard battle in Chicago with members of the Public Utilities Commission digging for facts, this was found to be true. The result was a compromise calling for only 60 per cent straight runs, the remaining 40 per cent being reserved to cover peak load demands.

Union officials themselves must have realized at last that they have been asking the impossible. This is indicated in the compromise Chicago agreement. They have evidently discovered also that their men will not be satisfied with an eight-hour limit to their working day, and that the choice runs are those which pay ten or more hours per day. A recent issue of the *Union Leader*, official organ of the Association in Chicago, has this to say on the subject:

> Perhaps we may yet be forced to admit the claim of the companies that many of our men did not want the eight-hour day. We are reluctant to believe this. * * * If we have men who want the long workday, they are surely blind to their own interests and the interests of their fellows * * *. With the shorter workday established it will be much easier in the future to advance wages and secure other improved conditions. The test will come when the new eight-hour tables are put in force. With the long workday now prevailing, the total daily wage will be higher than with the eight-hour time table. Then will come the test as to whether our men wanted the eight-hour day; as to whether we are sincere in our adherence to trade union principles.

Apropos of the new Chicago wage scale, it is interesting to note a recent advertisement of the Carpenters District Council in Chicago. The striking trainmen had been pointing to the higher hourly wages of other union workers. "The carpenters are getting 92½ cents," they said. These same carpenters who were striking for $1 an hour, now complain that "the carpenter can get work only part of the year. His average annual wages do not exceed $1,200."

Industrial Conference Should Include the Electric Railway Industry

PRESIDENT WILSON has called a conference for Oct. 6 for the purpose of obtaining the "combined judgment of representative employers, representative employees and representatives of the general public" on what may constitute "a common ground for agreement and action with regard to the future conduct of industry." To this end he has invited the United States Chamber of Commerce to select five persons to attend the conference, the National Industrial Conference Board to select five, the American Federation of Labor fifteen, the Investment Bankers' Association of America two, and the National Grange and National Farmers' Union three, while he will select fifteen reprepresentatives of the public. This conference will no doubt afford a splendid opportunity for threshing out all of the differences and presenting all the interests of the four parties concerned—labor, capital, public and government.

But this conference cannot be complete in its scope unless one of the largest industries of the country, both in number of employees and capital invested, and made up of a large number of individual plants locally governed and operated, is included. We refer to the electric railway industry. Differing from the steam roads, which are subject to a single administrator, the electric railways are like the industrials in their segregation and diversified control. They are also inextricably interwoven with the life and prosperity of the individual industrial plants and are vital to the social and industrial welfare of the nation as a whole.

So it would seem that if the conference is really "to canvass every relevant feature of the present industrial situation," this great industry should have a voice. This might be had as a direct nomination from the American Electric Railway Association, or through the Public Utilities Committee of the United States Chamber of Commerce, which has already been invited to nominate five persons. This leads us to suggest that a railway man, such as Philip H. Gadsden, for instance, who is a director of the Chamber of Commerce and who is well qualified through his prominent experience on the Electric Railway War Board and the Federal

Electric Railways Commission to serve in this important work, would be a happy choice. In any event, we hope that the labor problem on electric railways will be thoroughly considered at the conference.

Let's Cut Out "Preaching" In the Safety Movement

THE program for the Eighth National Safety Congress, just issued, shows that the electric railways are to be well represented at that gathering. The program contains six papers by electric railway men of high standing, including the presidents of the American Electric Railway Engineering and Claims Associations. The topics of their papers suggest that the authors propose to handle the general subject in a tangible, practical way. This is highly desirable for there has been quite a little "hot air" in evidence in safety discussions, and a somewhat marked tendency to "preach." A recent Safety Council electric railway poster recognizes this fact by the caution, properly illustrated, "Teach by Example—Don't Preach Too Much." Accidents are in themselves tangible enough. The wordiness referred to comes from the difficulty of impressing upon the men who contribute to the causes of accidents the seriousness of the situation. Nearly everybody is willing to take a chance on his own safety and many are willing to include the safety of others also. But they don't like to be cautioned about it; it seems patronizing to them.

The electric railway section meetings are to be held on Thursday and Friday, Oct. 2 and 3. There are some interesting matters of general interest to be presented on Saturday morning, and the annual dinner is scheduled for Friday evening. It is thus possible for electric railway men who can route their Atlantic City trip so as to include Cleveland to take in at least part of the congress on their pierward way. It certainly would greatly encourage the men who are striving to keep up the interest in accident reduction if a reasonable number of the men fairly high up in the business would attend. Our observation inclines us to the belief that the executives in industrial plants take the safety movement more seriously than do those in the utilities, as evidenced at least by attendance at the Safety Congress.

Why Politicians Try to Befog the Issue

THE mayors of the largest two cities still seem to think it a popular move to oppose a living fare to the electric railways. In New York this opposition has gone so far, in the case of the New York & North Shore Traction Company, as to threaten to force its abandonment of much needed transportation facilities, where the persons dependent on these facilities have manifested their approval of a higher fare by voluntarily paying it in large numbers for some months.

If the converse was the case in either New York or Chicago, it is easy to imagine the great outcry which would be raised over the necessity for lower fares. If a railway or any other public utility, on the strength of a franchise granted sixty years ago under conditions entirely different from those at present, was making enormous profits, it would soon be required to lessen its charges. There are cases without number where rates for utility service have been cut by the state legislature and these reductions upheld by the courts, and it is just that a public utility should be restricted to rates which will return only a reasonable return on the value of its property. A public utility is a public servant which conducts a monopoly for the state because private ownership is considered more desirable than that of the public, but in other respects it is practically a branch of the state. If the state thus assumes to reduce rates which are unreasonably high it is equally bound to increase the rates of a public utility which are unreasonably low.

That fair treatment of the local railway system is not only a duty but good business is recognized by a growing number of city officials. One of the clearest cut statements along this line which we have seen recently is contained in an opinion recently expressed on the advisability of increasing trolley rates in Auburn, N. Y., by C. S. Drummond, city attorney. "By law, in common sense and in good morals," he says, "the company is entitled to a return for the service it renders the public, that is, the company is entitled, so long as it serves the public, to receive enough money to pay its operating expenses, the taxes assessed by the public upon its property, the interest required to be paid upon the money invested in property, and besides a reasonable return on its system for the service it renders."

No pronouncement on the situation could be clearer and sounder than this.

Status of the Manufacturers In the American Association

AT THE coming Atlantic City convention it is hoped and expected that provision will be made in the executive committee of the American Association for official representation of the manufacturers and that some plan for an affiliated association of manufacturers will be approved by the manufacturer members of the American Association. It is now nearly three years since Charles L. Henry, then president, in his Atlantic City convention address, suggested the provision of means to permit more active participation of manufacturer members in the management of the association. It will be remembered that the 1916 convention was the first at which the manufacturing companies were represented as company members on the same footing as railway members. At the following meeting of the executive committee, held on Dec. 20, 1916, a committee of manufacturers was appointed to draw up a proposed plan of union, and, at the 1917 midyear meeting such a plan was presented, but after discussion was returned to the committee for further consideration.

During the war, when conventions were abandoned, naturally but little progress was made. Nevertheless, the executive committee decided, in any event, to recommend the addition to the executive committee of two manufacturer members and suggested that after the manufacturers had formed an affiliated association there would be a third manufacturer representative on the executive committee in the person of the president of that association. Such constitutional steps as are necessary will be taken before the convention, so that the first of these changes may be voted upon at the October convention and a proposed form of constitution establishing the manufacturers as an affiliated association will be placed before them for their approval.

There has been a question in the minds of many manufacturers as to whether the proper form of their body should be an affiliated association or an independent organization. For this reason, perhaps, it is just as well that the determination of this question has not proceeded too rapidly. We believe that a majority of the manufacturer members of the association accept now the formation of a suitable affiliated association as the best solution of the problem. It may be that this opinion is unanimous; we hope that it is. If there are still manufacturer or railway members who think otherwise, we call their attention to the fact that while some independence is undoubtedly surrendered under the proposed plan, it provides for a 50 per cent increase in representation on the executive committee and a much greater unity of organization. Under any form of united organization, the manufacturers will enjoy a very considerable independence due to the nature of their business. Furthermore, they now form more than a third of the membership of the American Association and pay a fifth of the dues. Being such a large element, both numerically and financially, in the parent organization, it would seem that they should have a section of it for their own in order that they may contribute most effectually to the development of the industry.

If We Sat at a Telephone Switchboard

ELECTRIC railway men in discussing traffic surveys no longer confine themselves to the actual passengers on the cars but to the possible passengers on the sidewalks. One equally important source of prospective traffic may be suggested for such traffic surveys, namely, an analysis of telephone uses.

If we could only sit in at a telephone switchboard to hear the nature of the messages, what surprises would be in store for us! Mrs. Jones is telephoning her favorite department store, 2 miles away, that she would like to have the store send up two or three size-38 house gowns for approval. Mrs. Smith is having a long chat with Mrs. Robinson who lives but a mile away. Mr. Williams, that likable rent collector, is asking some tenants to mail their checks, it having occurred to him that today he will lack time to walk from block to block. In short, we would soon see that the telephone instead of the electric railway was being used for countless occasions.

Undoubtedly many interviews can be conducted more quickly and easily by telephone than personally, but we believe that the splendid salesmanship that the telephone companies have exhibited for years has had a great deal to do with the extended use of that instrument. There is just as good opportunity for the electric railway companies to display salesmanship. Traffic can be driven away by infrequent service and too high charges, just as it can be cultivated by the opposite policy. In the cases cited, Mrs. Jones possibly would have preferred to select those gowns herself at the store and the merchant surely would have liked her to do so, had it not been because of the long headway on her line or the recent increase in car fare. Mrs. Robinson would certainly have had still more pleasure in seeing rather than merely hearing that dear Mrs. Smith. Had Mr. Williams called for the rent in person, he might have run across examples of the janitor's neglect that would not otherwise come to his attention until too serious to smooth over!

The obvious moral is that the electric railway must be just as keen to advertise the advantages of personal presence as the telephone company is to advertise the advantages of faster though less satisfactory communication. The transportation man must not take the triumphs of the other fellow for granted, but be ready to do a little salesmanship of his own. With the self-propelled vehicle at one end and the telephone at the other, it is high time that we felt the inspiration that comes from competition.

Some Things That Organized Labor Can Do.

SANE and orderly unionism has won out against the aggressions of radicalism on at least two occasions recently. Once was during the Chicago street car strike when a majority of the trainmen sustained International President Mahon in his criticism of a disturbing element of men who had previously refused to take a referendum vote on a settlement offer. Only a few weeks later Mr. Mahon found it necessary to threaten the revocation of the Pittsburgh employees' charter because they went on strike in spite of a solemn agreement with the receivers of that property to abide by the award of the War Labor Board. At a subsequent meeting of the union the men listened to the pleas of their official counsellors, who insisted that they maintain the inviolability of their contract. For such leadership the Amalgamated Association must be commended. A strong object lesson might have been given by making outlaws of the radicals on either of these occasions, but it is at least to the credit of Mr. Mahon and his associates that they took the action which they did in these situations.

In thus recognizing true unionism, it is none the less a duty to call attention to another chapter in the Amalgamated Association's history which forms a less enviable record. By this we refer to the story of tactics and methods of organized labor as related a few weeks ago in Kansas City at a hearing before the Chamber of Commerce committee. Various witnesses at that session told of former union employees who had approached them while they were working on the cars and suggested means for beating the company. Far be it from us to intimate that union leaders had encouraged such conduct. If these stories are true, however, prompt steps should be taken to weed out from union membership all who could be identified as countenancing such tactics.

If labor is to have any hope of coming into partnership with capital in the conduct of business, it must be prepared to join in the agreement with clean hands. The days of unsavory methods are past for labor as well as for capital. The time is coming, we hope, when correct moral principles will be the prime requisite for entry into any union or any business. American labor has already proved itself more sane in listening to reason rather than to bolshevistic arguments, and we believe that with new responsibilities added to organized labor in its growing share in industrial activity the days of the unprincipled workman are numbered. The Amalgamated Association membership, assembled in biennial convention in Chicago this week, might well ponder the benefits of following capable leadership rather than listening to the siren song of those who would lead the workmen into the doubtful benefits of a new Paradise.

The Nickel in 1913 and 1919

The Shrinkage of the 5-Cent Coin During the Past Six Years Is Clearly Demonstrated by the Application of Unit Figures of 1913 Costs to 1919 Expenses

BY W. H. BURKE
Stone and Webster

DURING the past few years we have witnessed what comes dangerously near being the complete breakdown and disintegration of an industry representing an investment of some $6,000,000,000 and furnishing service each year to a total of about 15,000,000,000 passengers, including between 11,000,000,000 and 12,000,000,000 revenue passengers. We have seen the entire street railway industry of the country forced to the verge of bankruptcy, with companies both large and small owning some 6000 miles, or about 15 per cent of the total electric railway track mileage of the country already in the hands of receivers, over 500 miles of track dismantled and sold as junk during the past four or five years and in addition service on about 250 miles of track discontinued.

Faced with the strong possibility of losing its street railway service entirely, the general public has in the past year or so discarded some of its apathy toward the situation and has at last begun to realize that like any other commercial undertaking the street railway company must, if it is to continue in business, be allowed to take in as much money as it is obliged to pay out. The car rider is coming to understand that serious results are bound to follow his refusal to pay as much for his ride as it costs the company to furnish it, and that there is no pot of gold at the end of the rainbow which the company can draw on to offset the increase in present-day, as compared with pre-war costs of operation. The company manufactures and sells but one thing—transportation—and its selling price, in the long run, must be equal at least to the full manufacturing cost including a fair return on the money invested in its plant. The present predicament of the street railway industry is due to the fact that the cost of producing transportation service has increased enormously during recent years while the selling price, instead of being subject to the economic laws which govern the prices of other commodities, has arbitrarily been kept down to substantially the pre-war figure.

CAR RIDE AND LOAF OF BREAD ONCE COST THE SAME

The 1913 nickel was in many, though not in all, cases equal to the cost of the average city street-car ride. It was also equal to the cost of a loaf of bread including the baker's profit, but times have changed. In addition to handling the world's normal business as it did six years ago, the world's nickel has been called upon to supply battleships, guns, ammunition and other war equipment to the extent of some $150,000,000,000 in addition to meeting indirect costs of the war, and the strain was too great. To meet the situation $250,000,000,000 in paper currency has been issued, with the result that the nickel of pre-war days has shrunk in purchasing power to a shadow of its former self.

To offset this depreciation in purchasing power the baker, for instance, added a few cents to the price of his loaf of bread. In other words, he gave his nickel the help required to maintain it at the equivalent of its 1913 value. The street railway nickel has not fared as well but has been obliged to continue as it had done five years before under conditions which were entirely different. It has done as much work for the company as it was possible for it to do under the changed conditions of the past few years and the rest has been left undone and labelled "deferred maintenance" or more generally "foregone dividends".

During the past year or so some, though by no means enough, relief has been granted in the way of higher fares. The regulatory bodies and, to a certain extent, the general public have apparently begun to realize that the nickel will not stay in the street railway business if it is to be permanently overworked and discriminated against, but will join the other members of the family in lines of business where the requirements are less exacting.

This matter of comparative value of the nickel has been mentioned at some length for the reason that the car rider, at least, does not usually appreciate the fact that the nickel he now drops in the fare box is not, from the railway company's standpoint, the same coin at all as the one with which he paid his fare five or six years ago, although outwardly it looks the same. It won't buy as many pounds of rail nor pay the wages of the motorman for as many minutes as the nickel did in 1913, and this, after all, is the important point which concerns the street railway company.

ALL FACTORS MUST BE DULY WEIGHTED IN MAKING COMPARISONS

It is evident that the real measure of permanent relief which the railway needs in the way of higher fares can only be accurately determined by comparing the value of the 1919 nickel with the 1913 nickel working under identical conditions. It is not enough to say that last month's total operating expenses show an increase of 25 to 50 or 75 per cent over what they were for the corresponding month six years ago because it may well happen that in the 1913 month, when conditions were tolerably satisfactory, the railway company retied a couple of miles of track, for example, whereas with conditions as they are with most companies at the present time, it is reasonably safe to assume that no extensive work of this kind is being done, provided the cars will stay on the rails.

Merely to compare total operating expenses to prove our case is, in a somewhat exaggerated sense, like attempting to prove that the cost of living has increased because we paid $2 a bushel for potatoes last week where in 1913 we paid only 10 cents a quart for beans—our comparisons are differently based.

Neither does it throw much light on the subject of increased operating costs to compare present and pre-war unit prices of materials and equipment used in street railway operation. In an effort to prove their case, a great many such comparisons have been published by the railway companies during the past two years, but in most instances 90 per cent of the items included in these statements covered such comparatively insignificant materials as wood screws, trolley fingers, carriage bolts, etc., and while their unit costs might show increases of two or three hundred per cent, their total money cost would not represent 5 per cent of the companies's total operating expenses.

In the data given in this article an effort has been made to arrive at a true weighted average amount and percentage by which operating costs for a typical month in 1919 exceeded those for the corresponding month in 1913, the information covering the operation of three representative street railway properties, which for convenience are referred to as A, B and C. Stated in another way, the purchasing power, and therefore the value, of the nickel which these companies are collecting in 1919 has been compared with the value of the nickel collected in 1913.

HOW THE COMPARISONS WERE MADE

Company A operates a city railway system serving an estimated population of 105,000. Company B is also a straight urban railway proposition serving an estimated population of 150,000. Company C operates a combined city and interurban system, the population served being estimated at 280,000. The three companies are operating their city systems on a five-cent fare with a 2½-cent child's fare, and with the usual liberal transfer privileges. Although Company C is required by its franchise terms to sell twenty-two tickets for a dollar, only 7 per cent of its city revenue is represented by sales of these tickets, so that to all practical purposes its rate of fare is 5 cents.

Briefly the procedure followed in comparing present and pre-war operating costs for the three companies was to determine what their 1919 operation for a normal month would have cost at the unit labor and material prices which prevailed during the corresponding month in 1913.

All vouchers, stock slips and pay rolls covering March, 1919, operation were carefully analyzed and the quantities of material and supplies and the hours of labor chargeable against each operating account under the Standard Accounting Classification were thus determined. To the 1919 quantities the material prices and wage rates prevailing in March, 1913, as shown from the companies' records, were applied. In this way figures were arrived at which show what the cost would have been in March, 1913, for identically the same work as was done in March, 1919. The greatest care was taken to assure accurate results. As an example of the detail in which the matter was covered, it may be stated that adjustments were made in such comparatively unimportant items as the increases since 1913 in freight and express rates on material. Actual data were available in substantially all cases and such minor assumptions as were necessary had to do with insignificant items which could have no appreciable effect on the total figures which are summarized in Table I:

TABLE I—COMPARISON OF OPERATING EXPENSES FOR THREE COMPANIES IN 1913 AND 1919

	Actual Operating Expenses—One Month, 1919	Cost of Same Operation at 1913 Unit Prices	Weighted Av. % Increase in 1919 Over 1913 Costs
Company A..........	$44,473	$26,879	65.4
Company B..........	107,277	72,309	48.4
Company C..........	138,226	95,405	44.9

It should be explained in connection with the above figures that Company A, like most street railway companies, has been subject during the past few years to a very large increase in the cost of coal. Companies B and C, both of which burn oil as fuel, have been unusually fortunate in this respect, due to the fact that both have purchased oil on long-term contracts at very favorable prices, while in the case of Company A it was impracticable to make a coal contract covering more than a one-year period. Company B is, in fact, paying slightly less per barrel for fuel oil at present than in 1913. This explains the greater percentage increase in the weighted average expense for Company A. If the increase in fuel cost be disregarded for this company, its weighted average increase becomes 48 per cent, or substantially the same as for Companies B and C. Incidentally, the condition referred to above shows the justice of different rates of fare in cities where outwardly at least conditions appear to be very similar.

A more detailed comparison of March, 1919, with March, 1913, weighted operating costs for each of the three companies is shown in Table II:

TABLE II—COMPARISON OF 1919 PRIMARY EXPENSE ACCOUNTS ON 1913 COST BASIS

	Company A		Company B		Company C	
Maintenance of way and structures..........	$2,541	$1,727	$8,935	$5,092	$17,148	$10,525
Maintenance of equipment..............	3,938	2,436	9,168	5,796	18,716	10,190
Total power..........	6,639	3,435	12,191	12,687	11,684	10,622
Wages of trainmen.....	16,763	8,741	42,662	23,677	44,348	25,002
Other car operation, including superintendent of transmission ..	4,082	2,275	10,538	7,206	13,360	8,400
General and miscellanenous, including traffic................	10,510	8,265	23,783	17,851	32,970	30,666
Total.............	$44,473	$26,879	$107,277	$72,309	$138,226	$95,405

The foregoing figures show that it cost from 45 to 65 per cent more in 1919 than it did in 1913 to do identically the same work. There is one phase of the matter which is not taken into account in the figures shown above, that being the relative efficiency of the labor the companies are now employing and the quality of the materials they are now receiving compared with what they were getting in 1913 at much lower prices. While it is practically impossible to develop accurate data on these two points, there is no question but that such a comparison would have the effect of further increasing 1919 costs by a very substantial amount.

In 1913 all of these companies were furnishing good service, maintaining their physical properties in good condition, providing the required amounts for depreciation, paying a reasonable return to the owners of the property and laying by a little balance out of the nickel with which to stabilize their credit and attract new capital as needed. Merely to take care of the increases in current operating expenses under present conditions and allowing for no falling off in business due to the higher fares necessary to accomplish this, it appears that in the case of Company A the portion of the nickel which goes to pay current expenses would have to be increased 65 per cent and an increase of approximately 45 per cent in the case of Companies B and C. This would represent an increase in fare so far as these particular companies are concerned, of about 2 cents in the case of Company A and about 1¼ cents for Companies B and C, making their fares 7 and 6¼ cents respectively.

As stated above, these advances in fare would offset

The Nickel in 1913 and 1919

The Shrinkage of the 5-Cent Coin During the Past Six Years Is Clearly Demonstrated by the Application of Unit Figures of 1913 Costs to 1919 Expenses

BY W. H. BURKE
Stone and Webster

DURING the past few years we have witnessed what comes dangerously near being the complete breakdown and disintegration of an industry representing an investment of some $6,000,000,000 and furnishing service each year to a total of about 15,000,000,000 passengers, including between 11,000,000,000 and 12,000,000,000 revenue passengers. We have seen the entire street railway industry of the country forced to the verge of bankruptcy, with companies both large and small owning some 6000 miles, or about 15 per cent of the total electric railway track mileage of the country already in the hands of receivers, over 500 miles of track dismantled and sold as junk during the past four or five years and in addition service on about 250 miles of track discontinued.

Faced with the strong possibility of losing its street railway service entirely, the general public has in the past year or so discarded some of its apathy toward the situation and has at last begun to realize that like any other commercial undertaking the street railway company must, if it is to continue in business, be allowed to take in as much money as it is obliged to pay out. The car rider is coming to understand that serious results are bound to follow his refusal to pay as much for his ride as it costs the company to furnish it, and that there is no pot of gold at the end of the rainbow which the company can draw on to offset the increase in present-day, as compared with pre-war costs of operation. The company manufactures and sells but one thing—transportation—and its selling price, in the long run, must be equal at least to the full manufacturing cost including a fair return on the money invested in its plant. The present predicament of the street railway industry is due to the fact that the cost of producing transportation service has increased enormously during recent years while the selling price, instead of being subject to the economic laws which govern the prices of other commodities, has arbitrarily been kept down to substantially the pre-war figure.

CAR RIDE AND LOAF OF BREAD ONCE COST THE SAME

The 1913 nickel was in many, though not in all, cases equal to the cost of the average city street-car ride. It was also equal to the cost of a loaf of bread including the baker's profit, but times have changed. In addition to handling the world's normal business as it did six years ago, the world's nickel has been called upon to supply battleships, guns, ammunition and other war equipment to the extent of some $150,000,000,000 in addition to meeting indirect costs of the war, and the strain was too great. To meet the situation $250,000,000,000 in paper currency has been issued, with the result that the nickel of pre-war days has shrunk in purchasing power to a shadow of its former self.

To offset this depreciation in purchasing power the baker, for instance, added a few cents to the price of his loaf of bread. In other words, he gave his nickel the help required to maintain it at the equivalent of its 1913 value. The street railway nickel has not fared as well but has been obliged to continue as it had done five years before under conditions which were entirely different. It has done as much work for the company as it was possible for it to do under the changed conditions of the past few years and the rest has been left undone and labelled "deferred maintenance" or more generally "foregone dividends".

During the past year or so some, though by no means enough, relief has been granted in the way of higher fares. The regulatory bodies and, to a certain extent, the general public have apparently begun to realize that the nickel will not stay in the street railway business if it is to be permanently overworked and discriminated against, but will join the other members of the family in lines of business where the requirements are less exacting.

This matter of comparative value of the nickel has been mentioned at some length for the reason that the car rider, at least, does not usually appreciate the fact that the nickel he now drops in the fare box is not, from the railway company's standpoint, the same coin at all as the one with which he paid his fare five or six years ago, although outwardly it looks the same. It won't buy as many pounds of rail nor pay the wages of the motorman for as many minutes as the nickel did in 1913, and this, after all, is the important point which concerns the street railway company.

ALL FACTORS MUST BE DULY WEIGHTED IN MAKING COMPARISONS

It is evident that the real measure of permanent relief which the railway needs in the way of higher fares can only be accurately determined by comparing the value of the 1919 nickel with the 1913 nickel working under identical conditions. It is not enough to say that last month's total operating expenses show an increase of 25 to 50 or 75 per cent over what they were for the corresponding month six years ago because it may well happen that in the 1913 month, when conditions were tolerably satisfactory, the railway company retied a couple of miles of track, for example, whereas with conditions as they are with most companies at the present time, it is reasonably safe to assume that no extensive work of this kind is being done, provided the cars will stay on the rails.

Merely to compare total operating expenses to prove our case is, in a somewhat exaggerated sense, like attempting to prove that the cost of living has increased because we paid $2 a bushel for potatoes last week where in 1913 we paid only 10 cents a quart [illegible] beans—our comparisons are differently based.

Neither does it throw much light on the [illegible] creased operating costs to compare pre[illegible] war unit prices of materials and equip[illegible] street railway operation. In a[illegible] case, a great many such comp[illegible] lished by the railway companies during the past two years, but in most instances 90 per cent of the items included in these statements covered such comparatively insignificant materials as wood screws, trolley fingers, carriage bolts, etc., and while their unit costs might show increases of two or three hundred per cent, their total money cost would not represent 5 per cent of the companies's total operating expenses.

In the data given in this article an effort has been made to arrive at a true weighted average amount and percentage by which operating costs for a typical month in 1919 exceeded those for the corresponding month in 1913, the information covering the operation of three representative street railway properties, which for convenience are referred to as A, B and C. Stated in another way, the purchasing power, and therefore the value, of the nickel which these companies are collecting in 1919 has been compared with the value of the nickel collected in 1913.

HOW THE COMPARISONS WERE MADE

Company A operates a city railway system serving an estimated population of 105,000. Company B is also a straight urban railway proposition serving an estimated population of 150,000. Company C operates a combined city and interurban system, the population served being estimated at 280,000. The three companies are operating their city systems on a five-cent fare with a 2½-cent child's fare, and with the usual liberal transfer privileges. Although Company C is required by its franchise terms to sell twenty-two tickets for a dollar, only 7 per cent of its city revenue is represented by sales of these tickets, so that to all practical purposes its rate of fare is 5 cents.

Briefly the procedure followed in comparing present and pre-war operating costs for the three companies was to determine what their 1919 operation for a normal month would have cost at the unit labor and material prices which prevailed during the corresponding month in 1913.

All vouchers, stock slips and pay rolls covering March, 1919, operation were carefully analyzed and [illegible] quantities of material and supplies and the hours [illegible] labor chargeable against each operating account [illegible] the Standard Accounting Classification were [illegible] determined. To the 1919 quantities the material [illegible] and wage rates prevailing in March, 1913, as [illegible] from the companies' records, were applied. In [illegible] figures were arrived at which show what the [illegible] have been in March, 1913, for identically [illegible] work as was done in March, 1919. The [illegible] was taken to assure accurate results. As [illegible] of the detail in which the matter was [illegible] be stated that adjustments were made [illegible] paratively unimportant items as the [illegible] 1913 in freight and express rates on [illegible] data were available in substan[illegible] minor assumptions as [illegible] insignificant items wh[illegible] effect on the total [illegible] Table I:

TABLE I—COMPA[illegible]

Company A........

C[illegible] B........

C[illegible] C........

It should be explained in connection with the above figures that Company A, like most street railway companies, has been subject during the past few years to a very large increase in the cost of coal. Companies B and C, both of which burn oil as fuel, have been unusually fortunate in this respect, due to the fact that both have purchased oil on long-term contracts at very favorable prices, while in the case of Company A it was impracticable to make a coal contract covering more than a one-year period. Company B is, in fact, paying slightly less per barrel for fuel oil at present than in 1913. This explains the greater percentage increase in the weighted average expense for Company A. If the increase in fuel cost be disregarded for this company, its weighted average increase becomes 48 per cent, or substantially the same as for Companies B and C. Incidentally, the condition referred to [illegible] shows the justice of different rates of fare [illegible] where outwardly at least conditions appear [illegible] similar.

A more detailed comparison of [illegible] March, 1913, weighted operating [illegible] three companies is shown in [illegible]

TABLE II—COMPARIS[illegible]

Maintenance of [illegible] structures

Maintenan[illegible] ment

Total pow[illegible]

Wages of [illegible]

Other [illegible] cluding [illegible] ent[illegible]

Gener[illegible] enous [illegible] fr

T[illegible]

only the increase in current operating expenses; another quarter of a cent would be necessary to take care of the enormous increases in taxes to which the companies are now subject and a still further addition to the fare unit would be necessary to pay the investor the higher return which he is now demanding on his money and which he is able to get—and with safety of his principal—in other lines of business. Furthermore, if present high prices continue, depreciation requirements are bound to be greater than under former conditions, since eventually the present physical properties must be largely rebuilt and replaced at costs which exceed the cost of the existing construction by from 50 to 100 per cent or even more.

The grocer, for example, has added his increased costs to the price of his goods, but for the most part the street railway company has not been allowed to do so because of franchise restrictions and requirements and the arbitrary manner in which its business is regulated. Looked at in another way, the above figures show that the nickel no longer represents its 1913 equivalent in purchasing power and if the 1913 nickel be taken at 100 per cent value, the companies in 1919 are not getting a 5-cent fare, but only roughly from 3 to 3½ cents, and this is after allowing merely for higher current operating costs. Conversely, if Company A had been collecting a 3-cent fare and Companies B and C a 3½-cent fare in 1913, they would have been receiving approximately as much for their service based on then prevailing conditions as to wages and material costs as they are getting at the present time and under existing conditions.

HOW THE NET WOULD HAVE INCREASED TO 2.21 CENTS

In this connection, an analysis has been made to determine how Company B, for example, spent the nickel it collected in March, 1919, and how it would have been spent in 1919 if the same work which was done this year had been done at prices prevailing in March, 1913. This information is summarized in the tabulation shown in Table III:

TABLE III—COMPANY B'S DIVISION OF THE NICKEL IN 1919 AND WHAT IT WOULD HAVE BEEN ON 1913 BASIS

	Division of 5-Cent Fare	
	Actual March, 1919	March, 1919, Based on March, 1913, Prices
Labor	2.17 cents	1.12 cents
Material and sundries	1.46 cents	1.02 cents
Total operating expenses	3.63 cents	2.13 cents
Taxes	.37 cent	.16 cent
Interest charges	.40 cent	.50 cent
Balance for reserves, depreciation and dividends	.60 cent	2.21 cents
	5.00 cents	5.00 cents

NOTE.—Sundries include such items as injuries and damages, rent, insurance, light and water, and others which cannot be classified directly as either labor or material.

It will be seen from the above that average labor costs have practically doubled until nearly 45 per cent of the nickel is now required to meet the pay roll, that prices of material and sundry expenses have advanced some 45 per cent, that taxes have considerably more than doubled. Interest charges, on the other hand, have decreased slightly, due to a rearrangement of the company's outstanding obligations, while the portion of the nickel left to take care of reserves and depreciation and pay the investor for the use of the money which he invested in good faith in the property is actually 73 per cent less than it would have been if 1913 conditions were applied to March, 1919, operation. The facts are that in March, 1919, this particular company earned, after allowing for depreciation, at the rate of 2.2 per cent per year on the actual cash investment in the property, although this figure would be reduced to less than 2 per cent had it been possible to maintain the property at pre-war standards. If the showing were based on 1913 conditions the company would have earned, after proper allowance for upkeep, approximately 10 per cent on its actual cash investment. Incidentally, this is equivalent to only 7 per cent on the reproduction cost to-day, as shown by a recent appraisal of the property. It cannot, therefore, be contended that even under 1913 conditions the return would have been exorbitant. It might be stated further that this company was recently obliged to pay 9 per cent for money in order to finance its floating debt for a period of 3 years.

THE COMPARISON CARRIED TO GROSS EARNINGS

In the case of Company B, the comparison between the actual March, 1919. showing and the adjusted showing based on March, 1913, prices was carried a step further, gross earnings, as well as operating expenses, being adjusted in order to determine the company's balance after paying its current operating expenses, for a typical month this year under conditions which prevailed in 1913. This particular company has been the victim of cut-throat jitney competition, in varying degrees, since the latter part of 1914, as many as 800 jitneys having been licensed at one time with about 135 still in operation. In order to allow for the effect of jitney operation on the company's earnings, the 1919 figures were adjusted by assuming that normally the earnings per car mile in March this year should have been at least as great as in March, 1913, when the figure was slightly over 30 cents. On this basis the figures compare as shown in Table IV.

TABLE IV—COMPARISON OF EARNINGS AND EXPENSES FOR COMPANY B ON 1919 AND 1913 BASES

	Actual March, 1919	Same Operation Based on 1913 Conditions	Decrease
Gross earnings	$143,888	$169,981	$26,093
Operating expenses	107,277	72,309	*34,968
Balance for taxes, interest, depreciation, dividends and reserves	$36,611	$97,672	$61,061

* Increase.

It should be made clear that the figures shown above in the second column do not represent the actual March, 1913, showing of this company, but merely what the showing would have been if March, 1913, prices and conditions had applied to this year's March operation. The facts are that on account of the company's financial condition a great deal less work was done on the property in March this year than was really needed to maintain and operate it at its 1913 standard, and as 1913 expenses as adjusted are based on 1919 operation this means that they are very much less than they would have been had the company been in shape financially to operate and maintain its property at the standards which prevailed before the war.

The above figures speak for themselves; they show that on an equivalent basis this particular company, after paying its current expenses, had $61,000, or 63 per cent less than it would have had under conditions as regards operating costs which prevailed in March, 1913, with which to take care of depreciation, pay its taxes and a return to the investor and maintain its credit. Furthermore it should be remembered that even basing the March, 1919, showing on March, 1913, prices and wage rates, the company would have earned no more than 10 per cent—not on some assumed value, but on the cold cash that has actually gone into the property—and that it is actually earning at the present time considerably less than 2 per cent on this investment after allowing for proper upkeep of its physical property.

As already stated, the three companies considered in this article are fairly representative, Company A being more so than the other two since its fuel costs as well as its other expenses have increased enormously during the past three years, as has been the case with probably 90 per cent of the street railway companies over the country. The figures show that this company's operation for a typical month this year cost 65 per cent more than it would have cost under 1913 conditions as to material prices and wages and that its so-called nickel fare has now become 3 cents without making any allowance for higher taxes, increased money rates and greater allowance for depreciation which must be faced sooner or later. As a broad proposition, these figures would probably hold true for the majority of city properties over the country.

It has been shown that the purchasing power of the nickel the company receives for its service, taken as 100 per cent in 1913, has now shrunk to 3 cents in the case of Company A and to about 3½ cents in the case of Companies B and C; if higher taxes, capital costs and depreciation requirements were allowed for in addition to higher current operating expenses, the respective figures would be not more than 2½ and 3 cents. There is surely no good reason to think that wages and other costs which have, as a matter of fact, increased since the armistice was signed last November, will show any appreciable reduction in the near future and it is a practical certainty that they will never go back to what they were in 1913. In other words, like every other industry, the street railway business is on a permanently higher price basis both as regards operating costs and the cost of the capital needed to finance its requirements. Failure to recognize this fact or to take the necessary action after recognizing it, is responsible for the present predicament of the street railway industry generally.

THE SERVICE MUST BE PAID FOR

There is no cure-all by which the railway company, any more than other lines of business, can in the long run get 5 cents worth of value for 2½ or 3 cents, as it has been and is now trying to do. The street railways of the country need some $600,000,000 to $700,000,000 a year for improvements and extensions in order to keep pace with city growth and development, and in addition an average of about $350,000,000 a year is needed to refund maturing obligations. There are substantially but two ways to get this money, either through municipal ownership or through some plan under which the private investor can count not only on the safety of his principal but also on a reasonable return on the money he puts into street railway securities. If an industry as large as this and as necessary to the public welfare is worth saving, then the shrinkage in the value of the pre-war nickel fare must, in the long run, be made up. This can be done through higher fares, through a combination of higher fares and relief from present franchise burdens such as expenditures for paving and other street improvements, transfer requirements, etc., or through municipal ownership by charging the deficit into the general tax bill.

If municipal ownership and operation is the plan ultimately adopted, the full cost of the service will still have to be paid in some way, either by the car rider or the general public. The physical property will continue to wear out and require replacement just as it does now; interest on the securities issued by the city to finance the property will have to be paid the investor the same as with private ownership; the current expenses will have to be paid under municipal operation, just as is now the case, and there is very good reason to believe that these expenses will be considerably higher than for the same class of service under private operation. Taxes may seem to be reduced under municipal ownership, but ultimately the amounts which the privately owned company now pays the city in the form of taxes must, of course, be collected from the other local taxpayers, so that there is really no saving, even here. In other words, whatever the final solution of the present difficulty may be, the community will, if it wants street-railway service, have to pay its full cost—something it is not doing now and has not been doing for several years past.

Japanese Railways Report Favors Electrification

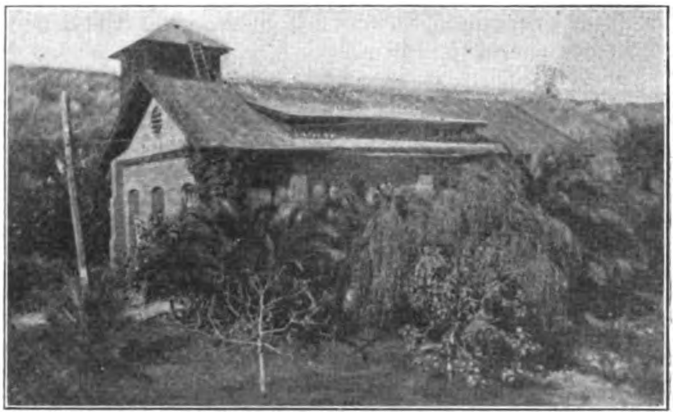
THE annual report of the Imperial Government Railways of Japan for the year ending March 31, 1917, has made its appearance in English in the form of a volume of more than 200 pages, with numerous illustrations, charts, maps, etc.

On the subject of electrification, the report has this to say in general: "Electric traction, as applied to railways, is especially suited to Japan, where the railways pre-eminently traverse mountainous regions, with the consequent prevalence of long tunnels and heavy grades. Already a good beginning has been made in this respect for suburban service in and around Tokyo and for the mountain section of the Shin-Etsu line over Usui Pass. The satisfactory results shown by the electrified line have led the authorities to consider the extension of the field of electric power to some of the heavy trunk lines."

While the electrification work had its inception before the nationalization of the railroads, it has since been fostered and extended under the government management. The most recent extension of note was the electrification of the Abt rail section across the Usui Pass, Shin-Etsu line, which was quite fully described in the ELECTRIC RAILWAY JOURNAL, Vol. 43, page 1393, June 20, 1914. The system used in this line was 600 volts, direct-current, while that on some of the earlier electrification work on the Tokyo-Yokohama electrification employed 1200-volt direct current.

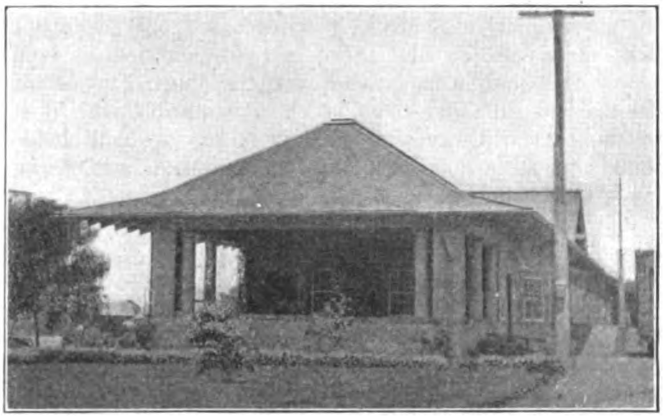
Year Ending, March 31	Electric Locomotives	Mileage Traveled by Electric Locomotives Miles	Vehicle Mileage Hauled Miles	Energy Consumption, Kilowatt-Hours	Energy Consumption per Locomotive-Mile, Kilowatt-Hours
1913............	10	87,722	536,215	1,642,050	18.72
1914............	12	122,155	761,115	2,246,847	18.39
1915............	12	136,409	900,879	2,549,124	18.69
1916............	12	112,977	743,531	2,241,162	19.84
1917............	12	127,444	841,449	2,535,118	19.89

The results of the electric locomotive operation over the Usui Pass are given in the accompanying table.



TREES HIDE THE UNATTRACTIVE WALLS

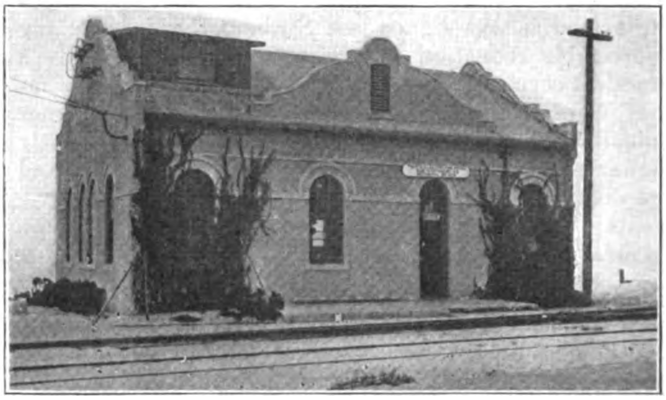
PALM TREES OFFSET UNGAINLINESS OF BUILDING



A STATION WITH WELL-PLANTED GROUNDS

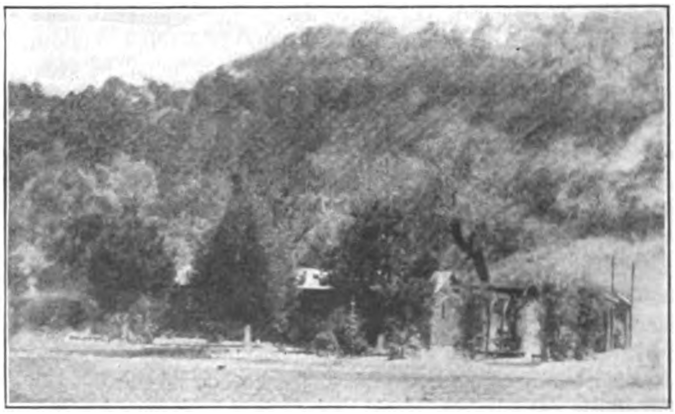
WAITING STATION HARMONIZED WITH NEIGHBORHOOD

SHRUBBERY BREAKS THE GROUND LINE



VINES ARE THE CHIEF DECORATION HERE

A FRONT YARD FIT FOR A RESIDENCE



SECTION CAMP BURIED IN FOLIAGE

Examples of Successful Planting by Pacific Electric Railway

Pacific Electric Has Complete Parking Program

Railway Finds Expenditure for Improving Grounds Around Buildings to Be a Profitable Investment

BY CLIFFORD A. ELLIOTT
Cost Engineer, Engineering Department Pacific Electric Railway,
Los Angeles, Cal.

THE maintenance of way department of the Pacific Electric Railway attempts systematically to utilize the natural climatic conditions which prevail in its territory for the beautifying of grounds around substations, passenger and freight stations, carhouses, shops, and section-camp grounds. In this semi-tropical climate lawns and terraces are green the year round, and tropical palms, flowers, trees and evergreen shrubbery contribute to the beauty of the landscape. For eight years the department has had an organization for handling the parking beautification program. This covers both the original work in parking the grounds and the upkeep of the grounds as well.

A SUBSTATION SET IN A GARDEN

The procedure is for the chief gardener and his force to improve the grounds around the buildings, planting them with flowers, trees and shrubbery. Then the company furnishes garden hose and endeavors to interest the operators and agents, inducing them to give some of their spare time to watering the grounds and giving to them such other minor attention as may be needed.

Where section-camp grounds are improved, very little effort is necessary to persuade the Mexican track laborers housed there to aid in this work, as they are lovers of nature and appreciate the privilege of taking part in beautifying their surroundings.

The greater part of the maintenance work around the grounds, such as trimming of shrubbery and trees, caring for palms, mowing lawns, reparking, fertilizing and replanting grass and flowers, devolves upon the chief gardener and his staff.

The chief gardener is a man who has devoted his entire life to work of this nature. He makes it a point to select such flowers, trees, grass and shrubbery as are well adapted to the southern California climate and that blend properly with other plants in a given locality. He also considers the care required by different plants and the consequent maintenance expense with a view to minimizing this. In spite of the favorable climate, his task is not always an easy one, because at some points considerable sand is encountered. He does his best, however, with the aid of fertilizers and transplanted fertile soil. In the valley towns his task is easy because the soil is usually rich and favorable for carrying out parking plans.

When a park has been installed around a building or camp, the defines of the parking and the walkways are outlined with rubble or washed stone obtained from near-by "dry washes." The stones are whitewashed, a practice that is found not to be burdensome as the climate is favorable to a long life of even the first coat of whitewash.

The beautifying of grounds plays an important part in the relations between the company and the public. Sometimes a small passenger waiting station is found in a locality where the surrounding boulevards and residences are extensively parked. When possible the company tries to adapt its own grounds to the surroundings. Some years ago a small frame substation building was erected in a thickly-settled district. The community protested, but after the company had completed its parking plan the sentiment entirely changed. In one locality the parking of the station grounds proved to be a great boon to the people as it was used by them for town gatherings in the absence of a park of their own.

Tourists over the company's lines are favorably impressed by what they see of California from the car windows, and the company's regular patrons, living along its lines, appreciate its efforts in the line of horticulture.

In addition to the duties mentioned, the chief gardener and his force take care of maintenance work in trimming back trees along the right-of-way to provide clearance, especially grade crossings, where a dense growth of trees would totally or partially obscure the view of the track and highway. In assigning tasks of this nature, which come within the province of the maintenance-of-way department, to an experienced landscape gardener rather than to a "tree butcher" of the type which is in some places "turned loose" on the trees, the company management feels that the best results are obtained. Skilled supervision of this work gives dignity to it and permits the removal of obstructions without seriously marring the beauty of the foliage which has been disturbed.

In conclusion, it may be said that in general parking work around the grounds of structures the company's policy is to plant trees of such types that their long life and uniform and symmetrical growth may be insured. Of course, the native palm is a very important tree, and there are several types of cedar well adapted to the climate that retain their form from the start up to full growth.

Inventorying Materials and Supplies

8613 Different Kinds of Materials Valued at $916,317 Were Inventoried in Two Days at Cost of $239.85—No Special Help and No Overtime

By B. J. YUNGBLUTH
General Storekeeper for Receivers Pittsburgh (Pa.) Railways

TO MAKE inventories successful six fundamental points must be considered: (1) A definite plan; (2) sufficient preparation; (3) personnel; (4) schedule of work; (5) speed, and (6) recapitulation.

PLANNING THE WORK

Best results are obtained by working in close and sympathetic touch with the auditor. Our practice is to take a complete inventory at each store as of one date each year, which enables us to make the necessary arrangements sufficiently in advance and to plan it as any big job is usually planned.

An inventory taken in the stock books (see the illustration) is more accurate than a "blind" count. Note that one has the advantage of seeing before him at the time of counting the amounts on hand in the previous months together with the normal movement of the item. Therefore if the amount found at the time of inventory is more than was previously on hand plus what was received, or if it is abnormally below the amount on hand previously minus the normal movement, an investigation at the time the count is made is naturally prompted, easily made and productive of the greatest possible accuracy. Since the person making entries in the book is relieved of the work of writing a description of the material, he has plenty of time to scrutinize the amount said to be on hand with relation to the previous record. Errors in transcription also are eliminated.

In the inventorying of iron, cold-rolled steel, etc., the material is not actually weighed. Measurements of length are made with an 18-ft. stick properly graduated, and the average weight per foot, according to an authority like Kent's hand-book, is used to determine the weight. This very greatly reduces the cost, and investigation has proved that it is more accurate, owing to the errors that creep in when the stock is actually weighed.

Instructions relating to the physical work only are read and explained to all persons engaged in inventory work. The following abstract of these for the inventory as of May 1, 1919, together with a study of our stock book sheet, will enable the reader to understand our plan.

The annual inventory is nothing more or less than our regular monthly stock-taking excepting that items stored in bulk such as nails, rivets, etc., which we are permitted to estimate each month, must be accurately counted or weighed as the case may be.

Preface: The stock books contain a list of every article we have in stock. Books may be taken from the office only after noting on chart, date, hour, and initials of team. Material must be counted in the sequence as listed in stock books. Date each page of book and initial it just as you go along. A schedule is made indicating the books and their sequence, to be used by each team.

Neatness: All entries in the stock book should be made with indelible pencil. No erasures are permitted. If corrections are necessary, cross out the first entry with two light lines without obliterating it and write correct figures above it, showing your initials.

No attempt is made to embarrass you because of errors made. We do ask you to show your initials for counts, corrections and changes. If questions arise, it helps to know whom to ask.

Counters: The person counting the stock shall say what he finds in the bin, giving the class number and the number of pieces. The person handling the stock book shall check the class number and the description given. In case of any differences the class number in the stock book shall be considered as correct after verifying same with the 1918 stock book.

Each item must be actual count; no estimates accepted.

The person handling the stock book will watch quantity said to be on hand, and if there is any great difference compared with previous month, the count shall be verified and the stock book marked "O.K." in the "On Hand" column with the initials of the person handling the stock book.

When the location of material in stock book is incorrectly noted or missing, the correct location is to be shown in the stock book. If any overflow stock of the same material is stored in the annex, platform or yard this should be shown.

Units: Frequently the accounting unit is not the same as the stock book unit, such as reels of wire, etc. The number of reels or coils of wire must be shown as usual, and in addition the weight or length is required for accounting purposes. Express both units in stock book in "On Hand" column at the same time the count is made.

Entries in Stock Book: If there should be on hand any items not written in the stock book, please locate the stock book in which such material should logically be and make the entry with indelible pencil. Use care to get full descriptions, dimensions, etc., and show location.

Paint Dots: As each item is counted dot the piece or containers (like barrels, kegs, boxes, etc.) with pink paint (a different color is used each year). In the case of nails, nuts, rivets, etc., in bins at least one dozen should be dotted. The dot should not be larger than a penny and preferably smaller.

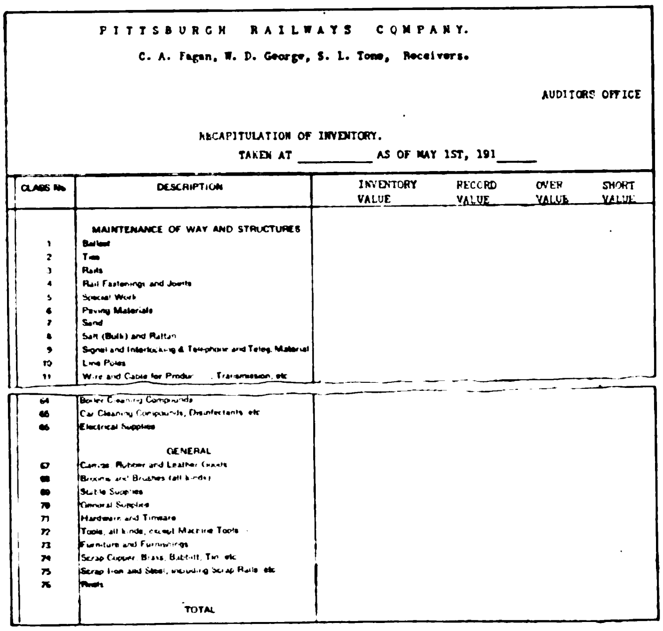
Care should be taken not to obliterate any paint dots made at previous inventories. Do not place the paint on the contact surfaces of electrical parts or on the exposed surfaces of car trimmings or other material that would be damaged thereby. The dotting in no instance is burdensome, it does not delay the work. It verifies that all items were inventoried. Paint does this better than anything else. The mark is not without further value, it shows how long the stock is on hand.

To insure correctness of the inventory it is necessary to record whether the receipts and the issues during the period were "before" or "after" the stock of each item was counted as evidenced by the presence or absence of the painted dot.

Receipts: No materials will be received during the inventory period excepting shipments applying on discount invoices or for special rush jobs. Such receiving cards as are necessary will be marked by the man inventorying the section in which such goods are stored "before" or "after" with his initials. This must be done each day.

Where the count has been made and entered in the stock book the goods received may be put into stock and no additional amount entered in the stock book, provided the receiving card is marked "after." Where the receiving card is marked "before," care must be taken to see that such quantity is included in the amount on hand.

Issues: The counter man will be particular to mark each requisition either "before" or "after." Where only a part



PITTSBURGH RAILWAYS COMPANY.

C. A. Fagan, W. D. George, S. L. Tone, Receivers.

AUDITORS OFFICE

RECAPITULATION OF INVENTORY.

TAKEN AT ________ AS OF MAY 1ST, 191____

CLASS No.	DESCRIPTION	INVENTORY VALUE	RECORD VALUE	OVER VALUE	SHORT VALUE
	MAINTENANCE OF WAY AND STRUCTURES				
1	Ballast				
2	Ties				
3	Rails				
4	Rail Fastenings and Joints				
5	Special Work				
6	Paving Materials				
7	Sand				
8	Salt (Bulk) and Rattan				
9	Signal and Interlocking & Telephone and Teleg. Material				
10	Line Poles				
11	Wire and Cable for Produc . Transmission, etc				
64	Boiler Cleaning Compounds				
65	Car Cleaning Compounds, Disinfectants, etc				
66	Electrical Supplies				
	GENERAL				
67	Canvas, Rubber and Leather Goods				
68	Brooms and Brushes (all kinds)				
69	Stable Supplies				
70	General Supplies				
71	Hardware and Tinware				
72	Tools, all kinds, except Machine Tools				
73	Furniture and Furnishings				
74	Scrap Copper, Brass, Babbitt, Tin, etc				
75	Scrap Iron and Steel, including Scrap Rails, etc				
76	[illegible]				
	TOTAL				

RECAPITULATION OF INVENTORY USED BY PITTSBURGH RAILWAYS

of the material issued on any one requisition has been counted, the words "before" or "after" shall be noted opposite each item on the sheet. This must be done when material is removed from the bin.

Completion of Inventory: After the inventory has been apparently completed, certain persons will be detailed to make an actual inspection of the stock and by the presence or absence of paint dots to determine whether any materials may have been missed. It will be the practice to exchange sections in doing this, *i.e.*, the person who counted stock in a given section will inspect the work done in some other section.

GETTING PREPARED

Inventories are effected more by what is done in the 360 days than in the few actually required in listing the stock. The stock must be kept in good physical condition regardless of the plan of operation. Sufficient space or room is more necessary than fine fixtures or expensive buildings.

Where the necessity exists, material should be marked for identification. Material should remain in the original packages instead of the entire stock being thrown into bins. That which it is necessary to place in bins should be neatly piled or placed. Given the same bin, material can be placed, even piled, in a way to make counting difficult, or it may be placed to afford proper visibility to count it without handling. Intelligent thought shows the way.

Having in mind the quantities of certain goods required by the man on the job, we specify in purchasing that the manufacturer ship them in uniform packages, for instance:

Line insulators	50 per box
Line bars	50 per box
Babbitt	100 lb. box
Fish paper	25 lb. package
Channel gum	5 lb. package
Armature coils	1 set per box
Grid resistors	1 frame per box
Commutators	1 per box

The manufacturer makes no charge for this. He is glad to accommodate. When it is inconsistent to ask the manufacturer to put certain other goods in packages, much is gained by packing them in our receiving room. Our practice includes such items as:

Brake shoe keys	10 package
Pipe fittings (small)	25 package
Open links	25 package
Segments	10 package
Fingers	25 package
Small electrical parts	100 envelope

All packages are tagged to show quantity and description of contents. Besides keeping the material in good condition while on the shelves, the packages in many cases go to the ultimate consumer without additional counting, thus eliminating liability to error, damage or loss. The time is well spent.

Chain, rope, wire and similar heavy material, the weight of which is required, is kept on platforms used with transveyor trucks so that they may be run on the flush floor scale and weighed without handling.

A complete list of items to be inventoried under the different classes is as follows:

MAINTENANCE OF WAY AND STRUCTURES

1 Ballast
2 Ties
3 Rails
4 Rail fastenings and joints
5 Special work
6 Paving materials
7 Sand
8 Salt (bulk) and rattan
9 Signal and interlocking and telephone and telegraph material
10 Line poles
11 Wire and cable for production, transmission, etc.
12 Pole fixtures and electric line accessories
13 Bonds
14 Lumber and timber for maintenance of way and structures
15 Castings for maintenance of way and structures

POWER PLANT AND SUBSTATION

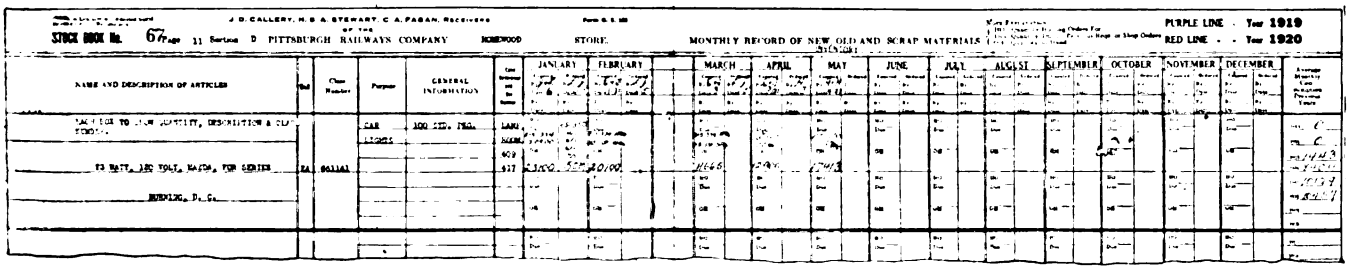
16 Boilers and boiler apparatus repair parts
17 Engine repair parts
18 Turbine repair parts
19 Armatures and repair parts
20 Switchboards and switchboard equipment
21 Mechanical devices for power stations
22 Ash and coal handling machinery, hoists, etc.
23 Storage battery parts

CAR EQUIPMENT

24 Lumber for car equipment, wagons, etc.
25 Bolts, nuts, washers, rivets, pins, studs, etc.
26 Metals, N. O. S.
27 Bar iron and steel
28 Drawheads, automatic couplers, journal boxes and lids
29 Castings, iron and steel, rough and finished, N.O.S.
30 Castings, brass and bronze, rough, buffed and finished
31 Forgings
32 Springs, all elliptical and helical body, truck, etc.
33 Pipe and conduit, iron and steel, including steel tubing
34 Pipe and conduit fittings
35 Car-body trimmings
36 Fare boxes, fare registers and repair parts
37 Arc and common headlights and repair parts
38 Signs and their repair parts
39 Electric car heaters and repair parts
40 Car stoves and heaters other than electric), etc.
41 Mechanical and electrical devices for car equipment, N. O. S.
42 Fenders, life guards and repair parts
43 Paints and varnishes
44 Glass
45 Air-brake material (all makes)
46 Magnetic brakes and repair parts
47 Brakeshoes
48 Car wheels
49 Car axles
50 Material for service cars, N. O. S.
51 Trolleys and repair parts
52 Controllers, contactors and repair parts
53 Car type motor repair parts
54 Gears, pinions, gear cases, lids and parts
55 Bearings
56 Circuit breakers, power switches, resistances, etc.
57 Wire and cable for car equipment uses
58 Insulating materials
59 Electrical hardware
60 Machinery, machine tools and repair parts

CONDUCTING TRANSPORTATION

61 Fuel
62 Lubricants
63 Illuminating and other oils, gasoline, etc.



J. D. CALLERY, H. B. A. STEWART, C. A. FAGAN, Receivers of the PITTSBURGH RAILWAYS COMPANY

STOCK BOOK No. 67 Page 11 Section D

HOMEWOOD STORE.

MONTHLY RECORD OF NEW, OLD AND SCRAP MATERIALS

PURPLE LINE - Year 1919

RED LINE - - Year 1920

NAME AND DESCRIPTION OF ARTICLES	Class Number	Purpose	GENERAL INFORMATION	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
75 WATT, 120 VOLT, MAZDA, FOR SERIES BURNING, D. C.		CAR LIGHTS													

SPECIMEN PAGE FROM STOCK BOOK OF PITTSBURGH RAILWAYS. THE REQUISITION NUMBER IS SHOWN WITH THE QUANTITY ORDERED AND DUE. THE DATES ABOVE THE QUANTITY ORDERED INDICATE INSTALLMENT DELIVERIES DESIRED

64 Boiler cleaning compounds
65 Car cleaning compounds, disinfectants, etc.
66 Electrical supplies

GENERAL

67 Canvas, rubber and leather goods
68 Brooms and brushes (all kinds)
69 Stable supplies
70 General supplies
71 Hardware and tinware
72 Tools, all kinds, except machine tools
73 Furniture and furnishings
74 Scrap copper, brass, babbitt, tin, etc.
75 Scrap iron and steel, including scrap rails, etc.
76 Reels.

PERSONNEL

Only persons regularly engaged in stores work are employed on the inventory. Each is given the work he is best qualified to do. Those most familiar with the stock do the actual counting. Those experienced in handling the stock books and having an intelligent idea of what they mean, make the record and scrutinize the result. A pair comprises a team working together throughout the period.

Those persons in the department who are not particularly experienced are employed as counters, being used in addition to the inventory team but working just ahead. As each lot of goods is counted, a slip of paper showing the result is placed with the material. The inventory team is required to use reasonable care to "size up" the quantity and reconcile it with the counter's slip. Laborers are used for weighing the bulk material in conjunction with the counters.

Through the use of the men and women of the office force, these are afforded an opportunity to acquaint themselves with the appearance of the materials, enabling them to perform their regular duties more intelligently.

To satisfy himself as to the correctness of the inventory, the auditor details five or six men to work on the teams and to select at random items which others had counted and check the counts or to make such investigations as he considers desirable.

SCHEDULE OF WORK—SPEED

Each team is employed with the materials with which it is most familiar. The sequence in which the various kinds are to be inventoried is carefully considered, so that the most painstaking work is done first while the workers are fresh. Care is taken to keep the workers properly separated so that one team will not interfere with the work of another. Of course, it is necessary that the counters be first employed with the materials to be listed first so that each team may have the advantage of their services. A copy of the schedule is supplied and in addition written instructions are given to each team.

Any inventory requiring considerable time interferes with normal operation. It is necessary to supply the daily wants of others and to receive materials which perhaps are badly needed or those on which there is a discount for prompt payment. Each issue and receipt during the inventory period creates a potential source of error, and in the aggregate a considerable discrepancy may result.

The work being naturally tedious, and after the first or second day the efficiency of the workers is reduced, their speed is less and they are more likely to overlook the apparently little things. On our own property we are told of an inventory years ago which was in progress after seven weeks. Its value was exceedingly doubtful. This company some years ago made partial or installment inventories in connection with the perpetual inventory scheme. Perhaps it is sufficient to say that the plan was abandoned, and everyone is glad of it.

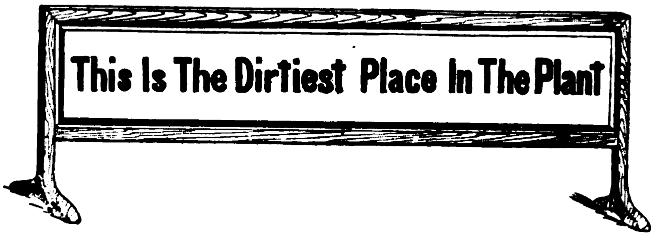
RECAPITULATION

A tabulated result of inventories should be made so as properly to analyze and criticize the operation of stores. Only the usual comparison of the quantities found with the quantities on the books is of little value. Most officials have not the time, if they have the inclination, to give it sufficient study. Without a proper recapitulation it is difficult to determine just what has transpired. The form on page 519 illustrates our recapitulation according to our standard classification of materials and supplies.

The last inventory for which the results are known at this writing covered stock valued at $719,182, which as compared with the auditors record showed a net total discrepancy of only $1,652. This is equivalent to 0.11 of 1 per cent of the value of materials disbursed during the year. The results of other inventories since adopting this plan were equally satisfactory.

New Method for Removing Danger Spots in Large Plants

A plan successfully used recently in eliminating danger spots in a large plant is suggested by the accompanying illustration. A "dirty plant committee" selected the places where this sign was put up. If a place was not cleaned up in reasonable time a photograph of it was taken with the sign on it and copies of the picture were placed on several bulletin boards in the plant and on the manager's desk. This procedure always brought results. This "stunt" was described in the National Safety Council's executive series recently.


This Is The Dirtiest Place In The Plant

THERE ARE SPOTS IN RAILWAY SHOPS AND ELSEWHERE WHERE THIS SIGN MIGHT BE EFFECTIVE

A member of the Council reports that the above sign has been used with good results, but that it has been found best to use also a sign reading: "This is the cleanest place in the plant." This company finds that the men put forth greater effort to obtain the "clean" sign than they do to prevent receiving the "dirty" sign. The experience of more than one electric railway master mechanic or superintendent shows that all that is needed to insure neatness about a plant is for the man in charge to call attention, diplomatically, to lapses from good order.

The National Highway Traffic Association is studying this year a number of topics which are of interest to the electric railway field. Among these are: Regulation of pedestrian traffic, segregated-traffic streets in municipalities, parking and ranking of vehicles, safety zones, legislation relative to highway transport, and motor trucks, motor buses and trailers—weights, speeds and dimensions.

Power-Saving Instruments a Long-Standing Success in Great Britain and Ireland

For Years a Large Proportion of the Cars in the United Kingdom Have Been Equipped with Devices for Fostering Careful Operation and Economical Use of Current—Many Managers Would as Soon Be Without Such Instruments on the Cars as Without Controllers or Brakes — Value of Follow-Up Is Recognized by Maintaining the Motorman's Inspector as a Permanent Official

LONG before the use of devices to promote energy saving on cars was a live question in America, the tramway managers of the United Kingdom had a very sincere interest in the subject. In fact, to them the advisability of using such instruments was clear almost from the day that they began electric operation. Their cars were and still are much lighter than cars of similar capacity over here, but the condition that many of them had to buy rather than generate power and that they also had to pay comparatively high rates for it led them to study the science of controller manipulation for the frank purpose of keeping down their power bills.

The first instruments developed were the watt-hour meter and the ampere-hour meter, and both types in greatly improved form are now in general use. A German current-time clock which had the dial of an ordinary clock but the hands of which moved only when current was passing through the controller has also been used to some extent. In the meantime, American instruments have invaded the field also. For a number of years past the great system of the London Underground Electric Railways has been using Rico coasting recorders on four of its subway lines, while very recently a number of Arthur power-saving recorders have been sent to the Southampton Tramways, the Metropolitan Electric Tramways and several others. Judging from personal discussions with several British managers, systems without instruments of some kind will soon be a rarity in their country.

CONSENSUS OF BRITISH OPINION ON CAR-CHECKING DEVICES

What British tramway managers as a class have to say about the utility of devices to promote energy saving is to be gleaned from two questionnaires answered by them in 1911, and again in 1913. These questionnaires were prepared by T. B. Goodyer, manager Croydon Corporation Tramways and now president of the Municipal Tramways Association. Mr. Goodyer's personal experiences are detailed later in this article.

In his first questionnaire Mr. Goodyer inquired as to what power saving had been obtained through the use of meters or other devices. The percentages reported varied from 5 to 23.37 per cent. One reply (Preston) significantly stated that in terms of the fuel bill the saving was 12 per cent. In another case (Gloucester), a saving of 21 per cent was reported as an improvement over several years use of what was described as "a bonus system which worked well for several years." One user noted that his money had been returned in less than six months, while several larger users stated that they had saved thousands of pounds. As evidence that light cars are operated in the United Kingdom, it may be noted that the maximum pre-meter consumption per car-mile reported was 2.11 kw.-hr. and the minimum, 1.7 kw.-hr., and the consumptions were reduced to 2.01 kw.-hr. and 0.84 kw.-hr. respectively.

Even in replying to the earlier questionnaire, a number of managers observed that instruments of the kind under discussion confer auxiliary benefits. To inquire further into this aspect, Mr. Goodyer communicated with thirty-five systems on the value of such instruments in the detection of faulty cars. The replies showed practical unanimity on this subject, the manager of the Bexley Heath Tramways actually writing: "It was for the purpose of detecting faulty cars that I purchased some meters several years ago." Decreased wear and tear, fewer electrical troubles, more even running and lower upkeep charges were mentioned in both general and specific statements. Among the last were those of the Cape Town (Africa) Tramways which reported the following increases in the life of equipment: Armature parts, 44 per cent; motor bearings, 15 per cent; axle bearings, 57 per cent; car wheels, 22 per cent, and brakeshoes, 41 per cent. On Mr. Goodyer's own system, the saving in brakeshoes was given as 26 per cent.

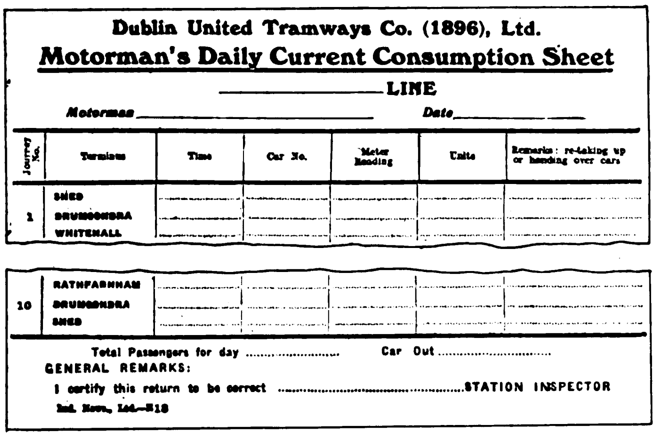
One would naturally expect that the value of meters and other instruments on cars would attain its maximum during a period of extraordinary fuel shortage. It is a fact that the many years of careful checking proved a boon, but it was usually out of the question to maintain the high standard of pre-war days. There were ample causes for this, such as the enlistment of the majority of skilled motormen and supervisory officers, the letdown of track and car maintenance, the increase of traffic without increase of cars and, in many cities, the inability to run as usual on account of the darkening of streets against air raids.

The following accounts of practices on individual roads are self-explanatory. It may be added, however, as a point of great importance to power saving and careful running that British tramways often have supervisory officials who bear the title of "motor inspector" but whose actual function is the supervision of motormen. It is wisely held that it is just as important to have efficient men to spend the corporation's money as it is to have efficient men to collect it. Therefore, the motor inspector is just as permanent an official as the ticket or traffic inspector.

INDIVIDUAL BONUSES ABOLISHED AT DUBLIN

The Dublin United Tramway Company (1896) Ltd., began to install measuring instruments in 1909, and now has 260 out of some 320 cars equipped with ampere-hour meters of C-H, Ferranti and British Thomson-

Houston makes, with the last-named make predominating. Formerly it was the practice to inspect meters every three months, but this was found unnecessary. They are now examined only when the motormen's reports indicate some unusual variation. As purchased, the meters are guaranteed to be accurate within 2½ per cent fast or slow, but for car-checking purposes variations up to 7 per cent may be permitted. Ampere-hour meters are preferred to watt-hour meters because of their greater simplicity and because the variations from the standard line potential of 500 volts are not important enough to impair the value of comparisons. The low cost of maintenance may be judged from the fact that these 260 meters are being kept in condition at an annual cost of but £160 ($768) for both wages and testing.



Dublin United Tramways Co. (1896), Ltd.

Motorman's Daily Current Consumption Sheet

________________ LINE

Motorman ________________ *Date* ________

Journey No.	Terminus	Time	Car No.	Meter Reading	Units	Remarks: re-taking up or handing over cars
1	SHED DRUMCONDRA WHITEHALL					
10	RATHFARNHAM DRUMCONDRA SHED					

Total Passengers for day .... Car Out ....

GENERAL REMARKS:

I certify this return to be correct ....STATION INSPECTOR

Ind. Hons. Ltd.—818

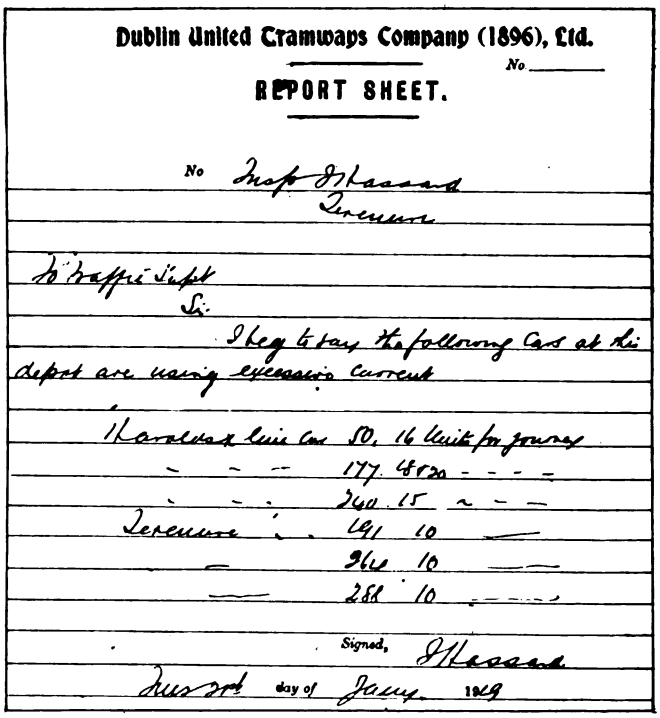
MOTORMAN'S DAILY CURRENT CONSUMPTION SHEET, TRIP BY TRIP

Up to the time of the coal shortage crisis, the traffic manager was not in immediate contact with the meter performances of the motormen, as all that came to him was a monthly report of the efficiency of each motorman on the basis of kilowatt-hours per every 100 car-miles run. Much more effective results were secured by adopting the trip-by-trip record and check illustrated. The initial reading of the meter is put down by the night foremen, and as the motorman returns to the carhouse on each round trip or journey he submits his record to the depot inspector for initialing. This is where the value of the traffic department's check becomes apparent, for if there is any reason for undue consumption of energy, as heavy loading, blockades, bad brakes, etc., it can be explained at once while the circumstances are fresh in memory. On the other hand, if the conditions have not warranted excessive use of energy, the motorman is obviously at fault and is open to reinstruction. This change to direct control was made in July, 1918. Its benefits may be gaged from the fact that at one depot the highest man reduced his energy consumption from 1.89 kw.-hr. per car-mile in May, 1918, to 1.77 kw.-hr. in September, 1918, while even the lowest man cut his requirements from 1.62 to 1.56 kw.-hr., per car-mile. As elsewhere in the United Kingdom, permanent follow-up men called motor inspectors (of whom there are two in Dublin) are employed to maintain the efficiency of the motormen.

In August, 1918, a special printed appeal in book form was issued. This publication not only contained the usual instructions on acceleration, coasting and braking, but undertook also to specify the series, parallel and coasting positions for practically every block along each route. This detail instruction book was really necessary because where two or more inspectors are instructing the men they are likely to have different opinions that must be brought into line by means of such specific directions. It is, of course, not intended that a motorman should have these rules memorized. The difficulty found, says G. Marshall Harriss, general manager, was that a man who was low down on the list and wasting energy would say: "Will you show me how I am to save it?" The easiest way appeared to be to put a booklet into his hands and demonstrate here and there according to the printed regulations.

In discussing this subject, Mr. Harriss writes that he has a very high opinion of the value of checking instruments on cars. He has gone very carefully into this question and has found that most of the tramways which are not very keen on the subject have never given them a fair trial. He, on the contrary, has found that the motormen who have the best efficiency records are usually the best drivers all around. He assumes that if they are alert and keen in trying to save current, they will be keeping a careful lookout to avoid accidents.

Formerly it was the practice at Dublin to give the highest two men of a depot a bonus of 10s. ($2.40) and the third man a bonus of 7s. 6d. ($1.80) every six months. This proved unsatisfactory. It discouraged the mass of the men who earned no prize money and tempted unscrupulous men to run by intending passengers for the sake of showing low energy use. Furthermore, the men prefer receiving like treatment. It has not been difficult for the traffic department to keep them interested in careful operation, especially as the trip-by-trip check at the carhouse encourages them to report immediately car defects that would otherwise go uncared for and possibly make harder work for them. The men also appreciate that careful attention to power saving goes



Dublin United Tramways Company (1896), Ltd.

No. ______

REPORT SHEET.

No Insp J Hassard
Terenure

To Traffic Supt
Sir:
I beg to say the following Cars at this depot are using excessive current

Harolds X line Car 50, 16 Units per journey
— — — 177. 48 & 20 — — —
— — — 240. 15 — — —
Terenure — — 191 10 —
— 266 10 —
— 288 10 —

Signed, J Hassard

Tues 3rd day of Jany 1919

CARHOUSE INSPECTOR'S REPORT ON CARS USING EXCESSIVE CURRENT

(Starting number is put on by night foreman. Inspector initials report at end of each trip).

hand in hand with greater safety to themselves and their passengers.

TEN YEARS SATISFACTORY METER EXPERIENCE AT ABERDEEN

The Aberdeen Corporation Tramways have enjoyed a long and satisfactory experience with the use of the C-H ampere-hour meters. As early as 1908, these meters were installed during the administration of R. Stuart Pilcher as general manager. He enthusiastically advocated the use of such devices in a paper before the Municipal Tramways Association. Mr. Pilcher's enthusiasm is shared fully by his associate and successor, William Forbes, who has set himself the task of making the most of the savings possible with such devices.

Like other British tramways, Aberdeen has a supervisory official called motor inspector—really motorman's continuing instructor—whose duty it is to ride the cars for the purpose of helping the motormen in their work. This feature of organization is, of course, most helpful in getting the fullest benefits out of car-checking instruments that depend for high efficiency on the proper handling of controller and brakes. However, when emergencies arise, as in the case of the coal shortage due to the war, the general manager himself must take a hand to secure top-notch results. As an example of this, the following circular issued by Mr. Forbes under date of Oct. 17, 1918, is worth quoting:

ABERDEEN CORPORATION TRAMWAYS—COAL SHORTAGE

Strenuous efforts are being made all over the country to cope with the present emergency caused by the shortage of coal. Coal must be saved and we have to adopt means whereby the contribution of the Tramways Department amounting to 15 per cent of our last year's total consumption of power must be saved. Various schemes have been adopted by different tramway authorities in order to effect the desired economy, and many towns are greatly curtailing their services. We could, I think, save a considerable amount of power if all employees would endeavor to carry out the following suggestions, viz.:

1. Don't use power longer than is absolutely necessary. Throw off power when full speed is attained and coast the rest of the distance.
2. Get off the resistance notches as quickly as possible, without rushing the notches, onto full series or full parallel. Never run on parallel unless you can take full advantage of the last notch. It is simply wasting power to throw off on the first or second parallel notches. The resistances have used up the most of it; the motors have only got a fraction of the power consumed. The same work could have been done with series at half the cost.
3. When starting from a station on a decline, release the brakes and allow the car to start on its own stored energy.
4. Run on series between Castle Street and Market Street and *vice versa* unless pressed for time.
5. Always endeavor to let the car in front have a 15-yd. start before notching up, particularly after the power has been cut off for a time.
6. Report at once any cars with hand brakes too tightly adjusted or any other defects.
7. Try to save at least one unit a day. It is a step in the right direction and is helping to win the war.

Conductors can assist the motormen materially in saving power by observing the following rules:

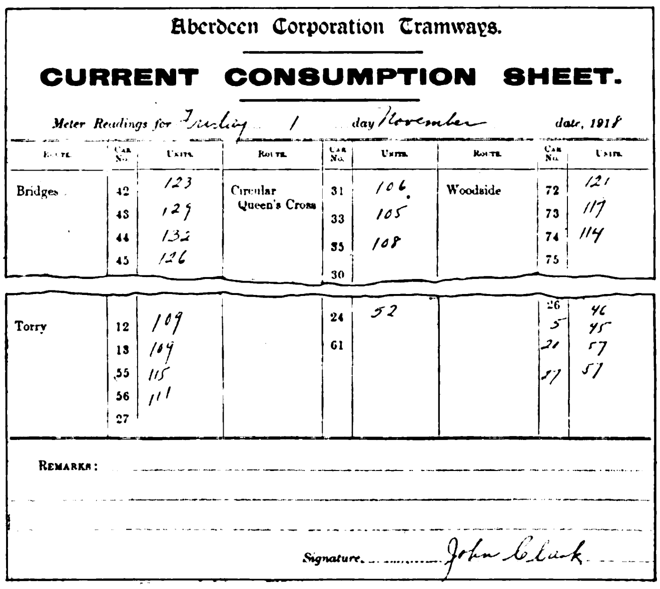
1. Call the name of the station when at least 50 yd. distant in order to give passengers time to get onto the platform before car stops and promptly bell the motorman if there is to be a stop or not.
2. Keep a sharp lookout for intending passengers.
3. Endeavor as far as possible not to have a second stop once the car is started. This can be best done by observing rules Nos. 1 and 2.
4. Keep the platform clear as far as possible. Don't have passengers standing on platform if there is room inside or upstairs. It obstructs the view of the motorman and is liable to cause accidents and delays when passengers are getting on and off.

By observing these rules you will help your motorman to "save a unit a day."

A return showing the number of units consumed daily will be posted every forenoon in the muster room.

Following the issue of this circular, the following savings were obtained week by week compared with the same weeks of the preceding year: First week, 3000 kw.-hr.; second week, 5000 kw.-hr.; third week, 4900 kw.-hr.; fourth week, 2900 kw.-hr. As the average energy consumption for the fiscal year ended May 31, 1918, was 54,000 kw.-hr. a week, it is obvious that this appeal was effective. On a money basis, the average saving of 3950 kw.-hr. per week at 0.917d. per kw.-hr. was $72. The record of saving is the more noteworthy because travel had increased more than 150,000 a week equal to 20 per cent as compared with the preceding year.

In discussing follow-up practices, Mr. Forbes expressed the opinion that it was unwise to spur on the men unless the management was certain that savings could be augmented. It was also good policy to make the appeal at the time when coal saving was uppermost in the minds of all. He estimated that the checking devices were good for at least 15 per cent saving in energy as compared with no devices and instruction. They had a further value in promoting better driving of the car, thus saving the equipment and effecting a reduction in accidents.



Aberdeen Corporation Tramways.

CURRENT CONSUMPTION SHEET.

Meter Readings for Tuesday 1 day November date, 1918

Route	Car No.	Units	Route	Car No.	Units	Route	Car No.	Units
Bridges	42	123	Circular Queen's Cross	31	106	Woodside	72	121
	43	129		33	105		73	117
	44	132		35	108		74	114
	45	126					75	
				30				
							26	46
Torry	12	109		24	52		5	45
	13	109		61			21	57
	55	115					17	57
	56	111						
	27							

REMARKS:

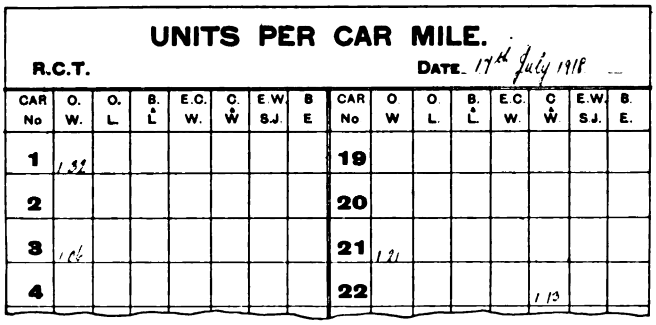
Signature John Clark

CURRENT CONSUMPTION SHEET USED IN ABERDEEN

The total number of ampere-hour meters in use at Aberdeen is eighty-four, and they are installed on both passenger and service cars. A meter card of the type reproduced is carried in every car. This record identifies the date, car number, route, successive totalized readings of the meter and separate readings of the kilowatt-hours used on the first and second shifts by the respective motormen. Thus it will be seen that there is one card per car instead of one card per motorman. These records are transferred to a daily "Current Consumption" sheet by the carhouse foreman, following which the records go to headquarters for transcription to a sheet covering the day-by-day records for the whole system by full weeks.

The men are asked to give, and do give their best services without the offer of individual bonuses. The fact that they are organized does not deter them from trying to run the cars as economically and safely as they can. It is simply a matter of good management to see that they do not lapse into unconscious negligence.

From the mechanical and electrical standpoints the meters have given little trouble. A deviation of 5 per cent from perfection, fast or slow, is held permissible. The instruments in fact have required very few repairs aside from the replacement of a few brass wheels. Cleaning and tests are carried out only when the records indicate that not the men but the meter is at fault.



UNITS PER CAR MILE.

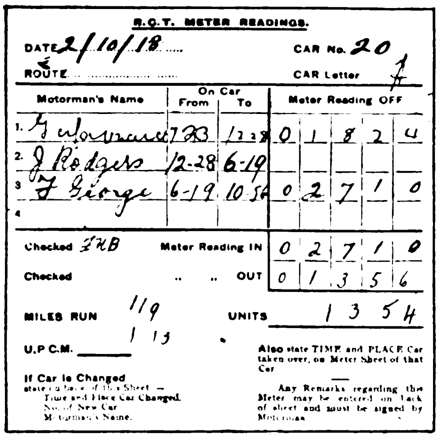
R.C.T. DATE 17th July 1918

CAR No	O. W.	O. L.	B. L.	E.C. W.	C. W.	E.W. S.J.	B E	CAR No	O W	O L.	B. L.	E.C. W.	C W.	E.W. S.J.	B. E.
1	1.32							19							
2								20							
3	1.06							21	1.21						
4								22					1.13		

REPORT FORM FOR UNITS PER CAR-MILE, READING CORPORATION TRAMWAYS

NINE YEARS' SERVICE TO DATE AT READING

The Reading Corporation Tramways was only one year after Aberdeen in taking up the C-H ampere-hour meter, the installation being made in 1910. All of the thirty-six cars in service are equipped. The meters were sold originally on the basis of having the makers take care of all repairs and calibration for a period of seven years. Owing to war conditions, it was not practicable for the makers to renew this agreement. With the ending of the war, however, the meters were sent to them for a general overhauling. Five per cent variation up or down is held to be reasonable inasmuch as these meters do not have to be so exact as a house meter, for example, whose readings are the basis of a monthly invoice. The savings due to the use of this checking device are estimated at 15 per cent. The men are unionized, but consider the use of a meter a matter of course. No awards are given specifically for good meter records, but every motorman who has a satisfactory general service record receives 10s. ($2.40) every three months, or 20s. extra at end of the fourth quarter of the year, if he has a continuously good record. The average energy consumption during the fiscal year ending March 31, 1918, was 1.52 kw.-hr. per car-mile. Two accompanying forms show the character of meter reading record kept on the car by successive motormen during the day and the assembly for all cars on all lines made up day by day from the car records.



R.C.T. METER READINGS.

DATE 2/10/18 CAR No. 20

ROUTE CAR Letter f

Motorman's Name	On Car From	On Car To	Meter Reading OFF				
1. G Woodward	7.33	12.28	0	1	8	2	4
2. J Rodgers	12-28	6-19					
3. F George	6-19	10.54	0	2	7	1	0
4							

Checked FHB Meter Reading IN 0 2 7 1 0

Checked .. .. OUT 0 1 3 5 6

MILES RUN 119 UNITS 1354

U.P C.M. 1.13

If Car is Changed state on back of this Sheet — Time and Place Car Changed. No. of New Car Motorman's Name.

Also state TIME and PLACE Car taken over, on Meter Sheet of that Car

Any Remarks regarding the Meter may be entered on back of sheet and must be signed by Motorman

METER RECORD, READING CORPORATION TRAMWAYS

As suggested earlier, the Croydon Corporation Tramways were early users of electric energy meters, all the cars at Croydon being equipped since 1910 with a total of seventy-five C-H ampere-hour meters. The matter of maintenance has hardly been a factor, since not more than one or two meters are in the repair shops at any one time.

Excellent results have been obtained without the use of a bonus system. To use Mr. Goodyer's own expression: "Pots of money have been saved by these devices." In money, the total saving from March, 1910, to March, 1916, was about £27,000 ($129,600). Of course this saving means that the installation, upkeep and record-keeping cost of the ampere-hour meters has been recouped many times over. The previous average energy consumption of 1.281 kw.hr. per car-mile was lowered by 20 per cent.

That Mr. Goodyer has kept in constant touch with the energy-saving problem appears from such detailed records as Tables I and II which show, in detail, the energy and money savings from 1910 to 1916. It will be noted that the energy consumption has not remained at the original low level. This is due partly to war conditions, such as presence of a large proportion of new men, to the darkening of the streets for air-raid protection and to omnibus competition which adds to street congestion. With the return of normal conditions, the savings should reach their former high level. The saving in brakeshoe wear is 26 per cent.

TABLE I—CONSUMPTION OF ELECTRICAL ENERGY IN KILOWATT-HOURS PER CAR-MILE AND SAVINGS TO DATE RESULTING FROM THE INSTALLATION OF AMPERE-HOUR METERS, CROYDON CORPORATION TRAMWAYS

Date	Kilowatt-Hours per Car-Mile	Savings	Savings to Date	Gross Savings If Taken on Basis of 1.28 Kw.-Hr. per Car-Mile
February, 1910..	1.29	....	....	....
March, 1910....	1.281	£85- 8-0	£85-8-0	£85- 8-0
March, 1911....	0.976	4,984-18-3	5,870-6-3	4,984-18-3
March, 1912....	0.929	806-15-2	6,677-1-5	5,594-0-10
March, 1913....	0.938	....	6,677-1-5	5,695- 3-0
March, 1914....	0.027	....	6,677-1-5	4,628-13-4
March, 1915....	1.071	....	6,677-1-5	3,720- 0-0
March 3, 1916..	1.089	....	6,677-1-5	2,613- 7-6
			£6,677-1-5	£27,321-10-1

TABLE II—CONSUMPTION OF ELECTRICAL ENERGY PER CAR MILE, CROYDON CORPORATION TRAMWAYS

	Kilowatt-Hours per Car-Mile
April 1, 1909, to Feb. 21, 1910	1.29
Average results on one car metered for one week, equivalent to £21-2-10	0.87
Weekly saving when twenty-four cars were metered:	
March 18, 1910	£12-13-0
March 25, 1910	30- 1-0
March 31, 1910	42- 4-0
Total saving for three weeks	£85- 8-0
Seventy-five cars equipped with meters by September, 1910:	Kilowatt-Hours
Average per mile, year ended March 31, 1911	0.976
Average per mile, year ended March 31, 1912	0.929
Average per mile, year ended March 31, 1913	0.038 (1)
Average per mile, year ended March 31, 1914	1.027 (2)
Average per mile, year ended March 31, 1915	1.071 (3)
Average per mile, year ended March 8, 1916	1.089 (4)

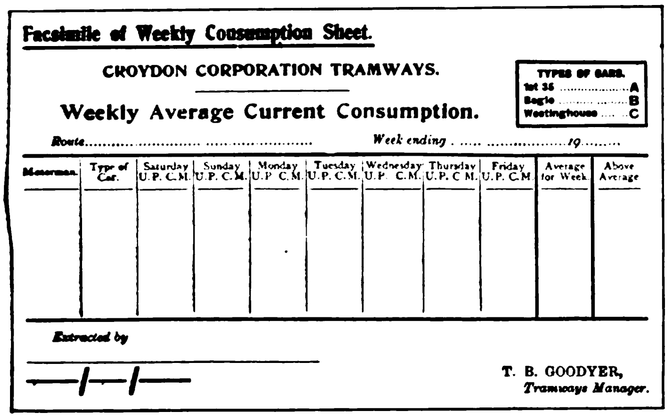
Notes: 1 and 2 are due to motor-bus competition, stopping between stopping places to take up passengers and increasing vehicular congestion. 1, 2, 3 and 4 — same causes, plus many new motormen, darkened streets, time of journey lengthened and less cars with more stops to take up and set down passengers; also unusual snowstorms.

As a guide to the motormen and their instructors, Mr. Goodyer prepared a booklet which tells exactly how to manipulate the controller over each part of the different routes according to traffic conditions. In filling out the meter card in the car, succeeding motormen are expected to check one another's readings at once to avoid disputes. The last reading of the day is not entered by the motorman but by the depot inspector who does so under the eye of the motorman. The meter readings are afterward segregated according to routes and types of cars as shown. The averages for each day of every week are also recorded.

In addition to the testimony from individual city systems the British Electric Traction Company, which controls some thirty tramway systems, considers the use of energy-saving devices as a matter of course. According to an official of that company the most generally used instrument on that property is the ampere-hour meter, then follows the watt-hour meter and, to a very small extent, the current-time clock brought from Germany about ten years ago. This same official added that it had been extremely difficult to get full value out of any checking device during the war because of the tremendous shifting of personnel and the loss of many experienced motormen. Of course, with the return of peace the situation will be greatly improved.

CAR METER TESTS AT GLASGOW

Although the Glasgow Corporation Tramways generate their own power at a comfortably low rate, the management has determined to look into the matter of meters on the cars. To this end a series of tests was begun on Oct. 14, 1918. Three cars, all of double-deck type and similar in other respects were fitted with C-H ampere-hour meters and run in like service over the Maryhill line, which is a purely city route. These cars were put in charge of motormen and motoresses selected for known ability; and then in charge of operators taken at random. In all cases, no special instruction was given but the operators were advised of the purpose of the meters. Hence the results may be ascribed to the moral influence of a checking device and to the desire of the car operators to do all they could, as individuals, to save coal.



Facsimile of Weekly Consumption Sheet.

CROYDON CORPORATION TRAMWAYS.

Weekly Average Current Consumption.

TYPES OF CARS.	
1st 35	A
Bogie	B
Westinghouse	C

Route.................................. *Week ending* ....19........

Motorman.	Type of Car.	Saturday U. P. C. M.	Sunday U. P. C. M.	Monday U. P. C. M.	Tuesday U. P. C. M.	Wednesday U. P. C. M.	Thursday U. P. C. M.	Friday U. P. C. M.	Average for Week.	Above Average

Extracted by

——/——/——

T. B. GOODYER,
Tramways Manager.

CONSUMPTION SHEET USED BY CROYDON CORPORATION TRAMWAYS

The results of these tests may be considered extremely gratifying, for many of the operators showed results below that of the average kilowatt-hours per car-mile of the entire system after making due allowance for lighting, which is not considered in the tests. The best motorman achieved the figure of 0.89 kw-hr. per car-mile, which is amazing in view of the fact that these cars weigh 24,260 lb. empty and may carry sixty-two seated and six standing passengers exclusive of the crew. The Shawlands-Maryhill line on which the runs were conducted is 6.06 miles long, with headways of two and three minutes and a schedule speed of 7.45 m.p.h. The accompanying Tables III and IV show the average and total energy consumption for given weeks and sample records on the test cars. These particular results are selected to show the uniformity of results secured by specially-skilled operators on a given car, the uniformity of results secured by unselected operators, and the range in the energy consumption on the test cars.

TABLE III—ENERGY CONSUMPTION, INCLUDING LIGHTING GLASGOW CORPORATION TRAMWAYS

Week Ending	Car-Miles	Traction Kilowatt-Hours	Kilowatt-Hours Per Car-Mile
Oct. 12	483,034	690,593	1.430
Oct. 19	478,498	684,676	1.430
Oct. 26	508,559	706,400	1.389
Nov. 2	475,184	671,090	1.412
Nov. 9	465,521	649,853	1.396
Nov. 16	452,202	638,574	1.412
Nov. 23	456,585	687,851	1.506
Nov. 30	452,741	662,362	1.463

TABLE IV—ENERGY CONSUMPTION SHOWN WITH THE SAME TYPES OF CARS BY DIFFERENT OPERATORS ON THE SHAWLANDS-MARYHILL LINE, GLASGOW CORPORATION TRAMWAYS

Date	Kilwatt-Hours	Miles	Kilowatt-Hours per Car-Mile	Operators
Car No. 265—Driven by Selected Operators				
Oct. 14	108.8	121	0.89	Livingston and McLean
Oct. 15	113.6	121	0.93	
Oct. 16	113.8	121	0.94	
Oct. 17	108.6	121	0.89	
Oct. 18	108.2	121	0.89	
Oct. 19	109.7	121	0.906	
Car No. 266—Operators Not Selected				
Oct. 14	151.1	121	1.24	Mulhearn, George
Oct. 15	145.4	121	1.201	S. O'Hara, W. J. Stewart
Oct. 16	148.4	121	1.22	R. Ross, D. McLeod
Oct. 17	146.1	121	1.207	J. Friel, R. Christie
Oct. 18	145.9	121	1.205	M. Stewart, D. McCann
Oct. 19	153.5	122	1.20	J. Muir, H. Borland

At the request of the editors of this paper the firm of Ferranti, Ltd., has supplied a list of the thirty-one municipal and eleven corporation tramways in Great Britain which use meters of its make.[1] Chamberlain & Hookham, Ltd., have also furnished a list of ninety-one cities, including several outside the British Isles, in which the C-H meters are used.[2]

COASTING STILL POSSIBLE ON TUBE LINES DESPITE ASTOUNDING INCREASES IN TRAFFIC

One of the best testimonials to the value of a checking device on cars is afforded by the experience of the London Underground Electric Railways with the Rico coasting recorder. These recorders are installed on the three "tube" lines, to wit, the Bakerloo, Piccadilly and Hampstead lines, and also on the Central London under-

---

[1] The Ferranti list is sub-divided thus:

Municipal Corporations—Manchester, Maidstone, Luton, Llandudno, Leicester, Yarmouth, Swansea, Stockport, Southport, Southend, St. Helens, Plymouth, Peterborough, Paisley, Nottingham, Norwich, Newcastle, Nelson, Blackpool, Leith, Oldham, Devonport, Barrow, Barnsley, Ashton-u-Lyne, Ayr, Dumferline, Dumbarton, Dartford, Burton-on-Trent, Exeter.

Private Corporations.—Merthyr Tydfil Electric Traction & Lighting Company, Ltd.; Llanelly & District Lighting & Traction Company, Ltd.; Greenock & Port Glasgow Tramways; South Lancashire Electric Tramways; Yorkshire (Woolen District) Electric Tramways, Ltd.; Oldham, Ashton & Hyde Electric Tramways; South Metropolitan Electric Light & Tramways Company; Blackpool, St. Annes & Lytham Tramways; Potteries Electric Traction Company, Ltd.; Mexborough & Swinton Electric Tramways; Colne & Trawden Light Railway.

[2] The Chamberlain and Hookham list is as follows: Huddersfield, Bournemouth, Dover, Hastings, Lowestoft, Wallasey, Walthamstow, Wemyss, Wolverhampton, Rochdale, Brighton, Birmingham Corporation, Birmingham Midland Tramways, Gloucester, Coventry, Derby, Swindon, Warrington, Wigan, Colchester, Leyton, South Shields, Aberdeen, Croydon, Burton, Bradford, Dublin, Belfast, Jarrow, Yorkshire E. T. Co., Sunderland, Reading, Dundee, Dundee and Broughty, Kirkcaldy, Cork, Greenock, Newcastle, Hull, York, Warrington, Preston, Lancaster, Blackpool, Ayr, Leith, Rotherham, Sheffield, Darwen, Salford, Luton, Rawtenstall, Carn Brea, Ilkeston, Cheltenham, Victoria (Australia), West Ham, Newport, Bombay, Dunfermline, Edinburgh, Torquay, Ferry, La Plata, Halifax, Musselburgh, Keighley, Cardiff, Pontypridd, Paisley, Lanarkshire, Liverpool, Buenos Ayres, Doncaster, Gateshead, Tynemouth, Gravesend, Glasgow, London County Council, Ilford, Nottingham, Kilmarnock, Perth, Athens, City of Santos, Manchester, Accrington.

TABLE V—COASTING RECORDS FOR FOUR WEEKS ENDING JAN. 29
PICCADILLY LINE, LONDON ELECTRIC RAILWAY

Key Number	Average Coasting, Per Cent.	Positions for Months Ending Jan. 29 32.3%	Jan. 1 31.4%	Dec. 4 33.8%	Nov. 6 35.0%	Oct. 9 36.2%	Sept. 14 35.8%
P.28	46.8	1	54	54	32	4	7
P.58	40.2	2	5	13	20	19	13
P.30	39.4	3	34	19	24	12	19
P.39	39.0	4	4	23	42	40	32
P.64	39.0	5	7	3	2	1	1
P.40	38.6	6	9	10	6	3	9
P.70	32.3 Average for	35	24	39	34	18	31
P.32	32.3 Piccadilly	36	39	45	35	32	41
P.51	26.0	64	47	56	53	37	50
P.42	25.9	65	53	53	46	26	25
P.23	24.0	66	65	67	55	54	25
P.76	23.7	67	68	71	68	69	69
P.20	....	..	57	66	64	68	60
P.50	....	..	..	..	..	..	..

ground line. All of these lines have had to take care during the war period of enormous increases in traffic without any increase in the number of cars available and with no decrease in schedule speeds. Furthermore, a large proportion of the motormen have been green hands and many of the conductors or guards have been women in railway service for the first time. Even with such handicaps, the use of the coasting recorders has gone on uninterruptedly and appreciable savings are still being made although the opportunities to do so were less.

The interest of the men is largely maintained by the posting of the records and the granting of a bonus. Instead of posting the records by names, however, key letters and numbers are used. For example, B-1 for a Bakerloo man, P-3 for Piccadilly and so on. This is believed to take the sting of unnecessary humiliation out of the postings so far as the management is concerned, while it does not injure the spirit of rivalry since each man on a given line knows very well who has a certain number.

On the three "tube" lines the minimum coasting percentage set as an efficiency indicator is 24.5 per cent. The average early in 1919 was 30.5 per cent, the men on these lines ranging as follows: Bakerloo from 43.3 to 28.8, Piccadilly from 39 to 24 and Hampstead from 45 to 24.9. The profile of the Central London Railway is so unfavorable, including up-grades at stations, that the coasting ranges only between 21.7 and 15.7 per cent.

The practice of giving bonuses to motormen upon the basis of their skill as individuals was in vogue only a very short time because it was unsatisfactory to the men. The men are rewarded equally according to the general average percentage of the coasting on all the lines. For every 1 per cent coasting over the base of 24.5 per cent, each man on the line receives 1d. (2 cents) a week calculated to the nearest ½d. Hence the present bonus for all of the men is 6 to 6½d. (12 to 13 cents) weekly.[1]

The average energy consumption on the three tube lines is 2.3 kw.-hr. per car-mile based upon the use of fifty-seat cars averaging 22 English tons (2240 lb.) each and operated at the following schedule speeds: Bakerloo, 16.5 m.p.h., Piccadilly, 17.78 m.p.h. (local) and 19 m.p.h. (express). The Central London Railway averages 1.6 kw.-hr. per car-mile at a schedule speed of 15.45 m.p.h. with 17-ton (average weight) cars run in trains of two motors and three or four trailers, and one motor and two trailers.

Sample data for the Piccadilly line are given in Table V. These show the ratings of a number of men for four weeks ended Jan. 29, with their positions in the lists for several preceding four-week periods.

What Is the Proper Length for Trolley Feeder Taps?

By C. F. Lloyd
Manager Substation Section Power Department Westinghouse Electric & Manufacturing Company

A ROTARY converter or direct-current generator tends to "buck" or flash over if short-circuited. Short-circuits on the line produce much less tendency to cause the machines in the substation or power station to flash over if the taps are made some distance from the source of power. Possibly 75 per cent and perhaps even 90 per cent of the flashing nuisance is traceable to the placing of the feeder taps too close to the station.

The question which naturally arises is as to the fixing of the tap distance from the machine. Unfortunately no general rule has been advanced on this point. So many variables enter into the solution of the problem that it will prove best to solve each case by removing the "close-in" taps until the resistance of the circuit becomes great enough to cushion a short-circuit and protect the machines.

The principal variables which enter into the determination of tap distance are as follows:

1. *Power capacity behind the rotary converter.* Obviously, for a given size of converter, the greater the capacity at the source of generation the greater will be the damage to the converter in case of trouble.

2. *Capacity of converting apparatus.* The larger the converting apparatus the less sensitive it is to direct-current line troubles.

3. *Voltage of the system.* The lower the voltage the nearer the taps can be placed to the machine. In general on a given system the tap distances for 1200-volt service should be at least twice those for 600-volt service.

4. *Size of feeders.* The larger the feeders the farther the taps should be from the machine.

5. *Disposition of feeders.* When possible feeders should be so arranged that each will carry a reasonable proportion of the station output. If one feeder carries a disproportionately great amount of power any trouble on it will react on the entire substation.

6. *Size of rails.* The heavier the rails the greater should be the tap distances.

7. *Bonding.* Broken bonds and poor ground connections have been known to produce flash-overs, although not frequently. Obviously, the bonding has a direct bearing on proper tap distances.

8. *Size of cars.* With a given substation unit, the heavier the car equipment and the larger the motor rating, the greater will be the drag on the substation equipment and the more destructive the effect of motor troubles. The rating of the car equipment has, therefore, a bearing on the tap distance, especially when the substation units are relatively small.

From the foregoing it is evident that to evolve a formula to cover such a diversity of conditions would prove to be a problem, and the result, until proved, could not be accepted as much more reliable than a guess. In general, experience has shown that on 600-volt systems, the first tap should be not nearer the machine than 3500 ft. and on 1200-volt systems, 5000 ft. The line losses due to the tap distances are of little consequence when compared to the loss caused by flash-overs, including the time and expense involved in cleaning up the damaged apparatus.

---

[1] In translating from English to American money the pound sterling has been assumed to be worth $4.80.

Amalgamated Meets at Chicago

In His Presidential Address, Delivered Sept. 9, Mr. Mahon Discussed Wages, Hours of Labor, Agreements, One-Man Cars and Other Live Topics of the Day—Other Business Dispatched During First Three Sessions

THE Amalgamated Association of Street & Electric Railway Employees of America opened its sixteenth convention at 10 a.m., Sept. 8. The meetings were held at the Ashland Boulevard auditorium of local division No. 241 of the Chicago Surface Lines. At the open meeting on Monday forenoon the convention was addressed among others by the president of the Illinois Federation of Labor, by a representative for the president of the Chicago Federation of Labor, and by the prosecuting attorney of the city of Chicago, representing Mayor Thompson. Each of these men welcomed the Amalgamated Association to Chicago.

The prosecuting attorney in his welcome classed the electric railway industry as a necessity of life. He said: "How far could Chicago, or any other city, progress without the street railway?" Further he said that the great enemy of the United States today is not any foreign country, but the present unrest and tendency toward bolshevism within our own confines. The only solution, he said, is for the employer and employees to get together in brotherly love and fairness.

International President W. D. Mahon, of the Amalgamated Association, in his opening address said that the Amalgamated Association is now welcomed by governors and their representatives and mayors and their representatives. This was not always so, he said. Years ago the association just came and planted itself down either for a convention or organization. This, he said, demonstrates the fact that if the laborer wishes recognition and welcome, he must demand it and not wait for it to be extended to him. Mr. Mahon said that the conditions of this reconstruction period will not approximate those of the days following the civil war. Labor unions were at that time abandoned and neglected by those who went into service, and the worker returning from the war had to fight his own battles as an individual. Today, the soldier returns to his work, and his association will fight his battles for him. The Amalgamated Association sent more than 12,000 members into the service, and more than 6000 of them have returned and have received higher wages. The worker will not face the dark period following the civil war, and if he faces any dark period, he will not face it alone.

The Amalgamated Association, President Mahon said, comes to its sixteenth convention in the best condition in the history of the association.

Mr. Mahon announced that Samuel Gompers, president of the American Federation of Labor, would address the convention of the Amalgamated Association on Saturday morning, Sept. 13.

Practically all of the afternoon of Monday, Sept. 8, was devoted to the examination of the credentials of the delegates assembled and the presentation to them of badges. These badges will not only give them admittance to the floor in all meetings but will also permit them to ride free of charge at any time during the convention week on any surface or elevated car in Chicago. Visitors accompanying delegates were also given a badge which will admit them to the gallery of the auditorium and which will also serve as free transportation for them.

On Monday evening before adjournment programs for the remainder of the week were handed out. Accompanying the programs were a free ticket to the Majestic Theatre for Monday evening, a free ticket to a 50-mile automobile sight-seeing ride through the connecting boulevards and parks of Chicago, including a free luncheon at Riverview Park, and a free ticket to the banquet to be held on Thursday evening at the Morrison Hotel.

The committees to report later during the sessions were appointed on Monday afternoon.

ADDRESS OF PRESIDENT MAHON

Practically all of Tuesday forenoon, Sept. 9, was devoted to the presidential address of International President W. D. Mahon. The main subjects covered in this address were wages, hours, agreements, arbitration, mediation, strikes and lockouts, appeals and one-man cars.

Wages—With reference to wages, President Mahon outlined the conditions which have developed since the last convention and described what has been accomplished. As a result of the high cost of living, due to war conditions, the International Association appealed to the War Labor Board to consider the wages of electric railway employees. The decision of the board to hear these cases created an enormous amount of work for the International Association, but delays in the cases Mr. Mahon said were due to the railway company's asking for more time or to the municipalities or the War Labor Board itself. After study, the Board granted very substantial increases, said Mr. Mahon. Canada, however, did not secure such substantial and satisfactory decisions as were secured in the United States. Unfortunately, the cost of living since the spring of 1918, when the Board made its decision continued to increase steadily, and it was soon found that the wages established at that time were not sufficient. Accordingly, many local divisions had to go before the Board a second time and insist on further increases to correspond with the increased cost of living.

The majority of the railway companies agreed that the wages paid to the employees were not sufficient but took the position that due to the low fares they could not raise wages. This placed the men in a serious position but they were compelled to insist on higher wages, pointing out the reasons for this necessity. In most cases the association was able to convince the War Labor Board of the justice of its demands. At this point Mr. Mahon stated that "no man can ever show where the Amalgamated Association ever entered into an illegal or unjust act."

Hours—During the war no attempt was made to shorten the hours of electric railway employees. When the war was over, however, it became necessary to take up the question of shorter hours. The spirit of some of the members is to oppose the eight-hour day because it prevents them from making as much money as formerly. These members, however, said President Mahon, must come to the conclusion that they as a small minority must give up the custom of working themselves to death to the detriment not only of themselves but of the large majority. Other industries have had the eight-hour day for years and the time has now come for the street railway men to demand the same. The principle that should be adopted is the greatest good for the largest number.

Agreements—In the matter of agreements, President Mahon said that the policy of the association to secure written contracts has been followed with satisfaction as in the past. At the present time the total number of written contracts is approximately 400. The written contract he said is the best contribution to the success of the organization.

Arbitration—Since the last convention there has been more arbitration than ever before in the history of the Amalgamated Association. Every case before the War Labor Board has been an arbitration case. There were a total of 134 cases submitted to the War Labor Board affecting employees of 148 electric railway companies. In forty-two cases the War Labor Board decided that it had no jurisdiction. This was chiefly due to the fact that the War Labor Board was originally created for the purpose of dealing with industries affecting the manufacture of munitions and other war supplies. There have been sixty cases of local arbitration in addition to those handled by the War Labor Board.

Strikes and Lockouts—Mr. Mahon came out very forcefully on the subject of strikes and lockouts. The spirit on the part of some of the membership he said has been to disregard entirely the laws of the Amalgamated Association. "I wish to remind you," said President Mahon, "that the integrity of the organization is sacred and if contracts are disregarded and the laws of the association are cast aside, we cannot ask anyone to have confidence in the organization." It was recommended that the local divisions carefully study the laws and if a division acts in violation of the laws of the national association, that division shall be deprived of its membership. "This may seem to be a drastic step," said President Mahon, "but will cause many divisions to think twice before they finally determine to go on strike."

Appeals—Thirty-five appeals from local divisions have been sustained by the International Association and fourteen refused. President Mahon recommends that more care be taken in trying to settle these cases without bringing them to the attention of the International Association.

Members in War—During the war the Amalgamated Association made such provision that the membership fees of those who entered the service were considered paid while the members remained in service. When these men returned they were placed back in good standing. The number reporting as answering military service was 11,157 and over 6000 of these have so far returned. In practically all cases these men have been given their seniority standing by the railway company.

Laws—The continued growth of the Amalgamated Association makes it necessary that there should be more international officers. The present staff of vice-presidents consists of ten. President Mahon recommended that this number be increased to fourteen.

Salary of Officers—According to President Mahon the international officers of the Amalgamated Association have been underpaid as the result of the high cost of living. It was recommended that the laws be changed to cover these increased expenses. There has been some criticism of salaries of international officers, but upon careful investigation it is apparent that the officers of the Amalgamated Association are about the lowest paid of any officers of international labor organizations.

Initiation—The initiation fee to the Amalgamated Association has in the past been $1, 25 cents of which goes to the International Association and the remainder to the local division. President Mahon recommends that the initiation fee be increased to $2, $1 of which shall go to the International Association.

Laws Relating to Officers of Local Division—It has been called to the attention of the International officers that some division officers whose duty is to collect dues, etc., for the Amalgamated Association, have been taking advantage of this position to act as collectors also for other societies, associations and company benefit organizations. President Mahon recommends that this practice shall not be continued and that any man who represents the Amalgamated Association cannot also represent any other benefit association.

One-Man Cars—The instructions of the previous convention were that definite action should be taken against the one-man car. The international officers tried to carry out these instructions but found that the question was a greater one than at first had been supposed. Careful investigation was made and as a result of this the best policy appeared to be to insist on an increase in wages for the operator of the one-man car and not to stand out against the use of this equipment. It is now reported that there are 2004 one-man cars in operation on eighty-nine different properties. President Mahon stated that in his opinion the one-man car had come to stay and that the association could not hope to overcome it. The best policy he said is to recognize the one-man car as a necessity to the electric railway industry and to demand higher wages for operators of this equipment.

The president's address was referred to the committee on president's address for a later report.

On Tuesday afternoon delegates and guests enjoyed an automobile tour of the boulevard and park system of Chicago. A 50-mile ride through the connecting boulevards and parks and to the Municipal Pier ended at Riverview Park, where luncheon was served. Concession privileges were furnished delegates and guests to participate in the Mardi Gras carnival at Riverview Park and special cars conveyed the party to the loop late in the evening.

On Wednesday the entire day was devoted to a report of the executive committee and reports on actions taken on appeals to the International Association from local divisions.

Economic Future of Transportation Utilities

"Are We Entering a New Epoch of Economic Relationship as Between Public, Labor, Investor and Ultimate Consumer?"—Symposium Presented at Western Society of Engineers' Meeting

AT ITS OPENING meeting on Monday, Sept. 8, following the summer recess, the Western Society of Engineers, Chicago, took the above as its subject, the program for the evening taking the form of a symposium of four papers on the following sub-topics: "Introduction and Historical," by James R. Bibbins, engineer, the Arnold Company, Chicago; "Valuation and Accruing Depreciation," by P. J. Kealy; "The Actuarial Problem," by W. J. Hagenah, of Hagenah & Erickson, Chicago; and "Electric Railway Policy," by George Weston. Mr. Kealy was unable to be present but forwarded his paper and it was read by E. S. Nethercut, secretary of the society. W. J. Hagenah was also unable to be present and the paper on the subject assigned to him was prepared and presented by John Jirgal, accountant of the same firm. Abstracts of the papers by Messrs. Kealy and Weston appear below. The papers prepared by Messrs. Bibbins and Jirgal will appear in abstract in a later issue.

At the close of his paper Mr. Weston read at length from the report of the valuation committee of the American Electric Railway Association. This report appeared in quite full abstract in the August 2, 1919, issue of the ELECTRIC RAILWAY JOURNAL.

Electric Railway Policy

By GEORGE WESTON

Consulting Engineer, Philadelphia (Pa.) Rapid Transit Company

WITH respect to the present general financial situation of electric railway properties in the United States and the attitude that they can take as to various means for relief, the first and most important matter is the question of cordial and satisfactory working relations between employer and employee—usually referred to as industrial democracy or co-operation. This brings up the question of whether industrial democracy can supplant collective bargaining.

First, collective bargaining does not conflict in anyway with the successful operation of a proper co-operative plan. And there can be no question but that the day has arrived when labor, through some co-operative plan wherein the rights of the general public will be fully guarded and protected, must be raised to a position of more direct participation in the management of operating conditions that affect their personal welfare and enabling them to participate more fully in the equitable distribution of the earnings which they help to produce.

When labor is made a working, participating partner in the business, it must assume its portion of the burdens, responsibilities and obligations, and positive provisions should be made in any plan for serious consideration that will prevent strikes on public utilities and insure to the general public continuity of service at all times. The abolition of the strike is one of the most important problem in the public utility situation today. Strikes like wars should be abolished. Why send the flower of our young manhood to Europe to offer up their lives and spend billions of money to help democratize the world and establish peaceful arbitration between nations as a substitute for wars, and tolerate the existence of a system of warfare between different elements of our own social organization in the way of strikes. Wars were necessary to civilize the world and similarly, probably, strikes were necessary to bring Capital to realize that Labor is its chief ally.

The "plan for collective bargaining and co-operative welfare" of the Philadelphia Rapid Transit Company offers an excellent example of real co-operation between the management and the employees.

[The latest plan was described in two articles in the ELECTRIC RAILWAY JOURNAL, one in the issue of Sept. 14, 1918 and the other in the issue of Dec. 28, 1918. As typical evidence of the feeling existing between management and employees in Philadelphia, the author quoted part of a clipping from a Philadelphia paper telling about a "Welfare" picnic and a dinner given by Mr. Mitten to the co-operative plan committeemen which was attended by the chairmen of the Federal Electric Railways Commission and the Pennsvlvania Public Utilities Commission. An account of these same events appears on page 537.—EDS.]

The Stotesbury-Mitten management adopted the co-operative plan in August, 1911, and it was accepted by a vote of the men in November of the same year. In a statement based on eight years' experience with the plan, Mr. Mitten in February, 1919, told of the organization of the fifty-two sub-companies into a single unit to form the Philadelphia Rapid Transit Company in 1902 and how in 1910 the company found itself with credit exhausted and with earnings insufficient longer to pay its fixed charges and operating costs. The car riders and business interests were suffering from the strikes of that year and preceding years and labor was threatening further disturbances. The service was bad and the cars antiquated. Then at the urgent request of the city government and the stockholders, the company undertook as a public duty, the rehabilitation of the system, promising to meet the needs of the car riders, increase the wages of the men and then pay to the stockholders such return as could be made possible by good management and co-operative efficiency.

The results obtained are evidence of what can be accomplished by co-operation between the men and the management. Every promise of the management is here shown to have been faithfully fulfilled. The number of passengers carried increased during the eight years 70 per cent. The average fare was lowered from 4.13 cents per passenger in 1910 to 3.91 cents in 1917 by granting additional free transfers. Wages increased from 23 cents an hour in 1910 to 48 cents in 1918. Dividends paid include one of 2 per cent in 1916 and 5 per cent in 1917 and 1918.

It will be observed that the co-operative plan has been in process of development in Philadelphia for a period of nine years, and it must be apparent that such radical reforms cannot be instituted overnight. The lesson to be learned by the Philadelphia example is that every employee should give a full day's work for a fair day's pay; that maximum wages mean maximum output; that economy of time, effort and energy is the price of commercial success; that we must not expect to get something for nothing.

Capital and labor should work together. United they will stand, divided they must fall. The employee who through a reasonable probation period has proven himself worthy to become a permanent employee, should be taken into the fold and made to feel that he is a real part of the working organization; that he must assume his portion of the burdens and obligations, and if he is to participate in the successes and profits, he must also stand his portion of the failures and losses likewise whenever they occur.

Valuation and Accruing Depreciation

BY PHILIP J. KEALY

President Kansas (Mo.) City Railways

THE street railway industry of the United States has passed through a most depressing period, but present indications are that the worst is over. One of the most hopeful signs to-day is the fact that the problem has ceased to be one only of local significance and has become national. Commissions have speeded up their action. The public has become aware of the seriousness of local transportation needs, which in some instances threaten the very continuation of service.

The appointment of the Federal Electric Railways Commission to investigate the needs of urban transportation and to make recommendations has served to crystalize the entire matter into national form. Through the activities of the American Electric Railway Association and the Committee of One Hundred in Washington, the entire question has been presented to this commission from a nation-wide standpoint. The national Chamber of Commerce has also taken up the question. The public mind has been educated to the needs of our urban transportation companies until in every community the necessity for some solution is now recognized.

All of these things working together open the way for placing the entire industry in every community upon a stable basis that justifies the belief that its future will be worked out in a manner acceptable to the investors and to the public.

In my mind the ultimate solution will be private operation and ownership with municipal supervision of service based upon the cost-of-service principle, which necessarily will include a fair return to capital actually and honestly invested in the public service. The cost-of-service plan primarily turns upon two fundamentals: First, that the car rider shall pay only for transportation; second, that inasmuch as one element of the cost to produce is a fixed return upon capital value, that such capital value be determined and agreed upon between the company and the municipality.

To some extent, from the standpoint of valuation, the doors of the past have been closed, and the entire transportation problem is in a fair way to be put upon a present and a future basis. The valuation cycle has progressed far enough so we can be at least hopeful that the standards in many cases being adopted, and which include the points developed in the recent report of the Valuation Committee of the American Electric Railway Association, will govern the majority of future valuation proceedings. Although the whole question of valuation is complex, its basis of common honesty and fair dealing is becoming universally recognized. We have traveled a long way from the principles established in the beginning by the Wisconsin Commission, where valuations for rate making purposes were made on the depreciated physical value plus some additional allowance for a going concern. The trend of rate making today is away from the idea of basing rates on depreciated value. It is now recognized that it is a physical impossibility to keep any property maintained to a condition where no depreciation exists; that no property can possibly be maintained at more than 80 to 90 per cent of its cost new value, and that when maintained to that condition it will, as far as the public is concerned, be giving 100 per cent service. In basing rates on the depreciated value of a property the investor is not only penalized, in that at least 20 per cent of the investment which he never had an opportunity to recoup is being confiscated, but the public also suffers. From the latter viewpoint, if, in determining fair value, accrued depreciation is deducted, in the future the rate of return must be sufficient to include an allowance for future depreciation accruals, yet such accruals can never be used for public benefit, since it is impossible to keep the property maintained at more than 80 to 90 per cent physically good. Therefore it follows that it is more expensive, and increases the cost of service, for the public to pay the principal by paying for accrued depreciation, than to pay interest on the cost new value without deducting depreciation. Furthermore, it is now recognized that depreciation charges have nothing to do with capital account but are chargeable directly to operation.

The Wisconsin Commission, which first originated the principle of basing rates on depreciated value, has within the past year abandoned this theory. The Buffalo Arbitration fixed values entirely on the cost to reproduction new. The Missouri Commission has similarly expressed itself and in a recent case stated that henceforth all valuations in Missouri for the purpose of rate making would be on the basis of cost to reproduce new. This position is economically and morally sound, and I believe is one which will be made the basis for all future valuations of traction companies for rate making purposes.

From every present indication the future of traction companies lies along the way of private operation based on the cost of service with sufficient public supervision to insure proper costs and adequate service. The car rider should not be made to pay for anything but transportation. This means traction companies shall be relieved of all indirect taxes, such as paving charges, sprinkling, snow removal, and other taxes of like nature. It implies a fair agreed valuation upon which the car rider will pay a reasonable return. It further implies public supervision and a reward to management for efficiency.

There can be no proper argument advanced why transportation should be furnished at less than it cost to produce, and the deficit made up by taxation. If this is reasonable, then it is reasonable to go a step farther and say that transportation should be assumed by the municipality and furnished free and all expenses borne by taxation.

Whether or not a satisfactory solution can ever be made for labor is a question that will always be doubtful. If the future is to be judged by the experiences of the past 24 months there seems to be no way of satisfying labor. The demands of the unions have already upset settlement after settlement that seemed to promise results. There is one element, however, in the situation that may curb further unreasonable demands, and that is public opinion. In the past, the public, in paying a fixed fare, was very little concerned with the troubles between the traction companies and their employees as long as service standards were maintained. In general the public sided with labor for the simple reason that, paying a fixed fare and receiving good service, it was not directly affected. However, under the cost-of-service plan all this will be changed, and when the public once realizes that further wage increases and work-day changes are immediately reflected in the cost of service, public opinion will be interposed to offset unreasonable demands. It has frequently been said that many of the troubles of public service corporations can be traced to "the-public-be-damned" attitude of a decade ago, whether this is true or not, and it will be very interesting to see what will be the result of "the-public-be-damned" attitude of labor.

It may be that the zone system is the solution in some localities, although as yet it has not been given sufficient trial in the United States to draw definite conclusions. The great majority of our cities have grown upon the basis of one fare and it will be an extremely difficult matter to change the very fundamental upon which their growth was predicated, that is, the one fare system.

There is this much that can be said upon the future of our transportation systems: They are absolutely essential to the growth and development of our cities; there is nothing today or in the near future that can take their place; what is necessary to our present civilization will be continued and maintained. The entire industry is today going through a settling process that will put it upon a more secure and stable foundation than ever before. Being removed from a local status to a national one, valuation and other standards will be more easily adopted. The public, to the extent that it will be given a more direct control of service and have the assurance that it is paying a fair price, will to that extent assume the responsibility for this service.

The investor will find a future that will assure him of a fair if small return upon the money he has actually invested to give transportation service to our cities. The public will be satisfied because it will have the assurance that it is paying for the service which it demands, a fair price based upon its actual cost, and that it controls more or less directly the character and extent of its service.

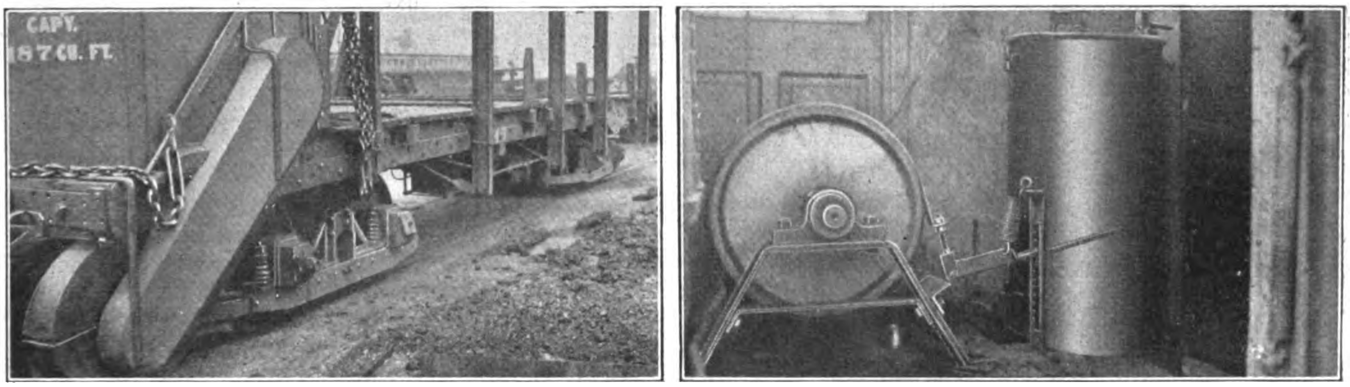
Labor will be made to realize that it is engaged in a public service and that public welfare must be considered. It will be paid a fair wage for a fair day's work and unreasonable demands will be met by the withdrawal of public support. The door of the past, I believe, will be closed not only upon obsolete valuation methods, but upon all of the old prejudices which have been the outgrowth of past mistakes and past policies. The urban transportation industry will be established on a business basis in which it will receive a fair price for a service absolutely essential to the well being and growth of our cities.

Drag-Line Car for Handling Track Materials

St. Louis Company Uses Old Drum, K-11 Controller and 30-Hp. Railway Motor to Replace Ten Men

THE United Railways of St. Louis recently equipped a single-end flat car in such a manner that rails, switches, crossings, frogs and other materials can now be handled with a minimum of manual labor. The car is the standard 40-ft. single-end equipment used by the company for such purposes and has four GE 57 motors with K-6 control and Westinghouse automatic air brakes. As shown in the accompanying photographs, all such cars used in handling rails and special work have embedded in the floor as skids, 60-lb. 4-in. T-rail.

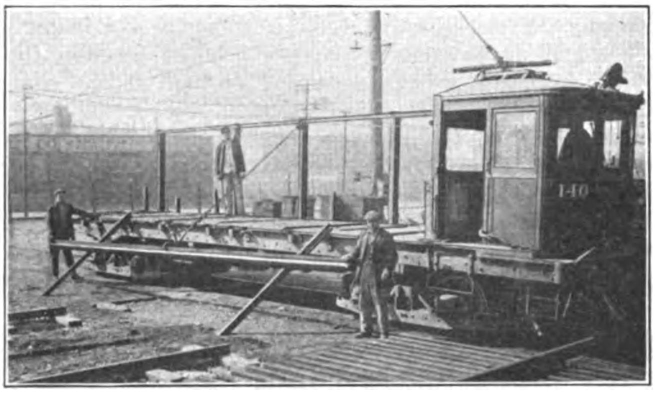
The equipment added to car No. 140 consists of a drag line operated from an 8-in. x 11-in. drum driven by an old Westinghouse 30-hp. railway motor. The motor is suspended from the car floor on the left side just ahead of the forward truck. It is connected by sprocket and chain to a drum mounted in the cab. The left side of the cab is permanently closed and the chain drive is housed as shown in an accompanying illustration.



AT LEFT, HOUSING FOR CHAIN DRIVE AND METHOD OF BRACING UPRIGHTS ON DRAG-LINE CAR; AT RIGHT, LOCATION OF DRUM AND CONTROLLER IN CAB OF CAR

The control equipment for the drag-line motor is Westinghouse K-11 and is located directly above the motor in the forward left hand corner of the cab. The drum is equipped with a band foot brake for holding purposes. A ½-in. stranded wire cable is used for the drag line. The back of the cab is open but in stormy or cold weather this may be closer by a roll canvas flap. A pulley for guiding and turning the cable is mounted in the back of the cab.

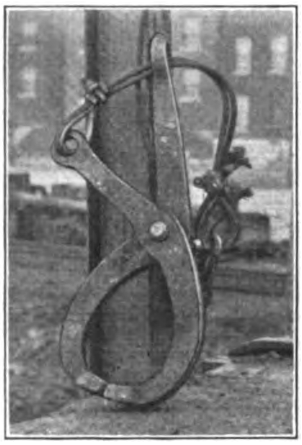
A rack has been built along the left-hand side of the car. There are four 6-in. I-beam uprights extending 6 ft. above the floor and braced at the bottom.



DRAG-LINE CAR USED AT ST. LOUIS FOR HANDLING TRACK MATERIALS

There is one lighter I-beam upright just back of the cab which is braced against the cab. The top longitudinal member is a 6-in. channel with a wood filler. The drag line passes from the pulley in the cab through a block which may be fastened at any one of the uprights.

The tongs used with the drag line were designed especially for the purpose, for they are always pulling at such an angle that the ordinary tongs would catch on the edge of the car floor. Sections of 4-in. T-rail are used as skids and these hook into angle braces on the side of the car. Two skids are used for rails, but for other pieces of special work three or four may be used.



SPECIAL TYPE OF TONGS USED WITH DRAG-LINE CAR

Formerly ten to fourteen men were used in a crew to handle rails and special work. With the equipment described above it is a very simple matter to handle practically anything of this nature with three men and a motorman. Thus a great saving in labor expense is realized and a negligible amount of heavy work is required of the men.

This equipment for handling track material was originally designed because of the impossibility of obtaining sufficient labor, illustrating again with added emphasis the old adage that "necessity is the mother of invention."

An unique exhibit of gear making was held in Cleveland, Ohio, some weeks ago under the auspices of an important local bank. Van Dorn & Dutton Company had in operation on the sidewalk at the corner of East 9th Street and Euclid Avenue an exhibit of electrical railway and other gears, with a gear-cutting machine in commercial operation. The gear-cutting operation demonstrated was particularly interesting because the gears produced were of the skew-bevel variety.

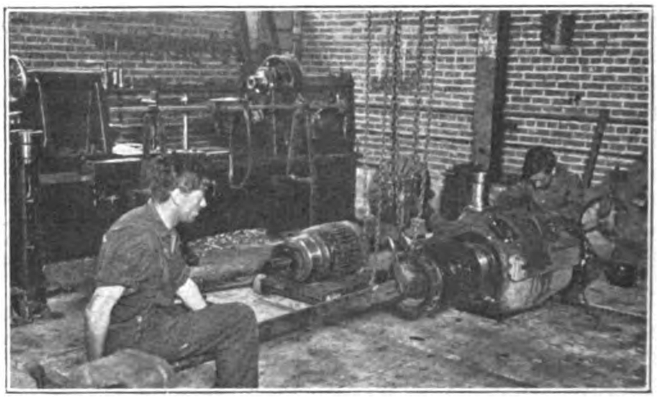
Washington Hearings to Be Resumed on September 29

THE next hearing before the Federal Electric Railways Commission will be held on Sept. 29, according to a communication from Charlton Ogburn, executive secretary. The first two or three days will be taken up by a few witnesses including mayors, railway managers and public utility experts who were prevented from attending the August hearings. Following their testimony, the labor program will be put on and this will require three or four days for presentation. It is expected that the Amalgamated Association of Street and Electric Railway Employees' testimony will be conducted by W. Jett Lauck of Washington and James H. Vahey of Boston as counsel.

The questionnaire which the commission expected to send out to a great many persons closely allied to and interested in the street railway industry was completed about two weeks ago but has not as yet been approved by the chairman of the commission. It is expected that it may be made public some time next week.

Convenient Method for Removing Armatures from Box-Frame Motors

THE accompanying illustration shows a method used by the Pennsylvania-New Jersey Railway for removing the armatures of box frame motors in the shop at Trenton, N. J. A piece of 4-in. pipe, approximately 6 ft. long, is placed over the end of the armature shaft after the end housing has been removed. A sheet steel hook, made of material ⅜ x 7 in., and with a surface for surrounding the axle about 9 in. long, is placed around the pipe close to the armature head and the hook from a crane or hoist is hooked into this. The hook of the crane is adjusted so as to keep the armature shaft the desired height and a man at the end of the 4-in. pipe steadies the armature and directs its removal or reinstallation. A man at the opposite end of the motor guides the shaft from the commutator end, so that there is no danger of interference. The Pennsylvania-New Jersey road has but few equipments of box-frame motors and the installation of an armature-removing press would not be warranted as it would be used too infrequently to pay the interest on the investment. This method has worked out very satisfactorily, in view of the comparative infrequency with which it is called into play.



REMOVING AN ARMATURE FROM A BOX-FRAME MOTOR WITH SIMPLE APPARATUS

Letters to the Editors

How to Secure Long Track Life

DALLAS, TEX., Sept. 8, 1919.

TO THE EDITORS:

In your issue of Aug. 16 you ask the editorial question: "Is there any standard track sub-construction?" and proceed to answer it in the editorial following. The real answer may be summed up in three words: "There is not!" What is really to the point would be the question: "Can there be, under the tyranny of 'Old Man Local Conditions'—such a thing as standard track sub-construction?" and the answer to this is the same but not so final and emphatic, because there is a corollary to it: "It is possible largely to standardize local conditions and make them a better fit to an approximate 'standard' of sub-structure."

As I have pointed out in articles on this subject for many years, street railway track construction has been a most inexact science. Engineering practice which has been "standard" for years in the construction of other structures has been totally ignored in track construction. This arises from several causes. The first of these is that few track engineers seem to realize that track is—or should be—a "structure," that is to say: "An assemblage of different and separate parts or materials so combined as to form, as nearly as is possible, an integral whole adapted to its specific purpose." It is well to keep this definition in mind for there is in it the whole theory and practice of proper and standard construction of track.

The "specific purpose" of railway track is, first of all, to form for its own wheel-traffic as perfect a rolling-way as is possible. This means that, for the wearing or "attrition" life of their heads, the two rails of every track must not only be, and remain, horizontally parallel and laterally level, except at curves of certain radii, but that the longitudinal wheel-contact surfaces of both rails must be, and remain, smooth, even and unbroken during that "wearing-life."

The second condition is that if the track or rails have to bear other wheel-traffic than its own, as it is compelled to do in most paved streets, it must be so constructed as to be able to do this with a minimum of wear, jar, injury or danger to that outside traffic and also in such manner that there will be a minimum of wear or injury to itself.

In paved streets the third condition is that the pavement and the track must be so component a portion of the whole street and must be so constructed with reference to each other where they touch or abut, that the track structure proper will not tend to loosen, separate or disintegrate that touching or abutting pavement or any other portion of it, so that the whole street may not have dangerous or objectionable defects caused by the installation and use of the track.

The fourth condition is entirely a local one, that of climate and subsoil, but even under such varying conditions as obtain in these respects in this country there can be a greater standardization if the basic principles of a "structure" are firmly held in mind and proper and correct engineering principles applied.

The fifth condition presupposes a certain amount of "prophetical instinct" on the part of the constructing engineers. Not only must the track be constructed for its purposes for the immediate present, but the effect of increased traffic on and across it must be a factor fully considered, as must be the probable effect on it which may be caused by enforced limitations in its initial construction. As a concrete example, if financial or other considerations compel the use of a very light rail, that rail must have more support (as with an increased number of ties) than would a much heavier rail and, also, much more attention must be paid to having the joints as nearly as possible an integral portion of the rail.

The sixth condition is one which affects not only the track and roadway department but also every other department of the company including the security holders. This is, that the effects of structural defects in the track are not limited to the track alone but are felt from the power-station to the claim department. The operation of the cars over "bad" track not only results in further injury to the track but, for every blow given by the car, the track returns a blow felt by the car maintenance department, the passengers, the pavement, the power-station and the dividends!

One of the main reasons why more attention is not given to properly standardized construction of street railway track is that we have all been used for so long to *un*standard construction that we take it as a criterion of track-life. We take it as a matter of course that any track laid for a few years must necessarily have "repairs" to it long before the actual wearing surfaces are gone. We repair "bad joints" and "low quarters," we resurface and reline and regage track with good railheads between joints as if that were a necessary condition. What would we think of the engineering ability of anyone whose construction of cars, power-station, carhouse, pits, generator and prime-mover foundations, pole line or subways which had to be "repaired" after a few years more or less? Would we accept cars, machinery or apparatus which needed constant "tinkering" to make them function properly? And yet, in our track alone, we expect and virtually approve that condition which necessitates such constant tinkering.

It is always possible so to build track that its "life" shall, as a whole, be limited only by the wear of the portions subject to the attrition of the traffic imposed upon it. But to do this it must be "structurally constructed" and not built as a crazy-quilt. Every portion of the track from its subsoil to the top of the rail is as subject to natural laws as are the component parts of any other structure, and the province of enginering is to take advantage of these where they are helpful and to remedy or nullify those which are harmful. Every general condition necessary to perfect track construction has been known for years, every specific or local condition may be known if the matter is gone into technically and not guessed at empirically. There is no possible excuse for unstructural construction of track except lack of funds, arbitrary interference on the part of owners or the municipality or inability to obtain time or materials to construct it perfectly. Track which goes bad long before it is actually "worn out" always had in it some thing which was wrong and, back of that "thing," and responsible for its imperfection, was some person ignorant, careless or negligent or some structural principle violated.

Treat track as a structure subject to many stresses, strains and impacts—all of which may be ascertained beforehand—and it will be like the "Deacon's One-Hoss Shay" made famous by Oliver Wendell Holmes—it may wear out but it will not be liable to break down!

H. S. COOPER.

Lo, the Poor Peanut Vendor Knows How to Sell!

NEW YORK CITY, Sept. 3, 1919.

TO THE EDITORS:

As almost every electric railway man is a good baseball "fan," he can vouch for the truth of what follows even if he has never thought of the matter from the same angle.

Go to a baseball game in almost any large city to which game the charge of admission varies from 50 cents to $2.00, exclusive of the war tax. To the attendants at these games, therefore, a car fare more or less would not be a hardship. Watch the crowd going home after the game. Some get on cars, others on automobiles, but many of them walk. If we follow the walkers, we see streamlets drifting off into the side streets for a distance of 1 to 1½ miles or more, although the main current is along a highway with street-car service.

What effort, if any, do electric railways make to get the baseball fan on the cars? In some cases, a prepayment area helps a good bit, but it is the exception rather than the rule to find any representative of the electric railway on hand to guide the homegoers and to suggest the use of the trolley car. Cars and track there may be but not a transportation salesman!

What a contrast is offered to this "let-'em-come-or-stay-away" policy by the action of the humble peanut vendor. Does he depend upon either the ravishing aroma of freshly-roasted peanuts or upon the piercing steam whistle? Not a bit of it. He gets as close to the current of traffic as he can and does not stop offering his wares, sold at a car fare apiece, by the way, until the last "bug" has departed.

Now just what do railway men mean when they talk of "selling transportation"? Is it something elegant, refined and detached, or straight man-to-man selling such as we get from Tony or Demetrius? What dignity doth hedge the electric railway business that prevents us from selling our wares exactly as people in any other line from peanuts to diamonds sell theirs? Hadn't we better use such ways of persuading the baseball "fan" and others to buy street car rides in preference to spending the money in some other way? At least, let us try.

PERTINAX.

The Census Bureau reports that in 1917 the number of deaths resulting from street-car accidents was 2277, corresponding to a rate of three per 100,000 inhabitants. This is greater than for the preceding two years and the same as that for 1912, but is less than the rate for other recent years. It compares with deaths due to injuries by vehicles other than railroad cars, street cars, and automobiles of 2326 or 3.1 per 100,000. This rate has declined somewhat during the past ten years, although the casualties from automobiles have risen in number rapidly from year to year. The total number of deaths caused by accidents during 1917 was 53,544 as against 60,072 during the previous year.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Standards to Be Labeled

THE exhibit committee is planning to introduce a feature at the Atlantic City exhibit, which is to have exhibitors mark apparatus shown in their exhibit where this apparatus conforms to the standards of the American Electric Railway Engineering Association. It is planned to have a uniform card printed for this purpose, which will read: "A.E.R.E.A. standard," and copies of this card may be obtained from Director of Exhibits Wells. The plan is approved by the committee on standards which believes that by this plan a better general knowledge of the extent of the equipment now standardized will be obtained.

Mail Pay Questionnaire

ON SEPT. 2 a letter was sent out by Secretary E. B. Burritt, to all railway member companies carrying United States Mail, discussing the rates proposed at the Indianapolis hearing before the I. C. C. examiner for compartment car or express car service on interurban lines. With this was a proposed modification for closed pouch service on city and interurban passenger cars. A questionnaire accompanied the letter requesting opinions as to the rates proposed.

The sub-committee of the main committee on mail pay which is preparing the brief covering all the sectional conferences has the work well in hand and at the meeting of the whole committee soon to be held, will submit its report. This committee at this meeting also plans to make definite recommendations for submission to the I. C. C. for all classes of mail service performed by electric railways.

Purchasing Agents to Meet

PRESIDENT PARDEE has appointed a committeee to make arrangements for an afternoon session at the Atlantic City convention, particularly for purchasing agents and storekeepers. A program will soon be drafted and announced. The committee comprises E. E. Stigall, purchasing agent Kansas City Railways, chairman; William Whiteford, purchasing agent Twin City Rapid Transit Company, and P. F. McCall, general storekeeper Metropolitan West Side Elevated Railway.

Committee Reports Ready

THE advance committee reports of the Engineering and Transportation & Traffic Associations, eleven in all, will be sent out from the association office within the next few days to all member companies and individual members allied with either of these associations.

Plans are under way to hold a gathering of publicity men at the Atlantic City convention. A committee to handle the matter will be appointed shortly.

H. H. Norris, ELECTRIC RAILWAY JOURNAL, has been appointed to fill the vacancy on the committee on convention daily caused by the resignation of J. J. Dempsey.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Thompson's Tall Talk

Mayor of Chicago Urges Municipal Ownership and Operation in Tart Message to Council

The much-advertised message of Mayor Thompson for a solution of the local transportation problem was delivered to the members of the City Council of Chicago, Ill., in special session on Sept. 9. In brief, it proposes municipal ownership and operation of the street railways with the management in the hands of a popularly elected commission of five men.

The Mayor also asked the Council to authorize him to appoint a commission to make plans for the "acquisition, extension, control and operation of the railways serving the public in the city of Chicago and surrounding territory." He asked to be allowed to spend $250,000 in the investigation.

The Mayor's plan would also create, with the help of State legislation, a district to be known as "The Transportation District of Chicago," which would include territory outside the city limits, the exact boundaries to be defined in the creative legislation.

RECOMMENDATIONS REFERRED TO COMMITTEE

The recommendations made by the Mayor were referred to the local transportation committee of the City Council, and unless there is a special session of that body there will be no hearing until sometime in November.

It had been hinted that Mayor Thompson would recommend drastic measures to revoke the franchises of the surface companies on the ground that they had violated the ordinance provisions for securing higher fares from the State Utilities Commission. The message dealt severely with "traction barons" and "multi-millionaire anarchy," and it proposed that "fictitious and inflated values" be eliminated so that the property could be bought or built at actual cost. The Mayor also insisted that Governor Lowden is in honor bound to call a special session of the Legislature for the passage of enabling laws.

Comment on the Mayor's message was to the effect that it offered nothing different from measures which had previously been rejected by voters in Chicago. The report of the Chicago Traction & Subway Commission, prepared at a cost of about $250,000 in 1916, is said to offer as complete a survey of the traction situation as can be arranged, and yet the ordinance based on these recommendations failed of passage at a public referendum.

The question of municipal ownership in Chicago also has been rejected by the voters. It is conceded that the railway properties cannot be taken over except on a price acceptable to the owners, and there would be the same reluctance to surrendering the lines for public operation unless a satisfactory rate of return on the cost is assured.

Ontario Hydro-Railway Problem

Following the recent voting at Guelph, Ont., when the citizens overwhelmingly gave their verdict against the city entering into an agreement with the Grand River Railway, Sir Adam Beck, chairman of the Ontario Hydro-Electric Commission, visited Guelph on invitation of the Mayor and the railways and manufacturers committee, and had a conference on Aug. 21.

The advice of Sir Adam was first asked as to the best method of dealing with the Guelph Municipal Electric Railway. He suggested two ways of handling the situation:

1 That the city put the line into shape by reconstructing the roadbed, putting the overhead wires in good condition and putting on small one-man cars with more frequent service; debentures to be issued to cover the cost of these improvements and the city still to continue to operate the road.

2. That the railway be leased to the Hydro Commission or sold outright to the commission with the idea of making it a part of the hydro-radial system.

As a result of the meeting it is expected that the Council will pass a resolution at the next meeting asking the Hydro Commission to make a thorough investigation of the civic line with a view to making improvements and submit a report to the city.

Sir Adam explained, in connection with the projected hydro-radial railway, which will give the city of Guelph connection with the north and south of Ontario, that until such time as the Council of Guelph passed the necessary resolution obligating the city for 10 per cent over and above the additional amount voted in 1916, nothing could be done, as this was blocking the whole hydro undertaking between Toronto and London. Mayor Carter said that he would not sign the resolution until the ratepayers had passed upon it, but Sir Adam said that so long as the Council passed the resolution he would be satisfied if the Mayor never signed it.

The chairman of the Hydro Commission also stated that surveying parties are now at work around Hespeler and that fresh estimates would be prepared for the roads in that district. It would be folly to parallel the present Grand Trunk lines if they can be taken over and electrified.

Columbus Strike Settled

Three-Day Strike Ended With Agreement to Arbitrate Matters in Dispute

An end came to the strike of the platform employees of the Columbus Railway, Power & Light Company, Columbus, Ohio, at noon on Sept. 6, as a result of an agreement reached some hours previously to submit all questions to arbitration. No cars had been operated since the morning of Sept. 3.

MAYOR TOOK FIRM STAND

It is believed that the decision which resulted in the settlement was hastened by a statement read by Mayor George Karb at a conference of company and union officials on the previous evening to the effect that he had ordered the company to have the road in operation by noon of Sept. 6 and that he had promised to give the company full police protection.

Crews of former employees assembled at the carhouses were ready to operate cars. When Mayor Karb learned that an agreement had been reached he extended the time to 3 o'clock p. m., on Sept. 6 in order that all the men might have time to report.

There was considerable opposition to the proposal to submit all questions, including the wage scale for 1920, to arbitration, but it was finally approved by the men.

The board of arbitration will have the following questions to consider:

1. Reinstatement of John Rayan, meter reader.

2 Discharge of members of Local 817 of the Amalgamated Association, who worked on trolley wires.

3. Increased wages.

4 Allowance of seven hours a day or the equivalent in pay for extra men.

The company has agreed to make up any back pay that still remains due in installments of 20 per cent per month.

ARBITRATION PROVIDED FOR

One clause in the settlement is to the affect that the proposed agreement for a wage scale for 1920 be submitted to the board of arbitration for their decision, as well as other points which may come up. Another is that the company shall not employ non-union men on trolley repair work for a period of ten days and shall not employ non-union men thereafter without giving written notice to the local union.

The members of the board of arbitration are to be chosen in accordance with Section 2 of the present agreement. Both sides bind themselves to accept and observe the findings of the board on all questions submitted.

Service-at-Cost for Minneapolis

Ordinance There All Ready to Go Before Voters in December —Valuation Fixed at $24,000,000

The Twin-City Rapid Transit Company may be operated under a service-at-cost grant in Minneapolis, Minn., after Jan. 1. A measure of this kind was passed by the Council of that city late on Sept. 4 by a vote of sixteen to ten. The Mayor is opposed to the grant in its present form, but the City Attorney, Charles D. Gould, in a written opinion has informed the city clerk that the ordinance is "immune" from veto. He says that the franchise should go to the company for its acceptance. Three months after such acceptance the measure must be voted upon by the electors. It is expected that the franchise election will be held on Dec. 16.

The so-called Pillsbury figure of $24,000,000 was accepted as the value of the property for rate-making and purchase purposes. The Mayor contends that this figure is from $4,000,000 to $7,000,000 too high. It will be recalled that the so-called Pillsbury valuation was accepted last January by the committee on street railway matters of the Council. Mr. Pillsbury had been retained to check the valuation of City Engineer Cappelen. Mr. Cappelen reported the value of the railway as of Jan. 1, 1916, as $25,914,309, Mr. Pillsbury as $24,346,113 and the company as $30,712,101.

The new franchise is for twenty-five years. Under it the company is guaranteed a return of 7 per cent on the valuation previously mentioned. In the preliminary discussion this guarantee was the subject of long consideration. B. J. Arnold for the company held that in the grant as originally drawn the 7 per cent return was cumulative, and that if at the end of five years the city bought the property he saw no way the city could avoid making up the deficit of the company. As amended the section of the grant covering this matter reads that "the city shall at the date of conveyance of the property to the city assume and pay all outsanding liability or liabilities of the company, except all unliquified deficits in the return to the company as provided in Clause B. Section 9 hereof."

The point just mentioned is an interesting one. Many others also seem to demand attention, but it must not be forgot, however, that the grant still must go before the voters. Therefore, until they have acted upon the ordinance it would seem to be prudent not to attempt to do more than touch some of the outstanding features of the grant. Among these not already mentioned are the following:

Surrender of the present grant. Close supervision of service by the city through a street railway supervisor appointed by the Council. Submission of budget for ensuing year forty-five days prior to expiration of current year. Reasonable control over railway purchases by the Council. Return to company to be reduced on failure to comply with orders of City Council. Creation of reserve fund for repairs, maintenance, renewals and depreciation. Right of purchase by the city at end of five or ten-year periods. Increase in capital value on approval by the Council. Arbitration of all disagreements between the company and the city.

The fare conditions follow substantially in full:

The initial rate of fare is to be 5 cents for each passenger more than six years of age. As the cost of service decreases or increases the rate of fare is to be decreased or increased by successive decreases or increases of 1 cent for each passenger. Whenever the fare is increased above 5 cents, however, the company is to sell tickets or tokens for fares for passengers in strips or packages of five or any multiple of five at a discount of 10 per cent from the fare then in effect. If the fares received during the sale of tickets at a discount are insufficient to make the payments provided for, the company may discontinue the 10 per cent discount on the purchase of tickets and charge each passenger the full rate of cash fare then in effect until such revenue is sufficient to make the payments required.

Children (not more than two for each paying passenger, babes in arms, one year and under not included) under six years of age accompanied by a person paying fare are to be entitled to ride free. No passes of any kind are to be issued to any person except employees of the company.

Mention is made, of course, in the grant of the detailed means of operating the fund for stabilizing the fares.

Brotherhood Contract Abrogated

Interurban Men Voluntarily Ask Railway for the Cancellation of Their Union Contract

The contract signed on Dec. 14, 1918, between the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., and the unions, was abrogated late in August, upon unanimous petition of the employees.

The contract was indeterminate. It had been punctiliously observed by both trainmen and company. During the eight months contractual relations, there had been no formal demand or request from committees of the unions for modification of terms of the agreement. The decision of the men to discontinue the organization seems to have sprung from general dissatisfaction with the fixed control of details of operation and working conditions by a union contract. There was no question of wage advances or of important changes in rules involved. The petition did not mention wages.

The employees of the Kansas City, Clay County & St. Joseph Railway who had not previously been organized in a formal union associated with national labor bodies formed such unions in the winter of 1918. Contracts were signed by the company on Dec. 14, with the branches in this company's personnel, of the Order of Railway Conductors and the Brotherhood of Locomotive Engineers. J. R. Harrigan, vice-president and general manager of the company, had refused to negotiate with representatives of the national organizations, and the matters had been handled by Mr. Harrigan with committees of the employees. The contract embodied in modified form, the demands of the men, except as to wage scale and certain unreasonable requirements. The document was signed during the period of the strike of employees of the Kansas City Railways, when labor generally in Kansas City was much agitated. It provided a moderate increase in wages, and many features which workmen in various industries were demanding at the time. The local railway strike had been in effect four days, during which time the interurban employees had been idle, because of suspenion of current supply. The power was to be turned into the interurban wires the day following the presentation of the contract, and operation of that line was to be resumed.

LABOR RELATIONS PLEASANT

Previous to the organization of the unions, the relations between the company and its men had been particularly pleasant, and there had been satisfactory co-operation towards efficient operation. Within a few weeks after the signing of the contract, dissension among the men, and complaints against the operation of the contract, appeared. The efforts of the leaders of the unions to inspire the former loyal service were not successful. It happened, too, that none of the individual complaints of employees, concerning elements of the contract that worked to their detriment, could be taken up by the unions as subjects of negotiation with the company.

The employees of the company had for years been accustomed to take grievances, and even the most trivial complaints directly to the officials, and these had been promptly attended to. Under the contractual conditions, however, there could be no such dealing with individuals.

CONTRACT MAKES FOR RESTRAINT

The lack of the old-time good feeling among the employees, the breaking down of the spirit of co-operation in the efficient performance of daily work, seems to have been an important factor in causing the trainmen to grow dissatisfied with the unionization of the personnel. They had been paying out money, they said, for various union purposes, and were worse off than before. The only thing they would lose by abandoning the unions would be the insurance—and the company was providing insurance facilities.

The first formal intimation to the company that any large proportion of the employees wished to withdraw from the unions, was the presentation on

July 31 of the following petition to Mr. Harrigan:

> This is to advise you that the undersigned trainmen are no longer members of the Brotherhood of Locomotive Engineers, or the Order of Railway Conductors, or any other organization and it is our purpse in the future to deal with our employers direct and not be bound by any contract that may have been in effect or may be in effect at this time. We feel that the organization has not been a benefit to us and does not warrant the expense incurred.
>
> From past experience we feel that the company will treat us liberally and fairly in the matter of wages and working conditions and we will at all times appreciate such improvement as the officials can consistently make.

This petition was signed by forty-four of the sixty-one trainmen.

The company immediately recognized the abrogation of the contract by these men. The effect of this recognition, however, did not extend to any modification of the contract itself. As it affected the working force as a whole the contract was still effective. There were numerous cases, however, in which the signers of the petition were relieved of conditions onerous to them which the contract had required the company to maintain. Such relief, however, was given only in the regular course of negotiation between the individual and the employee. No wage increase, no definite order affecting only the signers, were awarded. The signers were not, as a group recognized by the company, or "rewarded" for their cancellation of the contract.

On Aug. 28, the seventeen trainmen who had not joined in the original request to the company persented a petition for the complete cancellation of the contract. The men who signed the second petition included some of the employees of longest standing with the company. The restoration of the pre-contract conditions is said to be as gratifying to them as to the other employees, and the company.

Shortly after the first group of forty-four men had presented their petition for abrogation of the contract, Mr. Harrigan announced an increase of 10 per cent in the wages of all employees, including every person in all departments. This announcement made no mention of any contract, nor had there been any discussion of the increase with either the signers of the petition or the remaining seventeen who had not signed. The voluntary granting of the increase in effect implied that the contract no longer existed; but there was no change in any other feature of the contract.

The following table represents the wage adjustments of conductors and motormen during the past year:

	Sept. 1 to Dec. 15, 1918 Cents	Dec. 15 (Contract) Cents	Aug. 1, 1919 Voluntary advance Cents
First year ..	34	41	1st 6 months 41 2nd 6 months 44
Second year .	37	44	47
Third year .	40	47	50
Fourth year.	40	47	52

The wage increase was announced on Aug. 28, but it was made retroactive, effective as of Aug. 1.

Philadelphia's Wonderful Record

6078 Men Take in $34,000,000, While More Men in 1910 Took in Only $19,000,000—Wages Increased 154 Per Cent

The annual picnic of the Co-operative Welfare Association of the Philadelphia (Pa.) Rapid Transit Company was held at Willow Grove on Sept. 3 and 4. It was followed by a dinner on the evening of Sept. 4 given by T. E. Mitten, president of the company, to all of the co-operative committeemen, comprising 122 representatives elected by the employees and a like number of representatives appointed by the company.

MANY NOTABLES ATTEND

Great interest has been taken in the results secured under this co-operative plan, because under it wages are higher than elsewhere in the State, without increasing the 5-cent fare.

Notables among those present were Chairman Elmquist of the Federal Electric Railway Commission, now holding its inquiry at Washington, D. C., members of the Pennsylvania Public Service Commission, the Committee of Thirteen and prominent Philadelphians including business and newspaper representatives.

During the two days of the picnic practically all of the employees and their families participated, the attendance aggregating more than 50,000 persons. Sousa and his band and community singing led by Rodeheaver were at their best, while athletic events with swimming and other contests for prizes excited great interest.

The "Get Together" meetings each evening in the pavilion were addressed by President Jackel of the Co-operative Beneficial Association, who announced the membership as now being more than 99 per cent of all eligible employees. President Jackel spoke of how co-operation had taken the place of discontent and distrust among the men and on behalf of all the company's employees expressed to President Mitten the appreciation of the men at his square dealing and the wonderful results he had accomplished. At the meeting on Sept. 3 it was announced the proceeds from the picnic were expected to exceed $20,000, all of which goes to increase the funds in the treasury of the association.

PRIZES AWARDED

E. T. Stotesbury spoke appreciatively of the accomplishment secured to Philadelphia since 1910 by the co-operation of the men and the management. At the meeting on Sept. 3 Mrs. Stotesbury presented the Stotesbury cups to the rolling stock and building department, wining first prize, and the electrical department winning second prize, as having been the first two departments to attain 100 per cent co-operative membership.

President Mitten, in his after-dinner speech to the employees, reviewed the wonderful results secured by co-operation of the men and management since 1910, at which time the men were poorly paid and the company practically bankrupt. The management contributed honest purpose—the men responded with earnest effort; the management established good pay—the men gave good work.

According to the figures presented the company carried 445,599,008 passengers in 1910 at an average of 4.13 cents per passenger. More than 850,000,000 passengers will be carried during 1919 at an average of less than 4 cents per passenger. The average number of rides in 1910 was 288 per capita, while in 1919 with good salesmanship on the part of both motormen and conductors it bids fair to exceed 400 rides per capita. These figures demonstrate that the public appreciates the more acceptable service and that the company is on the whole functioning better as a public carrier.

The most convincing figure, however, as to the efficiency of co-operation as fostered by Mr. Mitten is contained in the statement that 6,078 train men are now taking in $34,000,000 of passenger earnings, while more trainmen were required in 1910 to take in less than $19,000,000 of passenger earnings. Mr. Mitten credits this wonderful accomplishment to the greater efficiency of the men who have, during this period, increased the effective transportation produced per man by more than 90 per cent.

GROSS EARNINGS INCREASED 82 PER CENT IN NINE YEARS

The gross earnings of the Philadelphia Rapid Transit Company in 1910 were $19,232,622, while the gross earnings for 1919 bid fair to be $35,000,000, an increase of 82 per cent. During this period the average yearly wage of employees has increased from $622.16 to $1,581.88, or more than 154 per cent. The company has paid a 5 per cent dividend annually since 1916, while the deficit from operation of $1,222,735, during 1910, has been changed to an accumulated surplus of $4,482,119, at the close of 1918.

Mr. Mitten places much of the blame for the present high cost of living upon that class of workman who now demands the biggest pay he ever received and gives in return the least productive work he ever performed. Mr. Mitten says the employees of the Philadelphia Rapid Transit Company do not belong to the "want-more-do-less" class, as they are now producing a much greater amount of transportation value per man than ever before in the company's history.

Mr. Mitten urged co-operation in the home and called upon the wives of the men to see that all of the last wage increase be put into their savings account. He urged upon the men and their families a return to the old-time thrift and economy as the surest means of establishing an assured prosperity.

Massachusetts Commission Busy

Judge Anderson Points Out Wherein the Electric Railways Are Essential to the State

Federal Judge George W. Anderson, formerly of the Interstate Commerce Commission and the Public Service Commission of Massachusetts, addressed the investigating commission on electric railways at Boston, Mass., on Sept. 2. He pointed out that electric railways are necessary to the public; that jitneys and automobiles privately owned cannot safely transport the volume of traffic forced through modern streets by present combined agencies; and that electric railway service should be preserved out of the tax levy.

REGULATE THE AUTOMOBILE

Judge Anderson declared that the streets are already jammed with automobiles and that the number of accidents occurring is appalling. Electric railways, he said, are at present being taxed, while automobiles are virtually being subsidized. "The general taxpayer ought not to give free roads to automobiles," said the speaker, "in many instances heavy trucks, which ruin the highways and cost large sums for upkeep of roads, when, at the same time, he is asking the transportation lines to pay for the right to operate." Mr. Anderson said:

> The electric railway has been and will continue to be a large factor in the economic, social and moral development of the state. Our great overcrowded cities are a social and moral problem, the solution of which can only be obtained by the removal of the people into the outlaying districts. A stable system of transit is an absolute need. Many of the present financial difficulties of the roads are due to failure in the past to account properly for maintenance and depreciation. Many operators believed that the normal increase of patronage would in time offset their failure to put aside proper amounts for depreciation, but patronage was reduced by the development of the automobile. Increased fares should have gone into effect years ago, but the roads hesitated to adopt them because they doubted their wisdom. The roads should also have aided years ago through taxation.

Judge Anderson stated that he was not in favor of public ownership. He advocated the banishment of jitneys so far as possible from streets in the sections already served by electric railways, pointing out that in many cases the jitney drivers operate only during the rush hours, when they are assured of large patronage. As a stockholder in the Boston Elevated Railway, Judge Anderson stated that the public must recognize that investors have put up their money for a public purpose, and that within reasonable limits, their rights should be protected by the State.

MR. BEELER ADVOCATES SAFETY CARS

John A. Beeler was a witness on Sept. 9 before the electric railway investigating commission at Boston, Mass. He advocated the use of safety cars as a means of doubling service without increasing labor costs materially. The witness declared that many of the present ills of the industry could be cured by this means. He stated that if the public could buy the Boston Elevated Railway at its present market value the road would be a bargain to the people.

Mr. Beeler favored continuing public control of the Boston Elevated and Eastern Massachusetts systems. He pointed out that the lines of the Boston company could not be reproduced at their original cost and declared that some system should be started by which the 5-cent fare could be utilized to promote short-haul traffic. He urged relieving electric railways of taxes and removing subway rentals from the Boston Elevated Railway.

The witness said that in his opinion no transportation agency in sight could drive the electric railway out of the field, gasoline being ten times as costly as power plant energy. The inability of jitneys to handle traffic in large volume was also recognized by the witness.

Pitt F. Drew, president of the Middlesex & Boston Street Railway, Newtonville, Mass., was also a witness. He stated that his road could not be run successfully for a fare less than 10 cents and that when a choice between this unit and no service was presented, little opposition to the 10-cent rate is encountered.

Power Contract Inquiry

The directors of the Indianapolis (Ind.) Street Railway have ordered an investigation to determine in the interest of the stockholders and the public that the present arrangement of purchasing power from the main generating station of the Terre Haute, Indianapolis & Eastern Traction Company, using the street railway power station as a subordinate or "standby" station, is the most economical that can be had under existing conditions and to be assured that the power furnished under the present contract with the Terre Haute, Indianapolis & Eastern Traction Company is being measured in a fair manner for both of the properties.

Prof. G. A. Young, head of the school of mechanical engineering of Purdue University, has been employed as an expert by the executive committee of the railway, and he will be assisted by the head of the electrical department and head of the experimental department in electrical and mechanical engineering.

In the merger agreement effected on July 1, consolidating the Indianapolis Traction & Terminal Company and Indianapolis Street Railway, at the instance of the city of Indianapolis, which desired that the city system should be assured of an adequate power supply, it was provided that when the present contract expired in 1922 a new price basis should be established, as called for in the existing power contract, and that the Terre Haute, Indianapolis & Eastern Traction Company should provide power until 1933, the expiration of the street railway company's franchise.

Bay State Strike Threatened

Employees of the Eastern Massachusetts Street Railway, Boston, Mass., have refused to accept the award of the Federal War Labor Board recently handed down, and a strike involving the entire system was expected Wednesday to follow an ultimatum to the trustees of the company demanding that the above finding be repudiated and a new arbitration be entered upon.

The War Labor Board granted the men a wage increase of 13.4 per cent, bringing the maximum pay to 50.4 cents an hour. The Bay state men demand a wage scale equivalent to that on the Boston Elevated Railway, with a maximum of 60 cents an hour. Later the State Board of Conciliation found that both parties were bound to abide by the terms of the award.

On Monday night the trustees gave out the following statement:

> Since Aug. 12, when the National War Labor Board awarded a wage increase of 13.4 per cent, several unfounded reports have been issued by the joint conference board that on certain dates the men would strike in repudiation of this award. Last week the conference board sought to have the State board of arbitration review the wage case and the State board replied that it was the duty of the employees to abide by the War Labor Board award. To-day, a statement issued from Mr. Vahey's (counsel for the union) office that the joint conference board would call a strike Wednesday morning unless the public trustees joined with them in repudiating the War Board's award.
>
> The public trustees feel obliged to reply that they will not be guilty of such an unjust blow at the public, upon whom a $1,000,000 additional burden has already been placed by the War Board's award.
>
> The public trustees report that it would be far better for the public to submit to the outrageous inconvenience of a strike than to surrender the fundamental principle of arbitration. The trustees are still confident that the men will not violate their agreement and strike and thus lose the $135,000 back pay under the retroactive award of the War Labor Board.

Contrary to expectations, the employees of the company did not strike on Wednesday. It was announced by the joint conference board of the unions that unless its trustees agreed to the demand that the War Labor Board's award be repudiated by Wednesday, the machinery would be set in motion to start a strike on Friday.

$200,000 Fire in Los Angeles

Shortly after 1 a.m. on Sept. 10, fire thought to be of incendiary bomb origin damaged the Pacific Electric Railway's stores and shops at Los Angeles, Cal. The loss was $200,000. The principal structure destroyed was a two-story brick building 59 ft. x 200 ft., used for storing valuable car repair parts, etc., and as a pattern room and cabinet working shop. The damage to the contents of the store house is estimated $150,000. Difficulty was experienced in preventing the fire from spreading to adjoining storehouses containing oils and other valuable materials. Many cars and locomotives in the adjoining car shop and on the tracks were saved by moving them in time. The fire was discovered in the portion of the building occupied by the lavatory.

Court Passes on Wages

United States Judge Frank H. Rudkin has allowed the claim of the employees of the Spokane & Inland Empire Railroad, Spokane, Wash., for increase of wages to the amount of the difference between general order 21 and supplement 4 thereto, and allows such claims priority over the mortgage to the amount of such increase for one month. The opinion was handed down in Federal Court in the case of the First Trust & Savings Bank, trustees, against the Spokane & Inland. Judge Rudkin holds:

> The negotiations between the Spokane & Inland and its employees amounted to an agreement to pay the wages being paid on federal controlled roads.
>
> The contract was disavowed by the company on the first pay day after supplement 4 went into effect, by its refusal to pay according to that order.
>
> The employees' claims are entitled to priority over the mortgage to the extent of one month's wages.
>
> The other claims of the platform men are rejected.

The platform men had always dealt with the company, the court states, through the instrumentality of their local union and had a written contract covering wages. The contract provided that either party might give thirty days notice of a desire to reopen the question of wages. Such notice was given by the employees and no new agreement was ever reached.

The employees contended that the giving of the notice terminated the contract and left them working on a *quantum meruit.* Judge Rudkin holds that the notice did not terminate the contract and that they continued to be employed under it and are not entitled to additional compensation.

The court also directs the receiver to file a statement setting forth the amount of the several several claims under the foregoing rule.

The date of the sale of the Spokane & Inland Empire under foreclosure is fixed by the court for Nov. 1 instead of Oct. 1, as suggested by counsel for the bondholders.

The circumstances which led up to the wage matter going to the court for a final ruling were reviewed in the ELECTRIC RAILWAY JOURNAL for Sept. 6, page 492.

Progress on Cleveland Rapid Transit Line

The Cleveland & Youngstown Railway will inaugurate an express service over its line between the business section of Cleveland, Ohio, and what is known as the Heights, the great residence district of the city on the east side, about Oct. 22. Temporarily the rapid transit service will be over the Cleveland Railway's Broadway line between East Thirty-fourth Street and Pittsburgh Avenue and the Public Square. The time on this section will be about eight minutes, while the time on the rapid transit tracks will be ten minutes.

It is announced that progress is being made in the details looking toward the beginning of construction work on the new passenger terminal. The Pennsylvania Railway, it is said, has not yet agreed to enter the new terminal. Only four months remain, however, for signing contracts for the use of the depot, and it is probable that everything will be done to get matters in shape as soon as possible.

Engineers are considering plans for the electrification of the Nickel Plate Railroad through the city east and west, but nothing is definitely known as to what will be done in that direction.

Power Employees Tie Up Toronto Railway

The Toronto (Ont.) Railway was tied up for five hours on Sept. 3, owing to the substation employees walking out. The strike took place because the The strike took place because the railway did not accept the majority report of the Board of Conciliation in the recent wage case in time to suit the electrical workers. This board brought in a report recommending an eight-hour day with four hours on Saturday for employees other than those on shifts, time and a half for the first five hours overtime and double time for all in excess of that, etc. The schedule of wages to be as follows: equipment repairs, 45 to 68 cents an hour; service inspectors, $22 to $25 a week; linemen 51 to 70 cents an hour; wiremen, 54 to 65 cents; jointers, 58 to 68 cents; meter inspectors, etc., $21 to $33 a week; station operators and attendants 49 to 65 cents; foremen, $29 to $34 a week. The new scale of wages was to take effect from July 21, and to terminate on thirty-days notice.

New Wage Contract Signed in Birmingham

A new three-year contract has been signed by the Birmingham Railway, Light & Power Company, Birmingham, Ala., and the representatives of the Amalgamated Association at a wage scale of 40, 45, and 50 cents an hour. The new contract has been in operation since Sept. 1. Under the new contract the first-year men receive 40 cents an hour, second-year men 45 cents and three-year men and men of longer service 50 cents an hour. The scale under the old contract was from a minimum of 31 cents to a maximum of 38 cents increasing 1 cent a year.

Under the new contract the shop employees of less than one year service receive an 8-cent increase. Men of more than one but less than two years receive a 10-cent increase and those of longer service a 13-cent increase.

The scale for gas plant employees gives an increase of approximately 10 cents an hour.

Compensation for men instructing students varies from 5 to 10 cents an hour over the regular rates. The compensation for men operating one-man cars provides an addition of from 2½ to 5 cents an hour in addition to the regular scale.

New Electrified Mileage on St. Paul

On Aug. 24 the Chicago, Milwaukee & St. Paul Railroad placed in service an additional 100 miles of electrified track between Othello and Cleelum, Wash. This includes 19 miles of 2 per cent grade up Saddle Mountain. It was mainly for pusher service on this grade that service has been started on this part of the division in advance of the remainder of the distance to Tacoma.

It is announced that by Jan. 1 the entire 211 miles from Othello to Tacoma will be completely electrified and placed in operation. This will give electrification from Harlowtown, Mont., to Avery, Idaho, and from Othello, Wash., to Tacoma, Wash., leaving still to be electrified the gap between Avery and Othello.

For operation of the electrified section opened on Aug. 24, some passenger locomotives are being converted to freight locomotives by changing the gears. The first new locomotives will be placed in service about Oct. 26. Five new passenger locomotives will be placed on the new line and ten new passenger locomotives on the old line. The forty-two freight locomotives now in service will be divided according to traffic demands.

Davenport Still Without Service

The Clinton, Davenport & Muscatine Railway, which operates the city lines of Muscatine, Ia., has not been able to come to an agreement with the city authorities of Muscatine and there has been no railway service there since Aug. 1.

On Aug. 29 Muscatine filed an equity suit to compel the company to resume service and on the same date secured a temporary mandatory injunction from Judge M. F. Donegan in district court ordering the company to run cars forthwith in accordance with provisions of the franchise. Notice of the court action was served on the superintendent of the city lines at Muscatine. He was backed by company officials in refusing to let cars go out. The sheriff of Muscatine county ordered individual car men to report at the carhouses, and take out cars. They reported but ran no cars.

B. J. Denman, president of the company, states that no immediate action to resume operation in accordance with the court order will be taken. The equity action is returnable on Sept. 9 and the company will then take the stand that operation at the present fare in Muscatine is confiscatory.

The company agrees to operate if a 7-cent fare is granted and if an ordinance which prohibits the operation of one-man cars is repealed. The Council of Muscatine has so far refused to increase the fare or rescind the objectionable service order. Laboring men at Muscatine ride at 3 cents between the hours of 5 a.m. and 7 a.m. and 5 p.m. and 7 p.m.

News Notes

Strike in Mattoon Settled.—Service on the lines of the Central Illinois Traction Company, Mattoon, Ill., has been restored following a strike of several days. No statement was made public as to the nature of the settlement agreement. The men have been receiving 35 cents an hour. They struck for 15 cents an hour additional.

Men at Ashtabula Strike.—The motormen of the Ashtabula (Ohio) Rapid Transit Company went on a strike on Aug. 28, when a new wage scale was not ratified as quickly as they thought it should be. The strike was of short duration, however, as the approval of the president, who was in New York, arrived a few hours after the men left the cars.

Scranton Agreement Accepted.—On Sept. 3 motormen and conductors in the employ of the Scranton (Pa.) Railway decided to accept the company's offer of an increase in wages of 4 cents an hour. From now until Jan. 1, the workers will receive 50 cents an hour and on the first of the year they will get 51 cents. A nine-hour day will still prevail.

Dynamiters Sentenced.—Nine former transportation employees of the Kansas City (Mo.) Railways accused by the government of having dynamite in their possession and suspected of complicity in the dynamiting of cars and carhouses in Kansas City during the strike last December, were convicted and sentenced by Judge Arba S. Van Valkenburgh recently.

Wages on Ohio Road Increased.—The Toledo, Bowling Green & Southern Traction Company has increased the wages of platform men to 48 cents an hour. The company says that this rate will be paid as long as there are sufficient funds. The Councils of Bowling Green, Portage and Maumee have refused the company permission to increase the rate of fare.

Not to Press Wage Demands.—The employees of the Washington Railway & Electric Company, Washington, D. C., on Sept. 4 announced that they would not press their demands for higher wages until Oct. 1. The present agreement under which the men are working is based on terms fixed by the War Labor Board. It will expire on Sept. 30. The demands of the men were referred to briefly in the ELECTRIC RAILWAY JOURNAL for Aug. 30, page 449.

Louisville Service Being Restored.—The third week of the strike of the trainmen of the Louisville (Ky.) Railway found the company operating twelve city lines and two of its interurban lines. Many of the former employees are coming back, and it appeared on Sept. 6 that the strike was nearing an end. Disorder on the part of strikers has calmed down, but sympathizers have been causing a great deal of trouble in the suburbs. No cars were operated on Labor Day.

Service Resumed in Muskogee.—The strike of conductors and motormen on the lines of the Muskogee (Okla.) Traction Company, which has been in effect since May 30, with the exception of a few days in July when the trainmen agreed to return to work but later broke their agreement, is still in effect. Cars were taken from the carhouse a few days ago under guard of the citizens committee and have since been operated despite the threats of the striking trainmen and other organized labor in sympathy with them.

St. Louis Plans Municipal Railway—The Citizens' Referendum League of St. Louis, Mo., is preparing in the next few days to circulate initiative petitions providing for a municipally-owned and operated system of railways and subways for St. Louis. The plan provides free transportation for St. Louisians, the cost of operating and maintaining the system to be paid by an increase of taxation. The league has prepared as a criterion to the success of municipal ownership a chart showing the operating expenses, net profit and other items in connection with the operation of the municipal railway of San Francisco for the year ending June 30, 1918.

War Dead of B. R. T. Honored.—A monument and bronze tablet to the memory of the fifty-three employees of the Brooklyn (N. Y.) Rapid Transit Company who lost their lives in the war was unveiled on the afternoon of Aug. 30 at the Railroad Men's Building, Jamaica Avenue, Brooklyn. The tablet, attached to a large granite column, cost $2,000, and was paid for by contributions from the 14,000 employees of the road. The list of names on it is headed with that of Capt. Harry A. Bullock, who was secretary of the New York Municipal Railroad, a subsidiary of the Brooklyn Rapid Transit Company. He was killed at Montdidier, France, on May 30, 1918.

Paving Charge Rescinded.—The receivers of the Pittsburgh (Pa.) Railways have been relieved by the United States Court, under which they serve, of bearing the expense of repaving a certain section of West Carson Street, over which a controversy has been waged by the city administration and the receivers for many months. The court takes the stand that to permit the receivers to bear this expense would establish a dangerous precedent in view of the fact that many other municipalities through which their lines run have similar claims to present and it might be impossible for the company to meet them all.

East St. Louis Men Still at It.—Although the chairman of the Public Utilities Commission of Illinois announced some time ago that the commission would not act as an arbitration board, the union employees of the East St. Louis & Suburban Railway, East St. Louis, Ill., have forwarded a request that the commission fix a wage scale for the men. The men struck recently because they were dissatisfied with the award of the War Labor Board, but returned to work under conditions reviewed in this paper for Aug. 30, page 447, among which was a promise of a future conference with representatives of the public included if the need arose for any further readjustments.

City Favors Taking Over Roads.—City Solicitor Estes, Howard G. Smith, Harvey E. Clap, William H. Saart and Arthur Sturdy, who represented the city of Attleboro, Mass., in the conference between representatives of the different municipalities through which the Norton, Taunton & Attleboro Street Railway is operated, relative to the sale of the road for $120,000, reported to the Chamber of Commerce on Sept. 20 that the delegates were unanimous in recommending the purchase of the road at the price named on a basis of equal assessments for the different municipalities. This means $35,000 for each of the municipalities. A recent act of the Legislature will permit such purchase of the road.

Budget for Seattle Municipal Railway.—Thomas F. Murphine, superintendent, has asked for an appropriation of $7,000,000 for the maintenance and operation of the Seattle (Wash.) Municipal Railway in 1920. The estimate is based on the financial showing of the lines during the first two months of the city operation. Of the amount asked, $3,066,666 will be required to pay salaries under the new salary adjustment recently adopted. Expenditures and expenses will aggregate $3,834,354, while improvements amounting to $161,000 are planned. The estimate does not include the salary of the superintendent of public utilities or other expenses of the utilities department. These are covered in a separate estimate of $52,055.

Manchester Wage Award Announced.—The board of arbitration which has been inquiring into the matter of wages for the trainmen of the Manchester Traction, Light & Power Company, Manchester, N. H., has awarded motormen and conductors 45 cents an hour for the first three months, 50 cents an hour for the next nine months, and 55 cents an hour thereafter. Miscellaneous employees were granted a 25 per cent increase. This gives the conductors and motormen in the employ of the company for three months an increase of 7 cents an hour and those in the employ of the company for more than a year an increase of 12 cents. The increase is retroactive to April 1. It is said that the company will seek an increase in fare from 6 to 8 cents.

Do Wages or Fixed Charges Come First?—An order granting the application of attorneys for the city of Des Moines, Ia., to appeal his recent decision in the Des Moines City Railway case to the United States Circuit Court of Appeals has been granted by Judge

Martin J. Wade, of the Federal court. The city's appeal is from that section of the order holding that fixed charges must come out of the revenues of the railway before wages are paid. The city attorneys maintain that the costs of operation including wages must be the first claim upon the operating revenue. According to Corporation Counsel Byers the appeal is taken simply as a precautionary measure to prevent the case being settled before the 6-cent fare is voted upon. The order prevents any further action in the case until after the United States Circuit Court of Appeals holds a hearing.

Arbitration Accepted on Extension Question.—C. M. Leslie, receiver for the Interurban Railway & Terminal Company, has advised Street Railway Commissioner W. C. Culkins, of Cincinnati, Ohio, that he is ready to submit all questions involved in the extension of the Cincinnati Traction Company's line to Kennedy Heights to arbitration, but that he cannot agree to the violation of any court order. The question is whether or not certificates of indebtedness held by the Cincinnati Traction Company shall receive preference over notes of bondholders in the distribution of money to be paid to the interurban company by the Cincinnati Traction Company. Mr. Leslie stated that the court had ruled that bondholders be given preference. The Cincinnati Traction Company has agreed to arbitration without qualification.

Will Exhaust Surplus to Pay Wages.—The Manhattan & Queens Traction Corporation, Long Island City, N. Y., announced on Aug. 28 that it had decided to grant the motormen and conductors an increase in pay which would make a 25 per cent increase over what they had been receiving on Aug. 1. The employees formerly received 41 and 49 cents an hour. Now they will receive 52 and 62 cents. On Aug. 10 the company voluntarily granted a 10 per cent increase, but a few days later a committee from the men threatened a strike if they did not get another raise equal to a 25 per cent increase in all. The superintendent of transportation of the company is quoted to the effect that the company had agreed to this increase and to give it to the men until the company exhausted the small surplus now in the hands of the receivers, and then suspend operations. The appeal of the company for an increase in fares was referred to the ELECTRIC RAILWAY JOURNAL for Sept 6.

Connecticut Interurban Increases Wages.—The Hartford & Springfield Street Railway, Warehouse Point, Conn., has granted an increase in wages to its motormen and conductors, amounting to an average of 12 per cent over the present schedule. Harrison B. Freeman, the receiver of the company, concludes a statement about the adjustment as follows: "It was felt that a strike resulting in both a loss of wages to the men and a loss of earnings to the railway and engendering bad feeling on both sides and resentment by the public on account of interruption of service, would do the Hartford & Springfield Street Railway no good and the new schedule of wages was adopted without any threat or ultimatum by either side after a full and fair presentation of the facts by both the officials of the railway and the executive committee of the employees' association. It is only fair that the public should understand this situation and that credit should be given to the employees' association for its fair and, in these days, unusual attitude in an industrial dispute."

Programs of Meetings

National Association of Railway and Public Utility Commissioners

Official call for the thirty-first annual convention of the National Association of Railway & Utilities Commissioners to be held in Indianapolis, Ind., beginning Oct. 14, has just been issued. The opening address will be delivered by Clyde B. Aitchison, chairman of the Interstate Commerce Commission. Walker D. Hines, Director-General of the United States Railroad Administration, has been invited. Among the important subjects to be reported upon are public ownership and operation, utility companies, railroad rates and service of railroads and service of utility companies, railroad rates and utility rates, demurrage, express companies, grade crossings, statistics and accounts, capitalization and State and Federal legislation. It is expected that the various plans for the return of the railroads to private ownership, as well as the Plumb plan for nationalization thereof, will be discussed.

Eighth Annual Safety Congress

The preliminary program of the Safety Congress, to be held under the auspices of the National Safety Council at Hotel Statler, Cleveland, Ohio, Oct. 1 to 4, has just been issued. It contains the following list of authors and topics of papers to be presented before the electric railway section:

"The Human Factor in Safe Operation and Maintenance of Rolling Stock," by F. R. Phillips, superintendent of equipment of the Pittsburgh (Pa.) Railways.

"Co-ordination of Safety Between Transportation and Equipment Departments," by G. K. Jefferies, general superintendent of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

"Why Does Not Every Electric Railway Have a Safety Organization?" by C. B. Proctor, claim agent of the Memphis (Tenn.) Street Railway.

"Nationalizing and Standardizing Accident Prevention," by Harry Reid, president of the Interstate Public Service Company, Louisville, Ky.

"Electric Railway Hazards—Causes, Effects and Remedies," by R. E. McDougall, claim agent of the New York State Railways, Rochester, N. Y.

"Safety Before and After the War," by E. F. Schneider, general manager of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.

In addition to the above, there will be papers of interest to electric railway men delivered before the public utility, public safety and other sections; as well as general or special sessions devoted to Americanization, employees' benefit associations, employees' publications, etc. There will also be a safety exhibit in Grays' Armory, and the week Sept. 28 to Oct. 4 will be "Safety Week" in Cleveland, the goal being to pass the week without a single preventable accident.

Iowa Electric Railway Association

Further announcement has been made concerning the program of the mid-year meeting of the Iowa Electric Railway Association. The meeting will be held at the Blackhawk Hotel, Davenport, Ia., on Sept. 17 and 18, and the session to be held during the forenoon of Sept. 17 will be divided into four sections, namely: way and structure, shops and equipment, transportation, power and distribution. The paper for the way and structure section will be presented by R. H. Findley, superintendent track and roadway of the Omaha & Council Bluffs Street Railway. This paper will be discussed by W. L. Wilson, engineer maintenance of way of the Des Moines City Railway; C. F. Reaney, acting chief engineer of the Waterloo, Cedar Falls & Northern Railway, and R. J. Smith, engineer maintenance of way of the Tri-City Railway, Davenport.

The paper before the shops and equipment section will be delivered by John Sutherland, master mechanic of the Tri-City Railway, and will be discussed by C. M. Feist, master mechanic of the Sioux City Service Company; T. E. Wood, master mechanic of the Omaha & Council Bluffs Street Railway, and John Duncan, master mechanic of the Fort Dodge, Des Moines & Southern Railway. The paper before the transportation section will be delivered by J. H. Seisseger, general superintendent of the Mason City & Clear Lake Railroad. The discussion will be led by L. L. Sloss, superintendent of the Des Moines City Railway; J. P. Boyle, traffic manager of the Iowa Southern Utilities Company, Centerville, and A. C. Anderson, superintendent of the Keokuk Electric Company.

The paper before the power and distribution section will be delivered by John M. Drabelle, electrical engineer of the Iowa Railway & Light Company, Cedar Rapids. The discussion will be led by D. W. Gilbert, superintendent of power stations of the Omaha & Council Bluffs Street Railway, and D. K. Lewis, electrical engineer of the Fort Dodge, Des Moines & Southern Railroad.

The remainder of the two-day program was announced in the ELECTRIC RAILWAY JOURNAL for Aug. 16, page 328.

Financial and Corporate

Chicago Valuation Filed

Reports Showing Surface Railway Figures Presented to Public Utilities Commission

At a hearing before the Public Utilities Commission of Illinois on Sept. 8, reports were filed showing the valuation of the properties operated by the Chicago Surface Lines. The reports were not recorded as exhibits, but are to be used later in the proceedings through which the permanent rates of fare are to be fixed. The fare has been 7 cents since Aug. 8.

The city, through its special counsel, Chester Cleveland, insisted that before hearings are held on the question of valuation there are a number of disputed points to be settled. One contention is that having submitted to one change in their contract ordinance, namely, the charge for fares, the companies must offer to surrender the entire contract. The commissioners intimated that the situation might be different because the city had no authority to enter into such an ordinance with the companies.

It was announced that both the commission and the city would be handicapped in making a valuation through lack of funds for this purpose. The companies figures were prepared after six months of investigation by Stone & Webster and A. L. Drum & Company. One incident of the hearing was the criticism by Commissioner Wilkerson of those who have been responsible for giving to certain newspapers information which appeared to reflect on the motives of the commission.

It was expected that further arguments would be presented on Sept. 12, and that the case of the elevated railways might be combined with that of the Surface Lines.

Abandonment Threatened

R. B. Claggett, secretary and treasurer of the Columbus Railway, Light & Power Company, Columbus, Miss., has indicated to the Council of that city that the company will be compelled to abandon service on its railway lines unless permission is granted to it to discontinue certain lines which now parallel each other and also make certain other changes in the interest of economy. With the advent of war conditions the company was confronted with a crisis. The situation was met by the Council allowing an increase of electrical and gas rates, which served to safeguard the light service. The increased fares on the railway, however, proved unsatisfactory and the company voluntarily restored the 5-cent fare on Aug. 1 in the hope of increasing its revenue from this source. Mr. Claggett stated that the railway was losing $1,000 a month, and its continued operation upon its present basis was out of the question.

Instruction of Bond Salesmen

Educational Venture Has 150 Enrollments—Attendants at Doherty School Visit Railway Property

Recently Henry L. Doherty & Company announced that they would conduct a class for bond salesmen in New York. A paragraph to this effect was published in two or three of the daily papers in New York. In consequence, some 6000 applications were received for membership in the school. It is obvious that no such number could be accommodated; about 150 applications were accepted, most of them from heads of some department or holding some responsible position in Wall Street.

No pledge is required that the applicant on completing the course shall join the Doherty forces, as the company's desire is quite as much to acquaint men who deal in bonds with the fundamentals of the industries in whose securities H. L. Doherty & Company deal as it is to enlarge its own forces.

The students are divided into sections, and a section meets daily at 7:30 a.m. The conditions underlying the issue and value of all forms of securities are studied. The course will conclude with special attention to Doherty securities. The course is in charge of L. F. Fuld, of the Doherty organization. No charge is made by the firm, either for tuition or for text books. It is a part of the plan to combine text-book instruction with work in the field. The first field trip of the pupils was made on Sept. 6. It consisted of a tour of inspection of the Second Avenue Elevated Railway and the Manhattan & Queens Traction Corporation. On the latter property the party was personally conducted over the system by Mr. Duncan, superintendent, who answered many questions relating to electric railway operation. The party traveled over the line in a special car.

Has $105,797,989 Still Due

Advances of $200,285,523 have been repaid to the War Finance Corporation, according to announcement on Aug. 22, leaving outstanding a balance of $105,797,989. The loans have been made to railroads, public utilities, industries and cattle growers. Although the corporation has authority to issue $1,000,000,000 in bonds for the financing of export trade, it is not expected that any advances for this purpose will be made before the conclusion of peace.

Slight Gains for Lake Shore

Results in 1918 and 1917 Compared in Income Statement and Operating Statistics

A comparative statement of the results of operation of the Lake Shore Electric Railway System (comprising the Lake Shore Electric Railway, the Lorain Street Railroad, the Sandusky, Fremont & Southern Railway, the People's Light & Power Company and the Bellevue Illuminating & Power Company) for the years ended Dec. 31, 1918 and 1917, follows:

	1918	1917
Gross income	$2,189,234	$1,786,011
Operating and taxes	1,593,083	1,210,690
Net	$596,241	$575,321
Interest paid	432,860	421,333
Surplus	$163,381	$153,988

E. W. Moore, president of the company, reviews the work carried out during the year. Considering the conditions which obtain in the labor field and in the market for materials the work of keeping the physical property of the company up to standard was well carried out.

Attention is called to the fact that the franchises of the Lake Shore Electric Railway and the Lorain Street Railway in Lorain were both renewed during the year for a period of twenty-five years.

$118,548 Charged to Capital Account

The total expenditures for additions and improvements to be charged to capital account were as follows:

Lake Shore Electric Railway	$100,648
Lorain Street Railroad	9,202
Sandusky, Fremont & Southern Railway	50
Bellevue Illuminating & Power Company	4,344
People's Light & Power Company	4,304
Total	$118,548

Operating statistics of the Lake Shore Electric Railway follow:

	1918	1917
Car miles	3,522,668	3,593,009
Income per car-mile, cents	49.24	39.51
Operating and taxes per car-mile, cents	35.82	26.57
Net earnings per car-mile, cents	13.42	12.94
Passengers carried	5,947,163	6,241,350
Earnings per passenger, cents	22.49	18.36

Operating statistics of the Lorain Street Railroad follow:

	1918	1917
Car-miles	694.542	685,293
Income per car-mile, cents	41.61	31.92
Operation and taxes per car-mile, cents	28.74	21.81
Net earnings per car-mile, cents	12 87	10.11
Passengers carried	4,273,220	3,711,368
Earnings per passenger, cents	6.76	5.90

Operating statistics of the Sandusky, Fremont & Southern Railway follow:

	1918	1917
Car-miles	232,643	235,340
Income per car-mile, cents	47.74	41.90
Operation and taxes per car-mile, cents	40.35	30.98
Net earnings per car-mile, cents	7.39	10 92
Passengers carried	287,165	345,080
Earnings per pasenger, cents	35.36	26.82

Washington Values Fixed

After Five Years District of Columbia Public Utilities Learn Their Value for Rate-Making Purposes

The Public Utilities Commission of Washington, D. C., has completed a task begun in May, 1914, fixing values for rate-making purposes on the properties of the Capital Traction Company and the Washington Railway & Electric Company.

The findings of the commission declared a fair total value of the Capital Traction Company as of June 30, 1919, to be $14,270,495, or approximately an increase of $1,000,000 over the value set by the commission for the company as of July 1, 1914. The company's claim for reproduction value, including expenditures as of June 30, 1919, was $25,951,679; while its historical value estimate, including expenditures, as of the same date, is $19,418,298.

A fair total value for the Washington Railway & Electric Company was fixed by the commission at $16,106,368 as of June 30, 1919, which allowed an increase of valuation of $1,500,000 since July 1, 1919. This company, estimating up to July 1, 1916, submitted claims of $30,778,083 for historical value, and $29,656,382 for reproductive value.

One of the commissioners rendered a dissenting vote. In view of this fact it is expected that an appeal will be taken by the companies. An appeal might delay the establishment of the valuation for several years, as an appeal taken by a subsidiary of the Washington Railway & Electric Company against a valuation set by the commission in May, 1917, is still pending in the courts.

Commissioner Gardiner, in submitting a minority report in the valuation case of the Capital Traction Company, takes issue with his associates as to the method used in determining fair value. Mr. Gardiner held that the only fair procedure of valuation to be one which determined fair value as of the present time, taking as a basis what is found to be a fair permanent basic cost of reproducing the property. If Mr. Gardiner's contentions are sustained by the courts they will lead to a much higher valuation for both companies than the majority of the members of the commission have allowed.

It was announced that pending the final review of the valuations by the courts, the commission would use the figures as a basis for fixing rates in Washington. Commissioner Brownlow said the application of the Washington Railway & Electric Company for authority to charge increased rates would be considered at a public hearing by the commission on Sept. 18. This rate matter was delayed pending the completion of the valuations.

Mr. Gardiner points out that the commission omitted an item of $5,143,907 in the case of the Capital Traction Company, the amount paid by the Rock Creek Railway for the Washington & Georgetown Railroad in 1916. In commenting on this point, Mr. Gardiner said:

> I believe it to be the duty of this commission to protect those who have innocently and honestly invested their money and not take from them $5,143,907 of the value of their property because a commission created some fifteen years after this transaction believes that the purchase price agreed upon by this committee was in excess of the sum which the commission thinks should have been paid.

Mr. Gardiner declared it was not for the commission to decide the sum paid was excessive, pointing out that in a case of this sort the commission must recognize the contract entered into, and that it must allow the company a sum equal to such purchase price in determining the fair value of the property to the present stockholders.

Interurban Committeemen Want City to Act

Elliott C. McDougal, chairman of the protective committee representing holders of the collateral trust 4 per cent bonds of the International Traction Company, Buffalo, N. Y., has issued a statement calling attention to the seriousness of the railway situation in Buffalo and severely criticising the city officials for prolonging litigation over the rate case after the decision of the State Court of Appeals.

Mr. McDougal says that notwithstanding statements to the contrary, there is grave danger of receivership and bankruptcy for the International Railway. The bondholders' committee, he states, learned after an investigation that during the year ended May 1, 1919, the International Railway lost in operation more than $750,000. He says that if the committee had not loaned the railway $800,000 to pay interest in January and July on more than $17,000,000 of its bonds, there would have been a receivership. According to Mr. McDougal the committee has twice saved the company from bankruptcy. On Nov. 1, 1919, another installment of interest on the company's bonds will be due and Mr. McDougal declares that "unnecessary delay in the rate case will be criminal."

Ancillary Receivers for Wheeling Company

Joseph D. Whittemore and Francis R. Harbison, both of West Virginia, have been appointed ancillary receivers for the West Virginia Traction & Electric Company by Judge Charles P. Orr, in United States District Court.

The company is a West Virginia concern, and recently suit was filed against it by Albert M. Cooke, which resulted in Messrs. Whittemore and Harbison being appointed receivers by the Federal Court for the Northern District of West Virginia.

The company's properties extend into a district coming under the jurisdiction of the Federal District Court for the Western District of Pennsylvania and it was therefore necessary to have ancillary receivers appointed to supervise these properties.

Lewiston, Augusta & Waterville Sold at Auction

The property and franchises of the Lewiston, Augusta & Waterville Street Railway were sold at auction on Sept 5 at Auburn, Me., for $80,000 to a syndicate representing the first mortgage bondholders and the holders of the refunding bonds. The sale is subject to the approval of Associate Justice Merrill of the Maine Supreme Court, by whom it was ordered on the petition of the trustees under the mortgages securing the first and refunding bonds of the road, amounting to $2,937,000, on which interest in excess of $151,133 had not been paid.

It was announced after the sale that the company will be reorganized. It is now being operated by receivers.

The Turner branch of the system, covering about 12 miles of track out of the 167 forming the road as a whole, was sold for $30,000 (included in the $80,000) exclusive of franchise. The branch line will be discontinued, according to present plans.

Seattle Again Reports a Profit

A report filed with Mayor Hanson by Superintendent Thomas F. Murphine shows that the revenue of the Seattle (Wash.) Municipal Railway for the month of July, 1919, was $461,228. This amount is a gain of $23,372 over the month of June, 1919, and $36,557 over the month of July, 1918. In a statement accompanying the report, Mr. Murphine said in part:

> The total known operating expenses are shown to be $378,462, as compared with a total of $367,026 for the month of June, 1919. From a gain or profit of $82,765 for the month we have deducted an item of $65,635, being interest on outstanding bonds, and an item of $7,664, being a proper amount for industrial insurance to be apportioned to the month of July; also an estimated item of $1,817, which is in addition to the $5,182, for damage claims already paid in July. When these deductions have been made there is shown a net gain of $7,648 for the month.
>
> Extraordinary expenditures of a rehabilitating character totaling $85,448 during this month more than offset depreciation, an average charge for which would in our judgment be $25,000. This maintenance expenditure for the month of July is at the rate of $1,025,382 for the year and represents approximately 19 per cent of the total revenue for the railway for the month.
>
> We operated during this month a total of 158,451 car hours, which is 28,879 car hours in excess of the car hours during the corresponding month of the previous year by the combined lines of the Puget Sound Traction, Light & Power Company and the Municipal Railway Divisions A and C.
>
> It is also shown that we operated 1,416,248 car miles, which is 19 per cent in excess of the car miles operated in the same month of the previous year. In view of the fact that the use of other transportation mediums has greatly increased this year over last year, the increase of 19 per cent in the car mileage of our railway indicates that the people of the city of Seattle are getting increased transportation service which is in excess of the increased growth of the population of the city.

Does Seattle Have to Pay?

The courts will be asked to decide whether the city of Seattle, Wash., can be required to pay a tax of $275,000 on the $15,000,000 railway purchased last March from the Puget Sound Traction, Light & Power Company. When the city and railway were about to close the deal for transfer of the property in March, the State Tax Commissioners fixed the valuation of the property at $12,000,000 for the purpose of taxation and put it on the tax rolls on that basis. The city's share of the tax this year on the $12,000,000 valuation was figured at $275,000. At that time, protests were made by both the city and company on the ground that before the tax could be legally spread on the rolls, the property would be in the possession of the city and not subject to taxation. The Tax Commissioner, however, took the position that somebody had to pay the tax.

Decision to Continue Operation

Stockholders of the Swansea & Seekonk Street Railway met in Swansea, Mass., recently and authorized the directors to resume operation of the road at once. While the prevailing sentiment was that service should be resumed, there were several dissenters and no one was optimistic enough to express the opinion that the operation would ever be a success financially. The attitude of the employees and the causes which resulted in the discontinuance of service were referred to only once during the meeting. That was when a stockholder inquired if it was because of the strike that the operation of the road ceased. He was informed that there was no strike, but that every employee of the company had resigned. A letter directed to the officers of the road was read to corroborate the statement.

Financial News Notes

Sale of Collateral Adjourned.—The sales of $2,500,000, West Virginia Traction & Electric Company general and refunding twenty-five year 5 per cent gold bond pledged as collateral to secure an issue of $1,800,000 of 6 per cent gold notes of the West Virginia Traction & Electric Company, Wheeling, W. Va., which was set for Sept. 4 has been adjourned for two weeks.

Asks Company About Security Issue.—Officers of the Cincinnati & Columbus Traction Company, Cincinnati, Ohio, have been cited to appear before the Ohio Public Utilities Commission on Oct. 22 to show cause why they should not abandon the authority granted them in 1915 to issue $1,800,000 of securities, from the proceeds of which they expected to extend the line to Chillicothe. Some of the securities were sold, but no work was done on the proposed extension. Recently the commission granted authority for the abandonment of a portion of the line.

Date Set for Sale of Collateral.—At a meeting of the protective committee of noteholders of the Washington Utilities Company, Washington, D. C., on Sept. 4, it was decided to sell the common stock of the railway at public auction on Sept. 24. The metropolitan Trust Company has been designated as trustee. As noted in the ELECTRIC RAILWAY JOURNAL for Aug. 2 sale of the 27,500 shares of the common stock of the Washington Railway and Electric Company held as collateral for the defaulted notes of the Washington Utilities Company was ordered on July 25 by the protective committee.

Receiver Appointed for Ohio Road.—On Aug. 29, George Whysall, president of the Columbus, Marion & Bucyrus Traction Company, was appointed receiver for the Springfield Terminal Railway & Power Company by Judge John E. Sater, of the United States District Court. The company operates an interurban line between Springfield and Troy, Ohio. It is said that the earnings for some time have not been sufficient to pay expenses, to say nothing of fixed charges. The company is in default on interest due in December, 1918, and in June, 1919, on bonds amounting to $250,000. The application for a receiver was filed by Harley E. Burns, representative of the Central Trust Company, Chicago.

St. Louis Certificates Offered.—The issue of receivers' certificates by the United Railways, St. Louis, Mo., to which reference has been made previously in the ELECTRIC RAILWAY JOURNAL, is being offered for subscription by William R. Compton Company, New York and St. Louis, the First National Bank, the Mercantile Trust Company, Francis Brothers & Company, the Mississippi Valley Trust Company and the Stifel-Nicolaus Investment Company, St. Louis. The certificates are being put out at 99.05 and interest to yield about 7 per cent. The total issue is $2,300,000 running for one year at 6 per cent, dated Sept. 2, 1919, and are due on Sept. 2, 1920. They are in the demonination of $1,000. As explained previously in the ELECTRIC RAILWAY JOURNAL, the entire proceeds of this issue will be used for the purpose of paying the loan from the War Finance Corporation, to secure which $3,500,000 of Union Depot Railroad first mortgage 6 per cent bonds were pledged by the United Railways as collateral. These securities will now be released.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$29,498	$*18,793	$10,705	$3,380	$7,325
1m., June, '18	23,272	*10,961	12,311	3,477	8,834
12m., June, '19	314,115	*187,404	126,711	42,107	84,604
12m., June, '18	245,509	*126,229	119,280	39,272	80,008

CAPE BRETON ELECTRIC, LTD., SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$46,529	$*36,883	$9,646	$5,330	$4,316
1m., June, '18	40,097	*29,940	10,157	5,255	4,902
12m., June, '19	556,491	*426,428	130,063	64,188	65,875
12m., June, '18	486,048	*339,416	146,632	63,057	83,575

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$63,130	$*36,679	$23,451	$15,331	$8,120
1m., June, '18	50,169	*34,996	15,171	11,795	3,376
6m., June, '19	30,652	*210,805	95,847	90,011	5,836
6m., June, '18	256,192	*175,870	80,322	68,939	11,382

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$22,705	$*18,875	$3,830	$3,993	$‡163
1m., June, '18	25,679	*18,890	6,688	4,106	2582
12m., June, '19	304,373	*213,246	91,127	48,917	42,210
12m., June, '18	337,476	*219,327	118,149	49,678	68,471

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$81,207	$71,737	$9,470	$14,388	$‡4,918
1m., June, '18	60,984	47,264	13,720	14,652	‡932
12m., June, '19	1,025,600	873,336	152,264	177,138	‡24,874
12m., June, '18	781,551	540,523	241,028	170,427	70,601

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$226,427	$*154,785	$71,642	$35,825	$35,817
1m., June, '18	186,672	*126,267	60,405	36,405	24,380
6m., June, '19	1,190,196	*898,933	291,263	215,193	76,070
6m., June, '18	958,841	*711,565	247,276	217,029	30,247

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$44,151	$*33,759	$10,392	$8,379	$2,013
1m., June, '18	42,732	*26,199	16,532	7,061	9,471
12m., June, '19	558,923	*434,441	124,481	93,290	31,191
12m., June, '18	417,518	*259,589	157,929	82,758	75,178

PUGET SOUND TRACTION (WASH.) LIGHT & POWER COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$666,787	$*463,947	$202,840	$265,340	$55,409
3m., June, '19	2,081,752	*1,390,058	691,694	1879,194	260,388
6m., June, '19	5,196,784	*3,688,407	1,508,377	1,695,888	461,668

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$97,926	$*62,515	$35,411	$4,770	$30,741
1m., June, '18	83,134	*51,094	32,039	4,263	27,776
12m., June, '19	1,159,080	*688,692	470,387	53,289	417,098
12m., June, '18	1,003,642	*583,089	420,553	51,017	369,536

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$118,664	$*99,343	$19,321	$24,517	$†5,196
1m., June, '18	96,677	*65,253	31,424	23,117	8,307
12m., June, '19	1,300,886	*1,037,554	263,332	291,247	†27,915
12m., June, '18	1,071,436	*719,354	352,082	275,909	76,173

* Includes taxes, † Deficit.

Traffic and Transportation

All Eyes on Jersey

Public Service Railway Ready for Installation of Zone-Mile System of Fares on Sunday

On Sunday, Sept. 14, 1919, coincident with the first car out on regular runs, the mile-zone system of fares will go into effect on the lines of the Public Service Railway in New Jersey. Fares will be based on 3 cents for the first mile and 2 cents for each additional mile on every car without transfer.

Approximately 600 cars operated on lines of heavy travel and having a considerable number of zones will be equipped with National cash registers, class 700. All other cars will carry Johnson registering fare boxes and overhead registers, on which the number of passengers carried will be registered.

The number of cash registers will be gradually increased during the following month until all cars operating on routes having three or more zones are equipped. This will call for practically 1300 registers.

The campaign of publicity outlined in last week's issue is going forward. Moving pictures of the scheme were first displayed at the Newark Theater on Sunday last. Much favorable comment has been received on this phase of the educational campaign.

Meetings of superintendents and supervisory forces were held during the week ended Sept. 13 for final instruction and for the purpose of clearing up all questions of doubt so as to insure universal treatment throughout the system, especially as regards the matter of fare collection and the handling of disputes on the first few days of operation.

No serious complaints have as yet come to the attention of the railway officials, although in some communities objection has been made that all the zones are not exactly a mile in length—this being due to the fact that the more important points which were made zone limits were not always exactly one mile apart, and a tolerance of 500 ft. was in general allowed in either direction.

Every Conductor a Salesman

The Eighth Avenue Railroad, New York, N. Y., of which W. B. Yereance is general manager, sent to each of its conductors on Aug. 29 the following memorandum:

> This company is trying to give the public the best transportation service in this city, and it is directly up to the conductors to see that such service is given.
>
> The conductor is this company's salesman, and we want you to realize that it is *your* actions that form the traveling public's opinion of the entire organization.
>
> YOU are selling our patrons what we have—and no one else is doing it. If you cannot sell our goods, (our transportation), the company cannot exist, and the better pleased our customers are with your service, the greater prosperity the company (which includes you), will enjoy.
>
> Keep yourself neat, be alert, and remember that a smile goes a long way.
>
> I hope that you will all realize this, and co-operate toward making The Eighth Avenue Railroad a line that will be popular with the people of New York. If you have any suggestions to make toward this end, come up and tell them to me. If practicable, we will put them into effect.

The memorandum is signed by H. S. McGinness, supervisor of transportation.

The Eighth Avenue Railroad was segregated recently from the other properties included in the system of the New York Railways and is now being operated separately. This change, which went into effect on Aug. 1, was suitably announced to the public by the company and was followed on Aug. 15 by a special bulletin to the public about the plans of the company reproduced in the ELECTRIC RAILWAY JOURNAL for Aug. 23, page 414.

New York State Mayors Confer on Fares

A plan advanced by Mayor John F. Hylan of New York, aimed to defeat legislation permitting electric railways to increase fares, was turned down at Syracuse, N. Y., on Sept. 8 by the advisory council of the State Conference of Mayors, representing every municipality of any size in the State. The council adopted the following resolution:

> Whereas the Mayor of New York City has directed a letter to the president of the State Conference of Mayors and city officials seeking co-operation in a campaign to pledge candidates for the Assembly to oppose any legislation which will in effect nullify franchise restrictions limiting the rate of fare charged by street railways; and
>
> Whereas the letter from the Mayor of New York has been referred to the advisory council of the conference, now, therefore, be it
>
> Resolved, That we are opposed to any legislation which will give to the Public Service Commission the power to increase fares in those cities where franchises limit the rate of fares:
>
> That we believe such legislation is contrary to the spirit of municipal home rule; that each municipality should be permitted to determine for itself what modifications, if any, should be made in franchise restrictions, and that each municipality can be trusted to decide such questions from the standpoint of public interest, with due regard to the property of street railways being permitted to earn sufficient revenue to maintain good service and to pay interest and operating expenses;
>
> That, inasmuch as it is not a function of the conference to participate in political campaigns or to influence in any way the selection of public officials, we cannot co-operate in pledging candidates for the Assembly, but must restrict ourselves to presenting our views at the proper time to the Legislature and the Governor.

Disapproval of the Hylan plan is said to have been directly due to assurance from Governor Alfred E. Smith that he will veto any increased fare legislation not approved by the conference.

Asks Rate Truce

Governor of West Virginia Requests Utilities to Hold Applications in Abeyance Pending Conference

Governor Cornwall has addressed the electric railway and other public utilities in West Virginia which have applications for increases in rates pending before the Public Service Commission of West Virginia. He suggests that such companies temporarily suspend their efforts to secure increases pending the conference of the representatives of industry, of labor organizations and of the farmers, to be held in Washington early in October. In other words, the Governor desires a truce in so far as the settlement of rate increases is concerned. The letter of the Governor follows in full:

> The President of the United States has called a conference of representatives of industry, of labor organizations and of the farmers, to be held in early October, in an effort to work out a wage-basis, or at least to secure a better understanding and a more harmonious policy as affecting them and the public generally. In the meantime vigorous efforts are being made to stop the rise in and, if possible, to reduce, the cost of living.
>
> Pending the proposed conference and an ascertainment of the results of the Federal and State governments in their war on high prices, a tentative "truce" has been established whereby it is understood demands for further wage increases will be held in abeyance.
>
> I need not point out the wisdom of such "truce." As long as one element or factor, in the economic circle, continues to climb upward all the others will, in fact, must, do likewise. To stop the ascent with justice to one or all, all must stop together.
>
> It is unquestionably true that fares and rates of public utility corporations have lagged behind in the ascent of prices, and to the extent that many of them throughout the country are embarrassed, some facing bankruptcy. Many are applying, in this State, to the Public Service Commission for the privilege of increasing rates. Your company is one of that number. As to the merits of your claim, I know nothing. It will be the commission's task to ascertain the facts and make the proper order.
>
> However, I do believe that during the "truce" referred to, and pending the effort to stabilize the industrial situation throughout the country, all public service corporations should agree likewise to declare a "truce" and hold in abeyance their applications for permission to increase rates or fares, as the case may be.
>
> If the wage-earner is willing to wait the outcome of efforts to bring down the cost of living, public service corporations should be willing to wait also, no matter how urgent their requirements or how pressing their needs.
>
> In this crisis there must be full co-operation between all interests. A little patience and forbearance will go a long way toward helping to solve the situation. All good citizens, whether wage-earners or corporation heads, will be willing to make any reasonable sacrifices to aid in the restoration of normal conditions. An announcement that all public utility companies in this State had temporarily suspended their efforts to secure increases would, in my judgment, have a very helpful effect, psychologicaly, at least.
>
> May I inquire whether your company is willing to join in such an announcement?

Register Finding at Boston

The arbitration board appointed to adjust the dispute on the Eastern Massachusetts Street Railway, Boston, Mass., over the use of the Rooke register has handed down a finding to the effect that the register shall not be used on open cars of the running board type after Jan. 1, 1920, but that it may continue to be used on all other types of cars at the discretion of the company.

Tangible Results Expected

Fare Matters in New York City Appear Now to Be on the Way to Definite Action

Events seem to be moving fast toward a point where tangible results may be expected in connection with the fare matter in New York City. On Sept. 7 Mayor Hylan wrote to Public Service Commissioner Nixon asking him specifically as to the intended procedure of the commission with respect to the application of the Manhattan & Queens Traction Corporation for an increase in fares. On Sept. 8 Judge Mayer, under whose jurisdiction are the receivers of the Brooklyn Rapid Transit Company, the New York Railways and the Interborough Consolidated Corporation, made public a memorandum disclosing the serious financial situation confronting the companies. On Sept. 9 Public Service Commissioner Nixon asked the Mayor if he would not "with an open mind call a conference that will be of so earnest a character that all phases of the situation may be recognized and a satisfactory solution arrived at." Meanwhile Governor Smith and Mr. Nixon were in conference. The only statement that followed this talk was that the Governor had said the fare matter was altogether up to Mr. Nixon.

NIXON RESTRAINED BY COURT

As for the Manhattan & Queens Traction case, referred to first, Mayor Hylan made good his threat to institute court proceedings to prevent the commission from granting further fare increases, as Corporation Counsel William P. Burr on Sept. 8 obtained from Supreme Court Justice Wagner an order to show cause why Commissioner Nixon and the receivers of the Manhattan & Queens Corporation should not be prohibited from taking any further action in the application of the line for an increase in fare. Justice Wagner, in the order, which was returnable on Sept. 12 stayed all proceedings by Commissioner Nixon and the receivers, thus effectively blocking any decision being made at the hearing called by the commissioner for Sept. 9.

Judge Mayer included as part of his statement to the press the full conclusions of Stone & Webster. The engineers hold that "upon the present basis of prices for materials and supplies, rates of wages, and fares there is no hope that the elevated and subway lines of either borough will earn interest upon the companies' investment in the subways for many years to come, if ever." The court says it seems an obvious duty "that plans should be worked out for determining the permanent status of the transportation companies and their legal and financial relations to the state and the municipal government."

In his letter asking the Mayor for a conference Mr. Nixon outlined the readjustment plan which he has in mind for the companies as follows:

1. Each of the present transit systems to be simplified by the consolidation or merger of the constituent companies into one railroad company.
2. All holding companies, not railroad companies, to be abolished.
3. Leases of roads to be terminated.
4. Perpetual franchises to be changed to franchises limited to fixed periods, within city charter limitations, or to what are known as indeterminate franchises.
5. Values of property to be arrived at in such a way that the determination shall be unquestioned.
6. The city to have the option of acquiring the properties within a fixed period at an agreed valuation plus the cost of additions, extensions, and improvements. It may be advisable to provide for the amortization of purchase price out of earnings.
7. A flexible fare to be established whereby fares shall be automatically adjusted to meet the cost of service, together with a reasonable return to capital upon the agreed fixed valuations and upon the cost of additions, extensions, and improvements. The variation in fare to be secured by maximum and minimum limits in a surplus fund. Only by such means can ultimate lower fares be secured.
8. The city to have a representative upon the directorate of all companies.
9. The readjustment of preferentials and possible refunding of certain loans and advances to be secured in the order in which returns are paid on city bonds, so that at least substantial blocks of such bonds may become self-supporting and so automatically freed from the debt limit.

Meanwhile the Mayor's Non-Partisan Vigilance Committee has replied to Judge Mayer. Through its secretary the committee said in conclusion:

> If Judge Mayer means by the somewhat ambiguous tenor of his memorandum to imply that he is willing to sanction abrogation of existing contracts between the city of New York and the traction company, guaranteeing a 5-cent fare to the traveling public, his individual and peculiar construction of the law ought to be set forth in plain words and not by innuendo. When it is remembered that the traction properties referred to by Judge Mayer have been the football of crooked promotion for over two decades, the alarmist qualities of the Stone & Webster figures are dissipated. Payment of interest on "guaranteed leases" at from 7 to 22 per cent make up a large portion of the deficit predicted by Judge Mayer's accountants.
>
> If the Judge and his experts have forgotten the stock watering exploits of the Wideners, the Whitneys, the Bradys, and others, the public has not.

Face the Facts

Auburn Official Points Out in Unmistakable Terms the Consequences of Delay

Auburn, N. Y., has a fare situation. There is nothing particularly new in that, but there is something new in the method of approaching the matter adopted by the public authorities of that city. Once before did the local electric railway, the Auburn & Syracuse Electric Railroad, apply to the city for permission to increase fares. In that instance the company desired to charge a 6-cent fare in Auburn. Because of franchise restrictions the company's application came within the Court of Appeals decision in the Quinby case. The Auburn authorities, however, waived the franchise restrictions and submitted the matter to the Public Service Commission for determination. On Dec. 31 last that commission authorized the company to charge 6 cents.

RELIEF MUST BE GRANTED

The 6-cent fare has proved inadequate. Now comes the company with a request to the Council for permission to charge 8 cents. In consequence City Attorney Richard C. S. Drummond was directed to report on the subject. Mr. Drummond has presented the results of his study to the Council in two installments, one on Aug. 26 and the other on Sept. 1.

Mr. Drummond in his preliminary report said that the figures already submitted by the company to the Council in support of its application apparently made a case for the relief sought. It is to the details of his study of the subject, however, that the greatest interest attaches. Briefly stated, he finds the company confronted with an insistent demand on the part of the employees for a substantial increase in wages, and with no funds or the prospect of revenue sufficient to pay the increased wages at the present rate of fare. Mr. Drummond says that the question that confronts the people of Auburn is whether they feel that the present demand made by the employees of the company for an increase in wages is justifiable. He states the issue clearly thus:

> The time has approached when the public itself must face issues of this sort, come to its own decision, and announce without evasion or timidity the course it desires its officials and representatives to take. The time has gone for camouflage, and self deception and demagoguery. The situation must be honestly faced and honestly handled.
>
> It is generally conceded that the operation of electric railroads is now and for some years past has been unprofitable. The credit of the roads is gone. Investors will no longer purchase electric railway securities, the companies can no longer borrow money. Our own company is in this exact situation. The present management of the Auburn Company is skillful and efficient. Its expenses have been pared down to the bone, even below the point of prudence. Conditions are bound to get worse rather than better, unless additional revenue can be supplied.
>
> By law, in common sense and in good morals the company is entitled to a return for the service it renders the public. The Council cannot avoid responsibility in the matter, but neither can the public. The public must consider, discuss and decide, and it should advise the Council. If additional money is not provided the consequences are clear and certain.

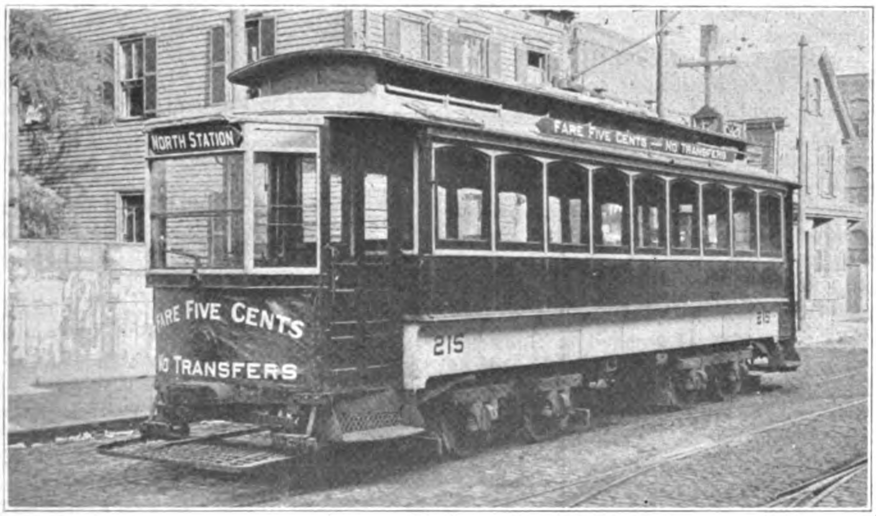
In the continuation of his report presented to the Council on Sept. 1 Mr. Drummond calls attention to the figures of receivership and the other data on electric railways published in the *Literary Digest* for Aug. 23. He says that the imagination may profitably be allowed to work on the spectacle of the city of Auburn trying to exist without its present electric railway system. That motor buses and jitneys could ever effectively take the place of the electric railway, he holds, is inconceivable. A 10-cent fare would not at all cover the cost of such service.

He says that if the public approves of the demand of the company and of the granting of the demand, it should then honorably prepare itself to pay the price. Unless the public announces itself to the contrary in no uncertain terms the representatives of the public in public office may assume, upon the basis of recent experiences, that the public is either in favor of the granting of the wage demands, or at least feels that the granting of these demands is inevitable and hence that it is prepared to accept the consequences of such action. In this connection he says:

> For a while it is to be borne in mind that the present application is being made not for the benefit of the company, but simply for the benefit of its employees. We may as well face the fact that we shall have to acknowledge the necessity of paying higher fares as a matter of mere self-preservation. In whatever aspects the case is considered the people of Auburn must admit the truth and address themselves to the taking of these measures which alone will avail to relieve the very difficult situation that now confronts them all.
>
> A community makes nothing by compelling a starving railway to eke out a miserable existence. The community benefits only as the company is itself prosperous and flourishing.

Mr. Drummond says that purchase of the railway by the city would spell only one thing—deficit. Unless a business can pay its way Mr. Drummond declares it must be given up. It cannot be supported by compulsory contributions by persons other than those who use its product. In conclusion he says the decision must rest with the public. The employees will not decide the question, and the company cannot decide it. Postponement and side stepping will not solve these pressing questions. Talk will not do so. The people having been informed must decide and act on their own initiative. In conclusion the City Attorney says:

> The final responsibility as to all these matters, of course, rests with the Public Service Commission. The Council may decide to leave the whole matter to the commission. It can refuse to do so, or it can consent to confer jurisdiction upon the commission to make the investigation, and to authorize the increase, if the facts of the case seem to warrant or require it. My office at the present time, as I understand the matter, is neither to advise nor to suggest any specific action. It is merely to advise the Council and the public generally as to the general condition of affairs, and to amplify the comment that I made at the invitation of the Council on the occasion of its recent meeting. This I have endeavored to do.



BOSTON'S FIVE-CENT CARS ARE PLAINLY MARKED

Boston's Five-Cent Service to Be Extended

The trustees of the Boston (Mass.) Elevated Railway have decided to extend the non-transfer local 5-cent fare service to South Boston, beginning on Oct. 1. One line will be operated from L Street and Broadway to the South Station via Summer Street extension and the other from Dorchester Street to the South Station via Dorchester Avenue.

Edward Dana, acting general manager of the company, announced the new service in a letter to W. H. McDonnell of the street railway investigating commission, also stating that the company has expended about $900,000 to build additional track at car houses and to provide new center entrance cars, some of which will benefit South Boston.

The new 5-cent rates will deliver passengers at points within easy walking distance in many cases of their destinations, and are expected to some degree to lessen the volume of traffic handled on the tunnel line under Dorchester Avenue. So far the patronage of the initial North Station-Franklin Street line has been unsatisfactorily light.

Interurbans Urged for Transporting Produce

Widespread use of interurban trolleys for transporting farm products to city consumers is urged in the report of the special grand jury which has been investigating the food situation in Cuyahoga County, Ohio. The investigators find that much food goes to waste in the territory surrounding Cleveland because farmers have insufficient means of shipping their products. The report points out that development of food traffic would benefit the electric railway as well as the farmers. It says in part:

> The present trolley system is only being used about fifteen hours in a day at the present time, and largely for passenger service. The remaining nine hours could be used for freight traffic in getting more food into the city.
>
> The basis of this system now exists; for the roads have the rails, wires and powerhouses; all that would be required is the rolling stock and train crews.
>
> This would add greatly to the revenues and profits of these roads at relatively small additional investment or expense.
>
> Linking the trolley freight system with the public markets would practically establish an overnight freight service from farm to market within an area of 100 miles of Cleveland.
>
> Switches into the public markets would obviate the necessity for expensive terminal facilities.
>
> This trolley freight system would be in the nature of an express service and should be justly paid for at rates higher than those for steam railroad freight service.

Seven-Cent Fare Planned for Springfield

Clark V. Wood, president of the Springfield (Mass.) Street Railway, announced on Sept. 8 at a meeting of the City Council that a 7-cent cash fare with a 6½-cent ticket rate and a special rate of 10 cents would be established between the center of Springfield and Chicopee in the near future if the approval of the Massachusetts Public Service Commission was secured. The present 6-cent fare will be eliminated, but the zone system will be retained.

Mr. Wood informed the Council that more than 50 cents of every dollar taken in by the company now goes to labor and that the recent 32 per cent increase in wages granted by the arbitration board of which H. B. Endicott of Boston was chairman will add about $600,000 to the yearly operating expenses of the company. Upward of $200,000 a year in revenue is also taken away from the company by jitney competition, which is untaxed and which operates only in the rush hours or when travel is fairly heavy. By curtailing or eliminating service on various unprofitable lines it is hoped to reduce increased revenues required to $450,000 a year. Mr. Wood pointed out that jitneys cannot handle the street railway traffic without unendurable congestion.

Chicago Rehearing Begun

Arguments on the motion for a rehearing in the Chicago (Ill.) Surface Lines rate case were begun before Judge E. S. Smith in the Circuit Court of Sangamon County at Springfield, Ill., on Sept. 9. The first day's session was taken up by the discussion of Chester E. Cleveland, special corporation counsel for Chicago, He contended that the ordinance contract between the city and the company is binding and cannot be changed by the State Utilities Commission; that the company cannot depart from some of the obligations of the contract without surrendering all its ordinance rights; that the State Commission has no authority to modify a contract; and that the commission had no legal right to increase rates of fare without making full inquiry into the reasonableness of the rates. The city also proposes to insist that the surplus earnings of the company under the 7-cent fare be impounded pending the outcome of the present hearing.

Transportation News Notes

Lowell Fares to Be Reduced.—The trustees of the Eastern Massachusetts Street Railway have voted to establish a ticket rate of 6¼ cents at Lowell, Mass. Sixteen rides will be sold for $1. The flat fare will remain at 10 cents for the present.

Milford & Uxbridge Wants Higher Fare.—The Milford & Uxbridge Street Railway has petitioned the Public Service Commission of Massachusetts for authority to increase its fares by 1 cent. The present tariff is a combination of 6-cent and 7-cent units.

Middlesex & Boston Fare Increases Suspended.—The Massachusetts Public Service Commission has suspended the new fare schedule proposed by the Middlesex & Boston Street Railway pending a public hearing on Sept. 16 to consider the necessity of the increase. A 10-cent fare unit is desired by the company.

Centralia Doing Better.—The North Coast Power Company, operating the electric railway between Centralia and Chehalis, Wash., has increased its service materially, adding several new cars to the run and improving the schedule. The city ordinance designed to put an end to jitney traffic has been put in effect, and the company reports a big increase in traffic since the suspension of the jitneys.

Eight Cents at Youngstown.—Announcement was made on Sept. 5 that the rate of fare on the local line of the Mahoning & Shenango Railway & Light Company in Youngstown, Ohio, would be advanced to 8 cents on Sept. 15. Although there was a deficit in the stabilizing fund on Sept. 1, the increase was not made at that time, as might have been done under the company's franchise, which provides for a service-at-cost system.

Six Cents Asked for Richmond.—The Virginia Railway & Power Company on Sept. 2 petitioned the Common Council of Richmond, Va., for permission to charge 6-cent fares with 2 cents extra for each transfer. The petition was referred to the streets committee for action. The company seeks to establish a flat 6-cent fare, with school and work tickets abolished. The Council early this year authorized a straight 5-cent fare to the general public, work tickets at the rate of six for 25 cents, and special tickets for school children.

Arsenal Workers Must Pay More.—The Tri-City Railway, Davenport, Ia., has announced that it will raise the fare paid by workers in the United States Arsenal at Rock Island, Ill., from $2 to $2.80 for a book of forty tickets. This will mean a rate of 5.6 cents per ticket as against the present 4-cent rate. The company rejected an offer made by the arsenal officials for a 5-cent fare. The arsenal fares were not raised at the time of the increase recently allowed by the Public Utilities Commission of Illinois.

Asks Eight Cents in Aurora and Elgin.—The Aurora, Elgin & Chicago Railroad, Aurora, Ill., has applied to the State Public Utilities Commission for an increase in fares from 6 cents to 8 cents on the city lines of Elgin and Aurora. The petition does not affect interurban lines, which are now operating on a 3-cent basis. In support of the petition, it is declared that for the year ended June 30, 1919, the gross operating revenue of the company was $250,161 and the gross operating expenses, exclusive of taxes, $240,462. No date has been set for the hearing.

Wilmington Wants Eight Cents.—The Wilmington & Philadelphia Traction Company, Wilmington, Del., has announced that it will apply to the City Board of Public Utility Commissioners for permission to raise fares from 6 cents to 8 cents. The company's decision to ask for higher rates comes as the result of a wage advance of 10 cents an hour to its employees. The carmen, who had threatened to strike unless they were granted higher pay, recently accepted the company's proposition for a 10-cent advance with time and a half after ten hours.

Six-Cent Fare Extended in Spokane.—The Public Service Commission of the State of Washington has extended until Dec. 2, 1919, its order of April 9 last, granting the Washington Water Power Company and the Spokane & Inland Empire Railroad, which operate in Spokane, permission to charge a 6-cent fare. The commission's original order has been extended twice before owing to delay encountered in the merger of the two companies. The property of the Inland company is to be sold on Nov. 1. Mayor C. M. Fassett recently protested to the commission against allowing an extension for more than one month beyond that date.

Would Refuse Seven-Cent Fare.—Retention of the present 6-cent fare is recommended in the report of Frank H. Booth, special master in chancery, who has been taking testimony on the application recently made by the San Antonio (Tex.) Public Service Company for a fare of 7 cents. The company was granted a 6-cent fare by the courts last year in the face of objections by the city. It now seeks an injunction restraining the city from enforcing an ordinance passed in 1918, limiting the rate of fare to 5 cents. Mr. Booth holds that the court has no jurisdiction in revising rates prescribed by act of the Legislature or City Council. Judge Duval West of the Federal Court, to whom the report was submitted, is expected to announce his decision within a few weeks.

Three Cents a Mile on California Road.—The Railroad Commission of California has issued an order granting the Oakland, Antioch & Eastern Railway, Oakland, Cal., increased fares. The new rates will put the fares of the electric railway on a parity with those of the Federal roads operating in the same district, insofar as they apply to the one-way rate, which is 3 cents a mile. The company will continue to issue week-end round-trip tickets at rates considerably lower than those in effect on the Southern Pacific Railroad. It is expected that the new rates will yield about $22,100 additional revenue. It was shown at the hearing that the company's payroll had been increased 72.97 per cent since 1916, and that material costs had increased 57.7 per cent in the same period.

Fare Hearing Put Off.—Petition for increased fare on the East St. Louis-Belleville line of the East St. Louis & Suburban Railway, which was scheduled for a hearing before the Public Utilities Commission of Illinois on Sept. 4, has been postponed indefinitely, pending a decision by Federal Judge English on the application by the company to restrain the Attorney General of Illinois and the State's Attorney of St. Clair County from enforcing the 2-cent a mile maximum rate for interurban railways. A decision on the petition for an injunction is expected to be handed down from the United States District Court at Danville, Ill., within thirty days. Should the injunction be granted, fares in East St. Louis will not be affected, but rates on all interurban lines will be increased.

No Charge for Retransfer.—All transfers between surface lines of the Brooklyn (N. Y.) Rapid Transit Company will be made on the basis of a 2-cent charge for the first transfer issued and without an additional charge of 2 cents for a reissue transfer. This policy is in accordance with an agreement just reached between the company and the Public Service Commission. The commission explained that the company had made a wrong interpretation of the order of July 17 permitting a charge of 2 cents for transfers, and that the intention of the commission at that time was that the company should make no charge for retransfers. Investigation by the commission has shown that the company had been charging for retransfers. As a result, it is said, passengers were charged not only 7 cents but in some cases 9 and 11 cents. The company will at once proceed to put into effect the necessary orders to prevent conductors from charging for a transfer on a transfer.

Six-cent Fares in Effect in Birmingham.—A 6-cent car fare went into force in Birmingham, Ala., on Sept. 4 under the agreement with the City Commission referred to in the issue of this paper for Aug. 30, page 454. The increased rate of fare was approved by the State Public Service Commission and by Judge William I. Grubb of the United States District Court. The 6-cent fare applies on all of the lines of the Birmingham Railway, Light & Power Company within the old 5-cent limits. The same transfer privileges are retained with the 6-cent fare. Injunction proceedings which were filed to restrain the collection of the 6-cent fares, were called before Judge Hugh A. Locke, of the Chancery Division of the Circuit Court on Sept. 4, but the hearing was put over to Sept. 15. The increased fare met with little or no protest on the part of the public during the first day of its collection.

New Publications

Making and Maintaining a Lawn

Department Circular No. 49 of the United States Department of Agriculture, Washington, D. C. Free.

This circular will be useful to electric railway men in providing material to place in the hands of shop men, substation attendants and others who are responsible for maintaining a creditable appearance of company grounds.

Effective Business Letters

By Edward Hall Gardner. Ronald Press Company, New York, N. Y. 411 pages. Price $2.

The wide ramifications of industrial and social life owe their binding force in no small degree to the use of the mails and the universal variety of transactions executed thereby. Not only the comparatively small number of unusually important letters written by the few men at the head of a business, or the form letters that are carefully composed for certain situations, but also the routine letters written by subordinates, are all alike representatives of the concern from which they issue and are capable all of becoming efficient units in the business. This is especially so with the man with nothing to offer but service. In the effective letter he will find an inexhaustible and faithful instrument.

The chief purpose of "Effective Business Letters" is to demonstrate by well defined principles how effective letters are to be written. It covers the complete range of business correspondence—orders, acknowledgments, sales, credits and collections. The volume is not a compendium of forms, but is a logically arranged guide designed to show conveniently the essentials of good form and proper appearance, as determined by the rules in use in a large number of leading business houses, the letters of which have been critically analyzed in an effort to present a compact body of principles that can be directly applied in any circumstances whether the daily output of letters represents only a few or a very large number.

Personal Mention

H. P. Harrsen Made Assistant General Manager

H. P. Harrsen has been appointed assistant general manager of the Michigan Railway and the Michigan Railroad by J. F. Collins, vice-president and general manager, and will make his headquarters in Grand Rapids, Mich. Mr. Harrsen will take over the duties of general superintendent, that title having been abolished following the resignation of C. E. Morgan. He will have charge of all operating and maintenance work. The chief engineer, the traffic manager, and the superintendent of equipment, as well as all traffic superintendents in the company's employ will report to him.

The establishment of the office of assistant general manager was made advisable because of the growing importance of Grand Rapids and the adjacent territory. This district will now have the benefit of direct representation by the management. Mr. Harrsen will also relieve Mr. Collins of much detail in connection with the operation of the system, which includes more than 350 miles of interurban lines as well as the city lines of Lansing, Jackson, Battle Creek, Kalamazoo, Owosso and Bay City.

Mr. Harrsen's connection with the electric railway industry dates back many years. For twelve years he was associated with Dr. F. S. Pearson as general manager and managing director of the latter's utility interests in Mexico and Spain. He returned to the United States in the fall of 1918. A portrait and a biography of Mr. Harrsen were published in the ELECTRIC RAILWAY JOURNAL for Oct. 12, 1918.

George L. Burr, at one time connected with the Stone & Webster properties, has been appointed a manager of the bond department of the Guaranty Trust Company, New York City. Mr. Burr was born on Aug. 29, 1889, in Phoenixville, Pa. He was graduated from Harvard College in 1910 and from the Civil Engineering School of Columbia University in 1912. He then entered the employ of the Interborough Rapid Transit Company as a draftsman, which position he held until he went to Keokuk, Ia., with Stone & Webster. In May, 1913, he was appointed manager's clerk of the Houston Electric Company and Galveston-Houston Electric Railway. In January, 1914, he was appointed secretary to the assistant district manager of Stone & Webster in Texas, with offices in Dallas, Tex. In October, 1916, he joined the bond department of the Guaranty Trust Company. He became assistant manager of the bond department in July, 1918.

James D. Mortimer, president of the Milwaukee Electric Railway & Light Company and the North American Company, is the subject of an article. illustrated with a portrait, in the September issue of *System*. The article speaks highly of Mr. Mortimer's fairness in dealing with his employees, a majoirty of whom are on a profit-sharing basis. The writer attributes Mr. Mortimer's success in handling a number of large businesses to his ability to concentrate his entire attention upon each new piece of work and to dispose of it without hesitation.

Otis R. Hill, chief inspector of equipment and rolling stock for the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has resigned to accept a position with the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. Mr. Hill was first employed by the company in Fort Wayne in the capacity of general foreman of the Chestnut Street shops in 1913, having gained preparation for this position through long service with the Illinois Traction Company at Decatur, Ill., and the Chicago City Railway, at Chicago. He continued in charge of the shops of the Fort Wayne company until August, 1917, when he entered the coast artillery service, being commissioned as captain. Captain Hill was sent to France in December, 1917, and participated in many of the major battles from that date until the signing of the armistice. He was mustered out of the service in December, 1918, after a year's very active service overseas, and returning to Fort Wayne was re-employed by the company as chief inspector of rolling stock and equipment. The Fort Wayne & Northern Indiana Traction Company has not as yet appointed a successor to Mr. Hill at Fort Wayne.

Obituary

Josiah Quincy, chairman of the Boston Transit Department and the third of his name to have served as Mayor of Boston, died at Boston on Sept. 8. Mr. Quincy was long active in Democratic politics in Massachusetts and was assistant Secretary of State during Cleveland's Administration. He was born at Quincy, Mass., in 1859, was educated at Harvard College and the Harvard Law School, and for many years was a member of the Boston Transit Commission and otherwise active in public life.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Aluminum Conductor Market Firm with Large Sales

Wire Quoted at 37½ to 38½ Cents per Pound F.O.B. Manufacturer's Works, Depending on Size and Quantity

The price of aluminum ingot is firm at 33 cents per pound f.o.b. manufacturer's works. Aluminum in the form of wire for electrical conductors varies with the size of steel wire, quantity, etc. It also varies with the size of steel reinforcement, it being understood that most of the track feeder circuits and high-tension transmission lines now using aluminum employ a composite cable, the center strand or core being a high-grade galvanized plow steel and the outer strands aluminum.

The price of aluminum wire may be quoted at approximately 37½ cents to 38½ cents pound f.o.b. manufacturer's works, depending on size and quantity. The composite price, including the price of steel, depends entirely on the relative cross-section of both metals. The principal manufacturer of aluminum electrical conductors reports a firm market with several large sales, both domestic and foreign.

Railways in Market for Electric Heating Equipment

Advance Orders So Far Better Than for a Number of Seasons—Porcelain Advances 15 Per Cent

According to reports received, the article which appeared in the July 5 issue, advising the purchase of heater parts for repair purposes, had its effect upon master mechanics and shop superintendents to the extent that a great number of orders have been filled. Those who were fortunate in placing their orders early will have escaped an advance in heater prices which manufacturers expect will be made in the near future. This is based on the report from the factories advising that the price of porcelain has been advanced 15 per cent and that additional increases may be made from time to time depending upon labor conditions.

It is learned from at least one manufacturer that advance orders this year have been better than at any time for a number of seasons. Reports indicate that business picked up considerably after the first of the present year, and that sales for the first six months of 1919 are greater than those of the corresponding period in 1918. Although no prediction is made on future business, a great many orders are looked for from the sale of one-man cars. Costs, of course, are higher than in 1918 and the tendency is for higher prices, as the production per man is not nearly so great as formerly. The prices of many products are only 50 per cent higher than pre-war prices, but a revision upward is expected at any time on account of the increase in price of porcelain, previously announced. Deliveries are fair and the heater manufacturers are in a position to give prompt attention to all orders secured at this time.

Some sales for trial purposes are reported, but these do not amount to a large volume except where a new heater is placed on the market, and in this case most of the sales are of this kind. At other times, however, there are few cases of experimentation excepting with the thermostatic control. Deliveries on this product continue to be good.

One company advises that within the past 90 days it has placed 350 electric heater equipments with large railways in Eastern territory, and that orders for 75 thermostatic control equipments have been received from the same railways. Repair part stocks are in good shape and a considerable volume of business may be placed before cold weather sets in, although many companies have been forehanded in placing their requirements for maintenance repairs before this time.

Waterwheel Market Strong and Steadily Improving

Reports from Manufacturers Show Satisfactory Business This Year and a Promising Future

Information has been received from several waterwheel manufacturers regarding the condition of the market as they find it. With but one exception they all are of the opinion that the market for the year to date has been, and the present market is, in a satisfactory condition. In some cases the average of sales for the first six months of the present year has been about the same as for each of the last five years. These sales have been and are now being well maintained and in one case were increased to 10 per cent over previous similar periods. Contrary to this rather general statement of prosperity, one manufacturer has found few inquiries and very little actual waterwheel business. During the first half year this concern manufactured for stock with a curtailed force.

At present the number of inquiries received is increasing steadily and shows a decided awakening interest among both large and small users of hydraulic prime movers. Sales resulting from these inquiries show a slight increase at the present time. In the one case where sales have not increased the cause was laid to the uncertainty of the general industrial situation.

The amount of waterwheel manufacturing capacity now being utilized varies from 30 per cent to nearly 100 per cent. This has even been exceeded in one instance wherein more equipment could be utilized if it were available. In another instance, where only one-half the shop is working, manufacturing is carried on for stock in the absence of new orders.

Excellent facilities and large capacity available for building waterwheels in some instances are responsible for rather short deliveries. Depending upon the size and type of the unit, the time of shipment varies from one to nine months on standard equipment. The length of time required to make shipments seems to indicate rather clearly in several instances the exact condition of the market.

The outlook in general is considered satisfactory and a bright future is predicted. In particular, the Pacific Coast has been referred to. More hydroelectric development is in sight there at this time than in the four-year period just ended.

MUCH WORK UNDER WAY

The passage of a national water-power bill should still further stir the market to an unprecedented extent, according to the opinion of more than one manufacturer. The fact that the only contracts that are coming through are those that are absolutely essential has been given as one cause for an outlook which is not too encouraging. According to the preponderating opinion, however, it is apparent that there is considerable essential work coming through. The essential nature of the project has now come to be asserted, in the case of the ordinary, every-day water-power development, in consideration of increasing coal prices, the scarcity and unreliability of labor, and with a view to the preservation for future generations of the coal supply, which it is already predicted will dwindle. The prevailing opinion holds out great hopes for the future once economic conditions in the country have become more normal and labor has become more stable and shows some degree of loyalty.

Heavy Buying Exhausts Electrical Sheet Steel

Entire Production of 1919 Sold Out and Orders Are Taken for Early 1920 Shipments at Prices to Be Set

The sale of electrical sheet steel for transformers, magnetic cores, motors, generators, etc., has progressed to such an extent that production for the remainder of the year has already been booked to entire capacity. Consequently word has gone out from the mills to book no more for 1919 delivery. This is going to leave some regular customers with short supplies, but with sufficient warning issued manufacturers of the sheets did not feel that they could keep their books open to accommodate timid customers. There are certain grades of steel, not so commonly used, on which deliveries have increased up to about nine weeks, and the tendency here too is to lengthen shipments.

One mill is booking orders for the first quarter of 1920 only at the prices which shall prevail at that time. There has been no price change for this commodity since March 21, but it is expected that in a few weeks this mill will be able to anticipate and quote a price on which it will book orders for early 1920 delivery. There is no assertion that there will be an advance, but the tendency is in that direction. The steel workers have declared a strike for Sept. 22 on the United States Steel Corporation, and they state it can be prevented only by a backdown by that corporation. So the chance for a rise in price is not an impossibility.

Word comes from one mill, however, that it is not selling electrical sheets for shipment next year, and it is not prepared to make any statement with respect to prices for 1920.

Rolling Stock

Penna-New Jersey Railway, Trenton, N. J., is reported to be in the market for a number of cars.

Terre Haute Traction & Light Company, Terre Haute, Ind., has ordered twenty-five safety cars from the American Car Company.

Orange County Traction Company, Newburgh, N. Y., has placed an order with the Wason Manufacturing Company for two Birney safety cars.

Interstate Public Service Company, Lndianapolis, Ind., plans the expenditure of approximately $350,000 for equipping its line between Indianapolis, Ind., and Louisville, Ky. Up-to-date steel coaches will be placed in service and all old cars will be made over into chair cars and trailers.

Springfield (Mass.) Street Railway, has specified the following details for ten safety cars recently ordered from the Wason Manufacturing Company.

Number	10
Date of order	July 17, 1919
Date of delivery	Oct. 1, 1919
Builder of car body	Wason Mfg. Co.
Type of car	18 ft. safety cars
Capacity	35
Weight:	
Car body	8,930 lb.
Trucks	4,670 lb.
Equipment	1,900 lb.
Total	15,500 lb.
Length over all	28 ft. ½ in.
Truck wheelbase	8 ft. 0 in.
Width over all	8 ft. 2 in.
Rail to trolley base	9 ft. 9⅝ in.
Body	All steel
Interior trim	Cherry
Roof	Arch
Air Brakes	G-E. C.P. 25
Armature bearings	Friction
Axles	Hammered Steel
Bumpers	3M No. 4 channel iron
Car signal	Faraday
Car trimmings	Bronze
Conduits	Alphaduct
Control	K-63
Couplers	Draw bar—Flat iron
Fixtures	Curtain Supply; Rex rollers
Curtain	Pantasote
Signs	Hunter illuminated
Door mechanism	Safety Car Devices
Wheelguards	H. B. wheelguards
Gears and pinions	Nuttall
Hand brakes	Amer. Car (Drop handle)
Heaters	Consolidated truss plank
Headlights	Crouse-Hinds
Journal boxes	3 in. x 6 in.
Lightning arresters	Westinghouse
Motors, type and number	2 West, No. 506-A-2
Motors	Inside hung
Enamel	Sherwin Williams
Registers	International No. 7
Sanders	Gal. iron; Ohio Brass valve
Sash fixtures	Edwards
Seating material	Wood slats
Springs	Semi-elliptic and coil
Step treads	Feralun
Trolley catchers	2 P. Catchers
Trolley base	U. S. No. 13
Trolley wheels	Wheels
Trucks	Brill 79-E
Ventilators	Brill Exhaust
Wheels	Steel 26 in.
Special devices:	Arthur power-saving recorder. Railway Utility thermostats

Recent Incorporations

Perry & Gulf Coast Traction Company, Perry, Fla.—Incorporated to construct a line to connect the towns along the gulf coast, about 40 miles. The route will include Hampton Springs, south to the Gulf of Mexico and the Steinhatchet River. Capital stock, $500,000. Officers: Ellis Bartholomew, president and general manager; S. A. Greiner, treasurer; R. C. Flack, W. S. Forrester and E. E. Sadler, vice-presidents.

Davenport, Springfield & Southern Railroad, Belleville, Ill.—Articles of incorporation of the Davenport, Springfield & Southern Railroad were filed for record at Belleville, Ill., on Sept. 3. The company proposes to build electric roads from Rock Island, Ill., to Pinckneyville, from Pinckneyville to Belleville, from Decatur to Edwardsville, and from Benton to Murphysboro. The capitalization is $100,000 fully paid. The incorporators all reside in Chicago.

Moore Haven, (Fla.) Railroad.—Recently chartered with a capital stock of $50,000 to construct a line from Moore Haven to Ritta, Fla., along the western and southwestern shore of Lake Okeechobee, about 30 miles. It is reported that work will be begun immediately and will be completed by next spring. After this road is finished an extension will be built to Kissimmee. Among those interested are Capt. J. O. O'Brien, Moore Haven; B. F. Welles, Arcadia, Fla., and A. C. Clewis, Tampa, Fla.

Franchises

Joplin, Mo.—Plans are being considered by the city and county officials of Joplin for granting a franchise to O. B. Witmer and his associates to construct and operate an electric railway system to Witmer Park, south of Joplin.

Union Traction Company, Anderson, Ind.—The Detamore power plant at Portland, Ind., belonging to the Union Traction Company of Indiana, (Anderson, Ind.) has been offered to the city of Portland for $18,000. This purchase has been approved by the citizens of Portland and the factory owners, who have been demanding more light and power current.

Fort Worth, Tex.—E. P. Turner and associates of Dallas, Texas, has been granted franchises for the construction of two interurban lines out of Fort Worth, one to Denton, a distance of about 33 miles, and the other to Grapevine and Irving, to connect with the line now being built out of Dallas at Irving. According to Mr. Turner, the interurban lines will form a triangle, with the angles at Fort Worth, Denton and Irving.

Track and Roadway

Oakland, Antioch & Eastern Railway, Oakland, Calif.—The Oakland, Antioch & Eastern Railway has applied for authority to build a spur track on Shafter Avenue, crossing Forty-first Street, to make a connection with the company's paint shop. The company also wants to cross the highway with a spur at a point 100 ft. east of the station of Bancroft.

Indianapolis (Ind.) Street Railway.—The Indianapolis Street Railway's board of directors has voted to accept an offer of the Union Traction Company of Indiana to sell for $95,000 its tracks and rights from Fairfield avenue to Forty-Sixth Street in College Avenue, Indianapolis. The distance is a little more than a mile, and there are double tracks. A "Y" will be constructed at Forty-sixth Street for turning the local cars. The board directed that bids be received for the special work, which it was estimated would cost about $15,000.

Cincinnati (Ohio) Traction Company.—Street Railway Director W. C. Culkins has approved the expenditure of $44,762 by the Cincinnati Traction Company to complete the extension of the Sixth Street line over Meeker Street to the Hopple Street viaduct and over the viaduct to Beekman Street.

Oakville, Ont.—The survey has been completed for the route of the proposed hydro-railway line from Toronto to Hamilton. The line will closely parallel the Grand Trunk Railway from Toronto to Clarksons and then in a southerly direction to the eastern boundary of Oakville. From the latter place the line will extend to Hamilton by a route north of Burlington, saving several miles over the present radial line. It is expected construction will be begun before the end of this year. F. A. Gaby, Toronto, is chief engineer of the Hydro-Electric Commission, 190 University Avenue, Toronto.

St. George, Ont.—A deputation from St. George will request the Hydro-Electric Power Commission to construct the proposed Hamilton-Galt radial through the village.

Toronto (Ont.) Civic Railway.—The ratepayers of Ward No. 7 have requested the city council to extend the civic car lines through the Runnymede-Annette district, taking precedent over extension along Bloor St. through the Runnymede-Jane district.

Hershey, Pa.—Announcement has been made by the Hershey Chocolate Company that plans are being arranged for the complete electrification of the company's private railroad, in connection with other extensive improvements and additions, which were financed recently through securities offered for public subscription.

Dallas (Tex.) Railway.—The City Commission of Dallas has ordered the Dallas Railway to reconstruct its tracks on Forest Avenue form Meadow Street to Second Avenue, using 103 lb. rails on wooden ties and concrete base. Bithulitic pavement will be laid between the rails.

Power Houses, Shops and Buildings

Iowa Southern Utilities Company, Centerville, Ia.—The Iowa Southern Utilities Company has closed 100 contracts for electric power in Blakesburg, Ia., and will make a 12-mile extension of transmission line to give service there. The line will be completed December 1. It will run from a point north of Moravia, Ia.

Public Service Railway, Newark, N. J.—The Public Service Railway, Newark, N. J., has constructed a pay-as-you-leave terminal at the two Gloucester, N. J., shipyards for use under the new zoning system.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Flames on Sept. 3 caused a slight loss at the power house of the Trenton & Mercer County Traction Corporation, Trenton, N. J. The flames reached the roof. The blaze did not interfere with the service.

Sistersville & Martinsville Traction Company, Sistersville, W. Va.—The Sistersville & Martinsville Traction Company, formerly the Union Traction Company, has leased a building on Wells Street, Sistersville, which it will use as an office, waiting-room and repair department. The company's present quarters are inadequate for its needs.

Trade Notes

Western Electric Changes

George Hull Porter, who has just been appointed railway sales manager of the Western Electric Company, was born in Danbury, Conn., in 1883, and received his education at the Mount Pleasant Military Academy in Ossining, N. Y. Since 1902 he has spent practically all of his time in the electrical industries, becoming a member of the Western Electric Company's organization in April, 1908, as a steam railway salesman connected with the Chicago office. Some time after he became Western manager of the railway sales department. Mr. Porter, in addition to being president of various railroad and electrical associations and chairman of civic societies and committees, has served on the staff of the Quartermaster General with a commission of captain. A. G. Nabors, who has been with the company since 1905, is now central district manager of pole line material. He was formerly at New York, Philadelphia and Pittsburgh. E. H. Waddington has recently been made Western district manager of the line material department. He is president of the St. Louis Electrical Board of Trade and joined the company in 1910. F. W. Swayze, who was first employed in the auditing department and has been in the company since 1904, is Eastern district manager of the line material department.

Chicago Pneumatic Tool Company announces the appointment of Fred Gehbauer, as special Navy Yard representative, with headquarters at the company's Philadelphia Office, 1740 Market Street.

Dickey Steel Company, Inc., Woolworth Building, New York, N. Y., has been appointed sales representative for New York and Philadelphia districts of the Worcester Pressed Steel Company, manufacturer of electrical sheet steel.

Duff Manufacturing Company, Pittsburgh, Pa., manufacturers of lifting jacks, announces the appointment of John Kopf as manager of its engineering department. Before joining this company, Mr. Kopf was with the Bureau of Aircraft Production, Dayton, Ohio.

Chicago (Ill.) Pneumatic Tool Company announces the removal of its Cincinnati office from the Mercantile Building to the Walsh Building, Pearl and Vine Streets, where a service station with a complete stock of pneumatic tools, electric tools, air compressors, oil engines, rock drills, and repair parts will be maintained.

Ohmer Fare Register Company, Dayton, Ohio, has recently leased and is now installing thirteen complete equipments on the cars of the Mahoning & Shenango Railway & Light Company, running between Youngstown & Warren, Ohio. The system of zone fare collection on this route is described on pages 327 and 328 of the Aug. 16, 1919, issue of this paper.

National Conduit & Cable Company has issued an estimated six months' income account for the period ended June 30, 1919, showing net sales of $4,760,150 and costs and expenses of $5,156,964, making the loss from operation $396,814. The account also shows that this was reduced by $62,066, which was itemized as other income, while the total loss for the period after the addition of taxes, interest, depreciation and other charges totaled $643,296. This compares with a loss of $394,468 for the corresponding six months of 1918.

F. C. Hibberd is visiting the United States in behalf of G. D. Peters & Company, Dean's Yard, Westminister, London, England. Messrs. Peters are among the leading electric railway manufacturing and equipment companies of Great Britain and have long held the European representation of Hale & Kilburn seating. Mr. Hibberd is looking into the availability of other American products for the foreign market and is also prepared to arrange for the manufacture and sale of British devices in this country. His headquarters are the New York office of Hale & Kilburn, 30 Church Street.

Benney Vise and Tool Works, Inc., Allentown, Pa., announces that Edward R. Mason, who has been relieved of active duty as Lieutenant-Commander of the United States Naval Reserve Force, has been made sales manager and will handle the sales of drop forgings manufactured by this company. Previous to Mr. Mason's entry into the Navy he was successively, vice-president, Porter & Berg; manager of the New York office, Electric Service Supplies Company; president of the E. R. Mason Company, Inc., and assistant general sales agent of the Ohio Brass Company, Mansfield, Ohio.

New Advertising Literature

Underfeed Stoker Company of America, Chicago, Ill.: Circular on new type of Jones automatic underfeed stoker.

R. Thomas & Son Company, East Liverpool, Ohio: Circular on wire-stringing fixture using nail-assembled knobs.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Catalog No. 38, a sixty-four page illustrated publication which describes its small motors and generators.

S. F. Bowser Company, Fort Wayne, Ind., has issued a folder on its leak-proof storage tanks. The leaflet can be folded to show one, two, three or four tanks for different kinds of oil.

Locke Insulator Manufacturing Co., Victory, N. Y.: Illustrated booklet on insulator design, testing and descriptions of the parts and use of all types of low-tension and high-tension insulators.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, September 20, 1919 . *Number* 12

The Policemen's Strike in Boston

THE action of the Governor of Massachusetts in the policemen's strike in Boston was the only one possible. The people of this country are not willing to intrust the security of their lives and property to the custody of any body of men who conspire to build up an *imperium in imperio* to which they propose to transfer their allegience. The love in America for individual liberty is so great that the people in the past have many times been lenient with the transgressions of organized labor against order. But to give up all control of its law enforcing organization to an outside body, as was proposed in Boston, would be practically to give up the fundamental principle on which our government is based, or government by the people, in favor of irresponsible autocracy. We hope to see the time when a strike on a public utility will be as rare in this country as that of policemen now promises to be.

Look Into the Bus!

TO THE MAN brought up on the rail, a dispassionate view of the merits and demerits of the motor bus is rather difficult. Possibly a prime reason for this is that his first acquaintance with the bus was as an unfair competitor. Thus he came to despise the bus quite as much as he did the pirate who ran it.

It is high time, however, that railway operators should look at the bus in a purely business way, especially as regards the development of new traffic in suburban districts, where there is now no trolley line. In the old days, when an extension was under consideration, whether for an additional fare or for the same fare, there was no way to give the service except to put down rails. Conditions are different today because both better suburban pavements and self-propelled vehicles are available. A company need not now undertake a large initial investment which may or may not prove successful to test out the traffic. It is necessary only to buy as few buses as the business there warrants. Should the dreams of the realty operators fail to come true, the railway will not be out even the price of the buses, since the latter can be sold or transferred to other service. On the other hand, if the business does grow, then a 100 per cent railway extension is in order unless the people served are willing to continue paying the higher rate that bus operation calls for.

In considering the possibility of the bus as an auxiliary to electric railway service, the operator would do well to study the inter-operation of street railway and bus services in Great Britain. On more than one property in that country, the bus and the car cover precisely the same route up to a given point, and beyond that point only bus service is available. As the bus is obviously intended for the extreme suburbanite, the short rider who ought to take the car is kept off of the bus by the application of an extra high short-distance fare! The electric railway man will be glad to hear that the most experienced operators of these joint services are well aware of the greater economy of the street railway, but they are equally aware of the greater flexibility of the bus which permits it to serve the fluctuating needs of the public in a way impossible to rail traction. Instead of considering these two popular-priced means of transportation as opponents, the British operators largely believe that they are complementary. Hence we see that in the electrification of the Edinburgh Municipal Tramways, for example, provision is also made for certain bus routes.

In America, a number of electric railways are operating buses through separate companies. The San Francisco Municipal Railway prefers small bus losses to large railway losses, and the Seattle system is planning to follow the same policy of developing new territory at minimum cost. As for entirely independent bus companies, the large properties of New York and Chicago and the proposed service in Detroit give ample warning that electric railways must seriously consider the logic of putting all popular-price transportation under one co-ordinating management to avoid wasteful competition which, in the end, must be paid for by the investor and the rider.

Keep the Supply Men in Mind in Dating Conventions

DISCUSSING the matter of convention dates with an experienced supply man, at the last convention of the American Railroad Association, mechanical section, the writer had impressed upon him the fact that the convenience of manufacturer representatives has not been considered as fully as it might be in selecting dates for conventions. This applies particularly to the sectional associations, although the same principle applies to the gathering of national bodies. The point is this: At present-day conventions the supply men are not only in considerable evidence but sometimes they form the majority of attendants. These men frequently are obliged to attend a great many conventions, traveling from section to section. Hence, when convention dates coincide, overlap or come in too close juxtaposition, the supply men are hard put to it to get around. The railway men have the advantage in that each does not attend the meetings of more than one or two associations, as a rule, whereas the supply man attends a very great number in the course of a year.

The manufacturers are receiving increasing recognition in all of the electric railway associations. It is in line with this tendency that they should be remembered when the convention dates are selected.

Get Better Acquainted With the Engineering Manual

THE past two or three years seem almost like a blank when considered from a standpoint of engineering progress. These years are now past, however, and the men who are responsible for the maintenance and development of the physical part of the electric railway plant must prepare themselves for strenuous days to come. One of the best ways of doing this is to study the past work of the American Electric Railway Engineering Association, particularly as epitomized in the Engineering Manual.

Realizing how difficult it is for a man who has not been in close touch with the Engineering Association work as it has progressed step by step fully to appreciate what has been done and what is the present status of the work, the ELECTRIC RAILWAY JOURNAL has arranged to have prepared a number of digests of the situation with respect to several salient aspects, basing these upon the Manual, the Proceedings of the Association and personal knowledge of the subject. Several of these digests are contained in the present issue and others will follow. There is time to study these abstracts carefully before the convention, and such study will furnish an excellent preparation for taking part in the discussions at Atlantic City; but even if the reader does not hope to get to the convention he should familiarize himself with the abstracts just the same so that he can follow the reports of the meeting intelligently.

As has been mentioned before, the standards committee is setting out on a campaign to popularize the association's standards, recommended practices and miscellaneous methods and practices. The publication of these abstracts by the JOURNAL should contribute to this end.

Maintaining Equipment On Small Roads

MOST of the information which we receive for publication regarding the maintenance of car equipment and shop practices comes from the larger railway properties. Much of it, however, has to do with methods and practices which can readily be adapted to any system, and it is published with the idea that it may suggest some beneficial procedure for railway properties that do not have the facilities for carrying out the suggestions in their entirety.

The problem confronting many small roads is not how to carry on the maintenance work on their equipment in the best manner, but rather how to keep the equipment in proper repair with the facilities which are available. It is comparatively easy to carry on work efficiently where the latest tools and equipment are provided, but the master mechanics of small railways are governed more by what they are able to do than by what they would like to do. The cost of any operation depends to a large extent on the frequency with which the operation is performed. In many cases where special equipment would enable the men to perform the operation more quickly or efficiently, if the use of these machines would be confined to but a few hours a month, the cost would not be warranted.

The removal of armatures from box-frame motors will serve as an example. A special machine will remove the armatures from these motors so that the frames can be shifted clear of the armatures in a very few minutes and can readily be lifted out of place by a crane. But, consider a road having but twelve box-frame motors which would require such a special machine for removing the armatures. If these were overhauled once every year, this would mean that the armature-removing machine would be in use on an average of but once every month, and for such infrequent use the extra investment would not be warranted.

On the other hand, it is false economy for small roads not to use machine tools and other labor-saving devices, when these can really be employed to advantage, simply because it is difficult to find the money with which to buy them. What is wanted is "long-run" economy, and many a device will "buy itself" in the course of a few months or years if only given a chance.

In deciding on the most economical methods for maintaining the equipment of small properties, master mechanics find the "load factor" in the use of shop equipment an important consideration. A knowledge of the latest and most approved methods of carrying on the work on other systems will aid in the choice of the method best adapted to the local conditions, although direct imitation of the practice of others may not be desirable or practicable.

Two Important Meetings at Atlantic City

AMONG the many important papers and sessions scheduled for the coming Atlantic City convention, two that look toward an extension of the association should not be overlooked. These are the special meetings called for the assemblage of the publicity agents on the one hand and purchasing agents and storekeepers on the other. We are very glad to see this step taken. As far back as before the war an effort was considered by each of these two groups to form an organization, and some informal meetings have been held by the publicity agents, but the cessation of convention activities generally during the war made any more definite action in either case impracticable.

Now the special reasons which make such meetings especially desirable at this time are set forth in letters published elsewhere in this issue by Leake Carraway of Norfolk, Va., and E. E. Stigall of Kansas City, the chairmen appointed by President Pardee respectively for the publicity agents and for the purchasing agents and storekeepers to draft programs for the meetings at Atlantic City.

To these statements but little can be added. It might be said, however, that in the case of each group the conditions at the present time are such that greater good can be accomplished for the industry than ever before. So far as the publicity agents are concerned, it is recognized that the fare question is largely a question of public education, and with the wealth of material on electric railway conditions produced at the federal hearings at Washington, the publicity agent is of more importance to a company than ever before. In the same way, at no recent period, if at all, in the history of this country have manufacturing conditions and prices undergone so many changes. All this means that both the purchasing agent and the storekeeper must be more than ever in touch with both the market situation and railway operation, so as to obtain, on the one hand, the lowest prices possible, consistent with quality, and on the other hand, to avoid carrying in stock apparatus which will become obsolete.

The form of permanent organization to be adopted at Atlantic City by both of these groups is yet to be determined, but after all is secondary to a definite plan by which the officials can get together each year. We hope for a large attendance of both classes of officials at the convention.

Should We Lessen First Cost and Increase Maintenance Cost of Track?

THERE has been a disposition in some quarters to reach what we consider an incorrect conception of J. B. Tinnon's suggestion, made at the recent meeting of the Illinois Electric Railways Association, to the effect that a cheaper form of track construction might be adopted at a saving of say $5,000 per mile provided that the $5,000 were set aside for expenditure in maintenance of the track in addition to the annual sums now allotted for maintenance.

In the first place Mr. Tinnon voices a very well known fact when he implies that an insufficient amount of money is now expended for maintenance. Electric railways have always accumulated more "deferred maintenance" than a proper maintenance standard would warrant.

This in turn has been due primarily to the fact that their incomes were never adequate to permit a maintenance standard of say 75 or 80 per cent new. In the second place, paved track maintenance is more costly than open track maintenance and about 60 per cent of our mileage is in paved streets. In the third place extraordinary maintenance or renewals charges have often been forced upon the companies by city paving projects which have tended to require an abandonment of track good for 2 or 3 or even 5 years before its time, because it would be unwise newly to pave a track with a 10 or 15 year pavement when the track would wear out long before the pavement. Extraordinary maintenance charges of this kind are very apt to force deferment of other badly needed expenditures.

We heartily agree with Mr. Tinnon's statement that the war has taught track engineers to conserve and that the maintenance engineers have done wonders in rehabilitating track which has often seemed fit only for the junk pile. But the fact that we have learned how to economize should not be an argument in favor of building something comparatively cheap with a view to spending the first saving in later efforts at patching it up. One may purchase a cheap suit of clothes and patch the holes from time to time, but the patches do not look neat and eventually more money will have been spent in patch costs than a first-class, durable suit would have cost.

We do not believe Mr. Tinnon meant that we should do this, because he is right when he says that expensive types of construction have often been chosen by the blind method of following the leader without any consideration as to whether the expenditure could be afforded or whether the type of construction would meet the conditions under which it would be used. In other words, the smaller companies have often chosen the heaviest metropolitan type of track construction for use in a small city without much consideration of economic possibilities. This is merely a repetition of what has been going on since the first electric railways were built. It is high time that more real engineering study be applied to the design of electric street railway tracks, and the work calls for engineering talent of no mean order.

Mr. Tinnon has called attention to a problem which demands the closest attention and there is no question but that a type of track construction can be designed to meet present-day needs, as well as all of the numerous unforeseen contingencies of twenty to thirty years of life, which will show a lesser annual maintenance cost than we have been accustomed to even under deferred maintenance conditions. It does not follow that the cost per foot new will be any less than heretofore even though this cost be based on pre-war price averages.

Meanwhile, a pertinent question may be asked: Does anyone know the actual maintenance cost per foot per year for any particular type of track over a period of even five years? The so-called permanent way is a misnomer. There is no such thing, because permanency is a relative term. One of the objects of track design, therefore, should be to determine upon and try to meet a predetermined period of life or permanency. To do this properly may not lessen first cost. In the very nature of the thing a track is subject to wear, and because it is made up of so many variable elements subject to action of forces not under much control, it is inevitable that a certain amount of maintenance will be necessary.

The question of design resolves itself into one as to what type or types of track (for there must be some variations) will develop the least average annual maintenance cost per foot for a given set of conditions. At present we have nothing to set as a mark to reach as a reasonable minimum annual cost except the very high costs for track maintenance now obtaining. There is a crying need for such information, which neither the accountants nor the maintenance engineers seem able to supply.

To return to design for a moment, it may be said that the items of soils, their bearing power and drainage, are more and more coming into view as factors to be reckoned with not only in steam-road track design but also in the design of electric railway tracks, no matter where located. When track engineers begin to give more attention to the soil and its drainage we may expect to find better and more economical track construction on electric railway properties.

Look Out for Next Week's Issue!

It will be our annual "Convention Number" and will
be devoted to the subject

"Selling Transportation"

Selection of Rails for Electric Railway Service

The Author Discusses Some Theoretical and Practical Matters Which Should Be Considered When Selecting Rails for Use Either in Private Right of Way or in Paved Streets

By R. C. CRAM
Engineer Surface Roadway, Brooklyn Rapid Transit System

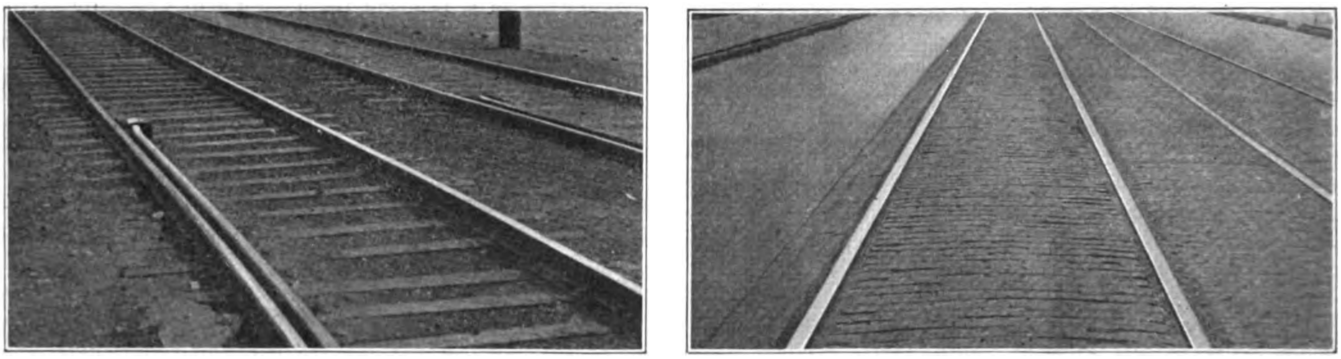
When new track or reconstruction of old track is under consideration, the selection of the rails to be used presents a problem which requires very careful study. At first thought it may seem that it is only necessary to turn to a rail catalog and pick at random one of several rails of a given weight or type. However simple it may seem, the matter is very complex and there are a large number of factors which must be considered before a decision is made.

In the first place there is the general question of location with respect to whether the rails are to be installed upon a private right of way or in a public thoroughfare. The answer to this question will determine whether a standard section (low T-rail) or some form of girder rail is to be used. The roads located upon private right of way and subways and elevated roads, being in many ways similar, call for the standard T-rail. On the other hand, the location in a public thoroughfare (with the possible exception of comparatively small towns and cities and in occasional locations at the side of highways) will require some form of girder rail, principally to meet paving requirements. Sometimes franchises call for a definite form of girder rail.

Selection of Rails for Use in Private Right of Way

In selecting rails for use in private right of way, the principal factors are weight of loaded car, axle spacing, character of roadbed, kind of ballast, tie spacing and frequency and character of service. A frequent-service, high-speed, interurban line with 55 or 60 ton cars will require a heavier rail than a suburban line operating at moderate speed with 25 or 30 ton cars. An interurban line which handles regular steam road freight cars with 60 ton electric locomotives, will require rails sufficiently strong to support the heaviest freight car. These are reaching capacities of 80 tons, giving a total weight loaded, of 105 tons. The character of the roadbed with respect to the bearing power of the soil and the kind of ballast and depth used to distribute the loads from the ties have a larger influence in determining rail selection than is usually supposed.

When the question of rail strength is under consideration, not only the stresses in the rail and the ability of the steel to resist them must be taken into account but the proportions of the rail must also be such that it will distribute the wheel load to the ties in a way which will not overstrain any part of the substructure. The mere fact that a rail will not break under a given load will not permit its use if, through not being stiff enough, it allows too great a portion of the load to come on a tie. Axle spacing in truck design enters into the question also. Both computations and experiments have shown that for a given class of track structure the allowable wheel load increases with the axle spacing up to a certain point, beyond which as the spacing is still increased the allowable wheel load decreases. It is the failure to appreciate such fundamental principles of design that has created conditions leading to excessive maintenance charges for keeping track and bridges in proper condition.

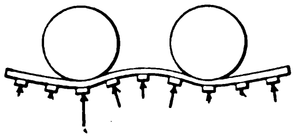


THE SELECTION OF RAILS FOR OPEN TRACK IS SIMPLER THAN FOR PAVED TRACK

It is not enough to assume that, because equipment on the A.B.C. railway is nearly the same as that on the X.Y.Z. road, the rails used by the former will be suitable for the latter. An inspection of the conditions obtaining on the A.B.C. line with respect to track maintenance may show that the rails are really too light for the service. It may also be found that the costs of maintaining the roadway on the A.B.C. road exceed those which experience has shown to be reasonable for the type of equipment and general roadway construction. Again, the axle spacing, tie spacing and depth of ballast on the A.B.C. line may be such that the loads are well distributed to the subgrade with the particular rail in use. If the X.Y.Z. line has equipment with a different axle spacing or the tie spacing and ballast are different, the influence of these differences must be taken into account. Any one of these factors may call for a different rail or better support for the same rail.

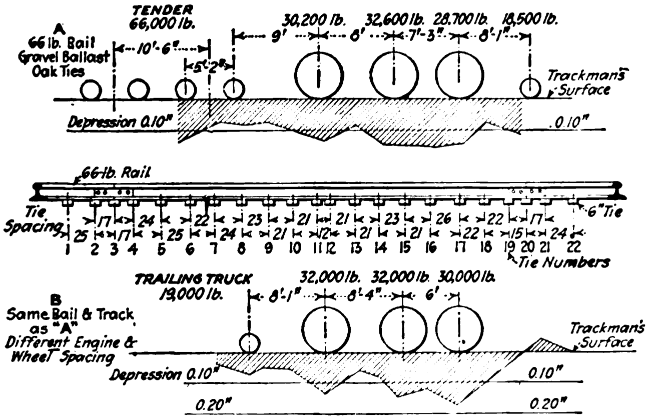
The mathematical problems which are involved in the selection of suitable rails for railway use are extensive. The forces exerted by a motor car or an engine act in many ways and the rails are consequently sujected to all known forms of stresses. Tension, compression, torsion, shear and impact, all play their parts and it has been well said that rail steel is probably subjected to more forms of abuse than any other structural material.

There are two main considerations in determining the proper form for a rail. First, and most important, the duty required. Second, and of nearly equal importance, the influence of manufacturing details upon the character of the finished product. Of course all the stresses to which it will be subjected should be considered, but its ability to resist them will depend largely upon the character of the metal, rather than upon the particular form or section. In considering the duty, first attention must be given to the external forces acting upon the rail, consisting of the pressure exerted by the wheels and the supporting forces represented by the ties. Knowing these, the stresses set up in the rail can be calculated approximately for different sections. The calculations involve many details and space will not permit their detailed discussion.



DISTRIBUTION OF TIE PRESSURE UNDER RAIL

Practically all of the data upon this subject have been obtained from steam road experiments, with typical conditions produced by the various arrangements and loads of locomotive driving wheels. Many of the extreme conditions so produced are not found either with electric locomotives or with electric motor cars. The average axle loads on steam equipment are also heavier than those on electric motor equipment or upon electric locomotives found upon most electric railways. However, electric locomotive equipment and some motor car equipment have a much lower center of gravity which tends to produce greater lateral thrust upon the rails and the stresses so produced must be considered, especially in curves.

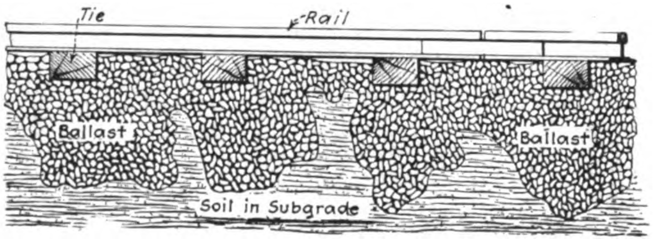


DEPRESSION OF RAILS UNDER ENGINE LOADS WITH EFFECTS OF AXLE SPACING

The maximum pressure upon the rail can not be determined solely from the static load (a load acting by mere weight at rest) of the wheel on the rail, even though the weight of the car can be accurately determined. The dynamic augment (added force or load due to movement) must be considered because the car does not always stand still. The forces created by irregularity in rolling stock or roadway, such as flat wheels, lack of rotundity of wheels, low joints, and poor surface which create impact and the rocking of the car upon springs and bolsters together with the effect of velocity of the loads must be provided for. These forces have been calculated for some electric railway conditions, covering city passenger cars and interurban passenger and freight cars. The typical dynamic loads for these electric railway cars are shown in the diagrams on page 558, and the dynamic augment for this class of equipment is substantially the same percentage of static load as that used for freight and passenger cars on steam roads. Usually the dynamic augment is considered to be 0.70 of the static load for wheel loads less than 15,000 lb. For wheel loads of 15,000 lb. or more, 10,000 lb. is taken as the dynamic augment to be added to the static load.

THE BALDWIN LOCOMOTIVE WORKS RULE FOR DETERMINING WEIGHT OF RAIL

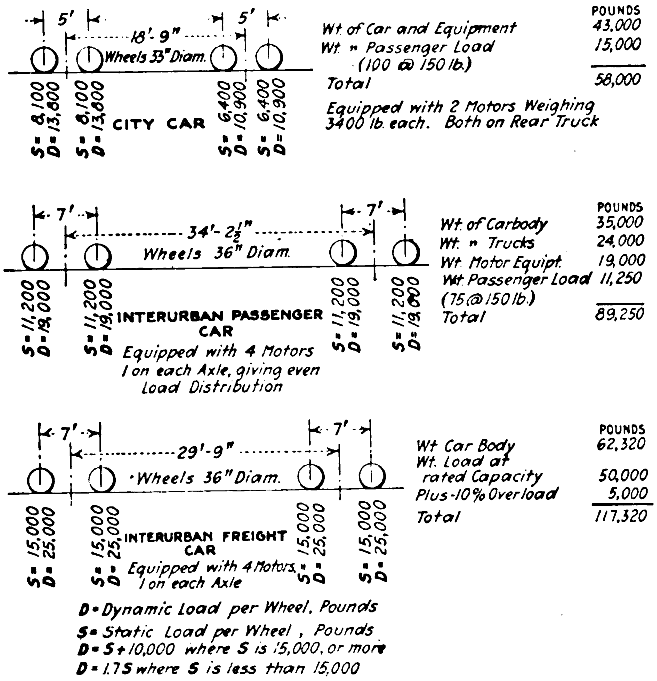
The general rule developed by the Baldwin Locomotive Works for determining the weight of rail is as follows: "Each 10 lb. per yard in weight of ordinary rail steel, properly supported by not less than fourteen ties per 30-ft. rail is capable of sustaining a safe load per wheel of 2240 lb. (1 gross ton)." On this basis, an axle load of 30,000 lb., or a wheel load of 15,000 lb. would require a 66-lb. rail. It is of interest to note that for this axle load the New York Municipal Railway Corporation has selected the 100-lb. A.R.A.-B. rail, or one of substantially one-third greater weight. There must be some reasons for this apparent overweight and these are governed by the desire for a greater stiffness, combined with a sufficient amount of head metal to allow a large proportion of wear before renewal becomes necessary. The greater stiffness should lessen the amount of maintenance labor, and requires a lesser amount of ballast to distribute the loads to the sub grade. Incidentally a far better joint section is secured. The high costs for labor in renewals, due to very frequent train service and locations in subways and on elevated structures where working conditions are much restricted, are very important considerations. Furthermore, one of the principles of design, calls for the addition of the dynamic augment to the static load. This was taken at 1.5 times the static load for wheel loads of 15,000 lb. or more and the dynamic augment added to the static load in this case gives a dynamic load of 22,500 lb. which, under the Baldwin Locomotive Works rule above mentioned, would call for a rail weighing 102 lb. per yard. Thus what (in the light of the Baldwin Locomotive rule) at first may appear



EFFECT OF OVERLOADING ON SUBGRADE

to be an uneconomic use of rail material, becomes a wise selection in respect to principles of design, ultimate economics in maintenance and lessened amount of ballast material required in construction.

Aside from the theoretical point of view, it is practice which furnishes the evidence necessary for check against theory. Here it may be said that as of 1914, five out of eight of our largest interurban and high-speed roads use the 80 lb. A.S.C.E. as standard for open tracks, one uses the 75 lb. and two use the 70 lb. A.S.C.E. sections. The very recent Buffalo-Niagara Falls high-speed line uses 85 lb. A.S.C.E. for cars with load giving an axle load of about 17,500 lb. with track laid on about 10 in. of granulated slag ballast.


5'
18'-9"
5'
Wheels 33" Diam.
S=8,100 D=13,800
S=8,100 D=13,800
CITY CAR
S=6,400 D=10,900
S=6,400 D=10,900
POUNDS
Wt. of Car and Equipment 43,000
Wt. " Passenger Load (100 @ 150 lb.) 15,000
Total 58,000
Equipped with 2 Motors Weighing 3400 lb. each. Both on Rear Truck
7'
34'-2½"
7'
Wheels 36" Diam.
S=11,200 D=19,000
S=11,200 D=19,000
INTERURBAN PASSENGER CAR
S=11,200 D=19,000
S=11,200 D=19,000
Equipped with 4 Motors 1 on each Axle, giving even Load Distribution
POUNDS
Wt. of Carbody 35,000
Wt. " Trucks 24,000
Wt. Motor Equipt. 19,000
Wt. Passenger Load (75 @ 150 lb.) 11,250
Total 89,250
7'
29'-9"
7'
Wheels 36" Diam.
S=15,000 D=25,000
S=15,000 D=25,000
INTERURBAN FREIGHT CAR
S=15,000 D=25,000
S=15,000 D=25,000
Equipped with 4 Motors, 1 on each Axle
POUNDS
Wt. Car Body 62,320
Wt. Load at rated Capacity 50,000
Plus-10% Overload 5,000
Total 117,320
D=Dynamic Load per Wheel, Pounds
S=Static Load per Wheel, Pounds
D=S+10,000 where S is 15,000, or more
D=1.7S where S is less than 15,000

SOME TYPICAL DYNAMIC LOAD DIAGRAMS FOR ELECTRIC RAILWAY CARS

Those who are interested in this subject will find it advantageous to consult the very able work of some 500 odd pages entitled "Steel Rails" by W. H. Sellew to which the writer is indebted for much of the foregoing matter.

SELECTION OF RAILS FOR PUBLIC THOROUGHFARES

Turning to the location in the public thoroughfare, we find a wide divergence in both theory and practice. At no time in recent years has there been much question as to the beam strength of girder rails. As girders they have been ample although some engineers still advocate a 9 in. depth in preference to 7 in. mostly because of the difference in beam strength, and because of claims regarding better mechanical joints and paving facilities. The day of the 9-in. rail seems to be rapidly passing. It is only necessary to point out that there are 7-in. girders today which are stronger in every way than the 9-in. girder of yesterday, while the modern joint and the modern 4 in. and 5 in. deep paving blocks have removed the deep joint and deep paving from consideration in rail selection. The general question of relative ability to withstand the direct loads does not enter to any great extent either, because a 70-in. 70-lb. plain girder rail on the usual 2 ft. tie spacing, will carry quite heavy dynamic loads.

The selection of rails for streets, therefore, is controlled more by factors entirely foreign to the rails themselves. Among these are: street widths, number of tracks in the street, character of highway traffic, particular district or section of the city or town, franchise requirements, views of public officials, cleanliness of streets, design of wheel flanges and treads, requirements as to kind of pavement and maintenance thereof. Just these few items are almost enough to give one a headache in an attempt to reconcile them. The additional items of allowances for wear under car and vehicular traffic and for corrosion may thus appear to be secondary in importance but they are really of first importance in controlling selection of rails for street use.

There are three general types of girder rails from which the selection for use in highways can be made, viz.: The plain girder (high-T), groove girder and tram girder. The girder guard is considered as a form of groove girder and is used in but a comparatively small proportion of any system because of its confinement to special track work and curves. The recommendations of the committee on way matters of the American Electric Railway Engineering Association seem to express the general controlling factors very well in the Engineering Manual as follows:

THE USE OF PLAIN GIRDER RAIL IN PAVED STREETS

The use of plain girder rail for track construction in paved streets is recommended except where the vehicular traffic in congested sections of narrow city streets is largely confined to the pavement area maintained by the railway. This condition exists, as a rule, only in cities of the largest class, and for use in such cases the Committee on Way Matters is of the opinion that the American Electric Railway Association standard grooved girder rails are best adapted.

The selection of plain girder rails for use in paved streets requires the most careful consideration of the type of pavement to be installed and the vehicular traffic to be sustained. Particular care should be taken with respect to the use of the standard section rails in pavements, as it will often be found that the plain girder rails of equal weight are much better adapted to a greater range in types of pavement which may be selected for use therewith.

RECOMMENDED DESIGNS FOR PLAIN GIRDER RAIL

1. For general track construction in private right-of-way and for use in streets where the type of pavement will permit as in macadam or other shallow pavement, standard section rails weighing not less than 80 lb. per yard are to be preferred and three designs, weighing 80, 90 and 100 lb. per yard respectively, are recommended.

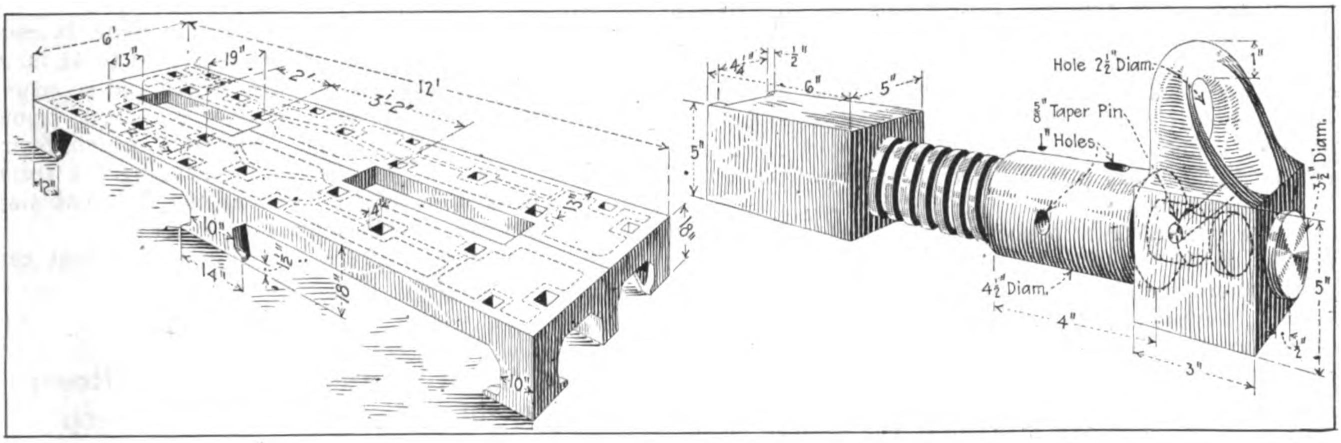
For track construction for light service, in connection with deep block pavement, a 7-in. plain girder rail having a 6-in base, 7/16-in. web, 2½-in. x 1 9/32-in. head and weighing 80 lb. per yard has been adopted as a recommended design.

For track construction for heavy service in conjunction with deep block pavement, a 7-in. plain girder rail having a 6-in. base, 9/16-in. web, 2¾-in. x 1 11/32-in. head and weighing 91 lb. per yard is a recommended design.

For track construction for heavy service in connection with deep block pavement in the congested sections of narrow city streets where the vehicular traffic is largely confined to the pavement area to be maintained by the railway, which conditions exist, as a rule, only in cities of the largest class, your committee recommends the use of the Association standard grooved girder rails.

The designs referred to in the above paragraphs were illustrated in the ELECTRIC RAILWAY JOURNAL for July 19, 1919, pages 110 and 111.

It will be noted that the tram girder is not mentioned by the committee. This is because its use has been practically abandoned for new work in this country, there being but one notable exception where it has been continued in use for renewals on any large system. It is also worth noting that British practice has always been confined to the use of a groove girder in public thoroughfares and their grooves are much narrower than those found in this country. Evidently flange wear does not worry the British engineers very much. There has always been a great amount of controversy over the question of comparative merits of the plain girder (high-T) and the groove girder rail for use in paved streets. As a matter of fact either can be used satisfactorily as far as car operation goes and pavement can be installed with plain girder rails in such a manner as to be unobjectionable to teamsters. Some engineers claim a lesser wheel flange wear obtains with plain girder rails, while others will say that this is more than offset by the lesser paving maintenance costs with groove girder rails. It will also be argued that a groove girder rail of proper design may weigh 122 lb. per yard where a plain girder of ample capacity for the same loads will not weigh over 91 lb. The price per ton is the same for both, hence the plain girder will cost less per foot of track. The writer is satisfied, from the results of a 5 year test of the two under equal conditions in the same street, that the groove girder rail is the proper one for use in narrow streets of large cities under heavy steel-tired wagon traffic which is largely confined to the railroad pavement area. This opinion is based on wear of pavement alone, as found on the test section.



DETAILS OF FACE PLATE AND SCREW JACK FOR BENDING AND STRAIGHTENING SPECIAL WORK

When the plain girder (high-T) rail can be used in small cities and towns or in localities where wide streets permit the wagon traffic to spread out and keep away from the tracks, there is an increasing tendency toward the use of standard section (low-T) rails weighing 100 lb. per yd. and of a depth of about 6 in. These rails can be purchased at prevailing prices for standard section rails which are much less than the prices for plain girders (high-T). This is an important point to be considered in rail selection, especially in these days of high cost. Incidentally the 6 in.-100 lb. low-T rail will admit the use of quite a number of pavements which are suitable for moderate traffic.

CONSULT ASSOCIATION STANDARDS WHEN SELECTING RAILS

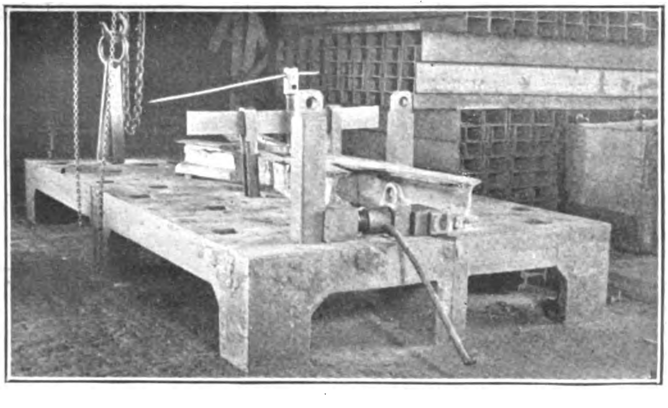
Having reached a decision as to general type and approximate weight of rail desired for some particular service, there remains the proper section to be selected. In this connection it should be the rule first to consult the standard rails approved as standard or recommended design by the American Electric Railway Engineering Association as found in the Engineering Manual. These rails were illustrated in the JOURNAL for July 19, 1919, and there is no question but that there should seldom be occasion for the adoption of a section other than some one of these. The principal exception would be in the case of need for a groove girder rail to provide for M.C.B. wheels. Even here, the Association rails will pass M.C.B. flanges but a reasonable amount of head wear is not provided for.

Face Plates Aid Straightening and Bending Work in the Shop

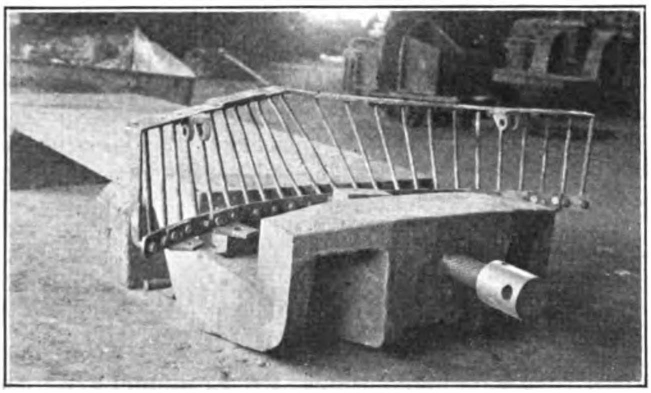
Twin City Company Makes Up Equipment Which Proves of Great Convenience On Work Not Easily Handled by Bulldozer

THE Twin City Rapid Transit Company, Minneapolis, has made up several so called "face plates" for use in its shops in straightening and bending materials. These are very large castings made in the company's shops and they incorporate various devices such that almost any materials which cannot be easily handled with the bulldozer can be speedily and conveniently straightened or bent.

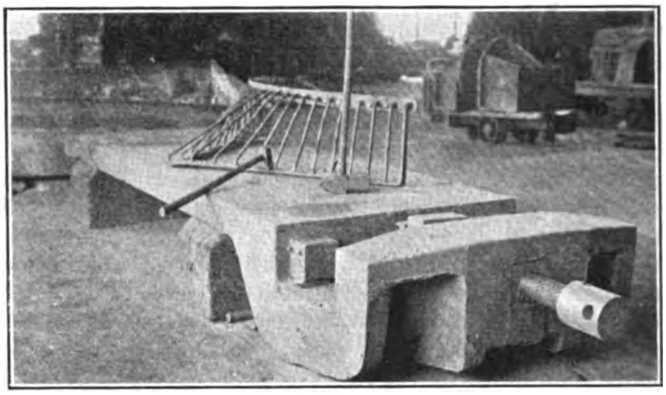
The largest of the plates measures on the top surface 6 ft. x 12 ft. and is made up of two matched castings each 3 ft. x 12 ft. The top surface of the plate is 18 in. above the floor. This plate is used especially for straightening special work, practically all of that used on the property being cast in the company shops. In cooling this will often get a little out of true and by properly locating dowel pins in the holes in the face plate and applying screw jacks to the bent parts the



TAKING OUT HORIZONTAL AND VERTICAL KINKS SIMULTANEOUSLY IN A PIECE OF SPECIAL WORK



FACE PLATE FOR BENDING AND STRAIGHTENING WITH OR WITHOUT FORMS



HAMMERING OUT SURFACE KINKS AND IRREGULARITIES ON THE FACE PLATE

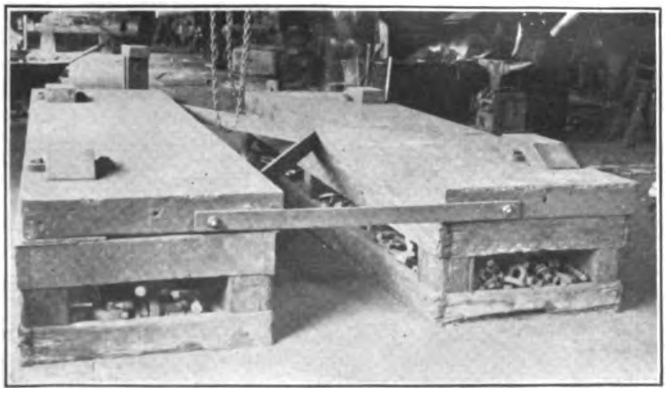
work can be made true. The accompanying drawing shows the dimensions of this plate, the location of the dowel pin holes, the dowel pins and the type of screw jack used.

Before bending, the portions of the special work which are out of true are heated over an oil furnace located beside the face plate. The piece of special work is then swung onto the plate by means of a Duplex 4-ton screw block crane, the dowel pins, jacks and other equipment are placed in the proper position and pressure is applied. Either horizontal or vertical bends can be made or, as in the illustration shown, both can be applied at once.

There is sometimes occasion for straightening parts of car bodies bent by accidents or for bending new work where templates are needed or otherwise, which cannot conveniently be handled by the bulldozer. For such purposes the face plate shown in another illustration has been made. This plate is 12 ft. 6 in. long, 3 ft. 4 in. wide and stands 18 in. from the floor. The gap is 16 in. wide and 8 in. deep and because of the location of the screw and end section has been made 19½ in. high at the center and 10 in. thick. The 3-in. diameter screw with three threads to the inch threaded into a 5-in. square block flanged on the gap side 6½-in. square.

The piece to be bent is placed in the gap in a similar position to the fender which is being straightened as shown. Pressure is applied by means of the screw and block. After the piece has been formed any surface kinks can be removed or other hammering done on the plate, as shown.

Another plate shown has been made for use in shaping and welding truck frames. The frames are first bent in the bulldozer but in cooling will become slightly untrue. The blocks on this plate are of such shape and so located that the frames can be brought true. The ends are then hammered out flat and the cross members are welded in place. The frame is complete when removed from the plate.



SPECIAL DESIGN OF FACE PLATE FOR SHAPING AND WELDING TRUCK FRAMES

As indicated in the photograph this plate is composed of two castings 3 in. thick, increased to 4½ in. at the rims, 31 in. wide and of such length and so spaced from each other as to accommodate the truck frame. The plates are set up on a framework which forms bins for the tools. The blocks for shaping the frame can be changed in location to suit the different sizes of frames made by this company.

All of these plates have proved to be a great convenience in the Twin City shops.

Heat Treating Tools In the Tool Room Instead of In the Blacksmith Shop

THE heat treatment of tools came up for a prolonged discussion at the American Railway Tool Foremen's Association convention held in Chicago, Aug. 27, 28, and 29. All members appeared to be in accord as to the desirability of treating tools for service in strict accordance with the recommendation of the manufacturers of the material from which the tools were made. The members also considered that the control of the operation of heat treating tools should be vested in the foreman of the tool department rather than in the blacksmith shop, as has been the usual practice. The tool foreman is responsible for the behavior of these tools in his shop and it is natural that he should be most vitally interested in the result obtained. In modern tool rooms there is frequently available equipment which will greatly facilitate this work in the nature of electric furnaces and tempering baths with their accompanying pyrometers, so that results can be obtained with accuracy not available in the ordinary forging plant.

The steam railroads are preparing for a national railroad accident-prevention drive, from Oct. 18 to 31, under the auspices of the safety section, division of operation, United States Railroad Administration. The steam railroads are making excellent progress in the campaign for reducing the casualties in their field and safety supervisors all over the country are making elaborate preparations to make the most of the enthusiasm which will be engendered by this special drive.

Laying Out a Power Transmission Line

Among the Factors Considered Are Selection of Route, Clearances and Pole and Tower Spacing — All with Due Regard to Maintenance as Well as Construction Costs

BY CHARLES R. HARTE
Construction Engineer The Connecticut Company,
New Haven, Conn.

IN PRECEDING articles we have discussed the details of line construction, in an attempt to show how each has been developed to meet certain specific requirements. The present article takes up the story at the point where it was left at the end of the article in the June 21 issue, with special reference to the engineering design of the transmission line as a whole.

Distribution lines in general have their location fixed, those for trolleys usually keeping with the track while those for lighting and power circuits follow the streets, but the transmission line, while it frequently is carried on the same poles as the distribution circuits is as often free to take its own route, which will then be as nearly straight between the main controlling points as may be practicable.

SOME THINGS TO BE AVOIDED IN LAYING OUT THE LINE

Very abrupt breaks in grade are undesirable because of the mechanical difficulties of meeting the stresses, although the present-day strain insulator has helped this problem; and a line on a high open ridge is an invitation for lighting trouble; but otherwise the question of grade has little to do with the location. The really important features are distance, ease of access and low cost right-of-way. The ability of the engineer in charge is shown by the kind of a compromise he can make; for the three requirements are usually more or less opposed to each other. Obviously the straight line should be the cheapest, not only because it is shorter, but because there is a saving in cost due to the absence of angles, with special construction.

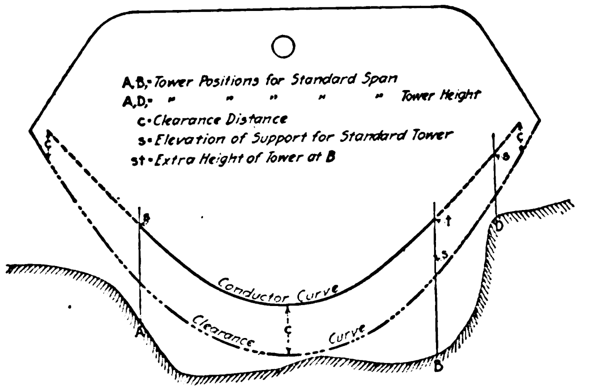
In wild country, where there are no highways, some kind of road has to be built over which to take the material for the line, and unless grades are too steep, the straight line is the desirable one from most points of view. In settled sections it is generally possible to parallel existing roads without too great increase in length of line; this makes possible the teaming of maintenance and repair material reasonably near to the spot where they are needed and facilitates inspection, since the men can readily get from section to section. Location on the highway itself is usually undesirable, as control by local authorities offers an opportunity for annoyances and restrictions, with the ever present possibility of an order to vacate. In addition the by no means uncommon presence of a border of shade trees involves continual trimming, if this is permitted, unending friction with abuttors and frequent expense in raising the lines at points where trimming is restricted or is not permitted. Highway trees also, as a rule, compel a location sufficiently far from the highway line to make the placing of poles on the inside out of the question, the average property owner not taking at all kindly to supports in his yard or in his front fields.

The best place for the line, as regards first cost of location and later relations with the land owner, is close to a division line where the poles cause a minimum of interference, and where inspection and maintenance do not necesitate tramping down growing crops or walking over sowed fields. In this connection it is well to remember that the farmer has a strong dislike towards "short furrows" and obstacles of any kind to the mowing of a field, a dislike which is apt to be strongly reflected in the price demanded for pole rights. In many cases the transmission company has the right to condemn a right-of-way in case agreement can not be had with the owner, but this is a weapon to be used very carefully. Unless the price asked is out of all reason it will generally be found that, when to the court's award is added the cost of the proceedings and when the ill feeling that is usually stirred up is considered, it is cheaper to settle without recourse to the law.

The value of a friendly neighborhood for any utility is hard to measure, but it is always great. Tact in preliminary dealings, absolute fairness in all agreements and, even more than any thing else, scrupulous care that both in construction and maintenance unnecessary inconvenience is not caused either by the work or by material piled in driveways or across paths, etc., cost practically nothing at all, but the work of the friendliness they secure appear continually. The average man will cherish the memory of some such petty annoyance long after he has forgotten a much more serious wrong. From time to time every utility company must come before the local authorities for supplementary rights or privileges, and friends at court are very essential. Furthermore the presence along the line of people who are well disposed means quick reports of unusual conditions and a policing effect which could be secured otherwise only at very considerable expense.

FORESIGHT IS BETTER THAN "HINDSIGHT" IN PLACING THE LINE

Two other considerations of such importance are, so to speak, the over head and the under foot conditions. Trees are ever the enemy when near a line. Long limbs of near ones tend to whip into the wires, and dead limbs blow from a considerable distance, particularly from trees on hillsides above the line. From time to time an entire tree endeavors, sometimes with much success, to fall across the phases. It is highly desirable therefore to keep in the open or, failing that, to get such clearing and trimming rights as will insure protection. Moreover the line should not be dominated by the ground, for the temptation to "chuck" a stick or a piece of wire into wires conveniently below is often too strong for those old enough to know better, not to mention the effect on youngsters. On the other hand, flat open ground is always questionable territory. Real swamps show their character, but many a respectable appearing meadow is a "whited sepulchre" or more correctly, a greened one, with a firm surface which hides a very soft and deep layer of muck. When pole setting begins, the facts are quite likely to become known, but a shift of line at that stage of the game is expensive and takes valuable time. Also, if the ground is too open and flat the supports may put the line so above the surroundings as to make it particularly attractive to lightning. The matter of clearing around the butts of the poles is a detail of construction rather than of location, but it is well to have in mind the fact that wood poles burn, and that meadows on which there is likely to be long dry grass are not the best of locations.


A,B,-Tower Positions for Standard Span
A,D,- " " " " " Tower Height
c-Clearance Distance
s-Elevation of Support for Standard Tower
st-Extra Height of Tower at B
Conductor Curve
Clearance Curve
A
B
D
c
s
t
TEMPLATE FOR USE IN FIXING LINE TOWER LOCATIONS

The presence or absence of rock is an important consideration. Solid ledge often offers excellent footings for towers, but for poles it is a costly proposition at best. Loose rock is always a nuisance, being "neither one thing nor the other, but on the contrary a d——d sight worse."

Finally, certain sections are cursed with highly unpleasant local conditions. If there are other wire lines in the vicinity their repair men can often give very valuable information as to sleet, lighting and heavy wind. Failing this, the oldest inhabitant is some help, although his stories are not always reliable; and in woodland the trees bear witness to the troubles they may have suffered, and so often show where not to go.

HERE IS THE IDEAL LOCATION

As a result of these considerations, the best location usually will be a series of long tangents, largely on gentle, open slopes. In settled sections to a very considerable extent it will follow interior property lines, not too far from fair highways, and keeping away from the property line itself a distance about equal to the height of a pole, to allow for guys. It is well too, to keep away from communication lines as far as practicable. A clearance between the nearest wires of the two lines equal to that between phases of the transmission line should be obtained, unless the communication line is higher. This is as good as the ridiculous specification that the lines shall be separated by the length of the tallest pole of either line, at least so far as mechanical and electrical factors are concerned. In many cases these are the only factors involved. Unfortunately, there are still some communication men who become hysterical over the thought of a transmission line in their vicinity, and while good construction can always be sustained if the matter is carried into the higher courts, much annoyance and expense may be avoided if in the first instance the cause of dispute is avoided.

After the preliminary location has been decided upon, there *ought* to be a survey, although many a pole line and some tower lines have been "jackassed in," as one line foreman described it, on the ground. Not much detail is required; the center line should be "run," measuring continuously from one end the distances and angles both of the line itself and of the fences, roads and larger streams. Buildings or similar structures crossed or very close to the line should be accurately located, and facts as to the nature of the ground, whether wooded or cleared and in the latter case whether or not cultivated, comprise desirable information. It is well, too, to show the character of the roads closely paralleling the line and those crossed by it, with notes as to where they lead, and particularly including all facts regarding the routes to the various railroad sidings or wharves along the line with the available capacity for storage. Such information is absolutely essential for construction; it requires very little additional labor to make it a permanent record, and if kept up to date, the information is invaluable in case of an emergency.

It is well to bear firmly in mind the fact that there are always two, and possibly four, highly important events in the life of a transmission system: Construction and maintenance are necessities on every line, while not infrequently increased capacity or extensions are called for. Fortunately less frequently, storm or flood sometimes necessitate rebuilding of a section. Under any of these circumstances it is of the utmost importance to know how and where material can be handled in.

In addition to the line and the immediately adjacent features, a profile is needed. If the ground on each side of the center line has the same general character, no additional levels are needed, but if there is much difference profiles should also be made of the line of the outside phase wires, or the line of the footings in case towers are used. If this is not done it may be found, when the line is built, that although there is plenty of clearance along the center line, the outside wires are dangerously close on the uphill side of a steep slope. In one case a 66,000-volt line had one phase within arm's reach of a man, while the corresponding wire on the other side had nearly 30 ft. clearance. So, too, it is essential that the center line profile be complete.

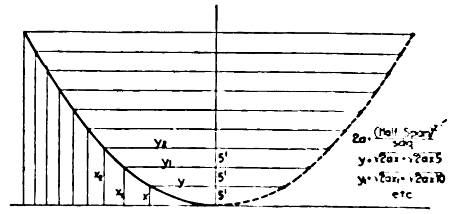
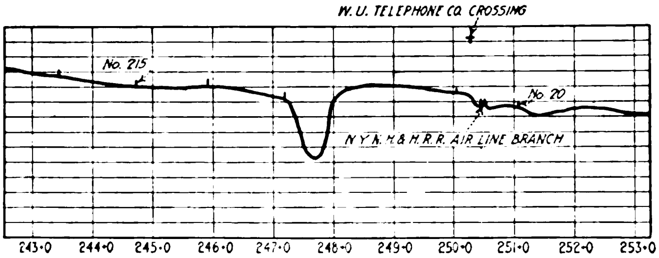


DIAGRAM SHOWING HOW THE TEMPLATE IS PLOTTED

On the same line the support locations were made in the office, and profile levels were taken only at tower centers. The result was that in crossing a stretch of rolling ground the towers fell in the valleys, and the "rolls" came under the low points of the spans. How seriously this reduced the clearance was not realized until the line was strung. Luckily the original design had very generous factors of safety, and it was possible to "horse up" some of the spans sufficiently, but in a few cases the towers had to be raised at a very considerable expense.

In addition to the surface elevations, the profile should show the elevations at the point of crossing of any buildings, structures, other wire lines, or other facts which might affect the height or clearance of the line. At highway or railroad crossings it is particularly important to get full details of both ground and air conditions, as there is apt to be argument over the location. Full information in the office may save much time and expense later.



A TYPICAL PROFILE FOR A TRANSMISSION LINE LOCATION IN "EASY" COUNTRY

Horizontal scale, 1 space equals 100 ft., vertical scale, 1 space equals 5 ft.

With plan and profile in hand the support locations can now be made in the office. Until comparatively recently it has been customary to limit angles on poles to a maximum of about 15 deg., making heavy turns by a series of small angles, but as will be described in detail later, the development of the strain insulator has permitted a very effective treatment which, if anchorage is available, can handle as heavy an angle as may be necessary on one pole for each circuit.

In the case of a tower line the structures can be built to meet almost any requirement and the decision as to what to do will be controlled largely by local conditions. If the line is on flexible supports it is necessary in any case to have anchors and one of them can be used for the corner. If the line supports are self-sustaining it becomes a question whether to use these, dividing up the turn among enough towers to keep the pull at each within safe limits, in which case there is apt to be higher cost of locations, or to turn on one special tower which will cost materially more than the standard form. If right-of-way is costly, the single-angle tower will often save something over the cost of the curved line, and most line engineers prefer the former as less liable to insulator trouble. In case the curve is used it must be remembered that this shifts the location off the center line profile, and, unless the line is on level ground, a new set of levels must be taken to give the profile under the line itself.

GOVERNING CONDITIONS IN POLE AND TOWER SPACING

In the East the usual spacing for wood poles is 150 ft., for which span the sag even with the heaviest wires is comparatively small. Except in very broken country the ground profile is not vitally important. In the West, however, the tendency has been to go to much longer spans on wood, and here the heavier sags make the question of mid-span clearance almost as important as in the case of steel towers, with spans ranging from 300 to 750 or 800 ft.

The best standard height for the supports naturally will be determined largely by the clearance required. In very wild country this need be but little more than enough safely to clear the line patrol; in cities the man on a high team load must be safeguarded. The National Electrical Safety Code gives a table of "Road Crossing Clearances" which establishes for "crossings above spaces accessible to pedestrians only," a very good practice for open country, as follows:

	Height of Lines of from 300 Volts to Ground up to 15,000 Volts, Ft.	Height of Lines of from 15,000 Volts up to 50,000 Volts, Ft.	Height of Lines Above 50,000 Volts
Over track rails on which are operated standard freight cars where brakemen are permitted on top........	28	30	Increase value for 50,000 volt line by ½ in. for every 1,000 volts over 50,000
Over other tracks than above, and across streets, alleys and roads..........	20	22	
Along roads in rural districts	18	20	
Over spaces accessible to pedestrians only.........	15	17	

The above values are for the line conductors; if there is a telephone line on the same supports this will have to be at sufficient height safely to clear any passer-by. Such lines usually operate at voltages so low as to be harmless in themselves, but they may have induced charges of unpleasantly if not dangerously high potential, not to mention the possibility of leakage from the main circuit. They should be at least 2 ft. above the reach of a person under conditions reasonably to be anticipated.

The arrangement of circuits will determine whether they or the telephone wires are the controlling feature. If the middle conductors are far enough apart, the telephone wires can be kept well up, but it must be remembered that light wires sway very irregularly in strong winds, and for that reason should have more clearance than heavier conductors which under the same conditions tend to sway in unison.

The form taken by the hanging wire depends upon the relation between sag and span, this in turn is controlled by the stress which may be allowed in the wire. Usually this is fixed as not greater than the elastic limit (the stress below which the wire will return to its original length when the load is removed), under the most adverse conditions of loading, which, as we have seen, are considered, in the National Electrical Safety Code, as follows:

Heavy loading; That due to the weight of the conductor, plus a layer of ice increasing the conductor diameter by 1 in., with a horizontal wind pressure of 8 lb. per square foot at right angles to the line against the ice-covered wire, all at zero Fahrenheit.

Medium loading; That due to two-thirds of the heavy loading, taken at 15 deg. Fahr.

Light loading; That due to four-ninths of the heavy loading, taken at 30 deg. Fahr. (If the conductors themselves are so heavy that the "medium" or "light" loading as above is less than 1¼ times the weight of the conductor above the latter, that is, 1¼ times the wire weight, shall be used.)

THE PARABOLA AS A SUBSTITUTE FOR THE CATENARY

The uniformly loaded, freely hanging wire takes a curve known as the catenary—or if it does not exactly follow it, the coincidence is so close that the difference is unappreciable. The calculation of various relations of the catenary are somewhat complicated but, if the sag is not large in comparison with the span, the curve differs so little from a parabola that it can be treated as such, which is far simpler. However, while there have been published a good many methods in detail, notably in the *Transactions* of the American Institute of Electrical Engineers for 1911, sag tables and sag charts are also available, one of the best being in the same 1911 *Transactions*, from which the facts can be plucked forth with comparatively little effort.

Taking, then, our particular case from the chosen size and material of conductor and the proper loading for our region we can find, for any span, what sag will be needed to insure that under the maximum load, the wire stress will not exceed the elastic limit. This sag, however, occurs when the conductor is blown out of the vertical plane. and is measured, not vertically but in the plane of the wire. The condition which gives the least clearance is that of the ice coated wire at 32 deg. Fahr. and no wind, so we must figure what happens under these circumstances to our conductor which has shortened up, due to the decreased load, but has now swung into the vertical plane.

MAKING AND USING THE SPAN TEMPLATE

Starting with a span of double the normal, so that the template will meet all reasonable cases we determine the sag for the iced wire at 32 deg. Fahr. and no wind, and then make a template on the same scale as our profile of this particular curve. In a parabola, if we draw a line midway between the two sides and another at right angles to it at the vertex, or sharpest point of the curve, the right-angled distance of any point in the curve from this last line is given by the expression $x = \frac{y^{2}}{2a}$. Where x is the distance wanted, y is the distance from the point to the line between the sides, and $2a$ is a value constant for any given parabola. In our case, taking a point at one end of the curve, x is the sag and y is the half span, from which values we can get $2a$, since $2a = \frac{y^{2}}{x}$. By turning our equation around $y = 2\ ax$. If now we take x in turn as 5 ft., 10 ft., 15 ft. and so on we get corresponding values of y, and plotting these on a piece of celluloid, taking the y values right and left of the center line for the corresponding x values we can then draw through them our desired curve.

The length of the average span, and the height which the wires will be above ground at the towers depend upon whether high or low towers are used. The choice may depend upon one or more of a number of considerations; to a considerable extent, however, voltage seems to govern. Lines of 66,000 volts or over are apt to be on high towers, the long spans thus possible materially reducing the number of insulators per mile. On lines of lower voltage the insulator is, electrically speaking, nearer perfection, and the disadvantage of increased number of insulators due to short spans is more than offset by the lessened mechanical stresses.

The office location is made by first fixing the positions of towers at controlling points, such as breaks in grade, banks of streams or ponds, and the like, and then spotting in between the remainder, spaced approximately the length of the standard span apart, and at each of these points drawing vertical lines on which are marked the elevation above the ground of the lowest insulator of the standard tower. A second curve, identical with the sag curve, is drawn on the template so that the corresponding points of the two are separated by the clearance decided upon. The template is then laid on the profile with its vertical lines parallel to the vertical lines of the latter, and is shifted, keeping this relation, until the clearance line just touches the earth between two towers. The sag curve is then cutting the tower lines at the points of support necessary to secure such clearance. If these last points are above the normal, the span must be shortened or one or both of the towers raised. If the first is done the adjacent span is correspondingly increased; in the second case, the position of the low points of the adjacent spans, and of the span itself if one of its towers is raised more than the other, is shifted towards the lower tower in each case. This at once brings up the question of supports at different elevations. So long as the curve is not changed, the horizontal stress in the wire is the same whether the supports are at the same or at different levels.

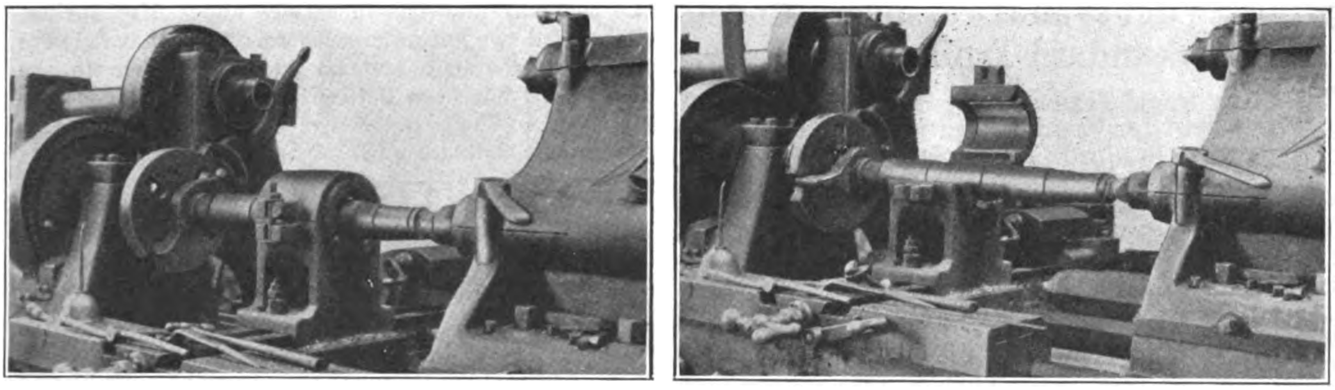
If the spans are of the same length, and the supports are at the same level, the pull at the supports of each span will be the same as, and balanced by, that of its neighbor. With variable spans, however, or unequal elevations of supports, while by adjustment of the sag-span relation the pulls can be balanaced for any one set of conditions, they will be unbalanced when the conditions change. A span having supports at different levels is a part of a similar curve extended to meet the level of the higher support, and the stresses are those of the longer span. A load change on the long span changes the span itself throughout its length but the span with unequal height supports can change only between the supports. Its behavior and stresses are, therefore, somewhat different from those of the long span, and the low point is not only changed vertically, but also travels side ways. For this reason, if the ground is close to the clearance curve each side of the low point for the maximum load, the position of the span under other conditions should be determined to insure the proper clearance at all times.

HOW NATURE HELPS THE DESIGNER

It will usually be found that nature has divided the line into sections by reason of sharp humps which are obviously the places for supports. Working from these points, the most desirable conditions is that of spans of equal length, with top at levels differing but little, on standard towers. Whether in the situations where this cannot be realized it is better to change span lengths, relative levels, or tower heights can only be determined after careful study; indeed often all three "rathers" have to be used. Differences in adjacent span lengths and in relative levels of support mean unbalanced strains on the tower, which if considerable may necessitate special details. In any case the unbalanced pull remains through all time, a more or less serious threat against the safety of the line. Taller towers or special construction involves larger first cost and an addition to the fixed charges. If the taller tower is decided upon, the additional length can often be had at a minimum cost by using the standard extensions which some manufacturers furnish; if special extensions have to be made it is well to have them standard for the particular job, in lifts of 8 or 10 ft.

The necessity for very long spans is usually brought out by the preliminary survey; the office location not infrequently indicating points where a long span apparently can be employed to marked advantage. In either case the necessary tower height should be determined, first on the basis of the standard conductor, and then on the supposition that there can be employed a special conductor which can be strung much tighter than standard, and so permit the use of lower towers but of course under correspondingly heavier stresses.

Finally, with the office location complete, it is taken into the field, and tested on the ground. Here is where experience is particularly desirable properly to decide whether or not it takes best advantage of the ground, and if it does not, what is to be done. The alternatives are to change span length, tower height, tower location, or possibly a section of the line.



AT LEFT, JIG USED TO HOLD BEARINGS DURING BORING OPERATIONS; AT RIGHT, ANY SIZE BEARING CAN BE ACCOMMODATED BY THE USE OF BUSHINGS

Reclaiming Worn Motor Axle Bearings

Des Moines City Railway Has Developed Equipment to Rehabilitate Worn Bearings by Welding, Boring and Babbitting

BY THE DEVELOPMENT of several shop devices by which the work can be quickly and accurately accomplished the Des Moines, Iowa, City Railway is reclaiming worn-out brass motor axle bearings which otherwise would go to the scrap pile and is obtaining a length of life equal to that of new brasses.

When the motor axle bearings for the GE-258 motors are worn down until they ordinarily would be used for scrap, they are taken to the reclamation department. These bearings not only wear on the inside surface but wear along the edges of contact between the two halves so that the outside diameter is gradually reduced. The first step then is to determine the amount of this wear and this was formerly done by means of calipers. This was a tedious process so a form with an inside diameter exactly that which the outside diameter of the bearings should be was turned down from a wheel bushing. Now the bearings are gaged by inserting them in this bushing as indicated in one of the accompanying illustrations. If a loose fit shows wear the halves are mismated until a snug fit is obtained and the worn halves are laid aside to be built up along the edge by the acetylene welder.

The halves which mate up to the proper diameter are placed in the lathe jig as shown and $\frac{3}{16}$ in. of metal is taken out. This jig is made of two castings hinged on one side and clamped together on the other by a bolt. It is set in the center and doweled in position by a pin on each side. By use of bushings this machine can be used with any size of bearing. The boring bar is equipped with two cutting tools, one ahead of the other and on opposite sides of the bar, but each set to cut the same diameter. About fourteen sets of bearings an hour can be bored out on this machine.

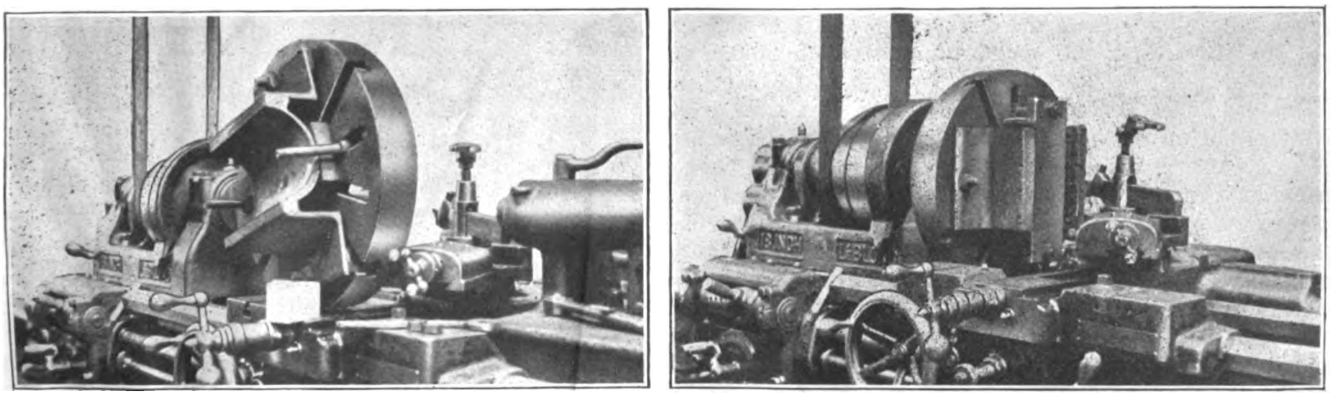
After boring the bearings are babbitted, this operation taking about fifteen minutes to a pair of bearings. The bearings then go back to the lathe boring jig and are bored out leaving about ¼ in. of babbitt. For this operation the boring bar is also equipped with two cutting tools, one to rough out and the second to finish. About eighteen sets of bearings an hour can be turned out on this operation which also includes the making of the fillet.

GAGE FOR AXLE BEARINGS

Those bearings which had to be built up by the acetylene welder are faced in the jig shown. This is made from two 4-in. angles connected by a curved section, the inside diameter of which corresponds to the outside diameter of the bearing. These three pieces are welded together with the acetylene welder and blocked up on filler lugs on the lathe face plate so that when bolted tightly to the plate the face of the jig is just 4½ in. from the plate.

The bearing is trued up in this jig and held firmly in position by a bar. The cutting tool is set 4½ in. from the face plate and as the jig revolves the bearing is accurately faced off. This device does better work than the planer which ordinarily would be used. The bearings then pass through the same boring and babbitting operations as already described.

These few pieces of home-made equipment have made possible the saving of considerable money by the reclamation of bearings.

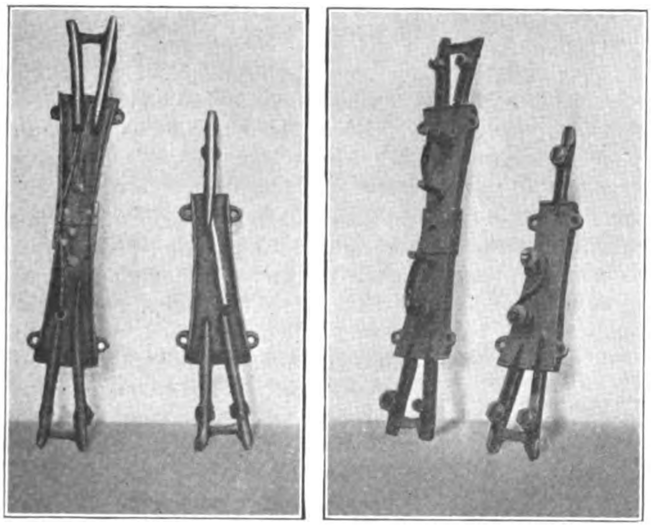


AT LEFT, JIG IN WHICH BEARINGS ARE PLACED FOR FACING OFF AFTER WELDING; AT RIGHT, BEARING BOLTED IN POSITION READY FOR FACING

Spring Switches and Crossovers Made From Standard Trolley Frogs

Twin City Rapid Transit Company Makes This Equipment for Special Locations and the Service Obtained Is Most Satisfactory

IT IS OFTEN the case that at crossings where the angle at which two lines cross is very small difficulty is experienced because the trolley wheel follows the wrong wire. This trouble also occurs in backing up at a wye. To overcome such difficulties at these two locations the Twin City Rapid Transit Company, Minneapolis, has developed a trolley frog spring switch and spring crossover, both of which have proved most successful during the past two years.


TOP AND UNDER SIDE VIEWS OF SPRING SWITCH AND SPRING CROSSOVER MADE FROM STANDARD TROLLEY FROGS

The spring switch is made from the company's standard switch by first cutting off about 3 in. of the lead to the curve. A hole is then drilled through each boss on the top of the casting, and in the hole nearest the single end a split post is set. The switch tongue is inserted through the other hole. The switch tongue consists of a piece of malleable iron bent at right angles, the tongue side slightly flattened and brought to a biased point, the post side remaining round and being split. A piece of spring steel is then fastened to the two posts in such a manner as to hold the tongue against the single line lead. This is clearly shown in the accompanying illustrations and drawing.

Suppose this switch in operation. A car desiring to wye and turn back will spring the switch when it enters on the tangent line from the double end. It then backs into the curve over the spring tongue which offers a continuous line.

The crossover is similarly made from two standard switches cut off at the single end just back of the pull-off rings and fastened together by a plate riveted over the joint. In this case the springs are so arranged as to keep the tongue points against the side of the switch. This cross-over would be used on a double track line or in any location where cars on a given track always operate in the same direction. As before, assuming this crossover to be in service, a wheel would enter over the spring tongue and be compelled by the second spring tongue, acting as a guard, to leave over the proper line.

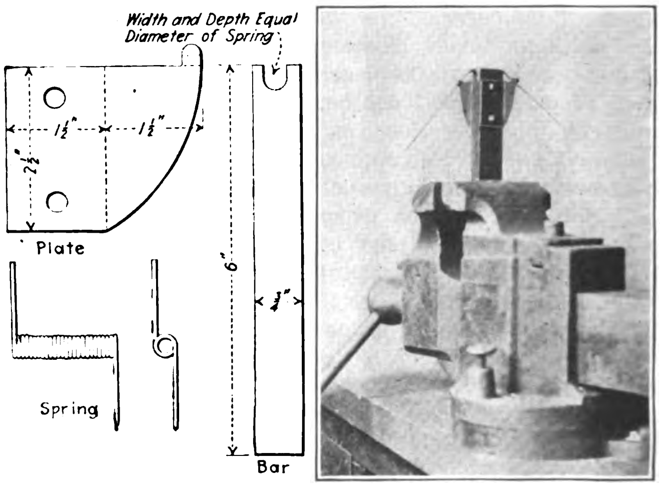
The company now has in service about fifty spring switches and two spring crossovers. These have always worked satisfactorily and no additional wear to the trolley wheel has been noticed. Malleable iron is now being used in the manufacture of all switches and is giving about double the life of bronze.

Handy Adjuster for Gear-Case Cover Springs

THE accompanying illustrations show a small device which has been constructed in the shops of the Des Moines City Railway to simplify the work of installing springs on the gear-case covers of G.E. 57 and G. E. 67 motors. The usual method of using a screwdriver to twist this spring and the hand to hold it in position is often very trying to the workman, and sometimes results in bruises to the hand, as it is frequently necessary to install the springs under the car where the space is limited and where the position that must be assumed by the workman is very awkward.

The device shown herewith for installing these springs consists of a piece of iron 6 in. long by 1½ in. wide and ¾ in. thick with two pieces of sheet iron attached. The iron bar grooved out on one end to accommodate the spring and the pieces of sheet iron are fastened to this bar about ½ in. from the end as indicated in the accompanying illustration. After assembling, these sheet-iron pieces are bent back at right angles and the finger at the end is doubled over to provide lips for holding the end of the spring.

To install a new spring on a gear-case cover the spring is laid in the grooved end of the tool. One end of the spring is then hooked under one of the side fingers and the spring is wound up two turns to provide tension. The other end of the spring is then hooked under the opposite finger. The tool holds the spring so that it can be readily placed in the hinge and the hinge pin inserted without any trouble and without danger to the workman. After installation the ends of the spring are released and the job is completed.



DEVICE FOR QUICKLY AND EASILY INSERTING HINGE SPRING OF GEAR-CASE COVERS

The United States Bureau of Mines will dedicate its new experiment station in Pittsburgh, Pa., on Sept. 29 and 30, and Oct. 1. The buildings are located at 4800 Forbes Street. Mine and coal-dust explosions will form part of the program.

Present Status of Engineering Association Standards

A Partial Summary of the Progress Which Has Been Made in the Development of Standards, Recommended Practices and Miscellaneous Methods and Practices

A GREAT many electric railway men overlook a most important adjunct to their work when they neglect to consult the Engineering Manual of the American Electric Railway Association. As the convention approaches, it may not be out of place to present a brief outline of some of the more important subjects treated therein.

A knowledge of what has been done along the line of standardization should be helpful. A creditable amount of work has been done, but it is unfortunate that this has not been more fully appreciated. An active interest in it cannot be otherwise than helpful to engineers in their daily tasks.

The Manual presents the finished product, as it were. A broader view of any particular subject is to be found in the *Proceedings* of the association. Many data of value will there be found, which from their nature, cannot find a proper place in the Manual.

A few of the topics which are covered in the Manual are discussed this week. Others will be taken up later.

Buildings and Structures

By R. C. Cram

In the field covered by the Engineering Association committee on buildings and structures, the activity and resulting standards or recommendations are at a minimum. This is undoubtedly due mainly to the generality of the subjects, which will not admit of the very close restrictions implied by standards or recommended practices. There is only one recommendation which has reached the "approved" stage. This relates to "Rules for Instructions to Employees for Fire Protection." There are seven other subjects in the Manual under "Buildings and Structures" as a general heading, classed as "Miscellaneous Methods and Practices." These cover matters relating to building design, construction and maintenance, which are so variable in different parts of the country, or because of incidental location, that it would be almost impossible to bring them to close enough agreement to warrant even a standing in the Manual as "Recommended Practice."

Nevertheless, the "Miscellaneous Methods and Practices" which are included in the Manual under "Buildings and Structures," are found to represent very important subjects in connection with design and maintenance of electric railway buildings. For instance, the subject of oil houses and their equipment is one of considerable moment. It is well discussed and illustrated with several typical drawings. The matter of proper facilities for employees in car houses, shops and power houses is reaching greater weight yearly. The Manual treats of this with particular reference to space assignments for the administrative various offices, men's rooms, locker rooms, toilets and assembly rooms.

Not the least in value is the codification of "Underwriter's Rules Relating to Car and Car House Wiring," which is an index of the subjects in the National Electrical Code which relate particularly to car wiring, equipment of cars and electrical work in car houses. These matters must be constantly referred to by electric railway mechanical, electrical and structural engineers. This index to the code is of great value.

The "Recommended Rules for Fire Protection" represent modern practice and cover organization of fire brigades, general fire rules, and form of inspector's report. These rules complete have been approved by the National Fire Protection Association.

The subject of economical maintenance of buildings and structures is treated in the Manual by outline reference to features of design which are of vital importance in reducing maintenance charges. Repairs, inspections, heating systems, roofing, floor construction, doors and painting are all considered in a way which should be of much interest and value to designers.

Under the head of "General Specifications and Form of Contract for Railway Structures" are found a proposal sheet, contract form, general conditions of contract and specifications for materials. This section embodies form and wording for contracts which are useful to engineers, and in general they will need but few changes to meet the opinions of legal talent and local conditions prevailing on most electric railways.

The subject of design of urban and interurban terminals is treated in all general controlling aspects, such as matters of location, real estate, track layout, and terminal building construction. When terminals are up for consideration in engineering and managerial offices, the Manual may be consulted for many valuable hints.

Facilities for fire protection in car houses and terminals, including open yards are discussed in a very illuminating manner in the section of the Manual under that heading. The several types of equipment and arrangement thereof, are set forth in considerable detail.

While the foregoing subjects are comparatively few in number, it will be seen that they represent items of much importance in connection with building and structure maintenance and construction. The *Proceedings* of the association, in reports of the commitee on buildings and structures, contain a large amount of general information on the subjects in the Manual which, from its nature cannot well find a place in the Manual because of the necessity for brevity. For instance the Engineering Association *Proceedings* for 1915 contain a most informative report on the subject of expansion joints and waterproofing of concrete structures, which is of such general value that it could well be brought down to date and included in the Engineering Manual under "Miscellaneous Methods and Practices." The subjects of power-house and substation construction have also received attention at the hands of this committee in the *Proceedings* for 1915 and 1916.

Way Matters

BY R. C. CRAM

In the field covered by the committee on way matters, an examination of the Engineering Manual indicates that twenty-five subjects or items have reached the stage of "Standard" or "Recommended Practice." This is the greatest number reaching such grades in any of the seven general heads or classifications of work in the volume. As an indication of the care in preparation and the extended discussion some of the subjects have received, it may be noted that the standard 7-in. and 9-in. girder and girder guard rails were about seven years in the process of reaching the Manual as the goal. A brief outline of the several subjects follows:

The location of, and clearances for, third-rail working conductors, structures and rolling equipment are shown in the standard diagram which is thus available as a guide to electrified steam roads as well as strictly electric railways. Third-rail terminology and recommendations on method of protection for third-rails are also covered. These matters were the results of reports prepared by the committee on heavy electric traction, all of the members of which are representative steam road engineers.

The design of proper foundation for tracks in paved streets is indicated by a recommended design for a ballasted construction. The reports of the committee on way matters for 1914 and 1915 on this subject, in the association *Proceedings* have proved valuable contributions to the study of this subject. The *Proceedings* should be consulted in connection with any consideration of design of tracks for use in streets.

Among "Miscellaneous Methods and Practices" will be found an extended report on ballast for suburban and interurban lines, and one on classification and bearing power of soils, both of which are useful in connection with track design and maintenance. Here also are rules and regulations for the government of employees of the way department which will serve as a practical guide if occasion calls for the compilation of such rules. A uniform method of designating compromise joints is shown which, if followed, will tend to eliminate the confusion which often arises in connection with special track-work purchases.

Under the head of "Specifications," of interest to those concerned with way matters, the Manual contains seven which may be used in connection with purchase of rails, joints and special track-work. They cover girder rails, splice bars for girder rails, four distinct types of special track work and the materials entering into the manufacture of special track work. An important special track-work matter is also covered under the rules for determining the gage of track on curves, while the recommended layouts or dimensions of tongue switches and mates are recognized as the prevailing standards by both manufacturers and electric railway companies generally.

Perhaps the most important contribution to standardization work in the electric railway industry lies in the standard sections for 7-in. and 9-in. groove girder and girder guard rails.

These designs and particularly the 7-in. depth, are gaining constantly in popularity and use throughout the country. Of no less importance are the recommended designs for 7-in., 80 and 91-lb. plain girder rails which, by the way, have long been rolled and have a wide use. The standard section (low-T) rails shown in the Manual should have more attention than they apparently have received. This is particularly true of the 100-lb. section which due to its weight and height (6 in.) is very serviceable for use in shallow pavements in small cities and towns.

Recommended designs of joint plates are shown for all of the girder rails above referred to and use of those for the 7-in. girder rail has shown that they are a big improvement over any previous designs.

It may not be generally known that the association has approved, as a recommended design, a uniform drilling for standard section (low-T) rails which agrees with the recommendation of the American Railway Engineering Association. A much needed improvement in practice calls for the use of this design to the fullest possible extent.

The recommendations on the use of plain girder rails in paved streets represent several years of study and they can well be used as a guide when this question is up for consideration.

The Wheel Situation

BY H. L. BROWN

With the sky cleared of the war cloud, at least, in a measure, there should be time now to take up the study of engineering standardization problems where they were dropped before the war. Of these problems, that pertaining to wheels is perhaps one of the more important. The situation in this connection as it stands today is about as follows:

The American Electric Railway Engineering Association in 1907 adopted a "standard design" for the tread and flange contour of cast wheels. This action involved two standard contours—type A, having a flange ⅞-in. high and type B, a flange ¾-in. high, both being $1\frac{3}{16}$-in. thick at the throat. For city service the type A tread is 3 in. wide and this is widened to 3½ in. for interurban service. Type B wheel has a 2½-in. tread and it was evidently intended as a sort of alternative standard to be used where the type A contour could not be used on account of local conditions.

Since this action of the association the advent of the rolled-steel wheel and the fact that comparatively few companies found it desirable to use the standard contour, have given rise to much discussion but little definite action. For example, it was found that the flange ⅝ in. high was distinctly more in favor than the higher flanges and the discussion at the several conventions has brought out that the use of the higher flanges, while perhaps more nearly ideal, is impracticable because of the existence of large amounts of old tram rail which is likely to remain in the streets and in use for some time to come. The thickness of the flange at the throat has also, more recently, been attacked as being too great, causing undue wear on the back of the flange. The $1\frac{3}{16}$-in. thickness was determined upon in order to make it possible to get more of the gray metal up into the flange, and thus reduce the chipping. There has also been much discussion in regard to the taper of the tread.

These considerations led to the submission in 1916 by the committee on equipment of a new set of three contours which it first recommended for adoption as standard in revision of the 1907 standards. It then withdrew its recommendation after extended discussion at the convention. The committee's recommendations included three designs as follows: Wheel A was to have a 3-in. tread and a flange ⅞ in. high and $1\frac{3}{16}$ in. thick; wheel B, a 2½-in. tread and a flange ¾ in. high and 1 in. thick, and wheel C, a 2½ in. tread and a flange ⅝ in. high and 1 in. thick; this matter will undoubtedly be brought up again for further consideration at the convention this year and some change made from the 1907 standards, which still stand.

As to standard dimensions, other than contour, for the cast wheel, it appears that no standards or recommendations covering dimensions have been passed by the Engineering Association.

STEEL WHEELS LIKEWISE UNSTANDARDIZED

Strange to say, there has been no standard adopted for the contour of steel wheels and there have been no recommendations made in this connection. While the standard contours of 1907 have been applied to a certain extent, these were developed before the advent of steel wheels and to meet the characteristics of the cast wheels, and obviously cannot be considered as best suited to the newer, more ductile wheel.

In 1909 the committee on equipment recommended for adoption as standard, certain dimensions for rolled steel wheels. This subject passed through successive stages of development and the 1911 convention adopted as "recommended practice" a table of dimensions for steel wheels of 33, 34, 35, 36 and 37-in. diameters with tread faces 2½ in., 3½ in. wide, flange heights of ¾ in. and ⅞ in. flange thickness of $1\frac{3}{16}$ in. Since then nothing further has reached the stage of printing in the Manual, although the subject has been brought up. For example, in 1916, the last convention, a revision of the dimensions was recommended for adoption as standard but the recommendation was withdrawn. It comprised two tables; one was for wheels of 2½-in. tread. diameters from 21 in. to 34 in., and flanges ¾ in. or ⅝ in. high and 1 in. thick; the other for 3-in. and 3½-in. tread wheels of 34-in. and 36-in. diameters and flanges ⅞ in. high and $1\frac{3}{16}$ in. thick. This subject will come up for consideration again at the coming convention.

So the situation now is that there is a standard contour for cast wheels and a set of recommended dimensions for steel wheels, both in unsatisfactory standing. There exists no standard dimensions for the cast wheel and no standard contour for the steel wheel. The result is an absurd multiplication of the number of styles of wheels which the manufacturers must supply to meet the individual fancies of each road, and no doubt this number could be reduced about 90 per cent, if the equipment engineers would establish satisfactory standards. This would seem to indicate a course of action to which early study might well be given.

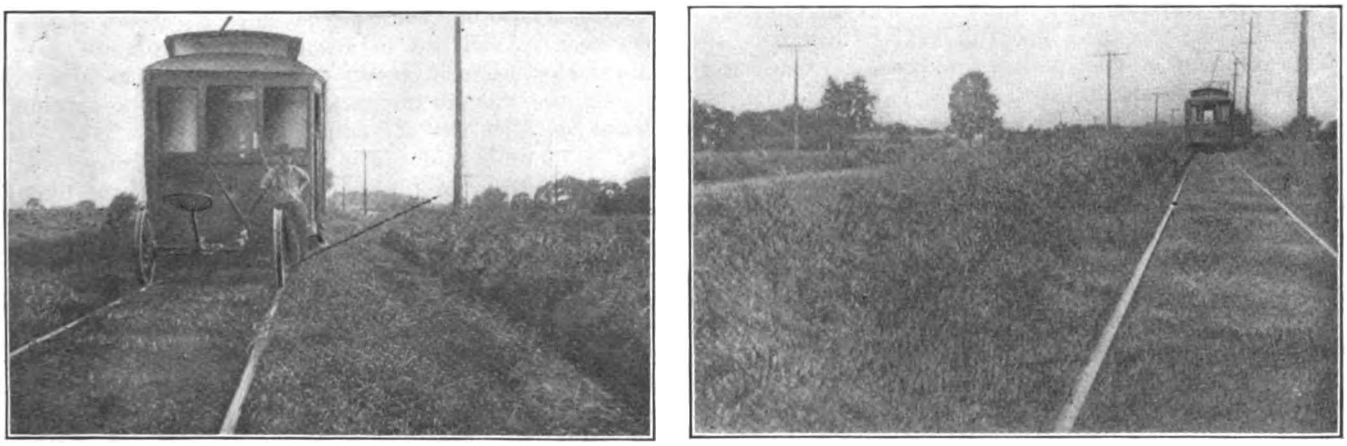
Mowing Weeds on Interurban Right-of-Way

By EDWIN MAIN

Chief Engineer Rockford & Interurban Railway

WEEDS spring up profusely along a right-of-way, especially if through lack of both labor and finances it has been impossible to keep the roadbed properly worked over. It is a long, slow job to mow miles of right-of-way by hand, and to more expeditiously handle such a situation the Rockford & Interurban Railway has drafted into service a standard farm mowing machine and substituted a single-truck motor car for the customary pair of horses.

An Emerson Brantingham standard 7-ft. mower is used with the wheels replaced by city electric car wheels of the same diameter. In order to obtain standard gage it was also necessary to install a new axle. The sickle bar was a little too long to clear the poles of the two-pole system so 6 in., including the shoe, was cut off. On portions of the line single-pole construction is used and here it is still necessary to raise the sickle bar at each pole.



AT LEFT, MOWER COUPLED TO STREET CAR ON ROCKFORD INTERURBAN; AT RIGHT, WEEDS IN NEED OF CUTTING ON INTERURBAN RIGHT-OF-WAY

The tongue of the mower acts as a safety valve and is therefore constructed of a grade of oak which will break should the sickle bar hit a stump or pole. The tongue is made of 4-in. x 4-in. oak about 7 ft. long, and extra tongues are carried for emergency use.

The mower is coupled behind a single-truck two-motor car with plenty of resistance temporarily built into the interior of the car so that the equipment may be operated on two or three points. This gives a speed of about 5 m.p.h. The crew is composed of three men including a motorman, a mower operator and a man to raise the sickle when necessary.

On the divisions equipped with double-pole construction, 12 miles per day is the average mowed. About 7 miles per day is accomplished on the divisions equipped with single-pole construction.

On July 1 the Glasgow (Scotland) Tramways Department celebrated the completion of twenty-five years of municipal operation of the local system.

The Net Result of the 5-Cent Fare*

History of Its Effect on a Large Company Carried Through Three Generations —The Lesson From This Pointed Out

BY JAMES R. BIBBINS
The Arnold Company, Chicago

IT IS ONLY the happy medium between radicalism and the baneful influence of the reactionaries that will perpetuate stability. This sane viewpoint can best be encouraged by the study of what may be termed the "Three Generations," past, present and future, of the street railway.

This may be illustrated by the investment history of a large railway property operating in one of the large cities of the United States, showing in cold figures the result, on the one hand, of the corporation's policy of rapid electric development (possibly too rapid), and, on the other, of the city's determined adherence at all costs to the letter of the franchise law—the 5-cent fare. In other words, this case shows clearly the net result of the 5-cent fare carried back through nearly six decades, starting with the Civil War and ending just before the war-price boom of 1917-18 began.

This company started with a few horse-car lines and extended very gradually until the period of electrification began, about 1890, when the property had an investment less than one-third of that of today. The lines were then all electrified; a very large proportion of the horse-car investment was abandoned during reconstruction; ill-considered competitive construction was permitted by the city, and extensions did not settle down to a normal rate until 1900, ten years later. Thereafter normal expansion continued at a moderate rate, especially in the later years.

THE DOUBLE CYCLE OF UPS AND DOWNS

The earning capacity of the property provided liberal operating funds and during the middle of the horse-car period the net earnings were gratifying, as seen in the accompanying chart. Then maintenance, renewals and depreciation began to mount, and net earnings finally vanished altogether in 1894, when the maximum renewal and replacement expenses occurred. After 1900 favorable net earnings again appeared and (excepting during the 1908-9 panic) continued up to the time of the war, but at a much lower rate. To-day, due partially to mounting renewal expenditures, the result is a duplication of the deficit in 1894, thus showing practically two complete economic cycles during the period of nearly two generations. For the entire period, the weighted average net earned on net plant investment was as follows:

Horse-car period, slightly over 8 per cent (on an average investment about one-seventh of to-day's). Electric period, about 6¾ per cent.

By all rights and economic laws, we are justified in considering such a property as a permanent or continuing operating investment for the same reason that service is a perpetual necessity. Therefore, it is proper to consider the financial result throughout the entire period, referring all results to what may be termed a fair standard money rate for the funds infested. This rate will always be reflected by the money market, which is sensitized to public opinion perhaps more than any other factor in business and finance. It is a known fact that the money rate of the earlier years, when horse-car traction was installed, was higher than to-day, due to the uncertainty regarding the future of the business and the corresponding risk to the investor. Moreover, in those days the words "depreciation" and "amortization" were practically unknown, and the future was admittedly obscured in undue optimism (on which basis fixed fare franchises were generally negotiated). Therefore, the prevailing money rate, while apparently representing net return on investment, actually represented that return minus a proper depreciation reserve. We know to-day, to our sorrow, that such a reserve should have been established to absorb the unavoidable permanent shrinkage in assets or plant value due to age, obsolescence, change in the art, trend of public opinion toward socialization of industry, etc.

But the public to-day wants to pay only "depreciated value" for utility properties, likewise rates based upon that value. Obviously, the corporation cannot return to the original investors the principal of their investment without having in fund a sufficient accumulation to absorb this permanent shrinkage in principal, which amounts to 20 or 30 per cent in a normal growing property and possibly over 40 per cent in a stationary property, both of which have been operating for a sufficiently long term of years to exceed one complete average life cycle of its principal depreciable parts. Therefore, the supposed return indicated above really means a net return on investment at least 1 per cent lower or about 7 per cent and 5¾ per cent., respectively. Both rates are manifestly below the standard money market rate for new money invested in such enterprises during those periods.

PUTTING THE RESULTS IN TERMS OF DEFERRED EARNINGS

Now let us assume a definite money rate (for example, 1860 to 1875, 9 per cent, 1876 to 1890 8 per cent, 1891 to 1917, 7 per cent), and observe the final result to-day. In other words, assume that the property should have earned these rates of net return, applicable to interest only, and carrying forward each year the resulting surplus and deficit, as the case might be, to a cumulative total as of to-day. At these rates, this property actually showed in 1917 an aggregate deficit or deferred earnings amounting to nearly one-half (45.9 per cent) of the existing plant investment. The horse-car period practically sustained itself at par up to the year 1890, based upon the above assumptions, but during the succeeding electric period, a continually increasing recession in earning power and accumulated deficit occurred, with no hope of ever catching up, on a 7 per cent net basis.

---

*Abstract of paper presented at meeting of Western Society of Engineers, Chicago, Sept. 8, 1919.

If the electric period be considered alone, an assumed rate of 7 per cent net return resulted in an accumulated deficit of over 50 per cent of the plant value, and a rate of 8 per cent, in the enormous deficit of 123 per cent of the plant value.

In fact, only with an assumed rate of 6 per cent did the electric property finally emerge from the long period of deficits, with a small surplus (6.28 per cent of the plant value), which has since been entirely wiped out and the recession continued. And the above results do not take cognizance of the necessity of a continued depreciation reserve, but only of the renewals spent or actual depreciation which had matured; that is, unless we assume that the net returns to the investors were about 1 per cent lower than stated above, i.e., 6 per cent for the electric period, 7 and 8 per cent for the horse-car period.

Corporate deficits have to be financed somehow. In this study it is assumed that the deficits were financed during the slumps on borrowed money at the rate indicated. Similarly, annual surpluses, when they occurred in the mid-periods, when the properties were comparatively new, were assumed to be put immediately at interest and credited at the same rate. Thus the zero-line of surplus-deficit indicates what may be termed "par" on the money market with respect to true operation and without reference to stocks and bonds.

THE 5-CENT FARE HAS PRODUCED INSTABILITY

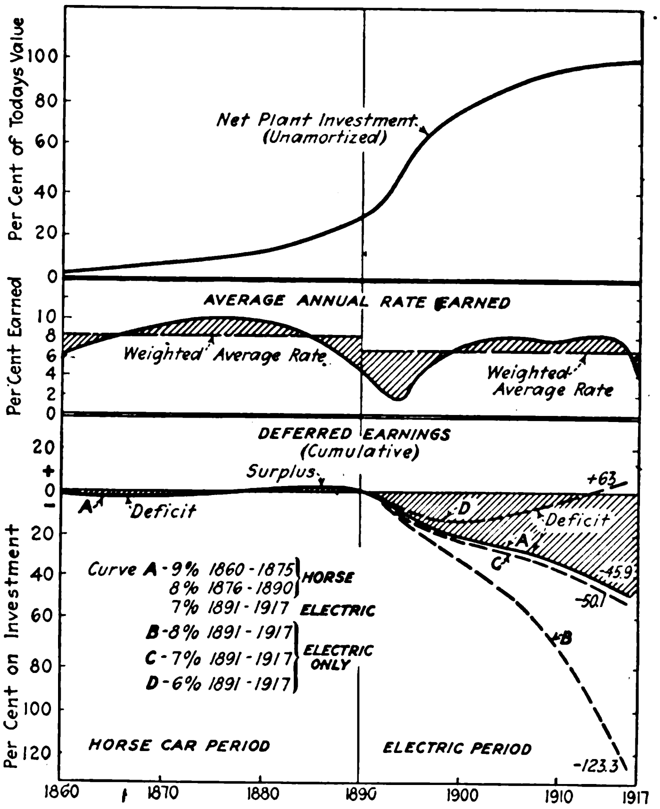
Admittedly, the results are not encouraging. In fact, they point a menacing finger toward the condition of a losing venture, as one expressing normality rather than abnormality. But the basis of a losing venture entirely upsets the normal equilibrium of values, cost of money, and operating efficiency. In the long run, adherence to unstable conditions of revenue, maintenance, or cost of money inevitably leads to dissipation of investment and ultimate reorganization.

The net result of this study is clear—that the 5-cent fare has not here produced stability, due largely to its gradually decreasing purchasing power.

It is idle to say that the company should have established depreciation funds long ago, for such knowledge as we have gained today by bitter experiments is not retroactive and it is quite pertinent to raise the question whether in this property even the municipality itself could have taken over the old horse-car properties, electrified them and operated them up to the present time at "par," with a 5-cent fare limit.

The problem for the future therefore is one which involves the re-establishment of stability in the industry. To jump at mere expedients, such as scaling down plant investment or lightly assuming low money rates clearly below the market rate, or fancied savings through public operation, is to ignore the plain facts of history and the unmistakable trend of the present. The real solution will require more intelligent and fair-minded treatment, and it seems to the writer incumbent upon the engineering profession to lend its weight in rectifying the obvious mistakes of the banker and the lawyer in handling these technical problems of utility development, and particularly to educate the public through all possible channels to a more thorough appreciation of the fundamentals upon which sound and stable utility operation must be conducted, whether by corporation or municipality.

The results are one and the same. We cannot escape the consequences of violating economic any more than normal laws. To the writer, these historical valuations have been more illuminating and convincing than all the volumes of opinion evidence which have been spread upon the public records. But they must be made with judgment and understanding of the conditions of the growth of the industry in adjusting physical accounting standards to present-day precision. In this respect, corporate records are invaluable, and it is the writer's belief that if every utility could have opened its corporate history to public inspection, much of the prevailing misconception and lack of co-operation could have been avoided. In this particular case, the final investment determined independently and entirely from corporate records properly adjusted as above noted, came within less than 1 per cent of the appraised cost to reproduce new as of the same date, using normal prices, approximately those actually paid for constructing and renewing the property.



INVESTMENT HISTORY OF A LARGE RAILWAY PROPERTY OPERATING ON A 5-CENT FARE THROUGHOUT THE TWO PERIODS CONSIDERED

The problem of the future or the third generation requires another discussion too involved to be attempted here. Suffice it to say that it seems hardly reasonable or equitable to present to the future generations a property quite free from the burdens of past development while this same future generation is reaping enormous benefits in appreciation of values which have been brought about as a result of this rapid development largely through the agency of the utilities. In other words, each generation ought to stand on its own feet. If errors have been made, they should be reasonably allocated or distributed, which can be done as an actuarial problem without unduly burdening any period or party to the common misfortune. This policy seems to hold the maximum of fairness and equity in dealings with the co-partners of the business—public, investor and labor.

Program

For the October Convention

THE convention for 1919 to be held at Atlantic City is expected to be the largest and the best ever held by the industry. To date approximately 57,000 sq.ft. of space has been allotted to exhibitors and the association expects that several more thousand feet will be taken before the opening.

The subjects to be considered at the American Association meetings, which open in the Greek Temple at 9:30 a.m. on Tuesday morning have already been announced by Secretary Burritt and should prove of much interest to all those who are at this time concerned in the welfare of the industry. Among the committee reports which will be of the greatest interest, will be that of the Committee of One Hundred giving a complete review of its work at Washington in connection with the hearings before the Federal Electric Railways Commission. The question of direct affiliation of the manufacturing companies in an affiliated association will be decided and already a proposed form of constitution and by-laws has been drawn along lines somewhat similar to the other affiliated associations except that it provides for two members in addition to the president on the executive committees of the parent association to be elected on the floor of the convention.

Changes are also proposed in the constitution and by-laws of the American Association so as to provide for the legal representation of manufacturer companies on its executive committee as proposed in the new constitution and by-laws of the Manufacturers' Association.

A preliminary program of the subjects selected for the American Association convention follows:

Some Features of Service-at-cost Plans — Cincinnati; Youngstown; Cleveland; Montreal.

The Public Service Railway Company's Zone System.

What Must be Done with the Electric Railways Before They Can Again Find a Market for Their Securities?

Labor and the Electric Railway Industry.

The Relationship of Items of Cost under Pre-war Conditions and To-day.—, Can These be Collected from the Traveling Public?—, Are They Likely to Develop Permanent Competition?

Report of the Committee on Valuation.

Report of the Committee on Zone Systems.

Report of the Committee of One Hundred.

The Association itself has an exhibit this year showing the benefits to be derived from membership. It will display some of the work actually performed by the information bureau for member companies.

In the Transportation & Traffic Association meetings only four committee reports will be presented, and it is planned to complete the discussion of these reports in the allotted time. Different phases of each subject have already been assigned to various members for discussion and, it is hoped that the points brought out by the committee will be further amplified by the discussions.

In addition to the regular reports there will be presented a complete review of the safety car situation supplemented by a movie film covering all the fundamentals of safety car operation, both from the public and operators' standpoint. This film has been prepared at the expense of certain manufacturers interested in this subject and is to be presented to the Association. In this way, companies which are considering the installation of such cars can secure it for showing in their territory and thus be better able to secure a more favorable reception from their patrons when the safety cars are introduced.

The Accountants' Association, in addition to its regular committee, reports a plan to have several addresses pertinent to its work.

On the program the Engineering Association, in addition to its regular committee reports, there will be several addresses. N. W. Storer of the Westinghouse Electric & Manufacturing Company will speak on "Electirc Motors vs. Gasoline Motors in Street Railway Service" and Maj-Gen. Wm. J. Snow, chief of Field Artillery, U. S. A., will give an address on "Field Artillery." Col. Henry Hodges of New York is also expected to address Tuesday's meeting on "Construction Work in France."

The Claims Association plans four papers by its members with written discussions covering "Experience with One-Man Cars," "Advisability of Fixed Schedules for Injuries to Persons Other Than Employees," "Organization for Public Accident Prevention Campaigns" and "Speed in Its Relation to Accidents." Supplementing these papers and discussions will be shown the safety educational picture of the Public Service Railway Company—"Comrades of Success."

Secretary Burritt has also announced that the executive committees of the various associations will all hold meetings in Atlantic City prior to the opening of the convention.

The entertainment features of the convention will be of an attractive nature. The grand reception is to be held on Monday night at the Million-Dollar Pier. Rolling chairs which have heretofore been provided for delegates in traveling to and from their hotels will not be provided by the Association.

Federal Commission Questionnaire

The Federal Electric Railways Commission Has Issued a List of 168 Questions on Electric Railway Topics

THE Federal Electric Railways Commission in its study of electric railway financial conditions has issued a questionnaire to be mailed to every city in this country where there is an electric railway. A copy of the letter of transmission, signed by Mr. Ogburn, executive secretary, and questionnaire, follow:

DEAR SIRS:

The Federal Electric Railways Commission, appointed by the President of the United States to investigate the condition of the electric railway industry of America, asks you to aid it in obtaining the data necessary for compiling a report to the President.

The Commission is conducting this investigation with an appropriation of only $10,000 and the commissioners are serving without compensation, and in order to perform its work it must seek the aid of those who are interested. Already a fine public spirit has actuated many leading citizens of America to come to Washington and testify before the Commission, giving it the benefit of their views. We believe that this same public spirit can be appealed to in order to obtain more detailed information relative to the transportation questions in each community. The Commission is not making a study of any local traction problem *per se*, and of course makes no recommendation relative to any locality; but it does wish to make a study of each electric railway, urban and interurban, in the United States and its relation to the communities served because of the bearing each local situation has on the problem and because a report to the President would not be complete without a study of each local situation.

This is a matter in which every citizen must co-operate if the public is to continue to receive the urban and suburban transportation service to which it is entitled.

May we not ask, therefore, that you supply us with as much information as possible concerning the street railways in your city and vicinity? We have asked a number of questions in order to direct your attention to the lines of inquiry we are making, and we should appreciate very greatly your answering *categorically* each question, and adding to your answers any information dealing with any phase of the subject which you think ought to be brought to the attention of the Commission.

It will be observed that a few of the questions can be answered only by the electric railway company itself.

Will you try to have your answer mailed to us within a week after the receipt of this questionnaire?

(NOTE: The following questions are based upon the assumption that there is one unified transportation system in your city. If there are two or more such systems separate and distinct, will you treat each system separately in your answers?)

I. ORGANIZATION AND CAPITALIZATION

1. What is the name of the electric railway serving your community? If more than one, give names of all, including surface lines, elevated lines and subway lines.

2. Is the system made up of several companies consolidated into one?

3. Will you state briefly
   (a) The development of the street railway system in your community, giving the names of the companies going to make it up, when organized and when electrified (if originally steam or horse cars).
   (b) How any consolidations were effected and by whom and the dates of such consolidations.
   (c) The securities outstanding on the underlying companies.
   (d) The securities outstanding on the holding companies.
   (e) Whether underlying companies were sold to present companies and at what purchase price or whether leased and at what annual rental.
   (f) The original cost of the separate and combined systems.

4. Was the construction work of any of this system done by separate contracting companies? If so, were the owners of the street railway financially interested in such contracting company?

5. In whom does the stock control of the system rest?

6. Has the public utility commission of your state or the municipality ever made an appraisal of the value of the transportation system of your city? Has there been an agreed valuation, as in Cleveland, Seattle, etc.? What was the appraised value of each integral part of the system? What was the total valuation? What relation does that total valuation bear to the total securities outstanding?

7. What is the amount, if any, of watered stock in your system? How can this be shown?

8. At what discount, if any, were the bonds sold? At what discount was the stock sold? What stock, if any, was given as a bonus with the bonds?

9. If a holding company, as lessee, leased the lines which are owned by other companies, what is the basis of the rentals paid? What income on the appraised value of the lines is represented by these rentals?

II. OPERATION

10. Will you give the last annual statement of the total operating expenses, gross revenue, and the net income, showing allowances for depreciation, taxes, interest, dividends and surplus? Will you give same figures for past ten years?

11. What is the total mileage of the system? What is the number of revenue passengers per car-mile? What is the total population served? What is the total area of the city?

12. Does the company sell electric power? If so, what proportion of its income is derived therefrom, and what proportion of its total expenditures is incurred therein?

13. Does the company sell gas? If so, what proportion of its income is derived therefrom, and what proportion of its total expenditures is incurred therein?

14. If the company has a power department, at what rate per kilowatt-hour is power furnished its transportation department?

15. What sums annually have been set aside and expended for past ten years for maintenance, depreciation and obsolescence?

16. Is the service regulated by a state commission or by the municipality? Are there complaints about overcrowding of cars, infrequency of headway, etc., or is the service generally satisfactory?

17. What economies of operation have been installed within the past several years?

III. FARES

18. What is the present rate of fare?

19. Is the fare fixed by franchise?

20. Has the State Commission authority to establish maximum fares?

21. What changes, if any, have occurred in the rate of fare, and when?

22. Has the company sought to increase its fare since the beginning of the European War in 1914?

23. What reasons were given for making the request for an increased fare?

24. Were these reasons accepted by the community as sufficient, or did the community treat them as insufficient?

25. If the fare has been increased, what has been the effect on the traffic?

26. If there has been a fare increase, by what authority was it allowed? (If by the decision of a state commission or of a court, please give exact reference, and if possible an abstract of the decision.)

27. Was the increase in fare based upon a valuation of the property?

28. What effect has an increased fare had upon the operating revenues of the company?

29. What methods must be pursued in your state to effect a change of fare?

30. Has there been a case where either the court or the state public utility commission has upheld it or has set aside a franchise or a legislative enactment under which

the rate of fare was fixed? If so, please give reference or copy of decision.

31. Is a zone fare charged either within the city or on suburban or interurban lines? If so, what is the zone fare and the length of the zones?

32. If there has been a change in the rate of zone fare, please give the present rate and the former rate, the present length of zone and the former length of zone.

33. What is the method of collecting and auditing zone fares?

34. If a zone fare plan has been recently inaugurated, has such a system had any noticeable effect on suburban development?

35. In your opinion, should the car rider pay the same fare regardless of the distance he rides, or should there be a different fare for the man who rides one mile and one who rides ten miles? Please give reasons for your answer.

36. In your opinion, should fares be fixed by franchise for the duration of the franchise or should fares be subject to adjustment to meet changing needs and conditions?

37. Do you favor control and regulation of fares by a state commission or by the municipality itself?

38. Does the company issue universal transfers free? If not, what charge is made for transfers?

39. Does it issue a transfer on a transfer?

40. If there is more than one company, are free transfers issued from the lines of one company to those of another?

IV. Wages

41. What is the rate of wage per hour now paid to the motormen and conductors?

42. What is the average daily wage?

43. What was the hourly rate of wage paid to motormen and conductors in 1914?

44. What is the total annual payroll of the company?

45. What percentage of the fare paid goes to labor? What was it in 1914?

46. Was the present wage scale fixed by the National War Labor Board?

47. What wage is paid for overtime? What is the percentage of overtime worked?

48. Has the increase in wages kept pace with or exceeded the increase in the cost of living? (NOTE: Increase in cost of living is estimated by the Bureau of Labor Statistics, Department of Labor, at about 80 per cent since Jan. 1, 1915.)

49. What is the hourly wage rate paid all machinists, blacksmiths, painters, carpenters, etc., in the company's shops? What is the union scale for this same classification?

50. Are the employees organized into a Local of the Amalgamated Association of Street & Electric Railway Employees of America?

51. Does the company recognize and deal with its organized employees?

52. If the company has a contract with its employees, do both sides live up to the contract?

53. Is there a proper spirit of co-operation between the company and its employees?

V. Taxes

54. Give annual state tax paid by the system for the past ten years. On what basis was the tax estimated?

55. Give the annual taxes paid to the city for the past ten years. Separate into various kinds.

56. What Federal taxes are paid?

57. Please list the other state, county or municipal requirements for

(a) Paving and extent of this requirement—whether between tracks only, or outside of tracks also, and if the latter, state number of feet of paving required,
(b) Bridge assessments or tolls,
(c) Cleaning streets,
(d) Snow and ice removal from surface other than tracks,
(e) Free transportation of public employees.

58. How do the total taxes paid by the company compare with the total taxes paid by other business and by owners of real estate?

59. Is the street railway taxed on the basis on which other interests are taxed?

60. Is the taxation of the street railway based upon income or money invested, or both?

61. What should be the basis, in your opinion, on which the street railway is taxed by the municipality?

62. To what extent should the state tax the street railway?

63. To what extent should a company, not earning anything at all upon the investment, be taxed?

64. To what extent should a company, not earning anything on the investment above interest on bonds, be taxed?

65. Would you favor remitting company's taxes to make up an operating deficit?

VI. Franchises

66. Can you furnish us with a copy of the franchise under which the street railway operates? If not, will you give the substance of such franchise?

67. Where is the power to grant franchises lodged?

68. What are the requirements as to approval of franchise by the people?

(a) When the present grants were made?
(b) At the present time?

69. What is the duration of the present franchise or franchises, and when granted?

70. What are the provisions regarding forfeiture?

71. What are the provisions for renewal?

72. Is the right to purchase reserved by the municipality? At what intervals? At what valuation?

73. What basis of value should be used where the franchise has expired?

74. Is the exclusive right of operation within prescribed territory conferred?

75. Is the company under this franchise protected from competition?

76. Are there any restrictions upon the acquisitions of competing companies?

77. How may routes and lines be changed?

78. If adjacent territory is annexed by the city, is the franchise automatically extended to cover this territory?

79. Can extensions of lines be compelled by the city or State Commission? Is a new franchise required?

80. If the fare is fixed by the franchise, does such fare provision extend to new lines built in territory annexed by the city after franchise was granted?

81. Are there any restrictions in the franchise upon the rate of return on the company's investment?

82. What control, if any, is exercised over issuance of securities?

83. What provisions, if any, are there relative to the sharing of profits with the municipality?

84. Is a franchise tax required?

85. If the rate of fare is not fixed by franchise, how is it fixed?

86. If the franchise provides for what is known as the service-at-cost plan, please give details, what charges are allowed in making up items of cost, the order thereof and a statement as full as possible of the plan of such service-at-cost franchise.

87. How may fares be changed under such service-at-cost plan?

88. Should the contract establish a maximum charge? Should it establish a certain return on investment or value which is not subject to change during life of contract, or should the question be opened at stated periods?

89. Do you favor a service-at-cost plan? Give reasons for your answer.

90. Do you favor a franchise for a term of years, or an indeterminate franchise? If you favor an indeterminate franchise, what general conditions should be incorporated as to rates, regulations, purchase, amendments, etc.?

VII. Economies of Operation

91. Is the "skip-stop" plan is force on any part of the system?

92. What was the average distance on a typical route between stops before the change to the skip-stop plan? What is it now?

93. What per centage of stops has been eliminated?

94. Why was the skip-stop plan inaugurated and when?

95. Is the public content with the skip-stop plan?

96. Has the company abandoned the skip-stop plan after once putting it into effect?

97. What benefits were obtained from the skip-stop plan?

98. What economies in shop operations have been put into effect?

99. Has the company one-man cars in operation? If so, how many?

100. What is the total number of cars operated?

101. What is the average weight of the cars on the system?

102. What is the average weight of the one-man cars?

103. Were the one-man cars converted from the former type or are they of the Birney or other safety type?

104. What benefits have been derived from the operation of one-man cars and has the public been satisfied with their use? Have the trainmen been satisfied with their use?

105. Does the operator of a one-man car receive a higher

wage than the regular motorman and conductor, and if so, how much?

106. What is the consumption of power per car-mile with the Birney car as compared with other types?

107. Have schedules been increased on lines using one-man cars? If so, to what extent?

108. How have earnings been affected by the use of one-man cars?

109. What is the life of the light-one-man car?

110. How have accidents been affected by the use of one-man cars?

111. How are fares collected and audited on one-man cars?

112. Do you favor an extension of the use of one-man cars?

113. What other economies of operation have been put into effect or are being considered? Have damages for accidents been reduced in recent years?

VIII. INTERURBAN LINES

114. If any interurban lines enter your city, will you give the name of such lines, give the schedules they maintain, compare the service rendered by such lines with service rendered by steam lines?

115. Compare the service of such an interurban line with the service rendered by automobiles and auto trucks.

116. Does such an interurban line have to meet automobile competition? If so, to what extent, both in passenger and freight?

117. What is the fare charged on the interurban line?

118. What is the total mileage of the interurban line and the total population served?

119. What size and type of car is used?

120. Are trains with more than one car operated?

121. Are sleeping cars carried?

122. What wages are paid the trainmen?

123. How do these wages compare with the wages paid on steam lines?

124. Are these interurban lines owned or affiliated with any steam lines?

125. Are they used as a feeder for any steam lines?

126. Do they carry baggage, express and freight on city streets?

127. Are any of these interurban lines interstate lines?

IX. GENERAL

128. What is the financial condition of the street railway system in your city?

129. How has this been shown?

130. Is the financial condition of this system such that an impairment of service is threatened? How would such impairment of service affect the social and business life of the community?

131. Is the financial condition such that the owners are receiving no return upon the money actually invested?

132. If, by reason of the financial condition of the street railway system, in your city, the public is threatened with an impairment of service and the owners with a loss of earnings upon the investment, what solution of the problem do you advise?

133. What shrinkage, if any, has there been in the market value of the stocks of the company since the maximum market value was reached? Of the bonds of the company?

134. Is the company in the hands of a receiver?

135. If so, what occasioned the appointment of a receiver?

136. What is the total mileage being operated by the receiver?

137. Has the operation of any lines been abandoned? If so, what mileage?

138. What are the annual capital requirements of the company?

139. Where does the company obtain the funds for these requirements?

140. What interest does the company have to pay for borrowed money
   (a) On bonds?
   (b) On short-term notes?

141. Develop kind and extent of competition, where it exists, and whether it is growing or decreasing. What effect did increase of fare have upon it?

142. Can jitney or other form of conveyance be a real substitute for street car?

143. Is the loss of earnings by the company attributable to automobile or "jitney" competition? If so, are jitneys subject to the same regulation that is imposed upon the street railway companies? If not, to what extent are jitneys regulated and by what authority?

144. Has the system unprofitable lines and extensions?

145. Should such lines be discontinued or the service thereon reduced?

146. Should car riders pay an increased fare on profitable lines to help support unprofitable lines?

147. Do the company and its employees co-operate sufficiently, in your opinion, in the prevention of strikes and disruption of service to the public?

148. Is the attitude of the public toward the company antagonistic? If so, for what reason?

149. Is it due to a belief that the public has been accorded unfair treatment through poor service, overcrowding of cars, etc., or is it due to a belief that the company is earning large amounts of money to which it is not entitled?

150. Has it been due to any participation which the company has taken in the politics of the community?

151. Is it due to a belief that the company has paid dividends on large amounts of watered stock?

152. Is there a trend of sentiment in your community toward municipal ownership?

154. How strong is this sentiment?

155. Do you favor municipal ownership and operation of the transportation system in your city?

156. Give reasons for your answer.

157. If you favor municipal ownership and operation, do you think it should be extended to suburban lines outside the corporate limits?

158. What should be the relationship of the community to the street railway and of the street railway to the community?

159. To what extent should the state regulate the service, operation, extensions, abandonments, rates, accounting and expenditure of municipally or privately owned lines? Give reasons for your answer.

160. To what extent should the Federal Government regulate the service, operation, extension, abandonment, rates, accounting and expenditures of street railway companies? Give reasons for your answer.

161. What do you consider to be an ideal system for the regulation of the companies? Should it be:
   (a) Exclusively by the municipality?
   (b) Exclusively by the State?
   (c) Co-operation between the municipality and the State?

Example: City to control service, operation, extensions, abandonment, rates, accounting and expenditure, subject to an appeal taken by interested parties to the State Commission, either party reserving the right to appeal from the Commission to a court.

Example: City and State to have precisely the same jurisdiction to investigate and determine question upon complaint or upon their own motion, but with the knowledge that an appeal can be taken from such an ordinance of the municipality to the State Commission.

162. To what extent and under what conditions should the State Commission fix the value of the property?

163. Where a street railway company operates between two or more municipalities, should the State Commission have any different power than over a company which operates exclusively within a municipality?

164. To what extent should the municipality control the lines which extend beyond its domain?

165. To what extent should the State control the lines which extend beyond its domain?

166. Is it good policy to have several municipalities and the State Commission exercising jurisdiction over one company?

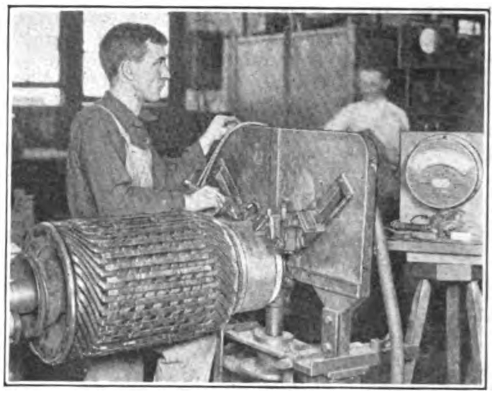
Example: In New Jersey a single company operates in and between 146 municipalities.

167. Do you believe that the cost of securing expert service over question of operation, rates and accounting is so large that small municipalities should be able to secure better and more intelligent regulation by the State Commission?

168. If the street railway company is operating under difficulties in your municipality, please give the cause and suggest the remedy. Go into detail.

In preparing the questionnaire, it was attempted to make it comprehensive of all relevant matter in order whatever angle of the problem seemed to them most important. The Commission hopes to receive the aid of Chambers of Commerce and similar organizations, central labor unions, the mayors and the railways themselves in obtaining answers.

Some Mysterious Car Ailments



Little but Important Troubles That Tend to Keep Equipment Men Interested in Their Work

CONTRIBUTIONS ARE INVITED FROM THE FIELD

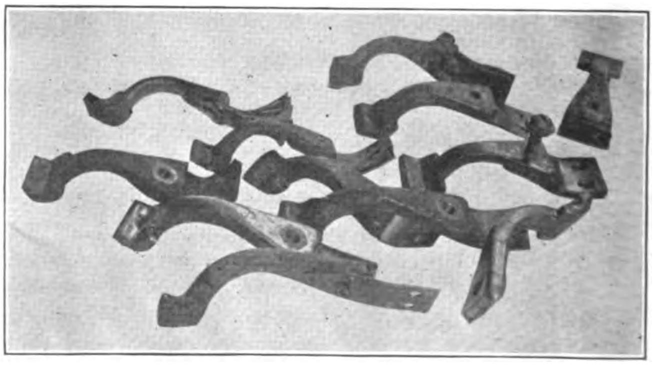
Far-reaching Investigation Results From a Controller That Could Not Be Shut Off

THE motorman of a car was following close behind a loaded truck by throwing his controller handle to the first position and then off again, so as to regulate the speed of the car to that of the moving vehicle. After throwing his controller handle on he suddenly found that it could not be shut off again, and before he had time to knock out the circuit breaker overhead the car collided with the truck and this resulted in serious damage and a general shaking up of the passengers. Investigation as to the cause of the sticking of the controller cylinder showed that one of the contact finger springs was broken. This finger had fallen down and become wedged in such a position as to prevent the cylinder from revolving to its off position.

This occurrence led to an investigation by the railway company's engineers as to the cause of the breaking of controller finger springs. The scrap pile of fingers and springs removed from controllers at each shop was carefully inspected, and a record was made as to the various defects that had caused their removal, and the number of each defect that was found. From this record it was seen that the breaking of finger springs was taking place almost entirely on fingers of one particular make which were not provided with shunts. The springs broke just at the edge of the fingers, and the breaking was evidently due to the use of material of unsuitable quality. A careful examination of the broken springs indicated that they were punched out of sheet phosphor bronze, and the grain of the metal in most cases ran crosswise of the spring; that is, in the same direction as that in which the crack occurred. The shunts on the fingers apparently not only increased the electrical conductivity, but also acted as cushions between the springs and the edges of the finger. Thus the bending of the spring was distributed over a greater surface and cracking was prevented.

Another type of finger which had been removed in large quantities on account of insufficiency of tension of finger springs was a type provided with shunts soldered to the springs. The soldering operation had apparently taken some of the temper out of the springs, due to the necessary heating, so that their resiliency was destroyed, as a certain amount of the phosphorus was lost due to the heating.

Investigation was also made as to the methods used by the shop men in installing fingers. At some shops it was found that in installing new fingers the men sometimes straightened the fingers slightly. This was done by turning the controller drum around so that the finger would bear on its contact, and then striking the finger a sharp blow with a hammer. Inquiry as to reasons why the men considered this necessary elicited the information that they could not line up the fingers properly, as some were longer than others. By straightening the fingers which appeared short, adjustment was provided so that the fingers installed would break contact at the same time as others. Some of the controller men also seemed to think that by straightening the fingers there was less liability of their "stubbing." This, however, was not so, as the stubbing of the fingers depended upon the location of the point of support and not upon the shape of the finger. It was also found that the shopmen sometimes bent the end of the contacts down slightly, so that the fingers would ride up on them more easily. All of these practices had their effect upon the ultimate life of the fingers and springs, as the bending of the fingers sometimes injured the springs and caused a fracture later. Also, where contacts were bent down, the tension of the finger at the point of contact was less, so that arcing was produced and the heat from the arc reduced the tension in the finger springs.



FINGERS AND SPRINGS TAKEN FROM A SCRAP PILE

In order to decrease the number of troubles caused by broken springs, it was decided that in purchasing fingers it should be specified that the springs be made of phosphor bronze drawn to the right width and thickness, and not punched from sheet metal, also, that all fingers should have copper shunts but that these shunts should not be soldered to the spring. It was also recommended as desirable that the manufacturer change his dies so that the edge of the finger bearing against the shunt should be slightly rounded. This change would cause the bending action of the spring to be distributed over a larger surface and so would give a longer life to the spring.

Printed instructions were given to the shopmen regarding the proper method of installing fingers. The men were cautioned that the practice of bending contacts and straightening fingers must be discontinued, as there was not only the liability that the springs might bend or break but also, as the clearance provided for breaking the arc on the heel of the finger was decreased, the arc would follow down to the lower part of the finger and spring, producing burning at that point and frequently taking the temper out of the finger spring.

A Car With a Fondness for Stripped Gearing

ON AN EASTERN railway operating cars in city service, one of the cars was turned into the shop on account of a stripped pinion. All parts were given a general overhauling and several new pinions, gears and axle bearings were installed. The car was again returned to service, but imagine the surprise of all the shop employees to have this car again turned in for having stripped gearing. All hand hole covers were opened and the pinion tried. The bottom gear case covers were also removed and bars were used to try and force the pinions and gears to start, but there was no indication of anything out of the ordinary. The car was then operated up and down the shop track and appeared to be in satisfactory condition. The bottom gear case covers were replaced and the car again returned to service. This time the car scarcely got a block away from the shop before the trouble occurred again. The motorman was asked to describe what had happened and he said there was a terrible noise and grinding and the motors flashed over. The car was again operated up and down on the shop track and everything operated satisfactorily. It appeared strange that the trouble could happen on the line and did not happen at the shop so one of the shopmen took the car out on the line, and on his return reported that the trouble happened twice and from the noise it appeared like a stripped gear. The brushes were found all shattered to pieces. These were replaced and another trip made over the road with men stationed to watch the performance closely. The motors were of the interpole type and it appeared strange that the brushes should break, or that the motor should flash over.

In watching the operation it was noted that the truck nosed somewhat, and immediately after that there was a sound like a stripped gear. The motor "bucked" so that the car was suddenly stopped. The brushes in the brushholder were again broken. It was apparent that the nosing of the truck had caused the trouble. The motor was tried for excessive end play on the axle. This end play was found to be 1½ in., which was excessive. A closer examination showed that this end play had caused the gear to strike the lip on the gear case. The car was again returned to the shop and the parts dismantled. It was found that the thrust collar on the axle had been left in its original position when new axle bearings were installed. This had resulted in the excessive end play, and had caused the trouble. The thrust collar was set in its proper position, repairs were made, the car returned to service, and it continued to operate satisfactorily.

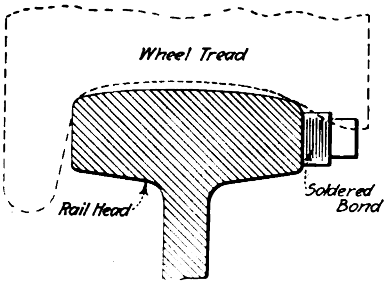
Unusual Cause for Motor Flashing

ONE of the lines of a Western railway company had both city and interurban cars operating over it. Considerable trouble was experienced on the city cars from the flashing over of their motors. As this same type of equipment operated satisfactorily on other lines of the system, it was assumed that there must be some condition peculiar to that line which was causing the trouble. While an investigation was being made as to the cause instructions were given to the motormen to operate these cars with the controllers in series position only. This operation proved unsatisfactory, as the men found they could not make the desired schedule speed.

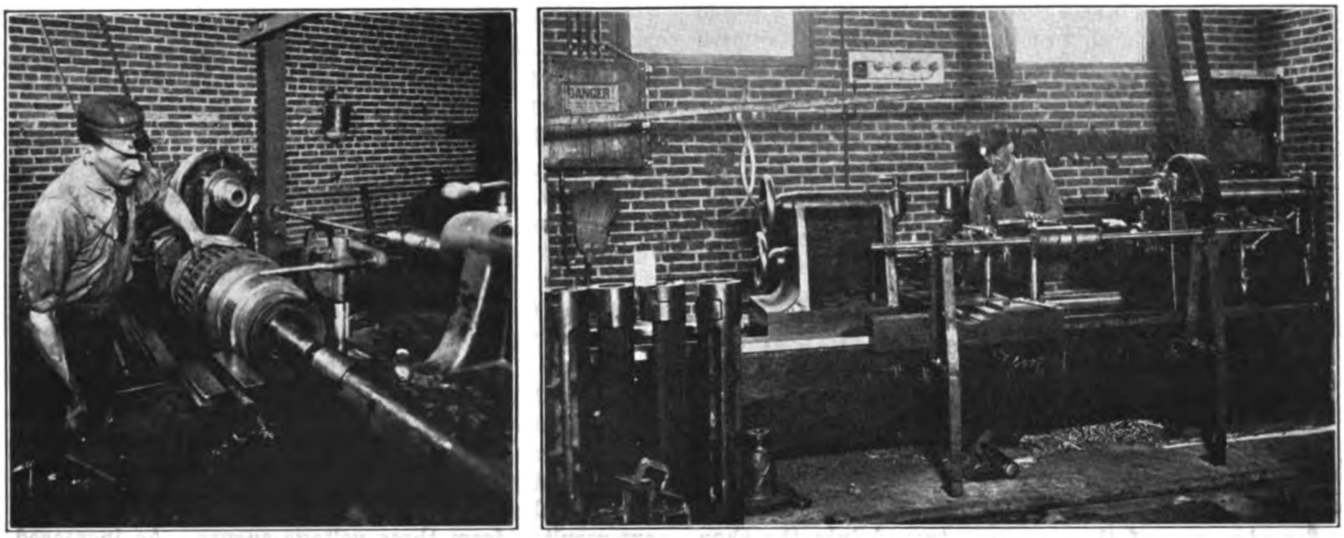
Investigation and tests showed that whenever an interurban car came into the section its large demands for current caused heavy voltage surges on the line, and that the flashing over of the motors on the city cars resulted from these voltage surges. As increased capacity for this section could not be provided at once, it was decided to resort to the temporary expedient of connecting resistance in the trolley circuit of the city cars ahead of the controller. This resistance was made of sufficient capacity so that it would carry the car current continuously without overheating. This remedied the trouble of flashing over of the motors, but of course the operation was somewhat inefficient.

Worn Wheel Causes Bond Trouble

THE operation of a car with a defective wheel recently resulted in an illuminating but sad experience for a prominent railway company which operates a number of city, suburban and interurban lines. The rails of one of the interurban lines were rebonded not long ago with laminated bonds soldered to the rail heads. The line is a double-track one and is laid with 60-lb. T-rails 60 ft. in length. It extends some 25 miles into the country, passing through several small towns. About one-half of the track is of open-type construction, the balance being on paved streets. Shortly after the rebonding was completed, track men noticed that practically all of the bonds on the open track were either lying along the track or had been partially loosened. After some little investigation the cause was discovered as a wheel which was worn grooved, as indicated in the accompanying sketch. A combination of soft wheel tread and defective brakeshoe had caused the tread to wear so rapidly that the damage to the bonding was done before the mechanical department noticed the defective wheel. As the cars were turned at one end of the run but not at the other, the defective tread came into contact with one rail on one trip and the other rail on the next trip, with the result that the bonds on both rails of the 25 miles of open track were knocked off. From the standpoint of way maintenance expense, this wheel broke all existing company records and emphasizes the fact that economical operation is secured only at the price of eternal vigilance.



INTERFERENCE OF WORN WHEEL WITH BOND



AT LEFT, SLOTTING A COMMUTATOR IN A DOUBLE-SPINDLE LATHE; AT RIGHT, REAR VIEW OF THE APPARATUS USED FOR COMMUTATOR SLOTTING

Commutator Slotting Device for Use with Double-Spindle Lathe

THE practice of slotting or grooving commutators of railway motors is now universal. The accompanying illustration shows a device which has been developed by William Mohr, master mechanic, Pennsylvania-New Jersey Railway, Trenton, N. J., for slotting the commutators of motors used by this system. As shown, it is arranged for application to a McCabe double spindle lathe.

The slotting saw is mounted on the end of a spindle which has a long bearing in a fixture mounted on an upright steel post. The base of this post is mounted on the carriage of the lathe so that the slotting saw will be moved backward and forward as the carriage is operated. A vertical adjustment is provided, so that commutators of different diameters can be slotted. This adjustment is effected by moving the upper casting up or down on the post and clamping with a set screw at the desired location.

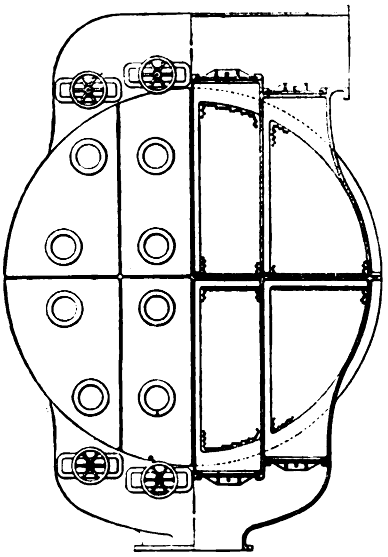
On the opposite end of the saw spindle is a pulley for driving it. This pulley is connected by a belt, which passes around an intermediate, idler pulley, with the main driving pulley located at the back of the lathe. The intermediate pulley is also mounted on an upright post fastened to the carriage of the lathe and is provided with a vertical adjustment similar to that used for the slotting spindle.

The driving pulley is made of sufficient length so that as the carriage is moved backward and forward to slot the commutator of the motor, the belt can slide along it without danger of coming off. This driving pulley is mounted on a spindle with two bracket supports at the back of the lathe. The end of the spindle is provided with a pulley for attaching a belt, the other end of which passes around the cone pulley on the lathe, so that the entire mechanism is driven through the lathe pulley. The entire apparatus can be assembled and taken apart in very few minutes, so that the lathe may be cleared for other purposes when it is not in use for commutator slotting.

Such an arrangement is of great convenience in a small shop when commutator slotting is carried out only at infrequent intervals and where lathes are used for many operations.

A New Type of Steam Condenser Construction

THE "compartment condenser" is a new type of condenser developed by the Wheeler Condenser & Engineering Company for the purpose of permitting one section to be cleaned without putting the entire apparatus out of commission. As shown in the accompanying illustration, the water space in the shell is divided into four compartments, each of which is equipped with a set of valves which control the circulating water. The condenser may be cleaned while the turbine, to which it is connected, is delivering full power, the operation consisting in shutting off the water from one compartment, removing the cover, cleaning the tubes and restoring the compartment to its original condition. During this operation the steam space, of course, remains full of steam, the only difference being that the bank of tubes which is being cleaned is not water cooled. While none of the new condensers is as yet in actual operation, a number are on order and will be installed soon. The improvement should encourage frequent cleaning without interruption to service.



SURFACE CONDENSER ARRANGED IN COMPARTMENTS TO PERMIT CLEANING WHILE IN OPERATION

Blue Lights and Their Significance in the New York Subways

Emergency Precautions That Have Been Taken to Provide for the Cutting Off of Power, the Turning in of Alarms and the Automatic Changing Over to an Emergency Source of Power for Lighting Are Described

BY EDWARD A. PORR.
Assistant Electrical Engineer New York Public Service Commission First District

As a RESULT of the subway accident which occurred Jan. 6, 1915, when a cable blow-out produced smoke and fire which resulted in the tying up of the subway system in New York City and the injuring of a number of passengers, a great number of safety precautions have been put into effect in the newly arranged systems. These are designed to afford the maximum amount of safety for passengers, combined with the greatest assurance of continuity of operation.

During maximum load hours the headway is from one minute to one and one-half minutes between ten-car trains, which are usually jammed to the doors with passengers. In case of an accident or a protracted delay between stations it has been found almost impossible to prevent passengers from leaving the trains and making their way along the tracks to the nearest station. In order to safeguard passengers when they are walking on the tracks in such a case, provision has been made for turning off the power at numerous points along the line. Blue lights, which indicate the location of these emergency stations, have been installed on the same circuit as the tunnel lighting, which is independent of the third-rail power circuit. A special alternating-current feeder has been installed for tunnel and station lighting with provision, by means of an automatic changeover switch, to connect this circuit to the third rail in case the alternating-current feeder breaks down. The blue lights are so arranged and located that at least one is always visible from any point in the tunnel. The heads of all train crews are instructed that in case of an accident or fire they are immediately to get off their trains and look for one of these blue lights. They are then to proceed to this location, where they will find a small red box which is called the "Emergency Alarm Pull Box." By the opening of this box and the releasing of a lever, cur-

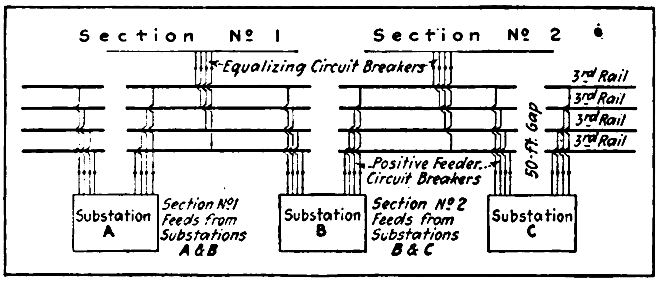
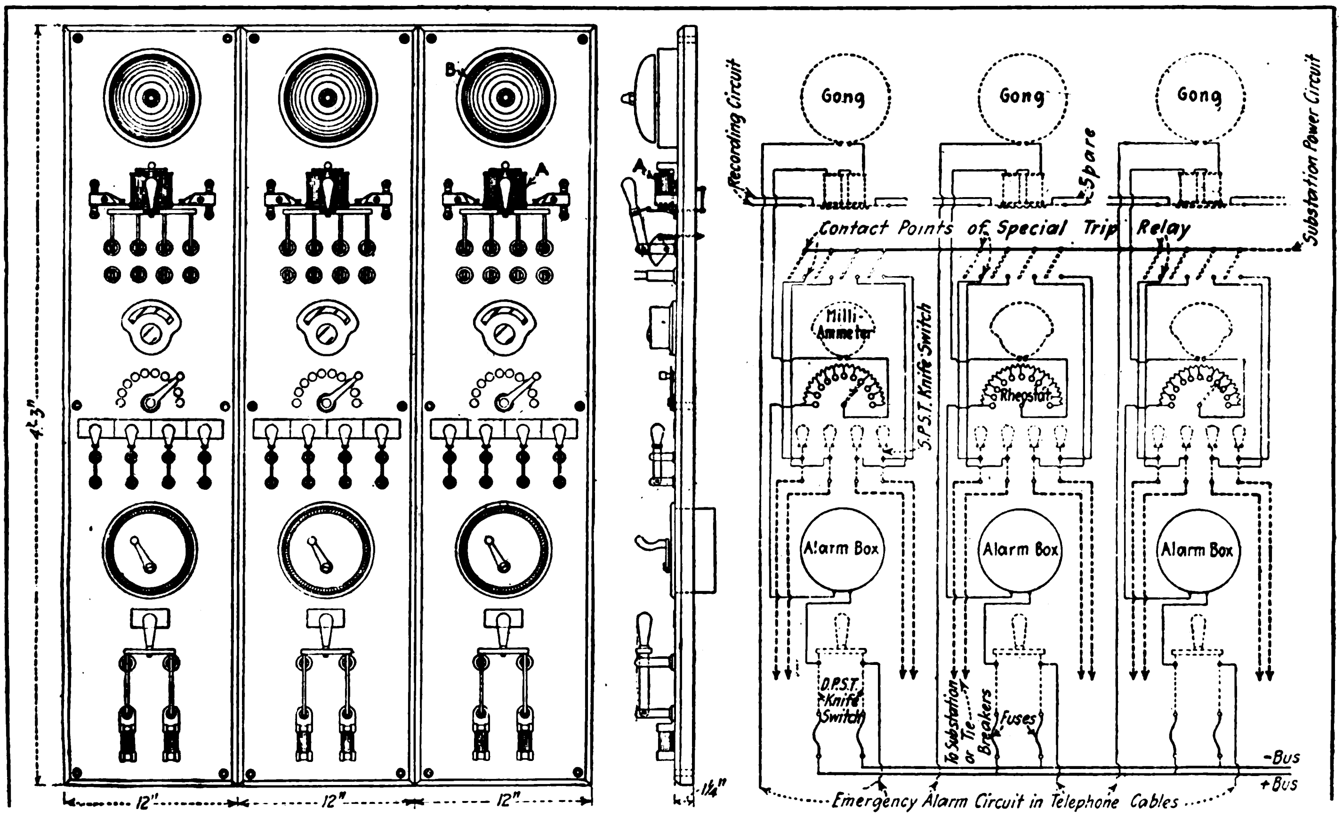
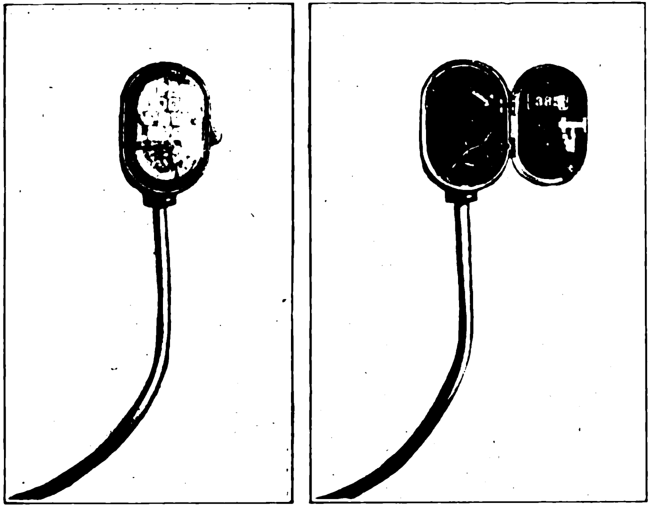

Section No 1
Section No 2
Equalizing Circuit Breakers
3rd Rail
3rd Rail
3rd Rail
3rd Rail
50-ft. Gap
Positive Feeder Circuit Breakers
Substation A
Section No 1 Feeds from Substations A & B
Substation B
Section No 2 Feeds from Substations B & C
Substation C

DIAGRAM OF THE SECTIONALIZING OF THE THIRD-RAIL SYSTEM


B
A
4'3"
12"
12"
12"
1¼"
Gong
Gong
Gong
Recording Circuit
Spare
Substation Power Circuit
Contact Points of Special Trip Relay
Milli-Ammeter
S.P.S.T. Knife Switch
Rheostat
Alarm Box
Alarm Box
Alarm Box
D.P.S.T. Knife Switch
To Substation or Tie Breakers
Fuses
-Bus
+Bus
Emergency Alarm Circuit in Telephone Cables

EMERGENCY ALARM PANELS LOCATED IN SUBSTATIONS

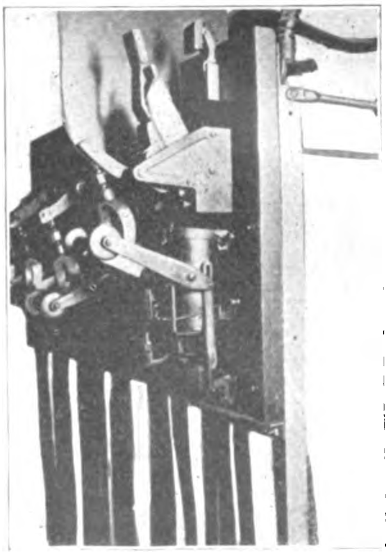


EMERGENCY ALARM PULL BOX

rent is automatically shut off from the third rail and other emergency precautions are provided for automatically. The shutting-off of power in the section where the alarm is turned in immediately stops all train movements in this section and eliminates any danger from moving trains and live rails, thus making it perfectly safe for the passengers to enter upon the tracks and proceed to the nearest exit or end of a passenger station.

TURNING IN AN EMERGENCY ALARM

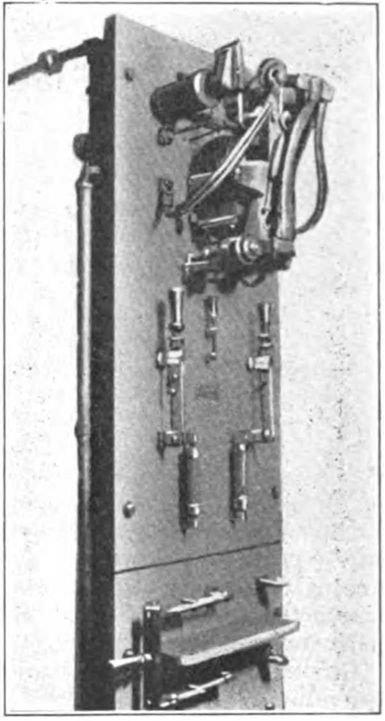
By releasing the handle in the emergency alarm pull box a mechanism rotates a slotted disk. At the first break or slot in this disk the controlling current is interrupted, which opens the circuit breakers feeding this section and all equalizer circuit breakers. All of the emergency boxes in a particular section are connected on a closed circuit so that any one box can be operated to break the circuit for that section. An accompanying illustration shows the type of emergency alarm panel which is installed in the various substations. When the circuit is broken by the rotating disk in the emergency alarm pull box the coil "A" on the emergency alarm panel is de-energized. This releases the four-point switch shown immediately underneath the coil, which is held closed under spring tension. The closing of this four-point switch automatically closes the tripping circuit for every circuit breaker feeding this section.



EQUALIZING CIRCUIT BREAKERS OF FEEDER CIRCUIT BREAKERS

The disk in the alarm box continues to rotate until a complete revolution has been made. In addition to the de-energizing of the coils upon the emergency alarm panel, the first breaking of the alarm circuit sets a mechanism in operation which produces strokes on a large gong. This gong is indicated at "B" on the emergency alarm panel. The gong rings as many times as there are notches in the emergency alarm disk. This enables the substation operator to determine the exact location of the box in the subway, substation operator as each box is provided with a different arrangement of notches on the disk.

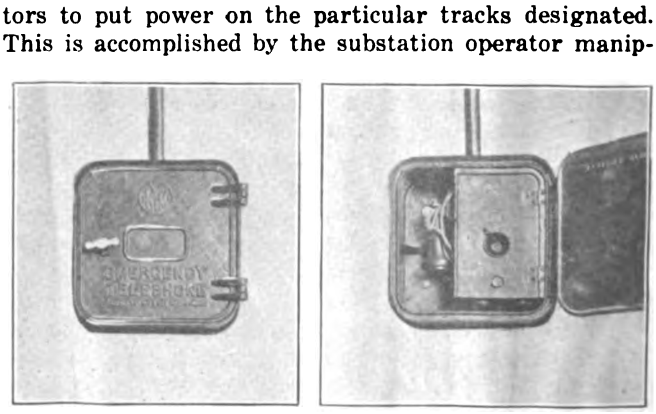
In addition to the emergency-alarm panels installed in the various substations, there is a special recording type of emergency alarm panel installed in the chief dispatcher's office, so that the chief dispatcher as well as the substation operators know at once that trouble has occurred and the location of the trouble.



AUTOMATIC CHANGE-OVER SWITCH

An emergency telephone set is also located alongside the emergency-alarm pull box and the head of the train crew is instructed immediately to report the trouble to the proper authority as soon as an alarm has been turned in. Passengers can then proceed along the tracks with safety and can obtain exit to the street at various emergency exits. These are indicated by banks of five lights. The lights of each group are arranged on different circuits so that some of them are sure to be burning, even though another circuit due to some defect, should be open. The emergency exit doors are counter-balanced so that they operate easily from the inside of the subway but they cannot be operated by unauthorized persons from the outside.

The pulling of an emergency-alarm pull box kills the third rails on all tracks in that section, so that service is interrupted in both directions. Current is turned on again only when the maintainer of the particular section personally reports on the emergency telephone located at the alarm box which has been pulled, that either all or some of the tracks are cleared and that operation can be resumed. Upon the receipt of such a report, instructions are given to the substation operators to put power on the particular tracks designated. This is accomplished by the substation operator manip-



EMERGENCY TELEPHONE SET

ulating a small switch on the emergency alarm panel which energizes the closing coil of each circuit breaker individually. These circuit breakers are located in a special compartment in the subway.

EACH SECTION IS FED FROM TWO SUBSTATIONS

An accompanying diagram shows the method of sectionalizing the various third-rail divisions and the location of the substation and circuit breakers. From this it will be seen that the third-rail distribution sections are arranged so as to be fed from two substations, and each substation feeds two sections so that if one substation should fail another source of power is provided. These sections vary in length from one to two miles. The third rails are also arranged with a gap of 50 ft. at each section break. This is done to prevent a single car from bridging a live section to a dead section, as might happen if the two shoes on the opposite ends of a car were to be in contact at the same time. It is the usual practice to install equalizing circuit breakers along the route of a section so as to equalize the load. The breakers connect the third rail to a common bus, and they are operated in conjunction with the emergency alarm like the feeder breakers. There are no parallel positive feeders used, as the electrical conductivity of the third rail is made great enough and the section short enough so that the drop in voltage is negligible.

Welding Wrought Iron and Steel

Some Practical Instructions as to Procedure Which Experience Has Shown to Be Necessary for the Best Results

By H. L. UNLAND
Power and Mining Engineering Department,
General Electric Company

IN ADDITION to the generating and welding equipment necessary for electric welding it is often desirable to have on hand some miscellaneous pieces of equipment. For example, odd pieces of carbon, or copper blocks, make excellent dams for holding the molten metal in place, and in making a weld which must be smooth on one side, a piece of copper or carbon held against it will give the desired result. Iron or steel can be used for this purpose if care is taken not to weld to it. In filling in a hole the bottom may be closed with a plate of carbon or copper until sufficient metal has been added to hold. In using such pieces, care must be taken not to allow the arc to play directly on them, otherwise the weld will probably be contaminated with the material, or else the guide piece may be welded in solidly so that it cannot be removed. For cleaning the parts to be welded a steel wire scratch brush is valuable.

In making contact with the piece to be welded, if the lead is bolted to an iron plate which forms the top of a work bench the work may be welded by simply laying it on this top, the contact being sufficient to carry the current. Where the work is too large for the table it may be set beside it, and a bar laid across will provide sufficient current-carrying capacity. In some cases a vise mounted on the table will be found desirable for holding the work.

A convenient terminal for the positive lead consists of a copper hook with the cable bolted to it. This may be laid on the work or hooked on a projecting part. Where welding is to be done in a room where there are other employees screens should be provided around the welding operator. These should be high enough to prevent light from striking the ceiling, as the flickering light from welding might prove objectionable. A receptacle containing water is desirable for cooling the electrode holders. Also gas burners for preheating and fire brick, sand or sheet asbestos for covering are useful, especially for cast-iron work, which in many cases should be preheated uniformly to a red heat, and welded while at this temperature. Some operators feel that gloves are necessary, others find gloves to be in the way. The arms, neck and face, however, should be covered, since exposure of these parts will probably result in burns similar to sunburn.

FLUX CONSIDERED UNNECESSARY

Many experienced welders consider that flux is unnecessary. If the work is kept clean by brushing at frequent intervals, and ordinary care is taken in the operation, an experienced welder can make a good weld without flux. Clean metal is the most likely to make a good, strong weld. Any foreign matter will contaminate and weaken it, or else make it hard. Impurities may also make the metal porous and spongy, due to liberation of gas. Pieces of foreign material may prevent the molten metal from filling all parts of the weld and cause cavities.

Methods of cleaning consist of pickling, washing with gasoline or lye, boiling with lye, sand blasting, chiseling, scratch brushing, etc. In welding heavy sections where it is necessary to deposit several layers of metal the surface of the preceding layer should always be clean before the next one is started. Each section should have its edges beveled to give a total angle of approximately 60 deg. and should be separated by ⅛ in. space. Sections less than ⅛ in. thick need not be beveled, but should be separated slightly. In some special cases angles as low as 30 deg., and as high as 90 deg. may be used, but the average safe angle is 60 deg. In welding extremely heavy sections it may be necessary to have these beveled on both sides. In making such welds the layers should be applied first to one side and then the other to prevent warping. In welding long seams the edges should be ⅛ in. apart at the end where the weld is started, and the distance should be increased 1½ per cent of the length at the extreme end. This takes care of the expansion and contraction of the metal.

In welding cracks in plates, forgings or castings the cracks should be chiseled out to get a good bevel, with ⅛ in. to 3/16 in. clear opening on the back or to the bottom of the crack.

WELDING WITH METALLIC ELECTRODES

To make a satisfactory weld using the metallic electrode, the arc should be kept short, not over ⅛ in. in length. The current should not be great, as excessive current causes burnt or porous metal. The arc should also be kept constant in length to insure uniformity in the metal deposited. In welding a seam the electrode should be moved in a zigzag or circular path, advancing along the seam. The metal will adhere only to the surface of the work actually played on by the arc, so care must be taken to bring the arc in contact with the whole surface to be welded. The electrode should be connected to the negative terminal. If the polarity is reversed, the arc will be more difficult to maintain and the deposited metal will not be as good as otherwise.

The operation of welding overhead is the same as in normal welding, but difficulty may be experienced in holding the electrode steady, especially if the position is cramped. The appearance of an overhead weld is sometimes marred by drops of metal projecting or by uneven thicknesses of deposited metal. This can be overcome by proper manipulation of the electrodes. A rest for the arm will sometimes assits the operator in holding the electrode steady.

USING CARBON ELECTRODES

With the carbon electrode, the holder should grip the electrode from 4 in. to 5 in. from the end. Ordinarily the electrode should be tapered to a blunt point at the working end to keep the arc from wandering. As the electrode burns away with use the holder should be moved back to keep the length of the working carbon constant. The arc should not be too short when welding or depositing metal, as there is danger of depositing carbon in the weld which results in a hard weld. In cutting or melting off metal the arc should be kept short, about ½ in. being an average length. For cutting, the arc is operated like a gas torch, being held in one position long enough to fuse the metal and allow it to run off. In cutting thin plates the arc is held in one spot until a hole is melted through the metal, then the electrode is slowly advanced along the desired line. For thick pieces such as shafts, castings, etc., it is desirable to start at the top on one edge and work down, allowing the molten metal to run down through the cut. It is often necessary to follow the molten metal down with the arc, to keep it melted until it runs off. The width of the cut will depend on the size of the electrode used and the skill of the operator in keeping a straight line.

To deposit metal with the carbon electrode the arc is not held in one place long enough to melt through. A pool of molten metal is established and a rod of metal is fed into the arc and melted down on to the work. All should be heated thoroughly to insure a complete union before more metal is added. Since heavier current can be used with the carbon electrode than with the metallic, faster work can be done in depositing metal. Due to the high temperature and large amounts of heat liberated when using the carbon electrode, the electrode holder is apt to become very hot, and under some conditions to melt away at the end.

CAST-IRON WELDING

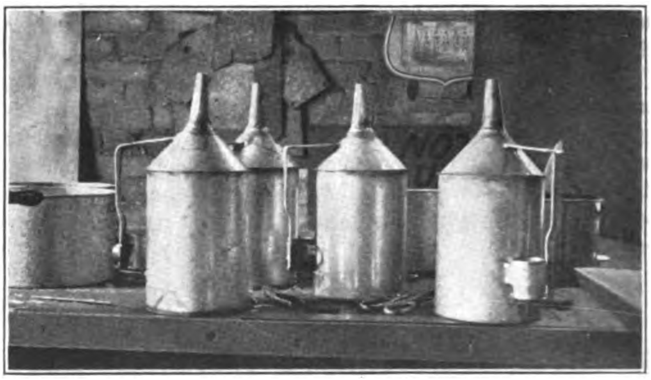
Cast iron, due to its properties is unsatisfactory for welding by any method. Its low strength and considerable brittleness cause it to break from expansion and contraction strains unless precautions are taken, and even then a successful weld cannot be assured. Pieces of simple cross section and heavy pieces present much less difficulty than complicated shapes, but due to the undependable nature of cast iron, care should be use with these. The experience and skill of the operator are large factors in producing a successful weld. By experimenting a number of operators have learned to weld copper to copper, copper to brass, and steel and bronze to bronze, as well as Monel metal, high-speed steel and Stellite. The special uses are rather limited in their application and the methods vary, so it is recommended that each operator experiment along the lines suggested by his experience and with which he is most familiar.

Saving Oil in the Shop

Oil Purchased on a Car Mileage Basis Necessitates More Care in Handling—Covered Cans Prevent Collection of Dust and Dirt

THE former method of handling oil for journal boxes and motor armaturê bearings at the Anderson shops of the Union Traction Company of Indiana was to take the oil from the storage house in open buckets and dip it out with small mesures. Oil is purchased on a car mileage guarantee contract and it was believed that this method of handling the oil was permitting a needless waste and allowing the oil to collect dust and dirt which, of course, was a decided obstacle in the way of efficient lubrication.

Two-gallon oil cans such as shown in the accompanying illustration are now being made from galvanized iron in the company's tin shop. An additional strip of metal near the base of the handle on the can forms a receptacle for the measuring cup, which has to be lifted up before it can be removed. The can is filled through the nozzle by means of a funnel and the oil is poured out again for use into the small measuring cup. These cans are being made up for all the shops of the company, and it is believed that a noticeable quantity of oil will be saved through their use and that the oil will be kept much cleaner.



CANS DESIGNED TO SAVE OIL AND KEEP IT CLEAN BEFORE USE

Massachusetts Tech Endowment

The Massachusetts Institute of Technology is launching a $10,000,000 campaign for an endowment fund, to cope with the high cost of living. "Mr. Smith," a friend of the Institute who prefers to remain unknown, has already given $7,000,000 to the school and now comes forward with a promise of $4,000,000 provided another $4,000,000 is raised for this endowment. "Mr. Smith" is not a Tech man, but is a firm believer in the Tech type of education and its vital importance for American industry. The sum of $8,000,000 is required to meet the pressing needs of the Institute.

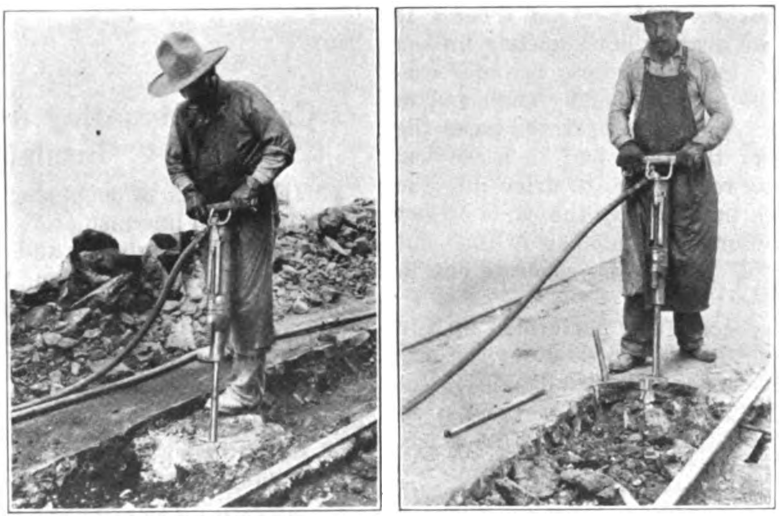
The endowment fund committee is headed by Coleman du Pont, and the other members are Theodore N. Vail, Charles A. Stone, Otto H. Kahn, and Charles Hayden of New York, Everett Morss of Boston, Edmund Hayes of Buffalo, and Richard C. Maclaurin, president of the Institute.

It is hoped that subscriptions will be received not only from Tech men but from those who have profited from the services of the Institute's graduates.

Pneumatic Tools for Breaking Up Pavement

By Using Special Points a Tie-Tamping Machine May Be Used for Cutting Asphalt, Toothing Out Paving Blocks and Breaking Up Pavement

By WALTER P. BURN, M. E.
Ingersoll-Rand Company



BREAKING OUT ASPHALT AND CONCRETE PAVING WITH TIE-TAMPER

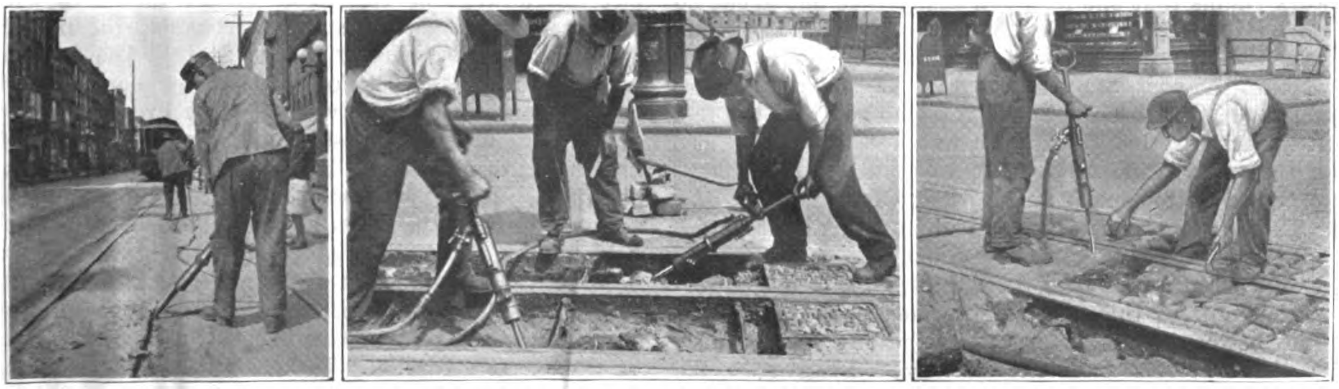
BREAKING up the pavement overlay in order to uncover the track in city streets for the purpose of making repairs or renewals has always been a very tedious job. The common method of removing pavement by hand is by using a "bull-point" on concrete or paving blocks and a chisel on asphalt or other bitulithic pavement.

Numerous devices have been invented for the purpose of removing pavement, and the one described herewith is the pneumatic tool, the principal of which is the tie-tamping machine. This machine is in effect a small hammer drill and when fitted with the proper point is very efficient in removing pavement. For removing asphalt or similar pavement the machine is fitted with a special chisel held at an angle of about 60 deg. to the horizontal by the operator. It cuts the pavement into squares which can then be removed with a shovel. The operator will soon find out the correct angle at which to hold the machine and this is practically the whole secret of successful cutting. He should be cautioned not to bear hard upon the two handles, merely using them to guide the tamper along the line which it is desired to cut. Bearing down will drive the chisel into the underlay and cause wedging.

Paving blocks are very quickly removed by the use of the tamper fitted with a "bull-point." In this operation the workman places the "bull-point" in the joint between the blocks, opens the throttle and as the machine drills into the bond, bears back easily, wedging the block out. The rapid vibration of the hammer is sufficient to loosen up all the mortar between the blocks so that they come out easily.

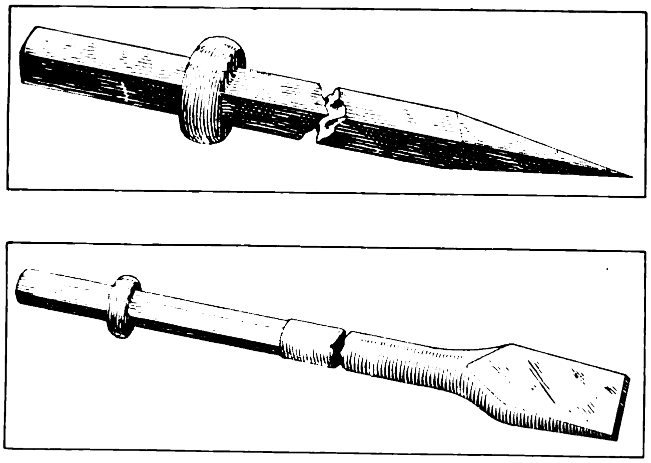
The foregoing does not apply to the removal of brick pavement. In this case when ordinary mortar has been used for the bonding, the tie tamper may be successfully applied and should be fitted with a small flat chisel instead of a "bull-point" and used in exactly the same manner as when removing pavement blocks. Too much must not be expected of the machine, however, and it will not remove in the most satisfactory manner bricks which have been bonded in cement mixture, as this is practically solid pavement and must be broken up in much the same manner as concrete. Some of the bricks may be saved, however, by breaking them out in groups. The bricks around the edge of the group will be partly destroyed, but those in the center may be broken out with a hammer.

Concrete has proved to be an ideal means of protecting the tie rods, fuse boxes, etc., and for keeping the track from spreading or warping so that its use would undoubtedly be more general if it were not for the fact that it has been very difficult to remove when it was desired to make repairs or renewals. The tie tamper provides a means for removing concrete from tracks in a most efficient and rapid manner. In this process



CUTTING ASPHALT PAVEMENT AND REMOVING PAVING BLOCKS ALONG THE LINES OF THE THIRD AVENUE RAILWAY, NEW YORK the machine is fitted with a "bull-point." Two men are usually employed, one to operate the tamper and one to shovel out the broken concrete. They can alternate their work in order to prevent undue fatigue. The tie tamper operator when starting a break, holds the tool in a vertical position but without bearing on it and opens the throttle, gradually easing off the tool to an angle. This results in the formation of a hole whose diameter is roughly three times that of the tamper, the concrete being broken up into small pieces, which are then raked out by the assistant with any sort of a small bent bar or scoop. This process is repeated until the concrete overlay is completely broken through. From this time on the process becomes easier and more rapid as the method usually employed in breaking down a face is used. The operator holds the tool 3-in. to 4-in. back of the face, and in a vertical position, easing off as the tool begins to drive into the concrete. This results in breaking up the concrete not only by means of the vibratory hammer action, but by a wedging action which breaks the concrete out in fairly large chunks.

This operation can be successfully performed by any class of labor which would be able to take out the material by hand, and yet some difficulty has been experienced. Probably the main source of trouble in this respect has been a tendency to try to do too much.



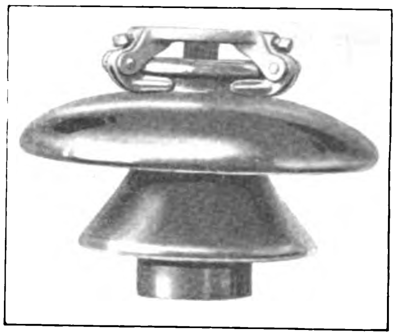
BULL POINT AND CHISEL FOR USE WITH TIE TAMPER

The Third Avenue Railway in New York City and the Chicago Surface Lines have used the tie tamper very successfully in breaking out concrete both outside the rails and inside around the tie rods and fuse boxes, using the "bull-point" as described in the foregoing. The New York Company's foreman in charge of this work claims that one man can easily take out about 20 cu.ft. of concrete per day by this method. The same process has also been used on a number of street railways in the past two years, and in the few cases where success has not been obtained it is the belief of the tool manufacturer that the failure was due first to the use of the wrong kind of point and second to the attempt to try to do too much and work too fast.

The tie tamper used as a tool in breaking concrete has its limits. No attempt should be made to use it on concrete more than 8 in. thick, as it is not powerful enough for this work. For concrete 8 in. or more thick better results by far will be obtained from the use of the tool known as the drift-bolt driver. On the Western coast, the drift-bolt driver is being used to take out "asphalt concrete" consisting of asphalt, sand and broken stone. The material is broken out easily, sometimes as much as 2 ft. at one cutting. When the asphalt concrete is soft as in warm weather, or in the heat of the day, cutting is more difficult, so that best results are obtainable in the early morning and late afternoon. In ordinary concrete, the drift-bolt driver will cut out material faster than the tie tamper. However, the principal advantage in using the latter, is its adaptability to other work. The tie tamper will tamp ballast, cut asphalt paving, and tooth out paving blocks, work for which the drift-bolt driver is too heavy.

Cap for Mounting Apparatus on Line Insulators

THE problem of mounting hardware and other apparatus on line insulators has occupied the attention of transmission engineers and designers of outdoor high-tension switchgear for a number of years. Many solutions have been tried, and one of the latest is a cap for mounting on a high-voltage insulator just placed on the market by Hickey & Schneider, Inc., Elizabeth, N. J. The cap consists of a top disk from which extend three pairs of ears, between which three clamp legs are pivotally mounted. The lower part of each leg is shaped into two fingers, which grip around the insulator head in the tie-wire groove. To prevent fracture of the porcelain, fiber or copper cushions are used between the metal of the cap and the porcelain. Each clamp leg may be adjusted separately so as to provide an accurate grip on slightly oval or irregular shaped insulators. The upper part of the clamp fingers is threaded and a set screw is used to bring the fingers into contact with the insulator head. The insulator caps are made to fit all standard types of insulators.



INSULATOR CAP MOUNTED ON A 35,000-VOLT LINE INSULATOR

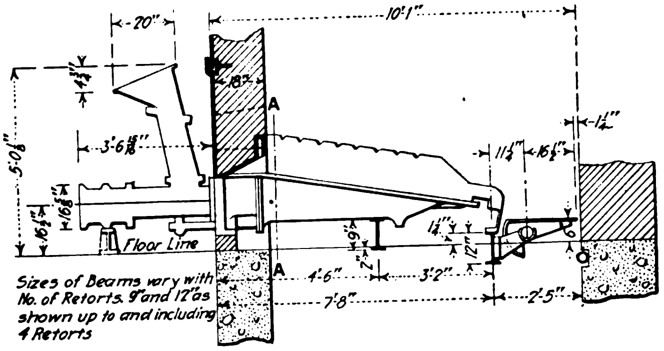
New York Executives Meet at Syracuse

As this issue goes to press, Sept. 18, officials of the electric railways of New York State were in session at Hotel Onondaga, Syracuse, to consider the present condition of the industry in the State. The meeting was held under the auspices of the New York Electric Railway Association, and was called by President E. A. Maher, Jr., at the request of the committee on ways and means to produce additional revenue, J. K. Choate, chairman. It will be remembered that the committee reported to the association at the Lake George meeting held on June 7 to the effect that the governor had been petitioned to appoint a committee to make a study of the traction situation, but that the governor had stated that such a committee is constituted by the Public Service Commission. The committee then appealed for the relief for the railways to the Commission.

Automatic Cleaning Feature for Underfeed Stoker

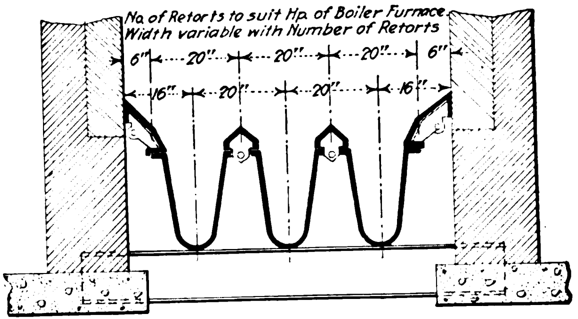
A NEW form of stoker, known as the automatic cleaning type, has been placed on the market by the Underfeed Stoker Company of America and already stokers are under construction for the equipment of 50,000 hp. of boilers. The feature of the new stokers which gives it its name is the dump plate at the rear, as shown in one of the accompanying illustrations.

Fundamentally the stoker is the same as the Jones stoker which has been marketed by this company for twenty-five years, but in the new form several improvements have been incorporated. In the older stoker the coal piled up on dead plates on either side of the retorts and was there permitted to form a clinker. At periodic intervals it was removed through front door openings. With some coals this proved to be a difficult proposition as very heavy clinkers were formed and, of course, during the cleaning period the efficiency was reduced if much time was consumed.



20"
10'1"
4¾"
5'0⅛"
18"
A
3'6 15/16"
1¼"
11¼"
16½"
16⅝"
16½"
Floor Line
9"
12"
1¼"
6
2"
A
4'6"
3'2"
7'8"
2'5"
Sizes of Beams vary with No. of Retorts. 9" and 12" as shown up to and including 4 Retorts

UNDERFEED STOKER WITH AUTOMATIC CLEANING FEATURE, SHOWING DUMP PLATE



No. of Retorts to suit Hp. of Boiler Furnace
Width variable with Number of Retorts
6"
20"
20"
20"
6"
16"
20"
20"
16"

Section A-A

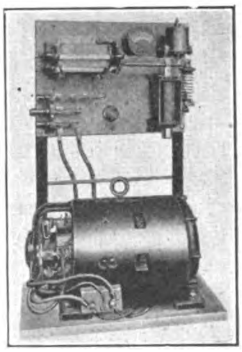
DIAGRAMMATIC CROSS SECTION OF FURNACE

In the new stoker the tuyeres slope at about 11 deg. and there is a progressive backward movement of the entire fuel bed toward the dump plate at the rear. By the time the dump plate is reached the combustible in the coal has been quite well consumed, and only dead ash is deposited on the dump plate. The dump plate is balanced and is easily operated by hand, the weight of the clinker itself tending to assist in the operation.

The novel features in the design of this stoker are said to be these: (1) The very small inclination of the tuyeres which prevents "avalanching," and clinker formation on the bridge wall. (2) Special design of side tuyeres, which are air cooled, to prevent clinker formation on the side wall. (3) Protection of the front wall by front wind boxes. (4) Accessibility of the stoker throughout the entire front through openings provided in the front wall over each row of tuyeres. (5) Regulation of the coal supply by the Cole automatic valve, which the company has used for years. By means of this valve the amount of coal supplied to the furnace is always in direct proportion to the air supplied by the fan. (6) Large coal capacity of retorts, which are very deep, permitting heavy reserve capacity and slow distillation of the gases.

New Arc Welding Set Developed

A NEW plastic-arc welding unit has just been brought out by the Wilson Welder & Metals Company, New York City. It is composed of a dynamotor and current control panel. The generator is flat-compound wound, and maintains the normal voltage of 35 on either no load or full load. The control panel has been designed to provide a constant-current controlling panel, small in size, light in weight, simple in operation and high in efficiency. The panel is of slate 20 in. x 27 in. and on it are mounted a small carbon pile, a compression spring, and a solenoid working in opposition to the spring. The solenoid is in series with the arc so that any variation in current will cause the solenoid to vary the pressure on the carbon pile, thereby keeping the current constant, at the value it is adjusted for.



DYNAMOTOR AND CONTROL PANEL

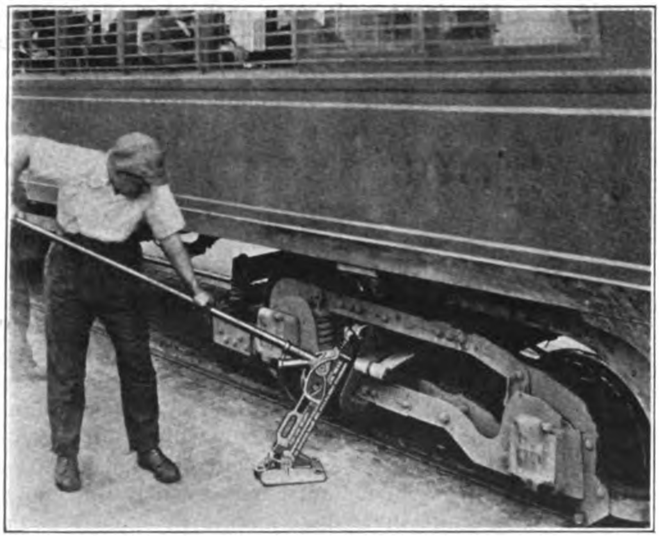
Three switches on the panel provide a means of current adjustment, between 25 and 175 amp. The arrangement of the welding circuit is such that 25 amp. always flow through the solenoid, when the main switch is closed, whether the welding current is at the minimum of 25 amp. or the maximum of 175 amp. The balance of the welding current is taken care of in bypass resistances shunted around the solenoid.

This outfit can be furnished as a dynamotor unit, with standard motor characteristics as follows, 110 volts, 220 volts, direct-current, or 220-440 volts, 60 cycle, two or three-phase alternating current, also as a gasoline-driven unit, or it can be furnished without a motor, to be belt-driven. The normal generator speed is 1800 r.p.m. The net weight of this new outfit in standard characteristics is 800 lb. with d.c. motor, 807 lb. with a.c. motor, 1200 lb. with gasoline engine, and 550 lb. as a belted outfit without motor. These new dynamotor sets can be mounted on a truck for portability, if desired.

Amalgamated Association Continues in Session

THE meetings of the Amalgamated Association of Street & Electric Railway Employees in Chicago, began Sept. 8, continued all of that week, and carried over into the present week. The sessions on the final three days of last week were devoted principally to the discussion of resolutions presented before the body.

On Thursday afternoon the association listened to an address by Mrs. Tom Mooney of San Francisco and on Saturday morning to one by Secretary Morrison of the American Federation of Labor. Mr. Morrison spoke in place of President Gompers who was unable to attend.



EMERGENCY USE OF A JACK ON A TRUCK

New Jacks for Handling Railway Equipment

THE accompanying illustrations show three new types of jacks which have been developed by the Joyce Cridland Company, Dayton, Ohio, with special reference to their use by electric railways. The No. 89 jack is single-acting and operates on the downward stroke of the lever. This is a combination of a jack with a detachable ground lift which may be used in emergency cases where a chain cannot be used. The jack pivots on its base from a vertical position to within 20 deg. of the horizontal and lifts, lowers or pulls at any angle. The base is ribbed to prevent slipping when the jack is operated at an angle and to provide additional strength. The construction allows the ground lift foot of the rack to drop down into the base, thus permitting the placing of the foot under low loads. The cap is provided with a corrugated surface arranged to grip the links of a chain and hold them firmly in position. These corrugations also provide for the use of a detachable ground lift so the load may be taken at any angle. The change from a raising to a lowering action is accomplished by shifting a small lever on the outside of the flange. This jack has a capacity of 15 tons, a height of 24 in., a rise of 12½ in. and weighs 75 lb.

SMALL ONE-MAN JACK

The No. 96 jack, especially designed for pulling and straightening telephone, trolley or lighting poles, also pivots on its base with a similar construction to that just described. The head is especially forged so that the links of the chain are held securely as the load is lifted. To use the jack for lifting a pole an I-beam base is placed beside the pole and the jack set upon it. The chains can then be hooked around the pole and placed over the forged recess in the head, and the jack is ready for operation. This jack has a capacity of 15 tons, a height of 37 in., a rise of 27 in., and weighs 91 lb.

LIFTING A POLE BY MEANS OF A JACK

The No. 153 ball-bearing jack is especially designed for one-man operation, and for use under low loads. Three heights are provided, of 9, 10 and 11 in., respectively, and the rise varies from 3¼ to 5¼ in.

Useful Chart Showing Cost of Evaporating Water in the Steam Boiler

THE engineering department of the Westinghouse Electric & Manufacturing Company has prepared the accompanying straight-line chart to simplify calculation of evaporating costs.

The inclined lines represent the relation of costs of coal per ton and corresponding costs of evaporating 1000 lb. of water from and at a temperature of 212 deg. Fahr. for rates of evaporation between 5 and 11 lb. of water per pound of coal. Enough lines have been drawn to cover the range of ordinary practice. The chart can be used not only to determine the cost of evaporating any quantity of water at any price of coal but it can be used to determine the evaporation required to generate steam at a certain cost.

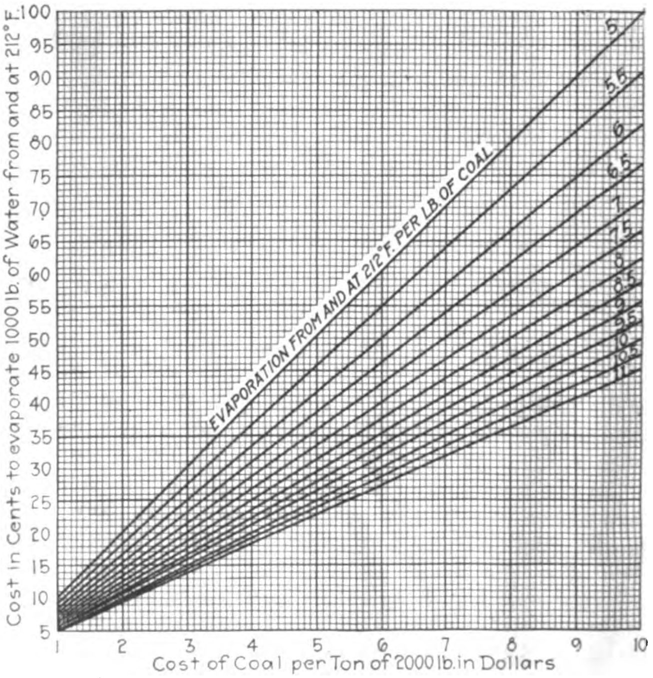


CHART SHOWING THE RELATION OF WATER EVAPORATION AND COAL COSTS IN STEAM BOILERS

Iowa Operating Men in Session

Midyear Inspection Meeting, Separate From Lighting Association, Proved Great Stimulus

THE midyear meeting of the operating men of the Iowa Electric Railway Association, in session at Davenport, Iowa, as this issue goes to press, promises to be a most successful experiment. There were more than sixty delegates present on Wednesday, and in spite of a stormy day the interest and congeniality were not dampened. Four papers were presented at the morning session which convened at the Blackhawk Hotel at 10:30

R. H. Findley, superintendent of track and roadway Omaha & Council Bluffs Street Railway, speaking for the interest of the way and structure delegates, outlined the most up-to-date and efficient methods of track construction and maintenance. For the benefit of the shop and equipment delegates, John Sutherland, master mechanic Tri-City Railway, Davenport, discussed the developments in rolling stock and equipment parts which permit great economy in maintenance and operation and placed particular emphasis on proper inspection. J. H. Seisseger, general superintendent Mason City & Clear Lake Railroad, speaking for the benefit of the transportation delegates, discussed the service and methods of this city and interurban property. For the interest of the power and distribution delegates, John M. Drabelle, electrical engineer Iowa Railway & Light Company, Cedar Rapids, discussed the most approved methods and equipment of power distribution for electric railways.

In the afternoon, the party split up into three divisions and conducted on special cars under the direction of the respective head of that department of the Tri-City Railway, inspected the shops, track and power house of the Tri-City system. In the late afternoon all delegates assembled at the car shops at Rock Island and proceeded on special cars to Watch Tower Inn for dinner. The evening was spent at a theatre in Davenport.

Plans at Next Federal Hearings

As announced last week, the Federal Electric Railways Commission will resume its hearings on Sept. 29 at Washington. During these sessions it is expected that the labor men will present their case, and also that a number of managers, experts and consulting engineers who could not arrange to attend the earlier meetings will testify. Among the witnesses in this latter group who have been invited to be in attendance are: Milo R. Maltbie, New York; Walter Jackson, New York; Morris L. Cooke, Philadelphia; Homer Loring, Boston; Henry Ford, Detroit; R. S. Bauer, Lynn, Mass.; John A. Van Allen, Buffalo; John A. Beeler, New York; Joseph B. Eastman, Interstate Commerce Commission; T. E. Mitten, Philadelphia, Pa. With evening sittings it is expected to conclude the hearings in one week.

Figures compiled by the actuarial department of the Bureau of War Risk Insurance in Washington, show that more than $107,758,200 of government insurance was carried by railroad men engaged in the transportation service of the Engineer Corps, American Expeditionary Force, and upon railroads in the United States. The engineer corps suffered in battle, deaths numbering fifty-nine officers and 1207 enlisted men.

Letters to the Editors

Railways Must Sell Their Transportation

NOTTINGHAM CORPORATION TRAMWAYS, ENGLAND

NOTTINGHAM, Sept. 1, 1919.

To the Editors:

I have read with interest the editorials and articles which have appeared in recent issues of the ELECTRIC RAILWAY JOURNAL advocating the merchandising phase of the street railway industry; I have also noticed that this idea will receive much attention in the Convention Number with its theme "Selling Transportation."

It seems to me that, whilst as a general rule the street railway industry is similar to other concerns in this respect, there are, however, essential differences. In the first place, the wholesale merchant will allow a lower average price on a large order than on a small one, and similarly street railway companies grant concessions by selling tickets at a reduced rate for a wholesale quantity. On the other hand, whereas one class of industries supplies us with the necessities of life (food, clothing, etc.), another class supplies the luxuries; but the street railways have perforce to provide for both the business and pleasure riding. With the universal rate of fare, a business man will not ride past his destination although his companion of the journey may be travelling a considerable distance further for the same original cost. If other industries were to offer their products on the same basis, it is reasonable to suppose the greatest advantage would be taken by the customers. If, for example, a tobacconist were to offer packets of ten, twenty, twenty-five, fifty and one hundred cigarettes at one standard price, say the value of a packet of fifty, I doubt very much whether his balance sheet would show a profit. The zone system of fares, which has so long held sway in England, undoubtedly places the street railways in a better position with regard to the "selling" aspect.

Again, electric railway concerns are making further concessions which do not enter into the merchandising of other commodities: I refer to the reduced rates for workmen before a certain time and the cheaper rates at which children are carried, in most towns, throughout the day. I cannot think of any parallel to the former, but it is true that amusement houses offer children the privilege of seeing their performances at reduced rates.

I have just perused the editorial in your issue of Aug. 2, relating to the greater interest which the public is taking in the wage disputes of the Chicago trainmen. To my mind, the street railway industry is practically unique in its main function of providing comfortable and adequate transportation for the public because, unfortunately, to nearly every person, transportation has no real tangible value. It would seem apparent from a psychological point of view that the public does not look so unfavorably upon the price of luxuries as compared with the price of necessities. In exchange for cash, the grocer, butcher, etc., sells comestibles necessary for life; the tailor, hatter, draper, etc., provide the wearing apparel; the ironmonger, furniture dealer, etc., supplies the goods and chattels for the household; and in each case the buyer receives something which he or she can see, grasp or touch. As already mentioned, there are many shops, merchants, ets., from which we obtain luxuries in the form of candy, music, tobacco, etc., something tangible being obtained in most instances. There are, of course, others who provide luxuries such as picture shows, sports (baseball), etc. which although possessing no tangible value, nevertheless provide enjoyment for the public, as indeed a luxury should.

But when we review the street car ride, there appears to be no such consolation for the patron. The average business man will board a car, pay his fare, take a seat if possible, and then either smoke, read his paper or enter into conversation. What interest does he find in the streets, houses, shops, factories, stations, or the city's celebrated examples of architecture which he passes every day? Until he changes his business destination or his place of abode, he has still the same monotonous daily ride or rides, and when he has returned home for the night, he has great difficulty in ascertaining what he has received in exchange for his car fare. In a very much less degree, pleasure riding also presents the same difficulty.

At the present time it seems that the public does not realize the vital necessity for city transportation, both for their own advantage, and for the good and development of the community in general, until street car service is suspended or abandoned.

In conclusion I would say that I believe the public should, first and foremost, be convinced that street car transportation is a vital necessity for their welfare, and when this object has been achieved, steps should be taken to show the various costs which enter into the price of providing service, finally proving that this cannot be provided at less than cost. The intangible element of the street car ride offers much scope for the psychologist.

A. A. JACKSON.

Repairs to Wood-Block Paving

THE TOLEDO RAILWAYS & LIGHT COMPANY,
TOLEDO, OHIO, Sept. 10, 1919.

To the Editors:

The article in your Aug. 16 issue, by J. S. Crandell, regarding repairs to wood-block paving has been noted with interest. From the photographs it would seem that the wood blocks had originally been laid on a very deep cushion of sand if the concrete which is shown as being placed is taking the place of a sand cushion.

It is natural to expect such results as those described if a cushion deeper than about ½ in. of sand is used. In my opinion, also, there was too much crown on the paving originally and there is too much crown in the paving as repaired, for best results. I believe in a level paving.

I also note that the web of the rail is filled either with a wood strip or with sand, and that the paving block is laid without being nosed under the rail head. I think also that this is the cause of some of the bulging. I do not like to "throw cold water" upon the process described, but am very skeptical as to the results of laying wood block directly on solid concrete except for the tar coating. I am not able to tell just exactly why, as yet, this method is not a success, but will say that last year and this year we have been laying blocks directly upon a pitch-covered concrete base and I must say that the results are anything but satisfactory. My opinion of a wood-block paving is that it requires about a half-inch cushion of sand, with the blocks laid level across the track and with the blocks laid next to the rail so as to nose under the rail head, the joints to be properly filled with a mastic (and not a pure pitch filler).

I notice that the author takes great pride in having invented a separating strip or spacer. This separating spacer, in my opinion, is inferior to the lug wood block which automatically provides proper joint spacing. We are using lug blocks entirely in this city and believe they are worth while, although feel that the lugs should be about three-eights inch deep instead of one-fourth inch as we are at present having them made.

I am writing this more as a letter of warning than as a letter of criticism, for if others lay the blocks direct on a solid foundation I am inclined to believe they will experience the same trouble as we have had.

It would give me pleasure to hear from other engineers who have tried this method of paving, to show whether they have had the same trouble as we have had, for originally this method of paving was suggested by our city engineering department and was agreed upon by this company against my judgment.

A. SWARTZ,
Assistant Manager of Railways.

All Electric Railway Publicity Agents Should Be at Atlantic City

NORFOLK, VA., Sept. 16, 1919.

To the Editors:

Publicity men associated with the street railway industry in the United States will doubtless be deeply gratified that President Pardee of the American Electric Railway Association has directed that Tuesday afternoon, Oct. 7, be devoted to a consideration of their problems and for a general discussion of ways and means for co-ordinating the work of the various individual companies with the general publicity plan of the association. There is much work of a most excellent nature that would be of great value to the industry at large that now is used in a restricted territory, simply through lack of a plan whereby the entire industry could profit.

Several attempts have been made to put into operation some plan whereby this great mass of endeavor could be directed to the general good, but without the indorsement of the association little or nothing could be done. Now that President Pardee has directed that a special program be provided for this all-important subject it is certain that the desired end will be accomplished. A program will be prepared and issued within a very few days, and it is the desire of the officers of the association that every man engaged in street railway publicity in the United States and every executive also arrange now to be present and take an active part in the discussions which affect his particular work.

Several meetings of a few publicity men have been held since the 1916 convention and from each has resulted many benefits to those attending, and with the support of the association all that we have been striving for all these years is possible of achievement.

The value of publicity to the industry has been so clearly demonstrated during the trying times of the great conflict and its increasing worth in the more perilous times which have followed, that there are few companies that do not fully recognize it, and the Atlantic City convention will be an inspiration to these few.

The work of the association can best be forwarded through this agency, and every publicity man should be present. There will now be no trouble in securing leave of absence for the day of the convention. Every executive will gladly arrange for the trip and in the judgment of the officers of the association should immediately direct their publicity representative to be on hand, not only for what he may learn from his fellows, but for the benefit his experience will be to those who are engaged in the same line of endeavor.

Therefore, let us of the craft adopt the slogan "On to Atlantic City!" and meet there on Monday, Oct. 6, prepared to enter the publicity meeting Tuesday afternoon ready to teach and to be taught.

It is needless to urge executives to be present. They have learned within the past few years the absolute necessity of properly directed publicity, and they know that if this great force can be made nation-wide, under the efficient direction of the American Electric Railway Association, a great stride forward will have been taken. Those charged with the proper conduct of the industry will be there to plan with and for us a yet wider field of usefulness.

LEAKE CARRAWAY,
Chairman Program Committee.

Purchasing Agents and Storekeepers Urged to Attend the Atlantic City Convention

KANSAS CITY, MO., Sept. 16, 1919.

To the Editors:

Every purchasing agent and storekeeper for an electric railway system who can possibly attend the Atlantic City convention should do so. There has never been a time when the question of the materials to be used by street railway companies is so important as at the present. This of course, results from the necessity of obtaining equipment and materials at the lowest price possible, in order to meet the present increased operating costs of railway properties. The manufacturers realize this situation and are offering many new ideas and materials to assist in cost reduction.

The question of service and source of supply has changed during the past three years, and it is important that the purchasing agents and storekeepers should be familiar with present conditions in order to obtain the proper materials at lowest price and avoid either carrying too heavy a stock or permitting some stocks to become exhausted on account of the difficulty in receiving prompt shipments. There are new manufacturers of street railway supplies, and some who were previously in the supply business have discontinued their lines or consolidated with other companies. It is a recognized fact the question of holding the cost of equipment and materials purchased to a minimum is next in importance to the amount of gross revenue received. This not only involves the original cost and of course the quality of the materials purchased, but care must be taken to avoid tying up too much money in stock accounts and also to avoid carrying obsolete materials or permitting the deterioration of some materials.

There are so many advantages to be obtained by attendance at the convention this year that it would seem practically every company should send either its purchasing agent or its storekeeper, in view of the benefits which will result from a careful examination of the exhibits and the information received from the manufacturers' representatives, as well as the daily sessions of different convention sections during the week.

E. E. STIGALL, Purchasing Agent
and Chairman of Program Committee.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Publicity Men to Meet

SUPPLEMENTING the brief note in the Sept. 13 issue of this paper, it is now possible to give more details regarding the meeting of publicity men which is to be held in connection with the Atlantic City convention. This gathering will be in charge of a committee consisting of Leake Carraway, Virginia Railway & Power Company, Norfolk, Va., chairman; J. W. Colton, the Connecticut Company, New Haven, Conn., and Luke Grant, Chicago (Ill.), Elevated Railways.

The date of the meeting will be Tuesday, Oct. 7, and it is scheduled for the afternoon. It is proposed at this session to have two or three papers or short addresses and devote the remainder of the session, and other sessions, if such are required, to a discussion of ways and means for co-ordinating the work of various companies in accordance with the general plan of publicity which the association has undertaken in connection with the hearings before the Federal Electric Railways Commission.

Exhibit Committee Holds Important Meeting

A MEETING of the convention exhibit committee of the American Association, C. R. Ellicott, chairman was held at association headquarters on Sept. 17. The report of Director of Exhibit Wells indicated that practically 57,000 sq.ft. of exhibit space has been assigned to 137 prospective exhibitors. Plans were made for pushing the campaign still further for the rental of space because, while at the present the totals of space and number of exhibitors are as great as in 1916, there is still some very desirable space to be disposed of.

Arrangements are being made for the showing of "movie" films for such exhibitors as desire to show pictures, for the distribution of pay telephones in different parts of the pier, etc. Mr. Wells will move his headquarters to Atlantic City on Sept. 24 and members of the committee will be on hand there during the week preceding the convention.

The fifteenth Annual Convention of the International Railway General Foreman's Association was held in Chicago, Sept. 2-5. The three principal topics considered were safety first, the welding of locomotive cylinders and other autogenous welding, and the functions and proper design of draft gears.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

New Interurban Inspected

Engineers Go Over the New Cleveland-Youngstown High-Speed Line Now Nearing Completion

One of the special features of the "get-together" meeting of the Cleveland Engineering Society with local sections of the National Societies on Sept. 9 was an inspection trip over the new rapid transit line of the Cleveland & Youngstown Railroad. This line connects the retail business center of the city of Cleveland, Ohio, with the Heights residence section. The party was taken over the route on a special train of flat cars. It was the first train to pass over the new road.

ENGINEER DESCRIBES SYSTEM

During the forenoon session at the Hotel Cleveland, W. E. Pease, engineer of the Cleveland & Youngstown Railroad, delivered a brief illustrated talk on the engineering problems involved in the construction of the road. The rapid transit idea originated in a big real estate development in the Heights section in 1911. The Van Sweringen interests, which control an immense section of land there, promoted the new road and have brought it to its present state of completion.

Many changes have been made since the original plans were drawn, Mr. Pease said, all of them being due to problems that arose in connection with obstacles of one kind and another that were met in the course of developing the route.

Mr. Pease also showed illustrations of the proposed new union station, now in course of development, with the long line of warehouses that form a part of the big undertaking. An immense freight terminal is also under way.

During the trip over the road, many favorable comments were heard in regard to the heavy construction of bridges and culverts. The road was really built on a steam road basis. The grades are not excessive at any point, although the railway reaches rather a high level at the east end.

FOUR-TRACK BRIDGES

The bridges for carrying the streets over a long cut are built to accommodate four tracks. In fact, this plan has been carried through the entire construction work. One track is completed and ballasted the entire distance and the second one is progressing well to that end. Plans have been made to have the double track in operation some time in October.

The new tracks will be used as far as East Thirty-fourth street, where a connection will be made with the tracks of the Cleveland Railway to carry the cars to the postoffice loop. This will give the road access to the heart of the city.

Side-door cars, similar to the 1100 series of the Cleveland Railway, will be used in the beginning. They will have special motor equipment for a speed of 50 m.p.h. The interior will be much the same as the local cars and they will be furnished with cross seats. Later on a type of cars for permanent use will be adopted.

The rate of fare between the Heights and the city will be 10 cents. It is not expected that much local city business will be done, as the road is built upon its own right-of-way, and in places beside other railroad tracks. In the Heights section the stops will be one-third of a mile apart. The streets are so laid out that they reach common points at the railway stops. Under the plans used in laying out the streets, the walk to these points is only a short distance for any of the residents.

Jackson Franchise Satisfactory

The American Public Utilities Company, operating the Jackson Light & Traction Company, Jackson, Miss., is reported to have wired Green & Green, its local attorneys in Jackson, that the franchise agreed upon with the city administration under which the local company in Jackson will be operated had been accepted by his principals. It is expected the City Council will now pass an ordinance submitting the proposed franchise to a vote and that it will be submitted to the electorate at an early date. Once in the history of the company, which is in the hands of a receiver, service was suspended.

Scranton Wage Increase Accepted

A voluntary increase of 4 cents an hour, dating from Sept. 1, and the offer of an additional cent an hour after Jan. 1, have been accepted by conductors and motormen of the Scranton (Pa.) Railway. Pitmen and helpers also share in this increase. In a recent award handed down by an arbitration board increases were granted carhousemen, trackmen, etc., but none was granted the conductors, motormen, pitmen and helpers.

The new scale for the conductors and motormen is as follows: First three months, 45 cents; next nine months, 47 cents, and thereafter 49 cents. After Jan. 1 the scale will be 46 cents, 48 cents and 50 cents. Pitmen are advanced from 50 to 54 cents an hour and their helpers are advanced from 47 to 51 cents an hour.

Company Accepts Franchise

Minneapolis Service-at-Cost Grant Will Go Before Voters at the Election on Dec. 9

The Minneapolis (Minn.) Street Railway, included in the system of the Twin City Rapid Transit Company, has accepted the cost-at-service franchise adopted by the City Council at a previous meeting. It is planned to submit the franchise to the voters on Dec. 9.

The company recognized heavy obligations in the proposed ordinance, but does not wish to make further delay in the negotiations, notwithstanding the agreed valuation of $24,000,000 for the property is lower than as appraised by engineers.

The Mayor regards the valuation as too high and the maximum return of 7 per cent as too large.

Horace Lowry, president of the railway, wrote to the Council as follows:

> The board of directors has instructed me to advise your honorable body that in adopting the resolution authorizing the acceptance of this ordinance, the company recognizes the heavy obligations it is undertaking but believes that with the closest co-operation between the City Council, the street railway supervisor and the officers of the company, the undertakings imposed by the ordinance can be successfully carried out.
>
> But for the fact that a refusal to accept the ordinance might completely destroy the credit of the company and inflict irreparable injury upon the growth and development of the city, the directors feel that their duty to the company's stockholders and the public would make it necessary to ask for certain modifications in the ordinance. The directors believe, however, that such action on their part might and probably would result in prolonged delay, with serious depreciation in the physical value of the property, demoralization of service, and great loss to the public.
>
> In accepting, therefore, the company does so with full realization of the fact that the ordinance provides all the benefits of municipal ownership without the city assuming any of the obligations incident to financing and operating the property, or burdening itself with the heavy investment incident thereto, and the city still preserves the opportunity to undertake absolute municipal ownership whenever it sees fit.
>
> The only advantage which the company gains is the opportunity to re-establish its credit and preserve the present investment, and the right to operate the property at a stipulated minimum rate of return, provided the operation of the property can be made to earn that return.
>
> The agreed value of the present investment as fixed by the ordinance is lower than that found by any of the engineering experts who have appraised it, much below the value the company itself places on the property and fully one-third less than it would cost to reproduce the property at the present time.
>
> However, we believe this ordinance provides the basis which makes possible the service and development of the property necessary to meet the city's requirements; and the best efforts of this company will be devoted to financing the large development program provided for and to carrying out the terms of the ordinance in letter and spirit and in every way promoting the welfare of the city.

The principal terms of the new grant were reviewed in the ELECTRIC RAILWAY JOURNAL for Sept. 13, page 536.

Former Commissioner Testifies

Mr. Eastman Paints a Dark Picture and Points Out Evils Which Have Followed Neglect of Depreciation

J. B. Eastman, of the Interstate Commerce Commission, recently addressed the electric railway investigating commission at Boston, Mass., upon the economic problems of the electric railway, and has furnished Chairman Washburn with a written statement of his views. Mr. Eastman holds that high fares are tending to cause congestion of population in urban centers, limiting the usefulness of electric railway systems, but does not see public ownership as a panacea. Notwithstanding high fares, credit is unsatisfactory and the uncertainty of future automobile competition and of labor conditions tends to impair borrowing power.

MUCH UNCERTAINTY

The special street railway commission which reported in Massachusetts in 1918 apparently believed that the answer to the problem was a means of raising fares more rapidly and with less agitation, and the general service-at-cost bill was the result. No company, however, has availed itself of this measure, which appears of doubtful value at present. The only courses in sight appear to be the alternatives of either permitting present conditions to continue, with reasonable certainty in most cases of high fares and poor service, or to resort to some form of public ownership.

Mr. Eastman believes that no matter how low a price should be paid for the properties in the event of public ownership, it is a question whether any of them can be operated under the old 5-cent fare at the present level of wages and prices without a substantial deficit. A 10-cent fare is not inconsistent with the prices now being paid for most commodities in common use. Any such deficit under public operation could only be made good through taxation.

Mr. Eastman hesitated to advise public ownership, stating that it would bring the State into what is at present probably the most difficult of all fields of public utility operation, trying the public ownership experiment under most unfavorable conditions. Public acquisition should not be undertaken, Mr. Eastman said, unless approved by a referendum vote. He does not fear that public operation cannot be made efficient. The more serious question is how far the cost of service should be covered by taxation.

AUTO A FACTOR

While it is impossible to be sure of the future effect of the automobile upon railway lines, it will probably be a long time before any other means of transportation is able to take the place of surface railways in the thickly-settled districts, and this is even more certain of rapid transit elevated and subway lines. Should public ownership come, Mr. Eastman favors a state director-general of street railways, aided by advisory committees representing business and labor, with decentralized administration giving local managers a large degree of discretion in operation. Supervision by the Public Service Commission over capitalization, accounts, safety of operation and service, should be retained. Possibly the commission itself might be placed in charge of the administration of the properties. Accounts should be so kept that the results of operation in various districts would be separately determined. With respect to fares, it would probably be desirable to set a definite limit to the amount to be contributed through taxation and adjust the fares accordingly, making it clear to the public that a reasonably low level could only be assured by increasing the use of the facilities with consequent growth of traffic, and by co-operation in reducing expenses.

DEPRECIATION NEGLECTED

In discussing the Boston Elevated Railway, Mr. Eastman says:

> Public operation already exists here and the situation is complicated by the contract with the private owners of the property which was made last year. Direct public ownership would improve credit and make possible a greater flexibility in the adjustment of fares, and might decrease the capital charge if the owners were willing to sell at something like the present market value of their securities.
>
> If the present arrangement is continued, new capital can be obtained from public acquisition of the Cambridge subway, but I am not prepared to suggest any other way in which it can be secured so long as the stock of the company is selling below par.
>
> Your commission should, I think, investigate carefully the appropriations for depreciation and maintenance, and I have no doubt that the trustees will be glad to aid you in such an investigation. It should not be assumed too hastily that the present charges are excessive, for one of the causes of our troubles with electric railways has been the failure in the past to appreciate the necessity of caring for depreciation. There is no way in which a company can keep its property in first-class modern condition except by building up an adequate depreciation fund.

Tennessee and Michigan Expand Laws

Provide for Regulatory Commissions With Control Over All Public Utilities as Well as Steam Railroads

Two regulatory laws recently passed have added Tennessee and Michigan to the States which have made comprehensive provisions for supervising their public utilities. Regulation is not a new thing in either Tennessee or Michigan, for each State has had a steam railroad commission. Under the new law, however, the functions of this commission in each case have been so increased as to permit the regulation of utilities in general.

RATE-MAKING CLAUSES REVIEWED

The new Tennessee Railroad and Public Utilities Commission and the new Michigan Public Utilities Commission have the usual powers of making appraisals, regulating rates, fixing service standards, authorizing security issues and the like, and details will not be given here. In regard to extensions, depreciation and rate-making, however, it seems worth while to show exactly how Tennessee and Michigan plan to handle such matters, which now are of more than usual importance. The clauses relative to such items in the Tennessee law follow:

> The commission shall have power to require a utility to establish, construct, maintain and operate any reasonable extension of its existing facilities where in the judgment of said commission such extension is reasonable and practicable and will furnish sufficient business to justify the construction, operation and maintenance of the same, and when the financial condition of the public utility affected reasonably warrants the original expenditure required in making such extension, or to abandon any service when in the judgment of the commission the public welfare no longer requires the same.
>
> The commission shall have power to require a utility to carry for the protection of stockholders, bondholders or securities a proper and adequate depreciation account in accordance with such rules, regulations and forms of account as the commission may prescribe. The commission shall have power to determine, and by order in writing after hearing, fix proper and adequate rates of depreciation of the property of each public utility, and each public utility shall conform its depreciation accounts to the rates so fixed, and shall set aside the moneys so provided for out of earnings and carry the same in a depreciation fund. The income from investments of moneys in such fund shall likewise be carried in such fund. This depreciation fund shall not be expended otherwise than for depreciation, improvements, new constructions, extensions or additions to the property of such public utility, unless the commission shall by order in writing give permission to the public utility to divert the fund to purposes other than those herein named.
>
> When any public utility as herein defined shall increase any existing individual rates, joint rates, tolls, fares, charges or schedules thereof, or change or alter any existing classification, the commission shall have power either upon written complaint, or upon its own initiative, to hear and determine whether the said increase, change or alteration is just and reasonable. The burden of proof to show that the said increase, change or alteration is just and reasonable shall be upon the public utility making the same. The commission shall have power upon such hearing and determination to order the suspension, not exceeding three months, of said increase, change or alteration until the said commission shall have approved said increase, change or alteration. Provided, however, that if the investigation cannot be completed within three months, the commission shall have power to extend the period of suspension for such further time as will reasonably enable it to complete its investigation of any such increase, change or alteration. It shall be the duty of the commission to approve any such increase, change or alteration upon being satisfied after full hearing that the same is just and reasonable.

EXISTING CONTRACTS STAND

> Where any existing contract between any public utility and any municipality specifies that particular things (other than charging certain rates, tolls or fares), shall continue to be done by such public utility, or the nature, kind and quality of any particular service to be rendered by the public utility to the municipality or its people, nothing in this section or in this entire act shall be construed to authorize the commission to excuse such public utility from continuing to do such specified things or from continuing to render and perform the service of at least the nature, kind and quality specified in any such existing contract, but, all these things involving the cost of the service shall be

> taken into consideration by the commission in exercising its power to pass upon the reasonableness of any rate, fare or charge hereafter to be made by such public utility.
>
> This act shall not be construed as being in derogation of the common law but shall be given a liberal construction, and any doubt as to the existence or extent of a power conferred by this act shall be resolved in favor of the existence of the power, to the end that the commission may effectively govern and control the public utility placed under its jurisdiction.

Under the new Michigan law, however, franchise rates cannot be altered by the commission without city consent. Pertinent provisions follow:

> In no case shall the commission have power to change or alter the rates or charges fixed in, or regulated by, any franchise or agreement heretofore or hereafter granted or made by any city, village or township.
>
> It shall be competent for any municipality and any public utility operating within the limits of said municipality, whether such utility is operating under the terms of a franchise or otherwise, to join in submitting to the commission any question involving the fixing or determination of rates or charges, or the making of rules or conditions of service, and the commission shall thereupon be empowered, and it shall be its duty to make full investigation as to all matters so submitted and to fix and establish such reasonable maximum rates and charges, and prescribe such rules and conditions of service and make such determination and order relative thereto as shall be just and reasonable. Such order when so made shall have like force and effect as other orders made under the provisions of this act.
>
> In any case where a franchise under which a utility including street railways is, or has been, operated, shall have heretofore expired or shall hereafter expire, the municipality shall have the right to petition the commission to fix the rates and charges of said utility in accordance with the provisions of this act, or to make complaint as herein provided with reference to any practice, service or regulation of such utility, and thereupon said commission shall have full jurisdiction in the premises.

It should be noticed that in Michigan the commission will not have unlimited power to fix rates for all electric railways. The power given by the regulatory act covers urban rates, but control over suburban and interurban rates is effected by a special legislative act passed about the same time. This special act provides as follows:

> It shall hereafter be lawful for any railroad to charge for transporting within Michigan any passenger and his or her ordinary baggage, not exceeding in weight 150 lb., not exceeding the following rate of fare, namely: A minimum fare of 5 cents; for a distance of not exceeding 5 miles, 3 cents per mile; for all other distances, 2½ cents per mile: Provided, That any railroad may charge or receive for transportation of children of the age of twelve years and over the age of five years a minimum fare of 5 cents; for a distance of not exceeding 5 miles, not more than 1½ cents per mile; for all other distances, not more than 1¼ cents per mile: Provided, That children of the age of five years or under shall be transported free of charge.
>
> This act shall apply to all railroads, including the so-called steam railroads, electric railroads, suburban railroads and interurban railroads: Provided, That this act shall not apply to the rates of street or interurban railroads charged in the transportation of passengers within the limits of cities, or within a distance of 5 miles of the boundaries thereof: Provided further, That these rates shall not apply to electric, suburban or interurban railroads whose gross passenger earnings, as reported to the Railroad Commission for 1918, equaled or exceeded $8,000 per mile for each mile of road operated by said company, including all branch roads owned, leased, controlled or occupied by such company: And provided, That in the future whenever the passenger earnings of any electric, suburban or interurban railroad, as reported to the commission at the close of any year, shall increase so as to equal or exceed the sum of $10,000 per mile per annum for each mile of road so operated by such company, then in such case said company shall thereafter, upon the notification of the commission, be required to charge not exceeding 2 cents per mile for the transportation of any passenger and his or her ordinary baggage as herein provided.

Bay State Men Remain at Work

As a result of advices from the headquarters of the Amalgamated Association urging the men to live up to their agreement to abide by the finding of the War Labor Board, the men are remaining at work in all the divisions of the Eastern Massachusetts Street Railway, Boston, Mass. No formal acceptance of the War Labor Board's award has yet been voted by the men, but for the present there seems little likelihood of a walkout. Indeed, at meetings of the local unions held within a few days, although the previous intimation that the men might strike rather than accept the War Labor Board's award has not been formally rescinded, a distinct feeling of dissatisfaction with the policy of the joint conference board in forecasting strikes on stated dates made itself felt.

Guy W. Currier, counsel for the company, recently addressed a letter to the unions through their counsel, pointing out that the trustees state that they cannot pay further increases in wages and continue to operate the properly. If the public, through public ownership or otherwise, does not take care of the financial requirements of the road the company will have to suspend operations. The War Labor Board awarded a maximum of 51 cents an hour.

Service Still Suspended in Olean

Platform men and other employees of the Western New York & Pennsylvania Traction Company, Olean, N. Y., who have been on strike since Aug. 12, refuse to return to work until their newly organized local of the Amalgamated is recognized by Wilson R. Page, president of the railway. No cars have been operated over the company's local or interurban lines since the riot of Aug. 18 which resulted in the shooting of more than a score of persons. There has been no disorder since the riot and the two units of the New York state constabulary which patroled the streets of Olean for two weeks have been withdrawn from the city by the Governor.

All efforts on the part of the Mayor and the Chamber of Commerce to bring about a settlement of the strike have resulted in failure. The company flatly refuses to recognize the union, although James P. Quigley, secretary and counsel for the company, assured a correspondent for the ELECTRIC RAILWAY JOURNAL that all other questions in dispute would be submitted to arbitration.

The grand jury of Cattaraugus County is investigating the riots. Some strikebreakers brought to Olean from Philadelphia are being held by the district attorney in jail pending the outcome of the grand jury inquiry.

Conditions in Connecticut

Commission There Sees No Hope in Further Fare Increases Under Present Competitive Conditions

The seventh annual report for the fiscal year ended Sept. 30, 1918, and including the financial reports of all public service corporations for the calendar year ending Dec. 31, 1917, to the Governor has just been issued by the Connecticut Public Utilities Commission. The report refers to the electric railway situation by saying in part:

> No class of public service presents more serious and difficult problems for solution than these railways which during the past quarter century have extended into every city and county in the State, there now being 828.71 miles of track operated with a capital investment of approximately $100,000,000.
>
> An examination of their financial standing shows them to be in unsound condition and with the high cost of operation and steadily declining net income it is no longer possible to attract new capital for efficient operation, and further the assumed charter obligations of many companies to operate every portion of the system under changed conditions, whether profitable or otherwise, involves an unsound business principle. The remedy to be administered must depend to a large extent upon the public or legislative policy of the State.

Among the numerous contributing causes for the present railway condition the report mentions high and constantly increasing cost of labor and materials due to war conditions, the increase in taxation, municipal paving requirements, loss of patronage incident to privately-owned automobiles and the more or less unrestricted competition of public service automobiles and "jitneys" so-called, operated at the option of the owner, during favorable weather conditions on improved highways in the most profitable sections of the territory served by the railway companies. The failure of the electric railways adequately to meet the service demands gave the occasion if not the necessity for the development and apparent permanency of public service automobile transportation.

Electric Railways Are Necessary

The commission is of the opinion that the best interests of the State still require electric railway service as an essential transportation agency, but if both the competent forms of transportation are to survive and render proper service protective legislation should be enacted more equitably apportioning the necessary burdens and defining their competitive rights. The commission feels that it is questionable if any material increase in net revenue would accrue from any further increases in rates on electric railways under existing competitive conditions, as any rate established which is in excess of what traffic will bear is an unprofitable as well as an unsatisfactory rate.

The commission finds in the annual inspection that, all things considered, the track was in better riding condition than in the previous year. Comment is also made on the increasing mileage of open track on highway side locations where practicable, also the fact that cattle guards, wire fences, pole bands for curves and switches, etc., are not in as good condition as heretofore. "End of Track" signs and telephone markers to avoid derailments at such points have not yet been submitted to the commission for approval and standardization, as suggested in last year's report.

The report also contains the usual tables showing mileage, gross revenue, expenses and traffic statistics for all companies within its jurisdiction.

New Canadian High-Speed Line

At a meeting of the board of commissioners of the London & Port Stanley Electric Railway, Sir Adam Beck, the chairman, announced that a new hydro-radial high-speed line to connect London and Hamilton, a distance of 80 miles, via Ingersoll, Woodstock and Brantford, was projected by the Hydro-Electric Power Commission.

It is intended that this new line shall connect with the London & Port Stanley Railway between London and St. Thomas at a point south of the Thames River. It will run directly east, passing through Dorchester village on the south side of the river and continue to Ingersoll and Woodstock; from the latter city it will run via Burford to Brantford, at which latter point it will likely be united with the existing Brantford-Hamilton and Hamilton-Oakville radial lines owned by the Dominion Power & Transmission Company, Hamilton.

Sir Adam stated that the Brantford and Oakville lines should be and he believed they would be acquired on behalf of the municipalities. The new line then would be shorter, have a better gradient and will give a faster and better service than any of the existing steam roads.

Ontario Hydro-Electric Radial News

The annual meeting of the Ontario Hydro-Electric Railway Association was held in Toronto, Ont., on Sept. 4. Sir Adam Beck stated that the line from London to Toronto could not be constructed at present owing to the fact that the city of Guelph had not yet joined with the other municipalities in assuming responsibility for the share of the four municipalities which had not passed by-laws in connection with the undertaking. Therefore, the whole system from Toronto to Port Credit and London was held up until Guelph took this step, or the other four municipalities passed the necessary by-laws indorsing the construction of this part of the system.

It was for this reason that the section from Toronto to St. Catharines was delayed, as no by-laws had yet been submitted, although he had advised the various municipalities concerned to request the Ontario government for permission to proceed with this line.

The construction of the Port Colborne section and Bridgburg division depended on the acquisition from the Dominion government of the existing Niagara, St. Catharines & Toronto Railway. The purchase of this line was held up pending the outcome of the negotiations now going on between the Dominion government and the officials of the Grand Trunk Railway for the purchase by the government of the G. T. R. local and paralleling lines and their electrification as part of the hydro-radial undertaking.

The total investment of the Province of Ontario in the Hydro, Sir Adam stated, amounted to about $10,000,000, while that of the municipalities was $73,000,000. A resolution was passed by the meeting asking the government for an order-in-council authorizing construction to be proceeded with on the lines passing through such municipalities as had already passed the by-laws providing for the assumption of the necessary liability by the municipalities.

The negotiations between Sir Adam Beck and the City Council of Guelph with respect to the hydro-electric railway have been reviewed.

Statement of Demands of Columbus Men

Under the terms of the settlement of the strike of the trainmen of the Columbus Railway, Power & Light Company, Columbus, Ohio, to which reference was made in the ELECTRIC RAILWAY JOURNAL of Sept. 13, page 535, the questions of increased wages and an allowance of seven hours a day or the equivalent in pay for extra men will come up. In their demands on the company the men asked 55 cents an hour for the first three months, 60 cents for the next nine months, and 65 cents thereafter. The present wages are 41 cents, 43 cents, and 45 cents.

Officers of the company had announced several times that they were willing to submit the matter to arbitration, although they were unwilling to grant the closed shop or pay an increased wage, while the rate of fare remained where it is. The voters defeated an ordinance providing for an increased rate of fare a few weeks ago and the company is still operating at eight tickets for a quarter.

Houston Valuation $4,000,000

The summary of Lamar, Lyndon's report on the valuation of the property of the Houston (Tex.) Electric Company is on its way to Houston, according to a telegram received on Sept. 9 by Mayor A. E. Amerman from New York. The elegram follows:

> Report completed. Present property valuation $4,000,000. Fare required 5.8 cents. You can charge 6 cents straight or 7 cents as regular fare, but sell nine tickets for 50 ecnts. An alternative is 6 cents regular fare, eight tickets for 45 cents, transfers 1 cent additional. Summary mailed to-day; complete report Saturday.

Mayor Amerman said the report would be turned over to B. F. Louis for examination in preparing for the trial of the case ned pending in the Federal Court in which the Houston Electric Company is fighting the city of Houston's 5-cent fare ordinance.

Declares War on Jitneys

Bay State Trustees Threaten to Suspend Service if Jitneys Remain Unregulated

War to the finish against unregulated jitney competition has been declared by the trustees of the Eastern Massachusetts Street Railway, formerly the Bay State Street Railway. Chairman Homer Loring of the board of trustees appeared on Sept. 16 before the street railway investigating commission at Boston and declared that cities and towns on the system which are doing little or nothing to check unfair jitney competition cannot expect to obtain lower car fares.

Further than this Mr. Loring pointed out that if the unregulated competition was allowed to continue, the time would come when the continuance of service even in cities of the size of Salem would be threatened. The public must decide which of these two services it prefers, and the present unregulated jitney traffic cannot be permitted by the municipal authorities if street railway facilities are to continue.

ABANDONMENTS THREATENED

In several places where jitneys are allowed to run wild, Mr. Loring declared, it will be absolutely necessary for the people to decide in the immediate future whether they want the railway or the jitney. In Lynn and Lawrence, Mass., two cities where jitney competition is at its worst, Mr. Loring stated that the railway company pays taxes of $650 and $600 respectively on every car operated, while jitneys operate with practically no tax.

At the hearing Mr. Loring touched upon various economies which the trustees are seeking to put into effect. By the purchase of 200 one-man safety cars, which, it is believed, will be in operation before March 1, 1920, it is expected that an immediate substantial saving will result. One hundred of these cars have already been contracted for, and the trustees have voted to purchase another hundred. By the removal of the Boston offices of the Bay State system from 245 State Street to 1 Beacon Street, Boston, Mr. Loring said there will be a saving of $11,000 in annual rental. Reduction in the clerical force of the Eastern Massachusetts Street Railway, resulting from the decentralization of operation, cut down the payroll about $150,000 annually.

HOME RULE PLAN POPULAR

The system is now divided into twelve operating or "home-rule" districts, in every one of which the local manager is given general charge instead of being responsible in the minutest details to the central office in Boston. A better feeling between the public and the company can be traced to this policy of decentralization.

By the erection of a car repair shop in some community north of Boston the trustees hope to save $200,000 a year in the construction and repair of rolling stock. It is the intention of the trustees to enlarge the present shops at Campello, near Brockton, in order to better serve the district south of Boston.

Mr. Loring said that one of the chief difficulties with which the trustees have to contend is the rapidly increasing cost of labor. In December, 1918, the men received an increase which added $750,000 to the expenses, and recently were awarded another raise which exceeds $850,000 more annually.

In discussing the 10-cent fare, Mr. Loring said that while it does not as yet fully meet the expectations of the trustees, a serious mistake has been made by those who claim it to be a failure. Net receipts in July, 1919, were 14 per cent more than in July, 1918; and in August, 1919, they were 18 per cent in excess of the report for the same month a year ago. The August, 1919, receipts were the largest in the history of the system.

During the hearing Chairman Macleod of the Public Service Commission indorsed the use of one-man cars. The commission has investigated its service on many roads, and in every case success has resulted.

Elsewhere in this issue details are given of the experimental reduced-rate tickets initiated in Lowell, Fall River and Taunton after most cordial conferences with business interests to meet traffic needs of regular riders and also in a measure to combat the jitneys.

News Notes

Strike in Marion.—The Coal Belt Electric Railway, Marion, Ill., suffered a strike which lasted seven days, the men demanding 75 cents an hour. A report was circulated that the company had offered 60 cents an hour.

M. O. Vote Planned in Spokane.—Municipal ownership of the railway system of Spokane, Wash., is to be placed before the voters of the city at the coming city election on Nov. 4, according to statements made by Mayor C. M. Fassett.

Wage Increase in Boulder.—The trainmen in the employ of the Western Light & Power Company, Boulder, Col., have been granted an increase in wages. The men have been receiving a wage of 33 cents and 35 cents an hour. According to the new scale the wages will be 35, 38 and 40 cents an hour.

Five-Cent Advance for Wilmington Carhouse Men. — Striking carhouse men of the Wilmington & Philadelphia Traction Company, Wilmington, Del., returned to work, on Sept. 10, after they had been granted an increase of 5 cents an hour. The new wage scale ranges around 50 cents an hour, the amount most of the men will receive.

Higher Pay for Chester Carmen.—The Southern Pennsylvania Traction Company, Chester, Pa., has averted a threatened strike of its employees by granting their demands for a wage increase of 10 cents an hour. The wage advance will cost the company $110,000 a year. The company is planning to ask for an increase in fare.

Jitney Control Lodged in Street Commissioners.—The City Council of Boston, Mass., has passed an amendment to the jitney ordinance by which the supervision of jitneys is to be put under the board of street commissioners. The ordinance originally put this supervision under the direction of the police commissioner, who declined jurisdiction.

Revere Beach Wages Adjusted.—The Boston, Revere Beach & Lynn Railroad, Boston, Mass., has announced that as the result of conferences with the representatives of the employees seeking increases in wages, concessions have been made by the management as well as by the committee from the employees and a satisfactory adjustment reached on a basis of compromise, carrying substantial increases.

Wage Conference at Urbana.—Officials of the Illinois Traction System conferred at Urbana, Ill., on Sept. 11 with trainmen who have made wage demands. About a month ago the trainmen asked for an increase from 50 cents an hour to 75 cents an hour for conductors and motormen and from 37 cents to 62½ cents for brakemen. The men are said to have reduced their demands 5 cents an hour, but the company has said it could not meet the increase.

Austin Men Want More.—Conductors and motormen in the employ of the Austin (Tex.) Street Railway have presented demands to the company for an increase in wages amounting to 5 cents an hour. The company recently refused to grant a wage increase of $1 a day demanded by firemen and powerhouse employees. In refusing these demands the company declared it could not increase wages because the city had declined its petition for fare increase from 5 cents to 6 cents as sought recently.

Agree on Concord Wages.—The management and the employees of the Concord (N. H.) Street Railway have agreed on the wage scale which has been under discussion since June 10, when the men demanded an increase. The new scale gives the men 45 cents an hour for the first three months, 50 cents the next nine months, and 55 cents thereafter. The old scale ranged from 36 cents to 43 cents an hour. Shopmen receive 50 cents and 52 cents an hour, an increase of 2 cents. The increase is retroactive to June 14.

Short Toronto Strike.—In view of the grave situation caused by the strike of the substation employees of the Toronto (Ont.) Railway, to which reference was made in the ELECTRIC RAILWAY JOURNAL for Sept. 13, page 538, a conference was quickly held between representatives of the company and the men, and a letter was sent by Mr. Fleming, general manager, agreeing to accept the terms of the award. The men then went back to work, and the operation of the cars was resumed at 9:30 p. m., on Sept. 3, the men having been out since 3 p. m. that day.

Request Delay in Cincinnati Loop Work.—W. W. Freeman, president of the Union Gas & Electric Company, has requested the Cincinnati Rapid Transit Commission to delay the draining of the Miami & Erie Canal until Oct. 15, so that the Plum Street generating plant can be used as an emergency station, while the installation of electrical machinery at the new generating plant is being completed. The Plum Street plant uses the canal water in its condensers, and it will be needed until the new plant is in full operation. The original date set by the commission for draining the canal was Sept. 15.

Municipal Ownership Recommended at Los Angeles.—The finance committee of the Council of Los Angeles, Cal., has recommended to that body that negotiations be entered into with the Los Angeles Railway with a view to learning the basis on which the city might acquire the property. Mayor Meredith P. Snyder has indicated he does not favor the taking over of the Los Angeles Railway at this time. The Mayor has stated there are more important municipal ownership plans that should be given consideration before the railway is purchased by the city. He is quoted as follows: "I am in favor of municipal ownership, but I wish to see our present projects on a paying basis before we turn to others of even greater expense. We need a municipal ice plant more than municipal railways, and I do not believe the project will be seriously considered by the Council."

Strike Still on at Louisville.—Following failure of an attempt to submit the differences at issue to arbitration, Mayor Smith of Louisville, Ky., on Sept. 8 called upon the Louisville Railway to accede to the demands of its striking employees and to resume full service, which had been curtailed since Aug. 18. The Mayor demanded that a contract be signed with the union guaranteeing "reasonable and just working conditions." T. J. Minary, president of the railway, rejected the Mayor's demand and declared that, given adequate police protection, the company could resume full service at once. He declined to treat with the strikers owing to the fact that the strike had been called in violation of contract and after representatives of the union had expressed themselves as satisfied with company's attitude. The strikers, who had walked out to compel the company to prefer charges before discharging an employee, later demanded increased wages.

Financial and Corporate

Reorganization Planned

Key Route System Spurred Into Action by Recent Pronunciamento of Railroad Commission

According to H. H. MacDonald, writing in the San Francisco *Chronicle*, another attempt is to be made to reorganize the San Francisco-Oakland Terminal Railways, Oakland, Cal., and to that end a carefully chosen committee has been named. The committee, which will at once set to work upon the reorganization, comprises the following leading citizens representing the interests of bondholders on both sides of the bay:

J. F. Carlston, president of the Central National Bank, Oakland; W. W. Garthwaite, president of the Oakland Bank of Savings; P. E. Bowles, president of the First National Bank, Oakland, and chairman of the board of the American National Bank, San Francisco; John S. Drum, president of the Savings Union & Trust Company, San Francisco; George Tourney, president of the San Francisco Savings & Loan Society; Gavin McNab, San Francisco; George K. Weeks, vice-president of the National City Company of California; George A. Batchelder of E. H. Rollins & Sons, San Francisco; Paul Sinsheimer, vice-president of the Union Trust Company, San Francisco, and Herbert Fleishhacker, president of the Anglo & London-Paris National Bank, San Francisco.

John S. Drum, president of the Savings Bank & Trust Company, on behalf of the committee, is quoted in part as follows:

> The system has been virtually managed by the trustees of F. M. Smith since May 5, 1913. For a year or two prior to that time the company could borrow money and it has run along since 1913 without new capital. Such earnings as were made, over and above interest requirements, were devoted, and solely devoted, to absolutely necessary repairs. In 1915 an effort was made to work out a plan of reorganization and a committee was then appointed, which, after numerous sessions found it impossible to formulate such a plan as would be acceptable to the bondholders. It would then have amounted only to an exchange of old securities for new, which it would be impossible to market.

Clean House Financially, Says Commission

> In November of 1916 an enabling act was passed by the Legislature for proposed resettlement of the franchise question and the various bay cities, through their Mayors and Councils, appointed representative committees to work out details for new franchises. Finally a plan was agreed upon and the Railroad Commission was asked to value the properties. That valuation proceeding is now pending.
>
> Meanwhile the Railroad Commission rendered two decisions. The first of Sept. 19, 1918, increased fares on the east side of the bay to 6 cents and the second of Aug. 11, 1919, increased ferry fares to 15 cents. In rendering the latter decision the commission said:
>
> "It has been repeatedly pointed out by this commission that the only permanent remedy for the financial difficulties of this company is a thorough-going reorganization of its finances. As long as the Key system rests on the present unsound financial structure, it is bound to continue in financial difficulties in the future, as it has in the past. The rate increases will not affect a complete or permanent remedy of this situation.
>
> "It is our opinion, as repeatedly expressed, that a financial reorganization of the company is necessary and that no permanent, satisfactory operating and financial result can be obtained until such a reorganization has been made."
>
> These two increases gave an additional amount of between $700,000 and $800,000 to the system, but the cost of operating, including that of labor and supplies, fully absorbed this amount. Since December, 1917, or less than two years ago, the cost of labor alone on this system has increased over $500,000. There are now about 2000 employees, about 1200 of whom are platform men.
>
> Now acting under the imperative directions of the Railroad Commission, it has been felt that, as a community problem, the effort should be made to propose a plan of reorganization. This is to be done even before resettlement of the franchises will be considered by the people.
>
> Even to-day it is a serious question whether moneys can be obtained through the sale of new securities to enable the company to keep pace with the growth and development of these communities and furnish adequate service.
>
> This is something more than a reorganization committee. It is of so thoroughly representative a character that it will be able from time to time to give authoritative statements as to the true condition of the company. Before the problem is finally solved the question of municipal ownership will come to the front.
>
> This matter has been seriously argued before a commission sitting at Washington.
>
> The present status means bankruptcy of all traction companies, the strong as well as the weak. There has seemed but one of two things open. First, private ownership with willingness of the community from time to time to pay increased fares, adoption of the zone system or a limit on transfers, or all three methods; second, municipal ownership with a fixed 5-cent fare and deficits on operation made up in tax rates. This implies that all would pay for the upkeep of the transportation systems as a common benefit of such magnitude as to make it worth while to do it.

Higher Operating Expenses in Milan, Italy

The last annual report of the municipal tramways of Milan, Italy, shows greatly increased expenses due to the higher expense for labor. The lines within the city were taken over by the municipality some years ago from the local Edison Illuminating Company, which still operates the suburban and interurban system. Early in 1919 the wages paid for platform labor were raised from 4 liri to 6.40 liri a day and of shopmen 5.85 to 9.35 liri. In the middle of May, another advance had to be made, that granted being platform labor, 7.20 to 10.90 liri a day, and shop men from 8.75 to 13.10 liri a day, the higher figures in each case being paid after seventeen years of service.

The Corrierre della Sera estimates that the salaries and wages for the 5100 employees entail a yearly expense of about 34,000,000 liri, while the total income is about 40,000,000 liri. The pertinent question is then asked whether all other expenses, such as maintenance, repairs, construction, materials, and electric power can be paid out of the balance of 6,000,000 liri.

Glasgow No Exception

Expenses of Model Municipal System More Than Outstrip Increase In Gross Revenue

The Glasgow (Scotland) Corporation Tramways did not do so well for the year ended May 31, 1919, as for the previous year. The surplus to the common good was only £14,772 as compared with £160,984 for 1918. While the total revenue from traffic and other sources increased more than £120,000 traffic and other general expenses increased more than £200,000. There was also an increase of about £80,000 in deductions. Wage increases are reflected in the figures. There were also extraordinary allowances for upkeep.

INCOME ACCOUNT OF GLASGOW CORPORATION TRAMWAY FOR YEARS ENDED MAY 31, 1919 and 1918

	1919	1918
Traffic receipts	£1,527,487	£1,404,110
Sundry receipts	3,832	8,525
Total revenue	£1,531,319	£1,412,635
Traffic expenses	£674,167	£527,152
General expenses	175,004	156,949
Maintenance and repairs	219,509	179,812
Power expenses	106,685	86,029
Clydebank bridges	1,752	1,131
	£1,177,117	£951,063
European war	72,869	93,120
Total expenditure	£1,249,986	£1,044,183
Balance carried to net revenue account	£281,331	£368,452
Interest on investments	10,564	8,579
Total	£291,895	£377,031
Deductions	277,123	199,479
Surplus to common good	£14,772	£160,984

During the year the sum of £91,913 was expended on the upkeep of the track in ordinary repairs. In addition to this sum £137,394 was set aside out of the year's revenue to meet the cost of the renewal of track. This sum is calculated at the rate of £700 per mile of single track. There was also deducted from the permanent way renewals fund the sum of £31,829, being the amount expended on renewal of track during the year.

The average traffic revenue per car-mile increased from 12.832d. to 14.33d. This is very high indeed, considering that more than 62 per cent of the passengers pay only a 1d. fare. The allowance paid to dependents of employees serving with the military and naval forces amounted to £72,704 for the year.

The tramway employs 5027 male employees and 1628 females. During the year all sections of the staff received increases in wages. On May 16, 1918, unskilled and semi-skilled male employees received an advance of 5s. per week. On Nov. 3, 1918, a further advance of 3s. 6d. per week was awarded to able-bodied employees of these classes. On June 25, 1918, an advance of 6s. per week was granted to the women car cleaners. A further advance of 5s. per week was granted on July 9, 1918, to motoresses, conductresses, women car cleaners, and on Jan. 29, 1919, a further advance of 5s. 6d. per week was granted, thus giving the motoresses and conductresses 25s. 6d. per week over pre-war rates and the women car cleaners 19s. 6d. per week over pre-war rates. There were other advances, but these are mentioned as indicative on the general trend of the wages on the system.

Attention has been called previously to the contribution of £14,772 to the common good. In addition to this the tramway paid £88,306 in taxes, etc.

A statement of the number of passengers carried during the year at each fare, and the revenue from each fare, with the percentage in each case follows:

	Passengers Carried		Traffic Receipt	
Fare	Number	Per cent.	Amount	Per cent.
½d.	290,080,376	62.48	£604,334	39.56
1d.	121,285,355	26.12	505,355	33.08
1½d.	31,750,977	6.84	198,443	12.99
2d.	10,348,905	2.23	86,240	5.65
2½d.	4,846,252	1.05	50,481	3.31
3d. and more	5,934,812	1.28	82,261	5.39
Sundries	....	......	370	0.02
Total	464,246,677	100.00	£1,527,487	100.00

Brazilian Company Reports

For the year ended Dec. 31, 1918, the Brazilian Traction, Light & Power Company, Ltd., Rio de Janeiro, Brazil reports surplus after charges and preferred dividends, of $4,569,672 equal to $4.29 a share earned on the $106,515,500 of common stock, as compared with surplus of $4,666,518 or $4.38 a share in the preceding year. The income account for the year ended Dec. 31, 1918, (in Canadian currency) compares as follows:

	1918	1917
Gross revenue	$6,122,412	$6,005,138
Interest received	130,051	198,560
Total income	$6,252,463	$6,203,698
Administration expense, interest, etc	832,791	937,180
Surplus	$5,419,672	$5,266,518
Amortization reserves	250,000	....
Preferred dividends	600,000	600,000
Balance	$4,569,672	$4,666,518
Common dividends	....	1,314,136
Surplus	$4,569,672	$3,352,382

During the year, twenty-nine first-class vestibuled ten-bench trail cars, and ten single-truck motor freight cars were completed and put into service. Due to delays in deliveries of equipment ordered for the new passenger motor and additional trail cars commenced in 1917, construction has been necessarily slow, but the work is now well advanced on ten thirteen-bench and fifteen ten-bench passenger motor cars, and twenty-five ten-bench trailers, all of which will be ready for service during 1919.

Further additions have been made to the buildings and equipment of the shops and foundry, and various articles heretofore imported can now be manufactured there with substantial saving.

The statement at the bottom of the first column gives comparative statistics of tramway system for the last two years.

	1915	1916
Miles of track	140	141.1
Equipment:		
Passenger cars	317	312
Passenger trailers	57	47
Freight cars	55	59
Freight trailers	27	33
Miles run—all cars	9,425,231	10,153,657
Passengers carried	51,574,145	55,154,564

Further Abandonments Authorized

Court Directs New York Railways to Discontinue Three Storage Battery Lines on East Side

Federal Judge Mayer at New York on Sept. 11 authorized Job E. Hedges, receiver for the New York (N. Y.) Railways, to cease for the present the operation of four short storage battery lines running through heavily congested sections of the lower east side of New York City. All of these lines except one are owned by the New York Railways. The latter is owned by the Sixth Avenue Railroad, which is leased by the New York Railways. Besides authorizing the suspension of the lines, Judge Mayer also resolved to return the Ninth Avenue line to its owner for the reason that the New York Railways, which leases it, has not been able to pay the rental and because it was losing money.

The four storage battery lines will probably cease operating within a fortnight. They had been carrying on an average of 1,000,000 passengers a month. Their total deficit, according to figures submitted by the receiver, has aggregated about $414,000 a year. It is estimated that the net saving by abandoning operation will be $300,000 a year.

Judge Mayer pointed out that the struggle now was to find some way of saving the more important lines in New York City from destruction. To accomplish this he said it was necessary to cut off the smaller and less important links of the system. The receiver stated that he had done all he could to keep the New York Railway system intact and that he hoped the responsibility for the cutting off of the crosstown service would rest with the municipal authorities.

In announcing his decision to authorize the suspension of the four storage battery lines, Judge Mayer referred to the order of Public Service Commissioner Nixon permitting a charge for transfers and continued:

> The application to Commissioner Nixon was opposed by the municipal authorities, and what little relief has been obtained by this receivership was, I regret to say, obtained over the opposition of those the court hoped would co-operate in some way or another, reaching a solution of a very difficult problem which, as I stated the other day, is filled with intricate questions of law, of government relations, and of financial requirements.

When the Mayor learned that the four storage battery lines were to be discontinued, he issued this statement:

> The head of the Bureau of Franchises and Commissioner of Public Works, Joseph A. Guider of Brooklyn will immediately work out a plan for the installation of a motor bus service along the routes of the lines discontinued.

6,000,000,000 Discouraged Dollars

Economists have written about the stabilized dollar and the diminishing dollar. Now comes W. P. Strandborg of the Portland Railway, Light & Power Company, Portland, Ore., who writes about "The Discouraged Dollar" in *Watts Watt*, the publication of his company, distributed on the cars. It is easy to understand the diminishing company, distributed on the cars.

It is easy to understand the diminishing dollar, for this shrinking personality is brought home every day in practically all purchases that are made. It might also be possible to learn something about the stabilized dollar if present-day economists were like the late William James and wrote like novelists, but they do not.

As for the discouraged dollar, Mr. Strandborg has made it quite plain what he is driving at. In fact, he sees 6,000,000,000 discouraged dollars in the electric railway field. In *Watts Watt* for Sept. 5 Mr. Strandborg says in part:

> Look, for instance, at Henry Ford's dollars. The one dollar that Ford put into his business a few years ago is now worth $125 and making enormous wages (profits) every day.
>
> Look at the Rockefeller dollars in Standard Oil—the Schwab dollars in Bethlehem Steel, the Carnegie dollars in U. S. Steel.
>
> Take the busy little dollars in the automobile industry, the textile industry, the packing industry, the leather, the coffee, the copper—and a thousand other industries—all fat, smiling and prosperous, with not a care in the world!
>
> Then take the other side of the picture.
>
> Behold, the street railway dollar!
>
> Of all the sad, dejected, mangy, disconsolate, unhappy, discouraged, melancholy and anaemic pieces of loose change—this little vagabond coin is the prize boob of the mint. Victim of a motley scourge of ills, sticking to its precarious job, underfed and overworked, banged and buffeted by rolling tides of misfortune, harassed from truck to keel, discredited, maltreated, scorned by its neighbors, its threadbare existence excites only pity among its fellows.
>
> The poor devil is in such straits that it is in the hands of government specialists down in Washington, and from the reports it is difficult to determine whether the consultation of physicians is going to develop into a diagnosis, a clinic, an autopsy or a post mortem. And the street railway industry, itself, doesn't quite know whether it is to hope for a resurrection or prepare for a funeral. It's a standoff, a fifty-fifty bet, and it takes a swad of optimism to put it that strong.
>
> There must be a reason for all this, for, once upon a time, the street railway dollar was happy, like the rest and made a comfortable living, but that was long ago and since then evil days have come upon it.
>
> Why is it? Why are there no more dollars going to work in the street railway industry? Why is capital so vital for the maintenance and development of railway service absolutely shunning this formerly inviting field and turning to other and more attractive channels for investment?
>
> The answer is merely that the dollar already in the business has become discouraged and the dollar that might have cast its fortunes with it is afraid to take a chance.
>
> The street railway dollar is not allowed either a living wage or decent working conditions. It has an army of bosses, cracking the whip and issuing orders. The general public, if not openly hostile, is conspicuously indifferent; the federal government, until a few weeks ago, had been ham-stringing it with war imposts and ignoring it as an economic factor; state authorities have as a rule been interested mainly in circumscribing its natural functions and loading it with legal restrictions; county and municipal regulative and legislative bodies have been more concerned in curbing and leashing it than in giving it freedom of action.
>
> These, friends, are some of the reasons the street railway dollar is "discouraged."
>
> And, there are very close to 6,000,000,000 of these dollars in the United States to-day in that same plight.

Financial News Notes

New P. R. T. Director.—Jeremiah J. Sullivan, Jr., has been elected a director of the Philadelphia (Pa.) Rapid Transit Company, vice John S. Phipps, New York, resigned.

City Invests in Traction Bonds.—The city of Charlottesville, Va., has purchased for its sinking fund $5,000 of bonds of the local company, the Charlottesville & Albermarle Railway.

Interest Payment Deferred. — The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has notified the Citizens' Trust & Savings Bank, Aurora, Ill., trustees for holders of the collateral trust notes, the company is unable to make the interest payment which was due on Sept. 1.

Guarantee of Equipment Notes Authorized.—The Georgia Railway & Power Company, Atlanta, Ga., has been authorized by the Georgia Railroad Commission to guarantee the payment of equipment notes to the amount of $132,231, this sum covering the purchase of fifteen new cars, of the center side-door type, with a seating capacity of fifty-one passengers.

Abilene Road Sold.—The property of the Abilene (Tex.) Street Railway has been sold at public auction by W. G. Swenson, receiver, to Henry James and George L. Paxton, both of Abilene, for $5,500. The property includes approximately 5 miles of single track, several one-man cars, carhouses, etc. It is understood to be the plan of the new owners to put the line in repair and resume operation. Since the cars ceased operation several months ago, transportation has been by jitney and omnibus service.

Dismantlement Under Way.—The work of removing the remaining ties, rails, poles, and other property of the Alton & Jacksonville Railway, between Alton and Jacksonville, Ill., was started at Alton, on Sept. 11. The road belongs to the estate of the late John J. Cummings, Chicago, who secured possession after receivership proceedings. During the war he received permission of the Public Utilities Commission of Illinois to dismantle the line and large quantities of the rails and other material were shipped to France for use in the construction of military railway lines by the American Expeditionary Forces.

Offering of Notes.—Halsey, Stuart & Company, New York, N. Y., are offering at 98.70 and interest to yield 7½ per cent, $96,000 three-year 7 per cent collateral gold notes of the Ashland Light, Power & Street Railway Company, Ashland, Wis. The notes are dated Aug. 1, 1919, and are due on Aug. 1, 1922. The purpose of the issue is to reimburse the company for expenditures made for permanent additions and betterment. In addition to the note the company has outstanding $200,000 of capital stock and $720,000 of first mortgage 5 per cent bonds due on Jan. 1, 1939.

Dallas Doing Better.—Earnings of the Dallas (Tex.) Railway for August showed an increase over former months, operating fewer cars at greater speed and covering less mileage than in July of this year, according to the monthly report of Lynn B. Milam, supervisor of public utilities. Mr. Milam explained that while mileage has been reduced and speed increased, more people are evidently being reached than before through the consolidation and extension of the railway lines. Still further economic gains along these lines are expected when the new rerouting schedules go into effect.

Interest Payment Postponed.—Semiannual interest on the $2,500,000 of bonds of the Washington, Alexandria & Mount Vernon Railway, due on Sept. 1, has not been paid. These bonds are the obligations of the Washington-Virginia Railway, Washington, D. C., which absorbed the Washington, Alexandria & Mount Vernon, and the Washington, Arlington & Falls Church lines. The previous installment of interest, which was due on March 1, was not paid until early in July, the company taking advantage of a clause in the mortgage, which provides that there shall be no legal default until four months after the due date.

Berkshire Receiver Discharged.—Judge Hammond of the Superior Court on Sept. 9 in the case of the Berkshire Street Railway, Pittsfield, Mass., against the New York, New Haven & Hartford Railroad decided that the services of C. O. Richmond as a receiver were no longer required. The judge decreed: "That C. O. Richmond be not authorized to continue further to act as receiver of the property of the plaintiff corporation and that upon the filing and allowance of his account he be discharged as such temporary receiver without prejudice to the right to apply hereafter for the appointment of receiver of the property of the plaintiff corporation."

Plan to Forego Interest Approved.—The plan has been approved which was proposed in May, 1919, by the Augusta-Aiken Railway & Electric Company, Augusta, Ga., to the holders of the first mortgage 5 per cent sinking fund bonds due 1939 of deferring the interest on the issue for three years by turning the coupons into a five-year interest bearing note at 5 per cent and agreeing until such notes mature on June 1, 1924, to waive the operation of the sinking fund. This proposal was made in order to secure necessary funds for construction, replacements and floating debts. Provision is made in the deposit agreement that until the 5 per cent coupon gold notes have been paid off no dividends shall be declared by the company on either class of stock.

Swansea - Seekonk Line Gives up Ghost.—The Swansea & Seekonk Street Railway, forming part of a route between Providence, R. I., and Fall River, Mass., is to be sold to the highest bidder, according to a decision reached at a stockholders' meeting on Sept. 16, in Swansea, Mass. The assets will be distributed and the corporation dissolved at once. A strike of employees obliged the management to cease operation several weeks ago, and the directors found it impossible to resume service. The line was unusually torturous in its location and found great difficulty in competing with the electrified Providence-Fall River service of the New York, New Haven & Hartford Railroad. It was rescued from the junk dealers some months ago, local capital becoming interested in the effort to save the property.

Electric Railway Monthly Earnings

CITIES SERVICE COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$1,789,252	$34,959	$1,754,293	$7,062	$1,747,230
1m., July, '19	1,583,722	56,957	1,526,765	176,828	1,349,937
12m., July, '18	21,331,886	399,579	20,932,306	20,648	20,911,658
12m., July, '19	21,361,104	690,169	20,670,935	1,369,205	19,301,730

COLUMBUS, (GA.) ELECTRIC COMPANY, COLUMBUS, GA.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$104,852	$*59,465	$45,387	$30,312	$15,075
1m., June, '18	95,152	*38,130	57,022	28,084	28,938
12m., June, '19	1,199,899	*649,655	550,244	356,075	194,169
12m., June, '18	1,178,395	*465,666	712,729	325,230	387,499

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$110,619	$*70,662	$39,957	$13,325	$32,846
1m., June, '18	102,080	*51,988	50,092	11,651	38,440
12m., June, '19	1,244,434	*766,947	477,487	156,170	329,590
12m., June, '18	1,018,128	*562,237	455,890	135,602	341,395

*Includes taxes. ‡Includes non-operating income.

EL PASO (TEX.) ELECTRIC AND SUBSIDIARY COMPANIES

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$123,869	$94,120	$29,749	$7,843	$21,951
1m., June, '18	96,236	69,198	27,038	6,667	20,446
12m., June, '19	1,37,8258	987,207	391,051	85,057	305,072
12m., June, '18	1,272,064	832,669	439,395	74,765	364,273

GALVESTON-HOUSTON ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$255,777	$*186,057	$69,720	$35,649	$34,071
1m., June, '18	230,752	*147,895	82,857	29,258	53,599
12m., June, '19	2,924,018	*2,121,528	802,490	378,815	423,675
12m., June, '18	2,385,354	*1,555,941	829,413	342,883	486,530

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '19	$282,414	$*183,470	$98,944	$25,041	$‡83,486
1m., June, '18	259,162	*165,336	93,826	25,212	‡78,197
12m., June, '19	2,927,397	*1,943,771	983,626	300,506	‡798,120
12m., June, '18	3,078,818	*1,747,266	1,331,552	307,987	‡1,109,815

Traffic and Transportation

Register Decision in Boston

Hand Register Not to Be Used on Open Cars With Running Board After Jan. 1

The board of arbitration in the controversy between the Eastern Massachusetts Street Railway, Boston, Mass., and its employees concerning the use of the Rooke register in fare collection handed down its decision on Sept. 8, 1919. As explained in the ELECTRIC RAILWAY JOURNAL for Sept. 13, page 545, the board decided that the register shall not be used on open cars of the running board type after Jan. 1, 1920, but that it may continue to be used on all other types of cars at the discretion of the company.

NOT AN UNREASONABLE REGULATION

The members of this board were Samuel H. Pillsbury, Boston, representing the railway; James H. Vahey, Boston, representing the employees, and James L. Doherty, Springfield, as the third arbitrator. Hearings were held at the State House, Boston, in August, as a result of the agreement to arbitrate on whether the register was reasonable, accurate, safe and proper. A previous reference to this case appeared in the ELECTRIC RAILWAY JOURNAL of Aug. 23, 1919, page 413.

The board assumed that the terms "reasonable" and "proper" are practically synonymous and were to be interpreted in the light of the circumstances in the case. In dealing with its accuracy, the arbitrators held that as a mechanical device the register was not always accurate but subject to fluctuations in registration generally due to effects of wear and usage.

As far as the personal safety of the conductor was concerned, the board agreed that on inclosed cars little, if any, more hazard was involved either to the conductor or the passengers than from the use of the overhead registers, but on cross-bench open cars with side running boards, an element of more seriousness was introduced, even though rules were in operation to prevent passengers riding on running boards of such cars.

BARRED ON OPEN CARS

Comment from passengers of the railway company directed to the conductors intimating their dishonesty, while irritating and unfortunate, was held not to be a controlling factor in the right of the management to establish reasonable policies and that the use of the Rooke register, under all the circumstances, was not an unreasonable or improper exercise of the judgment and discretion lodged in the management, and no change was recommended, except in one particular, namely: the use of the register on cross-bench open cars shall be discontinued on and after Jan. 1, 1920.

S. H. Pillsbury, the company's representative on the board, concurred in the finding against the use of the Rooke register on the open cars now operated upon the Eastern Massachusetts Street Railway, feeling it would not seriously affect its business. On the general principle, however, he did not concur as he was unwilling to prejudice the position of parties not directly affected by this proceeding, stating "that such finding does not appear to me to be supported by satisfactory evidence that the use of this register on open cars has resulted in accidents to employees or others."

A Bid for Popular Favor

Increased business through improved service has been adopted by the Chicago, North Shore & Milwaukee Railroad as a means of meeting a large wage advance recently granted to the employees. This wage increase amounts to $300,000 a year, and the company hopes to meet it without increasing rates to the public. Strict economy and improved efficiency are the watchwords. Courtesy toward patrons and real service to the public are demanded of all trainmen and station agents.

Orders have been placed by the company for thirty new passenger coaches. Delivery on the new equipment is expected to begin late in the fall. New tracks have been built between Milwaukee and Carrollville, Wis., and the roadbed improved in a number of places. Everything possible is being done in the way of making a bid for popular favor. Direct through operation of North Shore trains into the Loop district in Chicago, which began a month ago, is expected to increase passenger traffic.

"We Want You to Feel at Home"

W. P. Strandborg, of the Portland Railway, Light & Power Company, Portland, Ore., writing in a recent issue of the company's paper, *Watts Watt*, includes the following among some desultory thoughts:

> When you go into a store, an office or any other place of business you don't scatter refuse all around the place—you don't sit down in a chair and scatter peanut shells all over the room, and you certainly don't spit tobacco juice on the rug or carpet.
>
> Why then do it in a street car?
>
> One street car company in the East got out some cards a while ago which read like this:
>
> "If You Spit on the Floor at Home, Do It Here. We Want You to Feel at Home."
>
> That, of course, was sarcasm, but it went right to the point.

Buffalo Wants Ten Cents

Says There Is No Use Temporizing if Company Is to Be Saved from Financial Disaster

The International Railway, Buffalo, N. Y., in a supplemental brief filed with the Public Service Commission for the Second District, on Sept. 9, by its attorneys, Kenney, Killeen & Nye, says it should have a 10-cent fare in Buffalo until its deficit is wiped out. It continues:

> On a 6-cent fare this company will continue to starve, unable to pay its bond interest, unable to repave streets and reconstruct tracks, unable to wipe out its debts for taxes, back wages and accumulated bond interest, unable to render efficient public service.
>
> On a 7-cent fare the company will be able to pay operating expenses, including current maintenance, to provide for ordinary renewals and replacements, and probably will be able to pay some part of its bond interest, but it will not be able to wipe out its accumulated deficit and will not be able to pay real wages, to the dollars which are invested in its public service.
>
> An 8-cent fare will provide for the necessities of the company, except that it will not enable the wiping out of the deficit within a reasonable time.

The railway says a rate should be fixed which will restore the company to a condition of financial health so that it may function as an efficient agency of transportation. This can only be done, it asserts, after the credit of the company has been restored by the allowance of a rate of fare which will enable it to take care of its obligations, and to pay some return or wages to the money invested in the public service.

WOULD AVOID EXPERIMENTS

The company argues against experimenting with a lower rate of fare than the facts justify, claiming that an experiment, founded on the possibility that increased traffic may pull the company through is neither wise in itself nor judicious, considering the public interest. Such a course, it says, leaves the company without credit, unable to keep up maintenance, replacements and renewals, with its tracks, cars and buildings steadily deteriorating in operating efficiency and its capacity to render its public service daily diminishing.

	1910	1919	Increase Per Cent
Employees......	2,641	3,160	19.65
Yearly payroll...	$2,012,371	$4,365,990	11.96
Average pay per employee......	$761.97	$1,381.64	81.32
Gross earnings...	$5,984,187	$9,025,000	50.81

The railway says from 1910 to 1919 its payroll increased by about 117 per cent whereas gross earnings have increased only 50.8 per cent. Proof shows that the average price of material has increased since 1914 by approximately 120 per cent. The only way largely to increase the gross earnings at this time, according to the company, is largely to increase the rate of fare which the companies are permitted to charge. The company presented the accompanying figures in support of its plea for still higher rates.

Zone System in Effect in Jersey

Delay in Unloading Due to Passengers and Conductors Not Knowing Fare—Violence on Southern Division

The new zone system of fares on the Public Service Railway of New Jersey calling for 3 cents for the first zone and 2 cents for each additional zone or fraction, became effective last Sunday morning, Sept. 14, coincident with the pulling out of the first car at each of the twenty-eight operating car houses.

The system of fare collection, briefly outlined, provides that all passengers board the cars by the front door and receive from the motorman a zone check illustrated in the ELECTRIC RAILWAY JOURNAL of Sept. 6, page 485. On leaving the car, passengers pay their fare to the conductor, who on some 650 cars ring the fare up on a National cash register, while on other cars the cash is deposited in the fare box and the number of fares so paid is rung up on an overhead register.

The company took every precaution possible to make sure that the plan would operate smoothly. After the first day's operation, John L. O'Toole, assistant to the president, stated:

> The record for the first day was beyond our fondest expectations. We had expected people would take to the zone system, but even our best hopes were surpassed. The co-operation of the car crews, too, was everything that could be looked for. The system will work better and better as it becomes familiar.

FIRST REAL TEST

The first real test of the system came on Sunday night at the Velodrome bicycle races. The zone in which the Velodrome is located commences only some few hundred yards from the entrance and many people wanted to get off in order to save the extra 2 cents. Even though the jitneys operating to the race track were crowded, and many persons walked to the race track, the cars were delayed. Some of the cars took from ten to fifteen minutes to make the few hundred yards from the commencement of the zone to the race track. The delay was caused by the pay-leave system, the inability of the conductor to make change fast enough and lack of co-operation on the part of the traveling public. The Public Service had anticipated this delay to some extent and had provided ticket-sellers to board and go through the cars on approaching the race track, selling passengers full-fare tickets in the hope of eliminating delay.

There were several instances on the longer routes where passengers unacquainted with the system protested against the fares, but after arguing with the conductor, accepted his verdict. The policemen detailed to important traffic centers had their hands full on account of the added street congestions caused by automobile traffic being held up by the cars that were unloading passengers.

On Monday, in anticipation of the real test, especially during the morning rush, the company had ticket-sellers board all cars going to the Hudson & Manhattan tube station and the Hoboken-Fourteenth Street Ferry. This relieved to a large extent the delay at these points, but at centers where there were no ticket-sellers the delays in unloading somewhat disrupted car schedules—the cars became bunched, and as a result the company lost many riders who got tired of waiting for the cars and took the jitneys, which reported bigger business than ever.

SHIPWORKERS CAUSE TROUBLE

The first real trouble in operation was at the shipyards in Camden and Gloucester when the workers, on Monday and Tuesday, in protest at the fares and means of collection tore down car doors and side wire screens, broke the windows and bolted the cars prior to reaching the post-payment areas at the shipyards, while in other cases passengers pulled the trolley off the wire thereby stalling the car and then when the conductor was busy restoring the trolley would bolt the car by the door or climb through the windows.

In other parts of the southern division the car crews reported that citizens had piled obstructions upon the tracks with the view of wrecking the cars and that their own lives as well as those of their passengers were in continual danger. Tuesday afternoon matters became so serious that the men began to refuse to operate the cars, so that in the early evening very few cars were in operation and it was necessary for the shipyard workers to walk or ride in jitneys to reach their homes.

CONDITION IMPROVING FROM DAY TO DAY

Outside of the trouble in the southern division each day's operation brought out two points for successful operation, namely, that nothing but ordinary intelligence was needed by both the car riders and the trainmen and that passengers who purposely hinder the workings of the system serve only to increase delays to other passengers. It is felt that with the use of more ticket sellers on the cars, the establishment of ticket agencies in the principal stores for the sale of full fare tickets and the gradual adjustment of car riders and trainmen to the zone-checks, the delays incident to the new system will disappear within a few days. As one editorial put it "In ten days the novelty of the plan will be gone and in thirty it will be an old story, if the car patrons give it a fair trial."

A fair trial is needed to learn the defects, if any, in the system so that improvements can be made where needed. In the next week's issue will appear a story in detail covering the manner of fare collection.

Eight Cents Cash in St. Louis

This With Tickets at Seven Cents Is Estimated to Return 6 Per Cent on $50,000,000 Valuation

The right to collect an 8-cent cash fare, with a minimum ticket charge of 7 cents, has been granted the United Railways, St. Louis, Mo., by the Public Service Commission of Missouri. The new rates will become effective on Sept. 20. The company had asked the commission for a 10-cent cash fare for adults, a 5-cent cash fare for children, a 7.5-cent token fare for adults, and a 3-cent token fare for children, the establishment of the same rates on county lines, with the Meramec Highlands line divided into two 10-cent fare zones, a cash fare of 40 cents and a ticket fare 35 cents on the St. Charles line, and the abolition of the double transfer system.

The Public Service Commission granted the company an 8-cent cash fare for adults, a 4-cent cash fare for children, a 7.5-cent token fare for adults when tokens are bought in lots of less than fifty, and 7 cents when tokens are bought in lots of fifty or more, four children's tickets for 15 cents and 100 for $3.50, the establishment of the same rates in the county as in the city, and an increase in the fare to St. Charles to 34 cents. The present transfer system will be continued.

The commission finds that the increased wages recently granted to the employees of the United Railways amounts to $2,860,336 per annum, the back pay to $666,306 and the increased power costs to $128,820 per annum, and that the increased fares granted will about pay these increased costs and a return of 6 per cent on a valuation of $50,000,000 for the entire property, including the city, county and St. Charles lines.

AN EMERGENCY MEASURE

The appraisal of the property and audit of the books of the company now in progress by engineers and accountants of the commission will be finished within six months and the increased fares are put in effect as emergency rates for a temporary period of six months from Sept. 20, 1919, to enable the company to meet its increased costs until the commission can definitely fix a valuation of the property and a schedule of rates accordingly.

It is ruled by the commission that the properties of the United Railways must be treated as a whole for the purpose of rate-making. The commission says it is to the best interests of the city of St. Louis, including the car riders, that the county lines be operated, since they serve the city as effectively as though they were within the corporate limits. On the tentative valuation of $50,000,000 placed by the commission on the entire property, the division is in these items: United Railways city lines, $44,000,000; county lines, $5,245,735; St. Charles line, $745,265.

The conclusions reached by the commission are that the present rates of the United Railways on its lines within and without the city limits of St. Louis are insufficient to yield reasonable compensation for the services rendered and are unjust and unreasonable for the company. Assuming that the fare passengers for the ensuing six months will approximate the traffic handled from Jan. 1 to June 20, 1919, the commission estimates the passenger revenue under the new rates will be $9,199,258.

There is no change in the transfer system. In testimony before the commission, Colonel Perkins for the company asserted that the double transfer privilege was being abused and that people were enabled to make round trips by the payment of a single fare and the use of the double transfer. The commission stated that it found no substantiation for this.

TICKET RATE

The finding provides that the company shall provide and place on sale in its cars and other locations convenient to the public tickets or metal disks at the rates auhorized. In the concluding paragraph of the opinion, Receiver Wells is warned that strict economy must be practiced. It suggests that the receiver can increase his income from operation by practicing certain economies in operation, such as adjusting schedules more closely for the demands of transportation; short-looping the cars, and operation of the one-man safety car. The company's decision on whether or not the award would be accepted and the terms obeyed, according to the opinion, had to be handed the commission before Sept. 15.

Neither the company nor the city is satisfied with the ruling of the commission, according to announcements by Receiver Wells and city officials. Mr. Wells found fault particularly with that part of the finding, which fixed a 6 per cent return on a valuation of $50,000,000. J. L. Harrop, chief engineer of the Public Service Commission, had stated, however, that the commission in no way committed itself to that figure by its statement and also that the commission never had recognized the tentative $60,000,000 valuation agreed on between the company and the city.

Receiver Wells for the company gave out a statement for the company. He said in part:

> I hope that the people feel that we went into the fare matter with the commission in the utmost good faith and for the interest of the people first and then the investors. The character of the award is very disappointing to me, for it will make it exceedingly difficult to serve the public to the highest point of efficiency. The award does not materially benefit anybody.
>
> It creates a complicated system that will increase congestion in boarding the cars and the liability of accidents and will result in great delays. I felt perfectly sure the opportunity the people would have to buy tokens at reduced prices at convenient places would have made the 10-cent cash fare immaterial. As it is now a great many cash fares will be paid and the difficulty of making change will slow the loading of the cars down 25 per cent. If our request had been granted the fare could have been paid with either one coin or one token.
>
> This statement is made from the practical point of view and the numerous criticisms of a 10-cent cash fare were not warrented, being entirely theoretical, not practical. We will do the best we can under the circumstances.

MAY ASK REHEARING

Before the text of the commission's award was received by officials of the company, Colonel Perkins said that it was not unlikely that a rehearing would be asked by the company, but on Sept. 12 the company notified the commission that the decision would be accepted with the possible exception of the part fixing children's fares at 4 cents. Receiver Wells announced to the public that he contemplates petitioning the commission to allow the company to reduce this to 3 cents, the amount the company originally asked for.

Adults' tokens will be sold in packages of two for 15 cents, seven for 50 cents, and fifty for $3.50.

Monthly Tickets on Bay State

Experiment to Enable People to Ride at Reduced Rates Where Patronage Is Regular

On Sept. 15 reduced fares obtained through the sale of a fifty-ride, nontransferable, limited-life monthly ticket selling for $3 were established experimentally by the Eastern Massachusetts Street Railway at Fall River, Mass. At Taunton a fourteen-ride ticket, selling for $1, unlimited in every particular, was scheduled to go on sale on Sept. 20, and at Lowell, Mass., on Sept. 25, a ticket on which sixteen rides are sold for $1, good for one person only and for an unlimited period, was scheduled to go into effect.

All of these special tickets are purely experimental. The company reserves the right to withdraw them at any time. They represent an effort on the part of the trustees, co-operating with the local civic authorities and business interests, to afford the public means of riding at reduced rates where the patronage is sufficienlty regular to justify the purchase of tickets.

The flat fare unit remains at 10 cents. Holders of the above reduced-rate tickets are accorded the same transfer privileges as travelers paying the regular 10-cent fare unit. These reduced-rate tickets were put into effect in response to petitions by the local authorities urging that lower rates than the maximum fare unit be provided.

At Fall River about 7000 tickets were sold on the opening day. Before these went into effect the local authorities and the large mill interests conferred with the trustees, and the problem of establishing a lower rate was frankly discussed, all interests represented being in harmony.

In particular, the mill agents represented expressed their willingness to sell tickets for the railway on their own premises, to advertise the new facilities and to post bulletins in wash rooms and other places to make it easier for their employees to use the reduced-rate service. It was pointed out that adequate transportation facilities at these reduced rates are an important factor in maintaining contentment among mill employees.

Drug stores, department stores and practically every establishment in Fall River where circus tickets could be obtained in show-time, are also carrying these tickets for the company. The attitude of the local press and of the Chamber of Commerce shows much appreciation of the company's efforts to meet the situation.

Ruling on Fare Evidence

British Columbia Commissioner Decides That Gas and Electric Light Investments Should be Excluded

Major J. L. Retallack, Public Service Commissioner for the Province of British Columbia, rendered a decision on Aug. 6 as to the scope of evidence admissible in the 6-cent fare case of the British Columbia Electric Railway.

This was the case wherein it is set out that an inquiry is to be made into the fare charged in Vancouver. The question was whether the inquiry should be restricted to the city of Vancouver alone or the rest of the company's system.

The city took the former stand. The company pointed out that the whole company was involved because the credit of the company was one. The outlying municipalities also took a hand, opposing the contention of the city and averring that the outside districts had a right to consideration as they paid a great deal toward the revenue earned on the city lines.

After taking up commission precedents, Commissioner Retallack ruled that the Victoria system, the Vancouver Gas Company and the company's investments in land not directly for the purpose of its power, light and railway system, should be excluded from the inquiry. The commissioner said:

> I therefore rule that, in the inquiry under the act, evidence should be accepted as to the British Columbia Electric Railway's investment of capital, present property values, operating and administrative costs, fixed charges, and receipts either directly or through its subsidiary companies in its electric railway system, as constructed and operated in the District of Vancouver (being the area contiguous to and inclusive of the delta of the Fraser River, the cities of Vancouver and New Westminster, the municipalities of Point Grey, South Vancouver and Burnaby), the city and district of North Vancouver and the districts served by the New Westminster and Chilliwack lines, and including its investments, present property values, administrative costs, fixed charges and receipts directly or through its subsidiary companies in its power and electric lighting system in said district.

The commissioner added, however, that such ruling did not decide what proportion of the return should justly be derived from the company's collections within the city, and a decision would be necessary if the city's application were acted upon, as to whether it was "just to secure such return for the company by, for the sake of example:

(a) Continuing the present system of rates, being a more or less different rate for each governmental division of the district of Vancouver.

(b) Establishing a basic rate, modified in relation to mileage for the whole of said district.

(c) Establishing the zone system throughout the whole of said district—viz., a fare figured in proportion to the density of population and mileage.

This being only a preliminary decision in the 6-cent fare case the matter is going on, one of the phases now up for discussion being the proposed appraisal of the company's property.

Increases Announced on Massachusetts Roads

Several Massachusetts electric railways recently announced their intention to increase fares.

The Worcester Consolidated Street Railway has filed with the State Public Service Commission a revised schedule of fares under which the city of Worcester will be divided into two zones with a 5-cent fare in each zone. The inner zone, having its center at the City Hall, will be four miles in diameter. Beyond the limits of this zone, an extra fare will be collected. The company will charge 2 cents for transfers. Interurban rates are also raised to approximately 2.5 cents a mile. The present fare in Worcester is 7 cents, no charge being made for transfers.

The Interstate Consolidated Street Railway, Attleboro, will replace the present 5-cent fare unit with one of 6-cents, without the transfer privilege. Zone limits will remain as at present.

The Milford, Attleboro and Woonsocket Street Railway, Milford, will install a 7-cent unit. The present unit is 5 cents.

The Fitchburg & Leominster Street Railway, Fitchburg, has notified the Commission that on Oct. 1 it will begin charging 10 cents. The present 7-cent fare was authorized last November. Strip tickets will be sold at the rate of six for 50 cents. They now cost 50 cents for eight.

Must Honor Ticket

If the higher courts sustain a ruling made recently by Judge Caverly, the Chicago (Ill.) Elevated Railways will have to accept for full fare payment the tickets which were previously sold for 6 cents each. This decision was made in a suit brought by Robert E. O'Connor whose attorneys argued that the wording of the tickets "good for one fare" made a binding contract for transportation of the holder even when the legal rate of fare had been raised to 8 cents. Judgment to the amount of 2 cents was rendered in favor of the plaintiff. It was announced that the elevated companies would appeal the case.

A somewhat similar issue is raised in a suit brought at White Plains, N. Y., on Sept. 2, to recover 5 cents for breach of contract. The action has been filed in the Court of County Judge Frank G. Young against the Yonkers Railroad by Henry Koster, retired merchant, of Yonkers. Mr. Koster boarded a car for Yonkers when the company doubled the fare between Yonkers and New York. When he refused to pay a second fare, which he maintained was an illegal charge, he was ejected. He demands his nickel back, alleging the company failed to keep its contract to carry him to his destination for the fare he paid. He sues for $1,999 for the humiliation, discomfiture and inconvenience which he alleges he suffered by being publicly ousted from the car after having paid his fare.

Commission Not Empowered to Prescribe Jitney Rules

The Public Service Commission of Massachusetts has no power to prescribe regulations governing the operation of jitneys, but may either approve or disapprove such regulations when adopted by municipalities, according to an opinion filed recently by Attorney General Henry C. Attwill. The Attorney General had been called upon to pass on the commission's power to act on the protest of the Holyoke Street Railway against jitney regulations of the Board of Aldermen of that city.

An appeal was taken from the rules prescribed by the commission in several cases where objection was taken to the regulations of Holyoke authorities. The opinion of the Attorney General holds that in prescribing jitney regulations in Lawrence, Haverhill, Malden, New Bedford, Lynn, Salem, and elsewhere in the eastern part of the State, the commission exceeded its authority.

Seven Cents for Cincinnati

On Sept. 13 it was announced that the rate of fare on the Cincinnati (Ohio) Traction Company's lines would be increased to 7 cents on Oct. 1. A deficit of $113,000 in the cost of operation occurred during July and August. The franchise provides that the fare may be automatically increased half a cent, when a deficit in the cost of operation occurs, but the company is required to make an announcement of the fact on the fifteenth day of the month preceding the date the increase goes into effect.

Increase on Fitchburg & Leominster

A new wage scale, embodying a maximum of 56 cents an hour, has been established on the Fitchburg & Leominster Street Railway, Fitchburg, Mass. The basic eight-hour day is provided, with time-and-one-half for overtime. The company plans to petition the Public Service Commission for authority to raise its fares.

Transportation News Notes

Atlanta Using Tokens.—The Georgia Railway & Power Company, Atlanta, Ga., has been using metal tokens since Sept. 1. Each token costs the passenger 6 cents. This is the same as the cash fare. The use of the tokens does not affect the sale of books containing seventeen tickets for $1.

Higher Zone Fares on Pennsylvania Interurban.—The Southern Cambria Railway, Johnstown, Pa., which operates interurban lines in Cambria county, has announced an increase of zone fares from 6 cents to 7 cents effective on Oct. 3. At the same time the wages of employees will be increased.

City Has Jitney Regulatory Power.—In a recent decision handed down by Superior Judge R. M. Webster, the action of the City Council of Spokane, Wash., in denying a jitney license to an applicant was sustained, the Judge holding that the City Council has power to regulate all traffic on the city streets. Counsel for the applicant has announced that the local jitney owners' association will appeal the ruling to the State Supreme Court.

Zone System Desired by New Bedford Line.—H. H. Crapo, president of the Union Street Railway, New Bedford, Mass., appeared before the Massachusetts Public Service Commission recently in support of a new fare schedule. It is proposed to divide the city into two 5-cent zones, the center of the city being the division point. Mayor Ashley urged that the 5-cent fare be retained during the rush-hour periods. A finding will be made later.

Would Abandon Small-Lot Freight Service.—A petition to abandon its less-than-carload freight service in the eastern division of the city of Birmingham has been filed by the Birmingham Railway, Light & Power Company with the Public Service Commission of Alabama. In the petition it is pointed out that the increased use of motor trucks and the extension of street paving were reasons which were reducing the volume and making the traffic unprofitable in less than carload lots.

Fare Case Reopened Following Complaints.—Orders have been issued by the Oklahoma Corporation Commission reopening the fare case from McAlester, involving the Pittsburgh County Railway, which operates in McAlester. The commission last August granted a 7-cent fare applicable to all parts of the city. Complaints were made that the company had restricted its service, and the order reopening the fare case followed.

Seven-Cent Fare Upheld.—The Public Service Commission of Pennsylvania has sustained the 7-cent fare of the Valley Railway, operating from Harrisburg to Carlisle, Mechaniscsburg, New Cumberland and other places in Cumberland county, and Marysville, in Perry County. It dismisses complaints filed by the boroughs of Carlisle and West Fairview, and by various residents and associations of West Shore towns. The complaints were heard last winter and spring, and a valuation of the system was made.

Five-Cent Fares a Political Issue.—Retention of the present 5-cent fare will be an issue in the coming political campaign in New York City. Robert L. Moran, Democratic candidate for re-election as president of the Board of Aldermen, has announced that he will make the fare question the chief plank in his platform. He favors a 5-cent fare "if the public can be guaranteed adequate service for that rate." If he is re-elected he promises to investigate the managment of the railway companies "with a view to getting for the public the best possible service at the lowest possible fare."

No More Free Ferry Transfers.—The contract between the New York Railways and the city of New York, which operates the Staten Island Ferry, by which passengers could travel between St. George, Staten Island, and any point reached by the cars of the company running to the ferry terminal at Whitehall Street, terminated on Sept. 15, by order of Federal Judge Mayer. Hereafter the passengers will receive the needed transfers when they buy their tickets at St. George, but the purchase will be accompanied by a warning that the railroad company will not honor them and that they will have to pay another 5-cent fare if they want to ride in the cars of the railways.

City Asks for One-Man Cars.—City Attorney Pierce Tyrell of Elgin, Ill., has petitioned the Public Utilities Commission of Illinois to order the use of one-man cars on the city lines in Elgin by the Aurora, Elgin & Chicago Railroad. Mr. Tyrell has made this plea to combat the plea of the company for an 8-cent fare for city passengers. He hopes to have the fare placed at 6 cents or even at 5 cents, if the operation of one-man cars is allowed by the commission. Elgin will also ask the commission for a consideration of its case separate from the case of the company in connection with its local Aurora lines, on which an 8-cent fare is also being sought.

Fares Still Unsettled in Jacksonville.—The City Council of Jacksonville, Fla., has passed a second ordinance submitting to a special municipal election the question of granting the Jacksonville Traction Company a 7-cent fare. The first ordinance, referred to in the ELECTRIC RAILWAY JOURNAL some time ago, was vetoed by Mayor Martin because it did not provide for popular control of fares once the higher rate had been granted. The new ordinance stipulates that the Council may call for a special election to decide the question of lowering fares. The company must defray the expenses of the special election at which the question of higher fares is to be decided.

Will Not Reopen North Shore Case.—The application of Corporation Counsel William P. Burr of New York to have the Public Service Commission of the First District reopen the case of the New York & North Shore Traction Company and to restore the 5-cent fare on that company's lines within the city limits, was denied by the Public Service Commission after a hearing in the Flushing Town Hall on Sept. 5. Between 500 and 600 residents of Flushing, Bayside, Whitestone, Douglaston and Little Neck applauded when Deputy Public Service Commisioner Alfred M. Barrett, of Flushing, announced that the Corporation Counsel's application for a rehearing in the matter had been denied.

Seeks Injunction in Illinois Fare Case.—The East St. Louis & Suburban Railway, East St. Louis, Ill., has asked the United States District Court, at Danville, Ill., for an injunction to restrain the Public Utilities Commission of Illinois, the Attorney-General of Illinois and the State's Attorney of St. Clair County from interfering with the company's charging more than 2 cents a mile. When a nine-day strike on the East St. Louis & Suburban Railway was ended recently, an agreement of the men to return to work pending some action of the Public Utilities Commission, it was understood that an advance in wages would be made if rates were increased. The appeal to the Federal Court followed.

No Extra Charge to Token-Holders.—Holders of the 20,000 5-cent tokens of the Tri-City Railway, Davenport, Iowa, will be allowed to use them for street-car fare on the company's Illinois lines without the payment of additional 2 cents, following the installing of the 7-cent fare, as allowed by the Illinois Public Utilities Commission. At first, conductors asked for payment of 2 cents with each 5-cent token, but did not insist on the extra collection in case the passenger dissented. The remaining 5-cent tokens will be accepted as full fare and as fast as they collect will be taken out of circulation, as the company has provided a full supply of 7-cent tokens of smaller size. The company has removed cash-collection boxes from its cars.

Campaign to Reduce Accidents.—The Georgia Railway & Power Company, Atlanta, Ga., is conducting a campaign to reduce the number of collisions between automobiles and trolley cars. The latest phase of this campaign is a booklet entitled "For Humanity's Sake," several thousand copies of which are being distributed among the automobile owners in Atlanta. The booklet illustrates by pictures and description the most prevalent type of automobile accidents with street cars, shows how a little caution on the part of the automobile driver as well as that of the railway motorman could have avoided them, and makes a determined plea for elimination of the great waste in property and human efficiency that such accidents cause.

Safety Zones Recommended.—Establishment of the safety-zone plan, arranged to protect passengers boarding or leaving electric railway cars and still permit vehicle traffic to proceed, is recommended by L. E. McGee, police and fire commissionser of the city of Dallas, Tex. Mr. McGee made his recommendations after a thorough investigation with a view to instituting the one-way traffic rule in the business district of Dallas. The one-way traffic rule is opposed on the ground that the many long blocks would work confusion and the one-way rule would retard rather than speed-up traffic. The establishment of a safety-zone plan is recommended instead. He would have the zone marked by movable standards, which would be used only during the rush hours.

Would Raise Local and Interurban Fares.—The Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., has petitioned the Public Service Commission of Indiana for an 8-cent cash fare between any two street stops in East Chicago and Indiana Harbor; permission to sell five tickets for such travel at 35 cents; 3 cents a mile for passenger fare between points on its interurban system with a 10-cent minimum and a 10-cent penalty for cash fare, and a twenty-five trip, sixty-day commutation ticket, good to purchaser only, between Gary and East Chicago for $4, and between Gary and East Chicago for $5. The company has also filed notice that it has petitioned the Interstate Commerce Commission for permission to cancel commutation tickets between Gary and Kensington, Ill., and other points in Illinois.

Wants All Cars Fenderless.—The Capital Traction Company, Washington, D. C., will petition the Public Utilities Commission to allow it to remove fenders from all its cars. On June 29 the company was authorized by the commission to operate all its cars on the Georgetown line, as an experiment, without fenders. This involved between sixty-five and seventy cars. After two months and a half of fenderless cars the company is now looking forward to making the fenderless car a permanent innovation in Washington. The experiment has proved entirely satisfactory, decreasing accidents, it was said, and reducing operating expenses to some extent. The superintendent of operations, while not in possession of exact data on the amount saved or the accidents prevented, was fully confident that the fenderless car was a benefit both to the company and to the public.

Personal Mention

David Daly at Keokuk

General Manager of Houston Company Transferred by Stone & Webster to Their Mid-West Properties

David Daly, general manager of the Houston (Tex.) Electric Company since 1905, has been promoted and transferred to Keokuk, Ia. Mr. Daly will be district manager at Keokuk for the Mid-West properties of the Stone & Webster interests and will also have charge of the Mississippi River Power Company, which operates one of the largest hydro-electric power plants in the country. In addition to being general manager of the Houston Electric Company for nearly fourteen years, Mr. Daly since 1913 has had charge of the Galveston-Houston Interurban Railway.

After graduating from Harvard University, Mr. Daly entered the organization of Stone & Webster, in their Boston office, being assigned to the statistical department in handling insurance matters. Later he went to Ponce, Porto Rico, where he became manager of the Ponce Electric Company. His health failed in Ponce and he returned to Boston where he remained until Aug. 1, 1905, when he went to Houston as manager of the Houston Electric Company, succeeding H. K. Payne. In 1913 the management of the Galveston interurban was added to his duties.

Mr. Daly went to Houston at a time when it was just beginning its era of phenomenal growth from a small to an important city. The local railway was kept fully abreast of the city's development and in 1914, when the jitneys first began operation there it was in a high state of efficiency. The novelty of the jitneys in their early stages took nearly $500,000 in revenue from the railway during the first year of their operation. This and the war forced retrenchments in both maintenance and additions. The jitney matter is now in process of adjustment in the federal courts.

Mr. Daly always has taken a lively interest in civic affairs and has given liberally of his time to movements designed to promote Houston's growth and civic betterment.

No successor to Mr. Daly, as manager at Houston has yet been announced. Pending the permanent filling of the place, Luke C. Bradley, district manager for Texas of Stone & Webster, will have active charge of the operation of the properties.

T. J. Ramsey, assistant auditor for the Texas Electric Express Company at Dallas, Tex., has been transferred to Sherman, Tex., as special route agent.

H. Stuart Johnson, manager of the Honolulu Rapid Transit & Land Company, Honolulu, H. I., expects to arrive in the United States about Oct. 1 for a two-months stay.

Harold B. Kuder has succeeded Malcolm McIntyre as special car agent and assistant to the general manager of the Detroit (Mich.) United Railway. Mr. Kuder was company stockkeeper prior to his new appointment.

F. Windle, who was appointed assistant superintendent of transportation of the Pittsburgh, Harmony, Butler & New Castle Railway on Jan. 1, 1919, has been made superintendent of the company. Mr. Windle was formerly superintendent of the Indianapolis & Louisville Traction Railway. His railway experience covers a period of more than twenty-five years.

Sir Albert H. Stanley, chairman of the London, England, underground undertakings, has been elected a member of the National Industrial Council, which is to consider questions of labor and wages. Sir Albert, who recently visited the United States, was made president of the Board of Trade in the Lloyd George cabinet in 1917. He resigned a short time ago on account of ill health.

Malcolm McIntyre has been appointed night superintendent of the city lines of the Detroit (Mich.) United Railway. He has been with the company for a number of years and has held the following positions: Agent at Algonac; carhouse foreman, assistant superintendent of the Jefferson line, superintendent of the Pontiac and Orchard Lake division, and special car agent and assistant to the general passenger agent.

W. S. Murray, consulting engineer, New York City, has been appointed chairman of the traction and transportation committee of the American Institute of Electrical Engineers. The purpose of this committee is to keep the membership of the institute informed as to electric traction progress, particularly in providing suitable papers for meetings. For most of his professional life Mr. Murray has been engaged in electric traction and allied transmission work, being for eleven years associated with the New Haven Railroad in its pioneer alternating-current electrification. He opened his consulting office in New York early in the present year.

Edgar W. Bright, for the past twenty years in the engineering, purchasing and maintenance departments of the Boston (Mass.) Elevated Railway, has organized the Massachusetts Lumber & Creosoting Company, and will shortly begin the construction of a modern wood preserving plant. Mr. Bright has specialized in tie and timber purchasing and treatment for the past fourteen years, and as designer and supervisor of the Boston Elevated wood-preserving plant at South Boston, has had wide experience in the operation of equipment of this class. Mr. Bright is president of the new company, the vice-president being Ernest Lent, who has been his assistant for some time in the Boston Elevated Railway.

Maj. John Lansdale, formerly assistant engineer in charge of valuation work of the Pacific Electric Railway, Los Angeles, Cal., has returned to the United States after nineteen months service in France. Major Lansdale received his commission as Captain of Engineers in June, 1917. After several months of intensive training at Leavenworth, Kan., he went to France, where he was made Engineer Officer in charge of constructing the railroad line to Base Hospital No. 27. He subsequently held a number of other posts, and was promoted to Major of Engineers in August, 1918. At that time he was cited by General Pershing for "especially conspicuous and meritorius service." He will rejoin the Pacific Electric Railway in the near future. He was in charge of building the Nevers cutoff at Nevers, France.

George H. Dick, secretary to J. J. Dempsey, vice-president of the Brooklyn (N. Y.) Rapid Transit Company in charge of traffic, has severed his connection with the company to enter the employ of the R. E. Seamans Company, Inc., of which Mr. Dempsey has recently been elected a vice-president. Mr. Dick will remain with his old chief in practically the same capacity as in the past, acting as his secretary and as office manager of the New York office of the Seamans Company. Mr. Dick entered the service of the B. R. T. as a stenographer on Feb. 1, 1906, and in August of that year was placed in charge of the record room of the elevated lines. In September, 1908, he became secretary to Mr. Dempsey, who was then superintendent of elevated lines, and continued with him when Mr. Dempsey became vice-president on Jan. 1, 1918.

Obituary

George M. Lewis, lawyer and street railway promoter, died on Aug. 28 at his home in Wilkes-Barre, Pa., at the age of seventy-one years. Mr. Lewis took an active part in organizing the electric railway system of the Wyoming Valley, in Pennsylvania, which formed the nucleus of the present Wilkes-Barre Railway. He was graduated from Lafayette College, Easton, Pa., in 1873, and for the last fifty-five years had made his home in Wilkes-Barre.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Crossarm and Pin Orders Increasing

Prices of Pine Arms Up 15 Per Cent—Fir Arms Up 10 Per Cent—Wood Pins Firm

In anticipation of fall construction and winter maintenance needs there has been a good volume of wooden crossarm and pin ordering to date. There is, however, considerable room for improvement if stocks of certain grades of fir arms are to be accumulated and regular stocks of woodenware maintained.

Prices on pine crossarms advanced 15 per cent on Sept. 15. At New York warehouse 6-ft., four-pin and six-pin yellow-pine arms cost $78.10 in less than 1000-linear-foot lots, and 75 per cent long-leaf arms $89.64. In lots of more than 3000 linear feet these respective prices will be $65.08 and $74.70. Deliveries are good. Fir arms went up 10 per cent on Sept. 1, with one grade ranging from $92.04 to $110.45 for the same size and quantities as above with mill deliveries, and another grade $51.19 in carload lots and two to three months' deliveries. On pins prices have remained rather steady, and no change is looked for in the near future. Locust pins, 1½ in. by 9 in., are quoted at $45, $40, $24 per 1000 in lots from less than 250 pins to 5000 and over.

Rail Requirements Large

Volume of Business Not Large But Improving—Good Deliveries Now Made from Mills

Although steel rail and accessories equipment buying so far this year has been smaller than in any similar period for a number of seasons, the time is coming shortly when rail renewals will have to be made. The recent order given out by the Railroad Administration for 200,000 tons of rails placed in the steam railway field is merely an indication of what is to be expected. It has been estimated that the demand for the steam railroads up to the first of the year would be 1,000,000 tons, and it is believed that one-third or one-fourth of this amount may be ordered by that time.

There is no danger of the steam roads monopolizing the mill space, as all that has been ordered to date can be run off in a short time. The mills are in good shape to receive orders for the high T-rail, girder rails or the standard A.S.C.E. and other sections. Some of the mills are running a little bit slack, but nevertheless deliveries are good. The mills are in good shape to handle anything in the way of rail orders, accessories or special track work. One large mill which will accept orders as small as 250 tons can make deliveries within two weeks of order.

As a rule when there is plenty of mill space, orders come in slowly and the demands for rails are small. Later on when the railways commence buying the companies will be crowded with orders and mill conditions will approximate those at the early part of the war. Generally speaking, the price quotations which hold good at the present time, are those made at the time of inquiry. Girder rails are now bringing $65 per gross ton, in 250 ton lots, while the high T-rails are bringing around $60 per gross ton. The standard A.S.C.E. and A.R.A. types are quoted at $45 to $51 per gross ton.

Encouraging Outlook in Used Equipment Market

Increase in Buying for Fall Delivery Expected—Prices Probably Will Be Advanced

During the past two months the condition of the used apparatus market has improved to a marked degree and a large volume of business has been transacted. This state of the market is not localized, but is characteristic of the whole country. Inquiries for export are in a healthy state and point to a satisfactory market in that direction.

The power generation apparatus market is in good shape in respect to demand for the steam driven sets, although for other generating equipment stocks as a whole are low and there is less available material for sale now than before the war. Prices have been holding steady all summer and are given on an average as 50 to 70 per cent of new apparatus prices. A rising market is looked forward to as the lengthening shipments of the larger sized motors from manufacturers causes increased sales for the second hand dealer.

Spanish Railway to Buy Equipment

Compania de Travias de la Corunna, Spain, has issued securities in order to carry out the construction of the Corunna-Soda electric line, which will be 11.4 miles long. The purchase of the material for the construction of this new line will be made in foreign countries, and the opportunity for American concerns to supply the material and to oversee the construction is favorable.

"Price at Delivery" Policy Is Questioned

Manufacturers Differ as to Practices, Although Conditions Justify Withdrawal of Schedule

The practice started during the war of billing goods at the price in effect at the time of their delivery is growing among electrical manufacturers, who must buy raw material on this basis. However, the basis for the trend toward this new "price at delivery policy" is labor, because the increased cost of raw materials, such as iron, copper and coal, which are required by different manufacturers, is mainly an increase in the cost of labor. The manufacturer is also confronted with increased fabricating costs and a decreased output of labor at the same time.

A number of central station and industrial buyers do not object seriously to this policy provided it is kept in effect for a complete cycle of rising and falling prices. Broad-gaged business men do not ask manufacturers to protect them against an increase in price and also to give them the benefit of any reduction which may become operative between the time of ordering and of delivery. But this has been and still is the policy of a number of representative manufacturers.

LABOR COST MAY GOVERN

Many buyers feel that a manufacturer should take whatever steps he may deem necessary to protect himself when he receives an order. This can and is being done by some manufacturers, but it is not always practicable. The ratio of the cost of labor to that of material in an article may be so high that labor is the governing factor in making the price, and in this case the manufacturer in unable to protect himself against the growing inefficiency and rising wages.

It is easy for a manufacturer to change his price policy if he does so without considering the results. A manufacturer may have the best possible intentions but will probably have some difficulty in explaining to an irate customer why his goods were shipped just late enough to come under an increased price schedule or just early enough to miss a reduction in price. There is some question therefore whether a change to a "price at delivery" policy would not cause the manufacturers to lose more in customers' good will than would be justified by the more scientifically correct price arrangement.

Rolling Stock

Brockton & Plymouth Street Railway, Plymouth, Mass., has ordered two safety cars from the Wason Manufacturing Company.

Georgia Railway & Power Company, Atlanta, Ga., has been authorized by the Georgia Railway Commission to guarantee the payment of equipment notes amounting to $132,231 for the payment of the 15 center-entrance cars recently ordered from the American Car Company as noted in the July 12 issue of the ELECTRIC RAILWAY JOURNAL.

Recent Incorporations

Waco, Tex.—O. A. Ryfle, president and general manager of the Central Texas Electric Railway, formerly the Waco-Temple Interurban Association, has announced the organization of the Central Texas Engineering & Construction Company, the purpose of which is to construct the proposed interurban line from Waco to Temple. The capital stock is $50,000. Headquarters will be maintained in Waco.

Track and Roadway

Indianapolis (Ind.) Street Railway.—The following extensions to the street car lines of the Indianapolis (Ind.) Street Railway have been authorized and will be pushed through this fall: Brookside Avenue car line extension to the plant of the Premier Motor Company; College Avenue extension of city service to Forty-sixth Street; the Shelby Street extension to the city limits on the tracks on the Interstate Public Service Company. It was also agreed that within a year the question of extending city service to Fifty-second Street would again be brought up. A "Y" switch for Forty-sixth Street will be needed.

Toronto (Ont.) Civic Railway.—Works Commissioner Harris of Toronto, Ont., informed the Board of Control early this month that the plans and specifications for the proposed Mount Pleasant road car line, on which his department has been working, will be ready for submission to the Railway Commissioners very soon.

Dallas (Tex.) Railway.—The Dallas Railway has been ordered by the City Commission to construct a line on Seventh Street, from Seventh and Tyler, thence on Edgefield to King's Highway or as far as the funds available will permit. This order followed a hearing before the City Plan Commission on the proposed routings of this extension and the recommendation of the commission for the Seventh Street route.

Portland Railway, Light & Power Company, Portland, Ore.—In a petition filed with the State Public Service Commission by the city of Portland, Ore., the Portland Railway, Light & Power Company is asked to extend its lines from the present terminus at Fessenden and Jersey Streets to the St. Johns terminal. The line would be about 1½ miles long, and would cost between $30,000 and $35,000 to build. The petition declares that the city has no objection to the extension being classified as an interurban line, and the city offers to give reasonable franchise rights over the city streets, and to help gain reasonable franchise rights over county roads.

Philadelphia, Pa.—Two proposals were submitted to Director Twining of the Department of City Transit on Sept. 9 for the completion of the steel superstructure of the Frankford elevated road on Front Street for a distance of 173 feet. The bids were those of the McClintick-Marshall Company, who offered to complete the operation for $31,277, and the Phoenix Bridge Company, $40,846. Less than sixty feet of superstructure work remain to make the physical connection between the Frankford L and the Market street subway lines at Arch street. No award will be made until after a decision has been handed down by the Supreme Court regarding the validity of the municipal loan of $12,970,000.

Dallas (Tex.) Railway.—Street car service for the Mount Auburn and Lakeview additions to the city of Dallas are assured. Mayor Wozencraft announces that he has secured $40,000 of a fund of $50,000, for which J. F. Strickland, president of the Dallas Railway, agrees to build and operate a line through these additions to a con-

NEW YORK METAL MARKET PRICES

	Sept. 2	Sept. 16
Copper, ingots, cents per lb	22.37½	22.12½
Copper wire base, cents per lb	26.00	26.00
Lead, cents per lb	6.00	6.25
Nickel, cents per lb	41.00	41.00
Spelter, cents per lb	7.85	7.55
Tin, cents per lb	55.75 to 56.00	56.00
Aluminum, 98 to 99 per cent, cents per lb	32.00 to 33.00	32.00 to 33.00

OLD METAL PRICES—NEW YORK

	Sept. 2	Sept. 16
Heavy copper, cents per lb	18.50 to 19.00	19.00 to 19.50
Light copper, cents per lb	15.00 to 15.50	15.50 to 16.00
Heavy brass, cents per lb	10.50 to 11.00	10.00 to 10.50
Zinc, cents per lb	4.75 to 5.00	4.75 to 5.00
Yellow brass, cents per lb	9.00 to 9.25	8.50 to 9.00
Lead, heavy, cents per lb	5.00 to 5.10	5.00 to 5.10
Steel car axles, Chicago, per net ton	$26.00 to $27.00	$26.00 to $27.00
Old carwheels, Chicago, per gross ton	$25.00 to $27.00	$25.50 to $27.00
Steel rails (scrap), Chicago, per gross ton	$22.75 to $23.75	$22.75 to $23.75
Steel rails (relaying), Chicago, gross ton	$26.50 to $27.50	$26.50 to $27.50
Machine shop turnings, Chicago, net ton	$9.25 to $9.75	$9.25 to $9.75

ELECTRIC RAILWAY MATERIAL PRICES

	Sept. 2	Sept. 16
Rubber-covered wire base, New York, cents per lb	30	30
Weatherproof wire (100 lb. lots), cents per lb., New York	33	34
Weatherproof wire (100 lb. lots), cents per lb., Chicago	30.75	33
T rails (A. S. C. E. standard), per gross ton	$49.00 to $51.00	49.00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47.00 to $49.00	47.00 to 49.00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45.00 to $47.00	45.00 to 47.00
T rail, high (Shanghai), cents per lb	3	3
Rails, girder (grooved), cents per lb	3	3
Wire nails, Pittsburgh, cents per lb	3.25	3.25 to 3.50
Railroad spikes, drive, Pittsburgh base, cents per lb	3.50	3.50
Railroad spikes, screw, Pittsburgh base, cents per lb	7.50 to 9.00	7.50 to 9.00
Tie plates (flat type), cents per lb	2.75	2.75
Tie plates (brace type), cents per lb	2.75	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb	3	3
Angle plates, cents per lb	3.90	3.90
Angle bars, cents per lb	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb	4.50	4.50
Steel bars, Pittsburgh, cents per lb	2.35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.25	5.25
Galvanized barbed wire, Pittsburgh cents per lb	[illegible]	4.10 to 4.20
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70	3.70 to 3.80
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	16 to 19	16 to 19
Waste, cotton (100 lb. bale), cents per lb.	10 to 14½	10 to 14½
Asphalt, hot (150 tons minimum), per ton delivered	...	....
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton		
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl	$2.90	$2.90
Cement (carload lots), Chicago, per bbl.	$3.05	$3.05
Cement (carload lots), Seattle, per bbl	$3.13	$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal	$2.25	$2.15
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$2.27	$2.17
White lead (100 lb. keg), New York, cents per lb	13	13
Turpentine (bbl. lots), New York, cents per gal	$1.80	$1.63

---

† These prices are f. o. b. works, with boxing charges extra.

nection with the present street railway lines and to operate a through service with the downtown district of Dallas. The fund of $50,000 is being raised from among the property owners of the two sections to be served. The new line will take the place of the old line from which and to which transfers were given. This line has been operated by the real estate company that opened these two additions, and was not a part of the system of the Dallas Railway.

Houston, Richmond & Western Traction Company, Houston, Tex.—The Houston, Richmond & Western Traction Company, which proposes to build an interurban railway from Houston to San Antonio, with a branch from Yoakum to Victoria, is meeting with much encouragement from towns along the proposed route. The line is being promoted by Edward Kennedy, H. A. Halverton and others of Houston. The promoters have put their proposition before the people of Yoakum, and it has been accepted.

Dallas (Tex.) Railway.—The Dallas (Tex.) Railway has begun work on the Myrtle Street extension, the first of the extensions and improvements recently approved by the City Commission. This is one of the extensions called for by the terms of the franchise granted the street railway company. The Myrtle extension will extend to the Oakland Cemetery in South Dallas. Next in order will be the Oak Lawn extension and the new line out Seventh Street in Oak Cliff.

Seattle (Wash.) Municipal Street Railway.—Service has been inaugurated on elevated railway of the Seattle Municipal Street Railway, the first car operating over the structure on September 4th. For the present, the special shipyard service in the morning and afternoon will be operated over the surface tracks. It is expected that the elevated will save about fifteen minutes on the Fauntleroy and Alki trips.

Binghamton (N. Y.) Railway.—The Public Service Commission of the Second District on Sept. 11 conducted a hearing on the application of the Binghamton (N. Y.) Railway for permission to extend its lines to Fort Dickinson. The cost of construction, estimated at $9,000, would be met by issuing receiver's certificates.

Power Houses, Shops and Buildings

Public Service Railway, Newark, N. J.—The Public Service Railway, Newark, N. J., on September 12, applied to the Board of Public Utility Commissioners for permission to purchase a tract of land in Warren Street, Trenton, on which to erect a small terminal building. The land is offered for sale by the Trenton Banking Company at $45,000. The railway would exchange a $10,000 plot which it now owns and a $35,000 mortgage for the land.

Trade Notes

Stone & Webster Activities

Since April 1 contracts for new construction representing work in sixteen states and in Canada and totaling about $20,000,000 have been taken by Stone & Webster, Boston, Mass., and the outlook for a world-wide expansion of business is believed to be bright by this organization. About $6,000,000 will be invested in electric lighting and power facilities, about $8,000,000 industrial developments and $6,000,000 in miscellaneous enterprises.

James H. Manning has been appointed assistant engineering manager for the company. He is a graduate of the Worcester Polytechnic Institute, class of 1906, and after four years of drafting and field work, joined the company as superintendent of construction on the Franklin, Verdi and White Salmon hydro-electric developments. Later he was made head of the hydraulic division. Elbert G. Allen, who has been appointed advisory engineer, is a graduate of Massachusetts Institute of Technology. For six years he was engaged on various engineering work at Boston and in the Puget Sound district for the company and later became superintendent of construction at Dallas, Tex. In 1918 he was made assistant engineering manager. As advisory engineer he will devote his entire time to consultation and special problems.

H. W. Johns-Manville Company, New York City, has commenced excavating for a large plant at Waukekan, Ill.

National Fibre & Installation Company, Yorklyn, Del., has awarded a contract for a two-story reinforced-concrete addition, 60 ft. by 140 ft.

Hemingray Glass Company, insulator manufacturer, has moved its general office from Covington, Ky., to Muncie., Ind., where the factory is located.

Spencer Turbine Company, Hartford, Conn., is the successor of the Organ Power Company, manufacturer of motor-driven steel blowers for organs, and the Spencer Turbine Cleaner Company.

Bryant Electric Company, Bridgeport, Conn., manufacturer of electric switches and other electrical products, has awarded a contract for a four-story addition, 60 ft. by 220 ft., on Hancock Street.

General Electric Company, Fort Wayne, Ind., plans to increase its working force by approximately 1000 employees. During recent months business has constantly increased until now the company is deeply feeling the need of more men.

Inquiry 30590.—The American office of a firm in Sweden desires to be placed in communication with manufacturers with a view to securing agencies for the sale in the Scandinavian countries of railway and street-car supplies.

Inquiry 30573.—The purchase of large quantities of cotton waste is desired by a company in Sweden.

Page & Hill Company, Minneapolis, Minn., announces that J. E. Lynch has taken over the management of the firm's Chicago office. He served in France with the 311th Engineers and was promoted from private to the rank of lieutenant shortly after the signing of the armistice. Sig. Norman has just returned after twenty months of service in France with the 20th Engineers and will be assistant manager of the Newport, Wash., office.

Street Railway Material Desired in Colombia.—According to Trade Commissioner P. L. Bell, Bogota, the city of Medellin, Colombia, is to build a new electric street railway 25 kw. long (approximately 15.5 miles). American manufacturers of equipment which might be used are advised to get in direct touch with the officials of that city, addressing letters as follows: Districto de Medellin, Medellin, Colombia—c/del Ingeniero en Jefe, soliciting specifications and offering their help and engineering assistance for the selection of the proper and most adequate equipment and offering any particular specialties of which they can send complete details.

New Advertising Literature

General Electric Company, Schenectady, N. Y.: Bulletin No. 47,417 on type FP-7 oil circuit breakers.

W. H. Matthews & Bro., Inc., St. Louis, Mo.: A leaflet stating the advantages of their type BF "Fuswitch."

American Malleable Castings Association, Cleveland, Ohio. A booklet on malleable iron and its production.

Strombery Electric Company, 606 South Michigan Avenue, Chicago, Ill.: A circular describing the company's automatic time system.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Bulletin No. 1105 describing stationary and portable air-compressor equipment.

Clayton & Lambert Manufacturing Company, Detroit, Mich.: Bulletin No. 4, descriptive of its oil-burning machines.

Carbo-Hydrogen Company of America, Pittsburgh, Pa.: A catalog describing the use of carbo-hydrogen apparatus for cutting steel and iron.

Spray Engineering Company, 93 Federal Street, Boston, Mass.: A sixteen-page illustrated booklet descriptive of its Spraco air washing and cooling equipment, which is especially applicable for steam-turbine generators.

Chase-Shawmut Company, Newburyport, Mass.: Catalog No. 191, descriptive of the Shawmut renewable fuses, has been issued through the company's general sales agent, the Condit Electric Manufacturing Company.

"Selling Transportation" Issue

ELECTRIC RAILWAY JOURNAL

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 New York, Saturday, September 27, 1919 *Number* 13

The printers of New York are proposing to go on strike Oct. 1, and the pressmen already decline to work overtime. This makes necessary a somewhat smaller issue than we expected to publish this week. The principal condensation is in the news department. For next week, and possibly for a few succeeding weeks, we may be under a handicap in reporting the important events in the industry, but we trust that the interruption to our regular service will not be for long.

What "Selling Transportation" Includes

SUCCESS on the part of any commercial organization involves several elements. They may be enumerated as follows: The organization must have something to sell for which there is a market.

The quality of its product must be such that it will appeal to prospective purchasers.

The commodity should be sold in the quantity or quantities for which there is demand.

There must be some means by which possible purchasers may be informed as to the existence and the value of the product.

Last, but certainly not least, a price must be charged for the product which will not only defray the factory and selling costs but will be enough greater than these costs to yield sufficient return on the investment to attract the new capital necessary to cover the natural growth of the company's plant.

Any electric railway is quite as much of a commercial organization as a department store or a steel company, and the fundamental principles of business, economics and technical science apply to it quite as much as to any other business.

Transportation is the commodity in which an electric railway deals, and any discussion of the sale of this commodity logically divides itself along the lines indicated in the above paragraphs.

The plan of this issue has been to include a number of articles, some prepared by specialists in the field, others by members of the editorial staff, dealing with various phases of selling transportation. As the fare question is pre-eminent in the minds of electric railway operators today, the bulk of the issue has been devoted to this subject. The zone fare system seems to be growing in popularity, and that now in operation in several important communities in this country are described at some length, the endeavor being to present not only a brief description of the layouts of the systems, but also to touch upon their operating features and general satisfactoriness. Articles by specialists in their respective lines deal with the more theoretical and general aspects of the fare problem. Other articles deal with the quality of service and the merchandising and advertising problems involved in the sale of electric railway service. No attempt will be made here to comment on all of these articles. They speak for themselves. But references will be made to the question of state subsidies and advertising, discussed respectively by R. W. Perkins and F. G. Buffe.

State Subsidies—What Form They Should Take

IN THE extremity to which electric railways have been put by State laws it is not surprising that, as a possible form of relief, that of State subsidies should have been suggested. While not prepared to indorse them in all forms, Mr. Perkins declares that subsidies are often justified from an economic standpoint. At present, as he points out, the investors in the electric railway industry can do little but "stand and deliver" when one outside interest, the public, fixes the selling price of its product; another interest, labor, practically fixes the wages; and the economic law of supply and demand fixes the price of supplies.

Among other causes of the present plight of the electric railways Mr. Perkins notes that the fundamental idea underlying the early franchises was that the electric railway was a monopoly and as such must operate under certain restrictions, in order that the public might be protected from abuse. Since the advent of the automobile, the electric railway is no longer a monopoly but the restrictive hedges contained in franchises and in commission regulations, where commission permit has replaced the franchise, are still vigorously maintained. The situation in this respect is peculiar because, as Mr. Perkins points out, not only has the public failed to maintain the monopoly implied by franchise or regulation, but by reason of its activity in building high class roadways, it is actually assisting the competitors of the electric railway. Assuredly, the industry, privately owned, cannot go on rendering service for less than cost. Some one must pay the bill.

Perhaps one of the most interesting points made in the article referred to is that if it is just for the State to own and maintain the way structure of the jitney and express truck, it is also just that it own and maintain the way structure of the electric car. The idea of governmental ownership of track structure has been propounded before. It was discussed at some length in the course of the recent hearings before the Federal Electric Railways Commission when Lieut.-Col. Charles W. Kutz, public utilities commissioner for the District of Columbia, advocated the leasing of municipally owned track to privately owned electric railway companies as a means of settling street paving and other way matter difficulties which are common causes of friction between municipal authorities and operating companies. But Mr. Perkins has stated the idea in a forceful way and his suggestion that the State subsidy take this form is a most interesting one.

It may be argued that the modern highway benefits the whole public, since it permits the farmer to market his foodstuffs and in general facilitates local transportation. But this argument loses some of its force when it is remembered that the type of highway necessary to stand the hard usage of heavy and high speed motor vehicles costs from $30,000 to $40,000 per mile to build, while a first class highway from the standpoint of non-motor driven vehicles costs only a little more than 25 per cent of this sum. When consideration is given to the fact that the way structure of the interurban railway is no more expensive than the better class of highways and its maintenance cost probably less, it would appear that, everything considered, more economical transportation for the public as a whole would result if some of the money now spent on so-called permanent highways were expended on railway tracks for the use of electric cars.

Making Publicity Produce Results

ADVERTISING has not always been considered a necessary activity of the electric railway. That it can be used to perform a service which is fundamental to the commercial success of such an organization is discussed in an interesting way by F. G. Buffe. In this article Mr. Buffe points out the ends to be attained in advertising and the agents and means by which these highly necessary and desirable ends may be reached.

He classifies electric railway advertising into the main subdivisions, interurban and city line. Inasmuch as the interurban roads are to a large extent competitors of the steam roads and offer practically the same kind of service at nearly the same cost, advertising must dwell strongly on quality of service. The point made that much stress should be placed on the problem of acquainting the people served by the railway with its routes, organization and other physical equipment, is a good one. At best, a company or corporation is an intangible thing. Soldiers who have been through the horrors of war tell us that it was the intangible things rather than those with a physical entity that caused fear and nervous strain. The human mind is much the same in peace as it is in war, and anything which can be done to give a company personality and physical form is well worth striving for.

With the thought that railway advertising should keep the public informed as to the new things the railway is doing, the quality of the service it is giving and other pertinent things relative to its operation we also agree.

Administrative officials, operating officials and engineers need only look over the advertising pages of popular magazines and trade journals to discover the type of advertisement that appeals to people. Nearly everyone likes those which give facts and performances. We do not care for those which plead with us for patronage. The red-blooded man has a pretty poor opinion of the "panhandler" as an individual. The panhandler type of advertisement runs true to form; it is a pretty worthless sort of thing. On the other hand, the right kind of advertising is responsible for most of the commercial successes now being attained in industrial and merchandising fields. The success of the publicity work of the government in connection with the Liberty and Victory Loans and other things pertaining to the great war shows how easily the public mind is molded by proper publicity.

Educate Away the Prejudices of the Public

THE electric railway has two means of securing approval of its customers, the public.

First, by giving the best service its revenues will permit. This is of course the greatest force in appeasing criticism, and electric railway companies should spare no effort in this direction.

Second, by applying the fourth principle of salesmanship stated in the first editorial, and taking full advantage of the continuous and far-reaching power of the printed word and picture. If the service is the best that can be rendered at the price paid for it, then advertising will prove effective in informing and convincing the public of the broad economic value and essential character of the service rendered as compared with the cost. It is with this aspect of salesmanship that the following paragraphs deal.

The electric railways have been doing a lot of good publicity work in defending themselves against professional political aggression. This should be continued as needed but should be supplemented and ultimately replaced with educational publicity designed to promote a co-operative spirit on the part of the railways' patrons. Potential customers must be convinced as to the value of transportation to them, and this must be done in a way to inspire the confidence of the entire community. The result will be a spirit of reasonableness on the part of the representatives of the public in permitting equitable fares to be charge and in removing unjust restrictions upon operation. Incidentally, it will stimulate traffic.

Two forms of advertising publicity are available—

local and national. Each company has at its disposal valuable advertising space within its own cars, which experience has shown to bring splendid returns to the users, but which the company has failed to capitalize upon substantially for itself. The cars may also be used effectively for the distribution of educational matter in the form of convincing leaflets. And then there are the pages of the local newspapers which reach thousands and in some cases millions of readers daily. Again, the industry is nationally organized. Through this organization it has the machinery essential to an efficient and thorough use of national advertising that will "sell" the nation on what the electric railways have done and how vital their prosperity is to the industrial and social welfare. Such a nation-wide campaign can be used to intensify the effect of local advertising.

A well planned program of national publicity, skilfully executed and enthusiastically supported by every factor in the industry, can be made to put the industry on a business basis with the public, restore and hold public confidence, eliminate the deadly blight of politics from the situation, and make the present influential mouthings of the political self-seekers and charletans as harmless as "an empty sound driven by the wind."

The great need of the industry for effective action along these lines is an immediate one and plans should be laid to carry on and amplify the national publicity which the hearings before the Federal Electric Railways Commission have afforded and inspired.

The Amalgamated Association Makes Certain Decisions

THERE was a time, not so long ago, as stated by Mr. Mahon in his opening address before the Amalgamated Association in its Chicago convention, when the delegates of that organization were not welcomed by governors, or mayors or their representatives. Neither were their views on railway problems or conditions of employment considered of special interest to the majority of utility companies. During recent years, however, it must be admitted that electric railway unions have gained considerably in membership and there should no longer be any question that their influence will have weight in settling some of the larger problems with which operators have to contend.

For this reason it should be of interest to know that the delegates approved a resolution favoring increased fares throughout the United States and Canada and that they declined to support a resolution in behalf of municipal ownership of public utilities. The convention also withdrew its condemnation of one-man cars and agreed to let each local division settle the matter for itself. Similar action was taken on a motion to have jitneys placed under strict regulatory measures.

President Mahon met with one rebuff during the convention and even in that defeat he proved himself bigger than the men whom he represents. This was in the debate which led to the shelving of his recommendation that members going on strike without authority should be deprived of all Association benefits. It impresses us that the men who voted thus have nothing to be proud of in their refusal to come out boldly in behalf of the sacredness of contract obligations. The delegates showed a calmer frame of mind in refusing to follow the lead of radicals who would have changed the Association's laws as to arbitration. They also showed a strong front against several other resolutions which showed decided flavors of bolshevism.

Taken as a whole, the measures approved at the Chicago convention reflect credit on the men who represent the organized employees of the electric railway industry. We have reason to hope that the passing of another two years will show that these men have broadened still more and are coming to a real appreciation of the responsibilities involved in public utility work.

Needed—A Program on Which All Can Agree

EXECUTIVES of the electric railways of New York State met in Syracuse last week under the auspices of the New York Electric Railway Association to visualize the present condition of the industry in the State and to devise some definite plan for securing relief. Reports from practically the entire State showed that the problem is rapidly becoming one of finding money to pay operating expenses, and in one case, at least, to cover the payroll. A few words of cheer from Schenectady served only to heighten the darkness of the background in the picture. Just what procedure will be followed remains to be determined by a committee appointed to capitalize the results of the conference, but that something vigorous and effective must be done immediately is painfully evident.

Jas. L. Quackenbush, general attorney for the Interborough Rapid Transit Company, hit the nail on the head in his remarks when he said that the Governor and the Legislature are the agencies through which relief must now come. The difficulty of getting drastic emergency relief through the commissions is illustrated by the situation in New York City where Commissioner Nixon is having the fight of his life in an endeavor to keep the New York Railways in a position to give service. Again, the New Jersey Public Utility Commission is being made a political foot-ball because, after a long series of hearings and studies, it ordered a zone system of fares installed on the Public Service Railway property. It is to the supreme representatives of the people that the railways must go again, in the hope of securing action which will neutralize the disastrous effects of the famous Quinby decision of the New York Court of Appeals. They must follow the example of the apostle of old when he uttered the now classic phrase—"I appeal to Caesar."

It is inconceivable that if the facts, as presented at Syracuse, can really reach the Governor and the Legislature in undistorted form something will not be done.

If only politics can be kept out of the tangle, there will be a very fair chance that it will be unraveled. But a definite program must be presented by the railways. They presumably know the traction business, and they must be prepared to state concrete and convincingly what they need to help them out.

Discussion of Fare Systems

Present Fare Systems Classified and Compared—Fundamentals of a Scientific System Outlined

SELLING PRICE is always an important factor in the side of any commercial product, and electric railway fares appears to be no exception to the rule. In the case of the electric railway company, transportation is the commodity for sale. Inasmuch as the cost of producing this commodity in different localities varies rather widely, and as the commodity itself is so closely connected with the public weal, the problem of electric railway fares has always been a difficult one. Many solutions, some purely empirical or "rule of thumb," others with some scientific basis, have been proposed. As a considerable proportion of this issue is devoted to electric railway fares and fare systems, a brief general discussion of these systems seems to be in place here.

Electric railway fare systems may arbitrarily be divided into two fundamental classes—the flat-fare system and the graduated-fare system. Actually, of course, in addition to those belonging to these fundamental classes a large number of hybrid systems are in use.

THE FLAT-FARE SYSTEM SUMMARIZED

The flat-fare system is a familiar one in this country, as until recently it has been in almost universal use. Its outstanding features are that a single fare unit is charged whether the ride is long or short, and if transfer is made to another line, no additional charge is imposed. It is purely a "rule of thumb" or empirical fare system. It seems to have been adopted in the early days of the industry, with little regard to the actual cost of transportation or of possible changes in this cost. Some pioneer in the horse-car days of the industry decided that a flat charge of 5 cents was sufficient in the way of selling price for his product to produce ample profit on his investment. The precedent once set was almost universally adopted, and the flat-nickel-fare system became almost a law of the land. So ingrained has it become in the minds of the American public that some one has said that it appears that no inconsiderable portion of the people of this country seem to feel that the flat nickel fare is either stated as a rule of Holy Writ, or is guaranteed in the Constitution of the United States.

The flat-nickel-fare system precedent was set when street railway systems were rarely more than 3 miles in length; when trainmen, even in metropolitan New York, worked fourteen hours per day for a wage of $2; and when the materials used in the industry cost only about one-fourth as much as they do today. It was set in a day when passengers were willing to get off and help lift a derailed car back on the track, or in very cold weather to take a turn at driving while the driver warmed his hands. Also it was set in a day when accident claims were almost unknown, and the residents of a community were proud to have a public utility in their midst. In its infancy the flat fare, in some few instances at least, might have had some justification from both scientific and economic standpoints. Very probably, however, it could not have been so justified, and if it could the original basis was soon lost sight of in blind following of precedent.

The necessity or the desirability of a change in fares, on the part of the railway company because of the increased cost and extensions of lines, and on the part of the public because of the political influences and the desire of getting lower fares, has led to some modifications of the flat-nickel-fare system. One of these is the familiar plan of selling flat-fare tickets for less than 5 cents each. Another, and one in common use during the last year, involves the use of a flat fare higher than 5 cents, as 6 or 7 cents. Still another modification involves the use of a sliding-fare scale, either automatic or regulated in action, in which the fare is made to depend more or less on the cost of transportation. This modification is well exemplified in the now famous Tayler franchise system of Cleveland, although on some steps of the sliding scale of this plan a transfer charge is involved.

The important advantages claimed for the flat-fare system are: It promotes suburban development near large cities; it, like the flat postage rates of the Post Office Department of the United States, promotes the public welfare and development; permits readily of collection and auditing; allows for a freer labor market, since a laborer may live in any part of the city and reach any place of employment for the same transportation charge. Its disadvantages are: Being simple, it is naturally discriminatory, discriminating against the short-haul rider in favor of the long-haul rider, thereby reducing short-haul traffic; it is rigid in that it does not permit of ready adjustment to meet new operating conditions; it permits realty agents to speculate at the expense of the railways and of the car riders themselves; horizontal increases of fare cause marked reduction in the short-haul traffic, which is the most profitable part of the traffic of any street railway.

THE ZONE-FARE SYSTEM OUTLINED

The graduated system of fares, or zone system, as it is commonly called, used abroad since the introduction of the tramways and now coming into favor in this country, is based fundamentally on a distance charge. As regards the layout of a zone system it may be either radial or linear. In a radial layout the lines of an urban system are divided into sections or concentric zones which start with a center zone in the heart of the heavy traffic district. This type of layout is particularly well adapted to a community which possesses only one heavy traffic center and in which the transportation lines radiate from this center. The Milwaukee suburban zone system is a typical illustration of the radial type of zone-fare system. In the linear layout some important traffic point on each line is selected as an initial point from which zones are laid out by dividing the track into sections or zones. This plan is best adapted to a widespread urban district with a number of important traffic foci. The system just put into effect on the Public Service Railway is an excellent illustration of this type of zone layout.

In the zone system a certain fare is charged for each zone or section. A passenger who rides through only one zone pays a lower fare than one riding through several zones. This system has a more rational basis than the flat-fare system, in that the fare bears some relation to the length of ride.

Zone systems may also be classified as end-on and overlap systems. In the end-on system the fare is cumulative and a person getting on near the end of one zone, and riding into the beginning of the next, must pay the sum of fares for the two zones. The overlap system is an endeavor to eliminate some of the injustice imposed on the short-haul rider by the end-on system, as it permits the passenger to ride some distance into a second zone on a single fare.

MERITS AND DRAWBACKS OF ZONE SYSTEM

The advantages which have been citied for the zone system are: The car rider pays more nearly in proportion to the service rendered; fares may be adjusted readily to meet changes in operating expenses either by changing the fare per zone or by changing the length of ride given for a unit of fare; tends to cause a uniform development of suburban districts rather than the scattered development so common in American urban districts, and does not permit real estate operators so much chance to speculate in reality at the expense of the public and the railway company. The great objection to the zone system is the difficulty involved in fare collection. Other objections that are sometimes urged are: It tends to promote congestion of population in the center of cities; as compared with the flat fare it discriminates against the suburban or long-haul rider.

The application of the zone system calls for a great deal of study, and this and the unfamiliarity with it of both the public and the operating men have restrained managers from using it in this country. The fare collection system used with considerable success abroad considered by most American operators as not adapted to American service conditions. The objections urged to it are that it does not permit the use of prepayment methods; takes the conductor through the car and away from the position where he is best able to facilitate car operation and prevent accidents; and involves the use of inspectors whose work on a car would be objectionable to the American car rider. The systems now in use in this country are more or less deficient in certain important details. However, as the fare collection problem appears to depend to a considerable extent on the development of proper mechanical equipment, and as the problem now presents itself in a fairly tangible form, a reasonable solution of it may be expected. It may be remarked that the collection of flat fares other than the nickel is likewise accompanied by some difficulty.

ZONE-FARE PRACTICE VARIES

Zone lengths in modern zone systems range from less than ½ mile to more than 4 miles, 1 mile being apparently a popular average figure. Recent zone-fare practice in several American cities is shown in the accompanying table. Center zones range in radius up to 5.94 miles, as on one line of the Milwaukee Electric Railway & Light Company, although with low initial fares the longer distances are now considered too great. Where the zone system has been put in use in this country it is common to have some minimum initial fare which is usually higher than that of a single zone. Examples of this practice are the 5-cent minimum fare in Milwaukee, the 3-cent minimum fare of the Public Service Railway, and the 9-cent minimum cash fare of the Cumberland County Power & Light Company, Portland, Maine. The zone fares of these companies are for the first two 2 cents and for the last 3 cents per zone. The zone lengths in each of these cases approximates a mile.

In the past but few attempts have been made to formulate a really scientific basis for street railway fares. At present the zone systems of the Milwaukee Electric Railway & Light Company and of the Public Service Railway are the most noteworthy of those which have a scientific basis for their background.

Between the pure flat-fare and the pure zone-fare systems a great many hybrid systems exist. To these belong those systems which in effect are the superpositions of two flat-fare systems, as for example the so-called zone system used in Pittsburgh during the last year. The familiar 5-cent zones formerly so common in New England were really a series of flat-fare systems tacked together rather than real zone systems. Tickets, tokens, etc., are not fundamental to any type of fare system. They may be used to facilitate fare collection, for the convenience of the passenger, or as a means of securing a fractional fare unit not otherwise possible with prevailing currency units. Some of the ticket systems involve transfer and other complications which make it difficult accurately to classify a system as belonging either to the flat-fare or the zone-fare type.

Despite the fact that it is not possible to make a profit on an article without selling it for more than it cost, street railway operators have given the matter of transportation cost analysis very little attention as compared with the attention given to their costs by electric power and telephone companies. Of course the small amount of money involved in a transaction and the absence of a physical connection between company and consumer has had an important bearing on the problem. Except for the physical connection the service rendered, however, is very like that rendered by the telephone company. It is worthy of mention here that power companies, except in some very small communities, changed to the metered service charge long ago and that the present tendency of the telephone companies is in the same direction.

It is of interest to view the present fare systems from the standpoint of a rationally constructed system. In doing this a better perspective of the problem can be gained by considering the hauling of something else than people—for example, stones. Let it be assumed that a company is engaged in the transportation of crushed stone. A little study of the possible costs in connection with this problem indicates:

First: Certain costs are in direct proportion to the distance hauled.

Second: Certain other costs are independent of the distance the stone is hauled, but are more or less dependent on the number of loads hauled for each party, and the time at which the party demands the haulage to be done.

Third: Still other charges are dependent only on the number of parties for whom stone is hauled in the course of a given period of time, as a month or a year.

When figured on a load-mile basis the first of these costs, hereafter designated as the movement cost, is the same whether the haul is $\frac{1}{10}$ mile or 10 miles. The sum of the other costs figured on a per load basis is approximately constant except as affected by time, that is, at a certain time of the day, week or year it might be more or less than at some other time. When this sum, divided by the number of miles hauled for a given party, is added to the movement cost the total cost of haulage per load-mile is obtained. Obviously, the division of the constant charge by a short distance results in a very much larger charge per unit of distance than results for a long distance. The result is to make the total cost of hauling one load 1 mile very much higher for a $\frac{1}{10}$-mile haul than, say, for a 10-mile haul. Now, all of these classified charges exist in any transportation system, whether it be for stone, water, gas, electricity, communication or people, and since this is so it appears that a purely rational system of fares is possible of development. But from the practical standpoint it is not feasible, as each individual passenger fare would have to be handled as a separate transaction. However, service can be classified, that is, passengers who are receiving approximately the same service can be grouped together, and handled as one class or party, and a fare system with a rational basis, at least, may be evolved.

In this country the flat-fare system has been applied almost universally to the street railway, while another type of fare system, the mileage system, has been applied to the steam railway and interurban lines. In viewing these fare systems from the standpoint of the rational system just discussed, it appears that the flat-fare system reduced to the lower limit is rational when the movement charge is zero, that is, when the passenger rides no appreciable distance. Similarly, the mileage system is rational only on the basis that the second and third classes of cost previously stated amount to zero. Both systems approximate the true cost under certain conditions. The flat fare involves no serious error for short hauls, where the second and third charges are vastly more important than the first. The mileage system, on the other hand, involves least error when the haul is long, as in this case the constant charges are distributed over a large number of mile units, resulting in a practically negligible charge per mile. Those zone-fare systems in which the charge per zone is the same for all zones of approximately the same length are in effect pure mileage systems, and are rational, therefore, only for comparatively long rides. A system in which the charge per unit zone is higher for the initial zone than for following zones, and where the following zone fare units for a given zone length decrease or, what amounts to the same thing, the zone lengths for a given fare unit increase and where proper account is taken of peak and off-peak riding, is a system with a fairly rational basis.

There is no reason, of course, why fares have to be exactly proportioned to the cost of supplying the service. This should be a good basis for their general establishment, but the purpose of fares is to bring in revenue. Hence, an electric railway company is justified in making somewhat higher or lower rates for different classes of passengers than the actual cost if by so doing a larger income is obtained. The theoretical expense for each class of traffic should be known, but variations can be made from it in setting the fare if the needs of the service and the company justify it.

AMERICAN ZONE-FARE PRACTICE

City	Company	Kind of Zone, System	Radius of Center Zone, Miles	Approximate Length of Zone Sections, Miles	Min. Cash Fare, Cents	Zone Cash Fare, Cents	Reduced Ticket Practice	Fare Collection Inbound	Fare Collection Outbound
Milwaukee	The Milwaukee Electric Railway & Light Co.	Radial	3.12 to 5.94	1	5	2	None	Pay-enter	Pay-enter Pay-leave
Newark and other cities served	Public Service Railway	Linear	....	1	3	2	None	Pay-leave	Pay-leave
Portland, Me.	The Cumberland County Power & Light Co.	Combined	0.5 to 0.75 (approx.)	1	9	3	5 @ 35c. = 7c. 15 @ 35c. = 2⅓c.	Pay-enter	Pay-leave
Springfield, Mass.*	Springfield Street Ry.	Radial	2.28 to 3.65	1.3 to 5.17	6	6	6 @ 45c. = 7½c.—1½ zones 7 @ 65c. = $9\frac{2}{7}$c.—2 zones 5 @ 50c. = 10c.—2 zones	Pay-enter	Pay-enter and Pay-leave
Holyoke, Mass.*	Holyoke Street Railway	Radial	1.37 to 3.7	1.47-4.0	7	5	....	Inside collection with registration	
Providence, R.I.*	The Rhode Island Co.	Radial	2 (approx.)	1.5 1.75 (approx.)	5	5	None	Pay-enter Inside collection	Pay-enter Inside collection
New London, Norwich, Willimantic, etc., Conn.	The Shore Line Electric Railway Company	Linear	Flat fare in cities	1.125 (approx.)	5	2½	None	Inside collections without registration	
85 cities and towns	Eastern Massachusetts Street Railway	Radial	3 (approx.)	2 (approx.)	10	5	None	Pay-enter	Pay-enter Inside collection

* In each of these cases the company has petitioned the commission for an increase in rate to provide larger income.

Zone Fares Have Been Found Satisfactory in Milwaukee

Few changes have been found necessary in this pioneer of the zone-fare system in this country—Fare collection offers no difficulties—Elasticity is an advantage

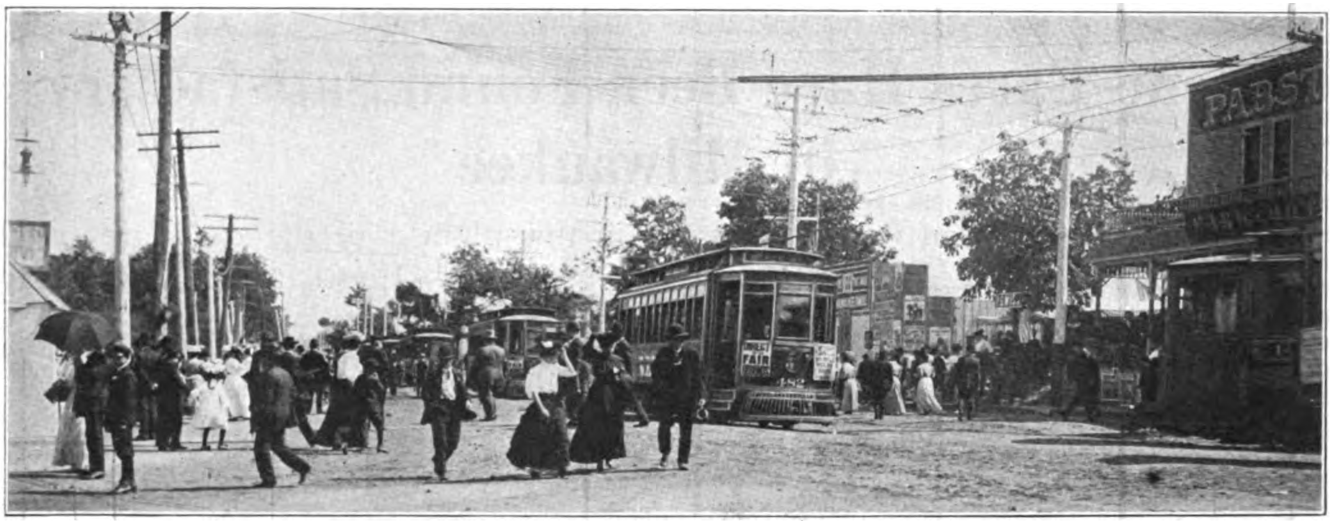
BIRD'S-EYE VIEW OF MILWAUKEE, SHOWING BUSINESS AND FINANCIAL SECTION

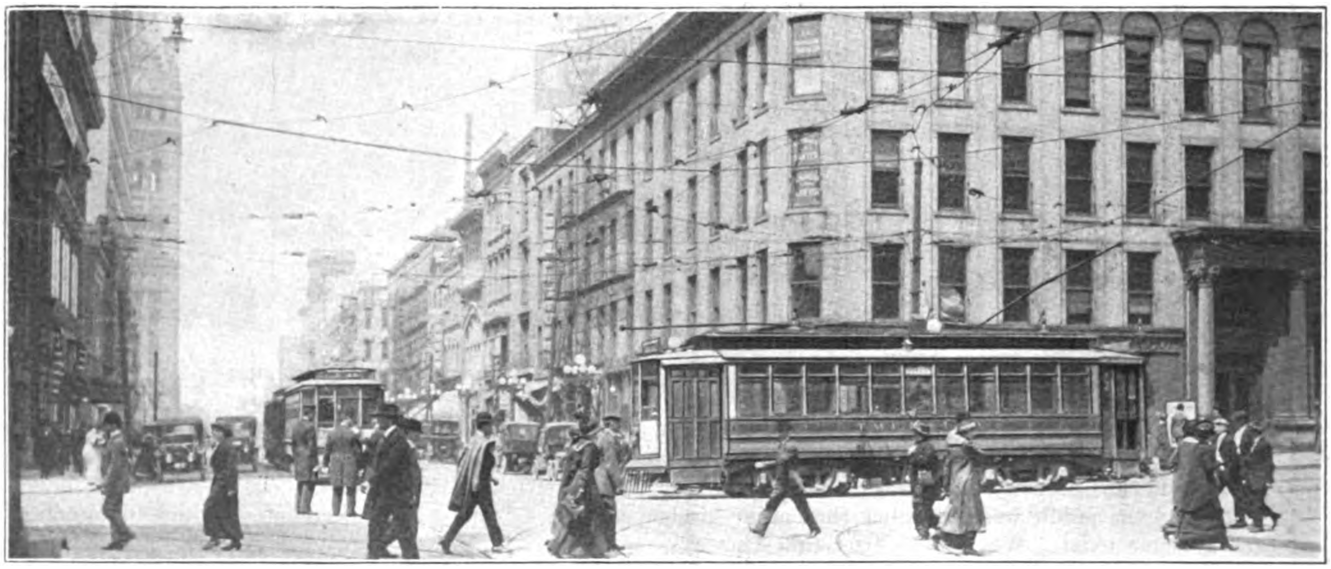
ZONE fares have prevailed so long on the suburban lines of The Milwaukee Electric Railway & Light Company that both railway employees and the public hardly realize that other kinds of fare systems exist. While it is true that this system of fares applies only to those lines extending beyond the corporate limits of the city of Milwaukee, the problem of transportation in the Milwaukee district is not greatly different from that of any other large urban community with a radial line transportation system. The application of the zone system to the Milwaukee property was the first important attempt in this country to collect street railway revenue on anything like a logical and scientific basis, and the operation of the system has attracted a great deal of attention. The theories and data upon which it was based, together with complete details of its methods of operation, were fully described in the ELECTRIC RAILWAY JOURNAL at the time the system was inaugurated. It is felt, however, that a brief review of the original plan of working, the changes that have been made, and present operating methods is of especial interest at this time in view of the tendency toward zone fares.

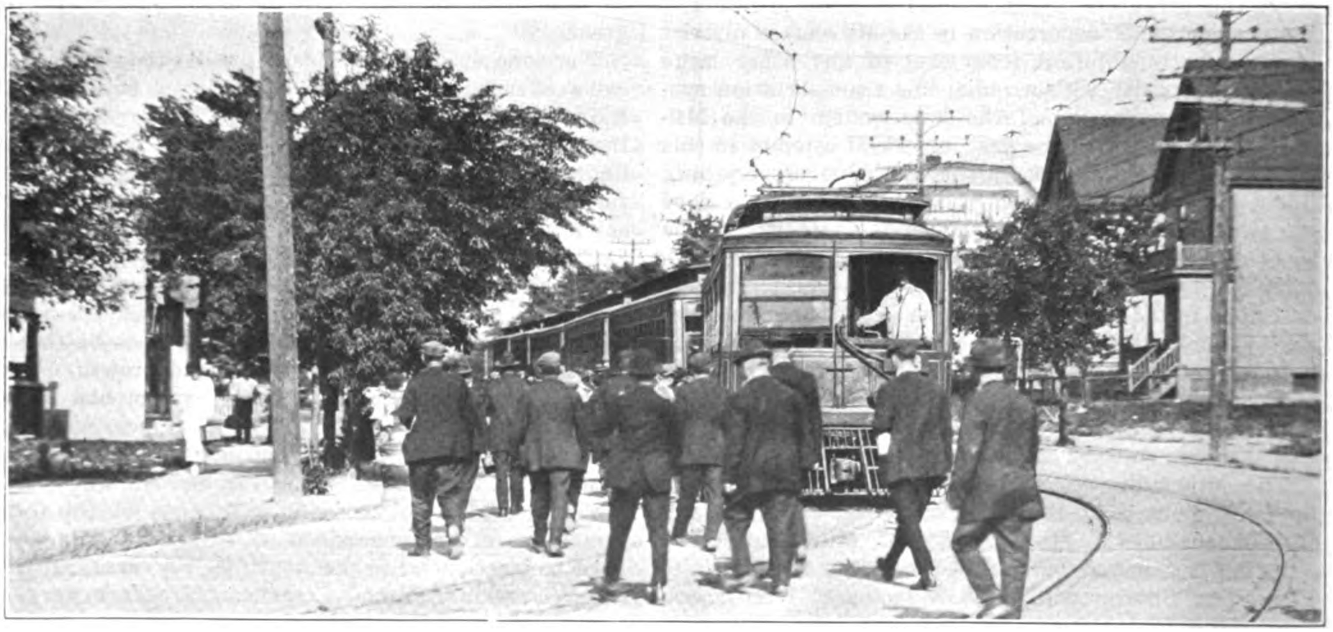
The Milwaukee Electric Railway & Light Company operates more than 400 miles of urban, suburban and interurban lines in the vicinity of Milwaukee. The principal suburban communities are Fox Point, White Fish Bay, Shorewood, North Milwaukee, Wauwatosa, West Allis, Cudahay and South Milwaukee. The population of this urban district is about 500,000. Milwaukee has long been well known as a great industrial center, the industrial sections being located to the south and southwest of the city. To the west and north is located a great summer resort region. On account of this variety of community interests some of the lines are subject to large hourly variations in traffic, while on others the daily and seasonal variations are very great.

The zone system, practically as it exists to-day, became effective on Jan. 18, 1914, by a ruling of the Railroad Commission of Wisconsin. Prior to this time the company had in effect a 5-cent fare within the limits of the city of Milwaukee and irregular 5-cent fare zones in the suburban districts. On one of the suburban lines, viz., the Fox Point line, there were two 5-cent fare zones. The zones were unequal in length, varying from 1.24 to 7.17 miles. There was also a complicated and expensive system of overlaps. These were the result of agitations for fare concessions by the different communities, and with the rapid growth of some of these communities the old fare system had become highly discriminatory. The present system came into being as the result of long continued agitation on the part of the Milwaukee public for 3-cent fares and on the part of the suburbs for extensions of the 5-cent limits and other concessions.

In connection with the hearings on these petitions the Wisconsin Railroad Commission made a very extended study of the traffic and operating conditions in the district. The railway company also made a study







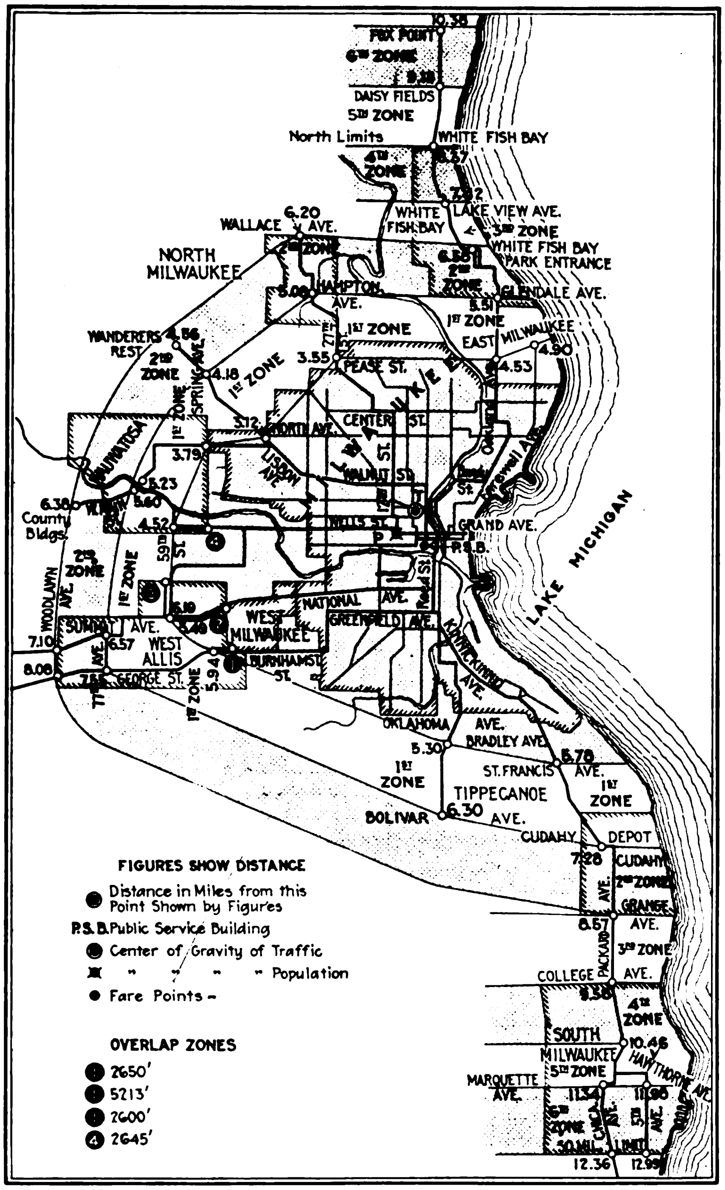
FIRST VIEW—AMUSEMENT RESORT SEEKERS PAY ZONE FARES IN MILWAUKEE. SECOND VIEW—THE WISCONSIN AND EAST WATER STREET INTERSECTION—AN IMPORTANT TRANSFER POINT. THIRD VIEW—LOADING WORKERS ON THE SOUTH MILWAUKEE LINE of the traffic by having its conductors record on specially prepared blanks the number of passengers on their cars at each half-mile point along their routes for a day on which the traffic was considered as average. The results of this study checked those of the commission's study very closely. To meet the various petitions and secure a more rational and equitable fare system, the company, using the traffic studies as a basis, worked out a zone-mile fare system for the suburbs which it presented to the commission for approval. This plan included a central or city fare zone of about 3.5 miles radius and a number of 1-mile suburban zones. After protracted hearings as a result of which some modifications of the zone points were made, a system of zone fares was ordered placed in effect. These zones approximated 1 mile in length and in most instances the center zone extended beyond the corporate limits of Milwaukee. The old stations and stopping points were retained, and such new ones as were necessary were created. The present zone limits, together with the distances from the center of gravity of traffic, are shown in the accompanying map.

Previous to August, 1912, reduced fares were available in the form of tickets, six tickets selling for 25 cents, twelve tickets for 50 cents, and twenty-five tickets for $1. Zone commutation tickets, 7½ cents for two 5-cent zone fares, were also available. At the time noted, the Railroad Commission ruled that tickets should be sold on the basis of thirteen tickets for 50 cents and twenty-six tickets for $1. This ruling resulted in a great deal of litigation, and at the time the zone fare system was inaugurated the company was selling six tickets for 25 cents, twelve tickets for 50 cents and twenty-five tickets for $1, with an attached coupon redeemable in case the courts upheld the August, 1912, ticket ruling. Zone-fare tickets were sold on the basis of 10 cents for a strip of five tickets and 20 cents for a strip of ten tickets.

Under the mile-zone plan of operation inbound passengers paid to destination by depositing in a fare box either 7 cents in cash or one city ticket and one zone ticket if in the first zone. If the point of origin was in the second zone either 9 cents in cash or one city ticket and two zone tickets were deposited. For local riding in zones a minimum of fare of 5 cents was charged.

TABLE I—ZONE DATA FOR MILWAUKEE SUBURBAN LINES

Name of Line	Total Route Miles	Route Miles within City Fare Limits	Original Number of Zones	Present Number of Zones	Fare for Total Distance, Cents, Zone System	Fare for Total Distance, Cents Original System
Fox Point	10.38	4.53	6	6	17	15
North Milwaukee	6.20	3.55	2	2	9	10
Wanderer's Rest	4.56	3.12	2	2	9	10
Wauwatosa-Walnut	5.23	3.79	2	1	7	10
Wauwatosa-Wells	6.38	4.52	2	2	9	10
West Allis-National	7.10	5.49	2	2	9	10
West Allis-Burnham	8.08	5.94	2	2	9	10
Tippecanoe	6.30	5.30	2	1	7	10
South Milwaukee	12.99	5.78	7	6	17	10

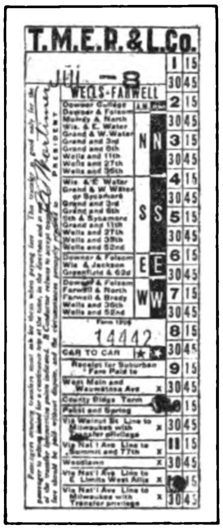

10.38
FOX POINT
6TH ZONE
9.39
DAISY FIELDS
5TH ZONE
North Limits
WHITE FISH BAY
4TH ZONE
8.57
7.92
6.20
WALLACE AVE.
WHITE FISH BAY
LAKE VIEW AVE.
3RD ZONE
WHITE FISH BAY PARK ENTRANCE
NORTH MILWAUKEE
2ND ZONE
6.85
HAMPTON AVE.
5.08
2ND ZONE
GLENDALE AVE.
5.51
1ST ZONE
1ST ZONE EAST MILWAUKEE
4.90
WANDERERS REST
4.56
2ND ZONE
4.18
1ST ZONE
3.55
PEASE ST.
4.53
1ST ZONE
SPRING AVE.
3.12
NORTH AVE.
CENTER ST.
3.79
WAUWATOSA
LISBON AVE.
MILWAUKEE
WALNUT ST.
5.23
6.38
County Bldgs.
5.60
4.52
WELLS ST.
GRAND AVE.
P.S.B.
2ND ZONE
1ST ZONE
59TH ST.
WOODLAWN AVE.
5.10
5.49
WEST MILWAUKEE
NATIONAL AVE.
GREENFIELD AVE.
2ND ST.
LAKE MICHIGAN
SUMMIT AVE.
7.10
6.57
WEST ALLIS
8.08
7.56
GEORGE ST.
5.94
BURNHAM ST.
1ST ZONE
KINNICKINNIC AVE.
OKLAHOMA AVE.
BRADLEY AVE.
5.30
6.78
1ST ZONE
ST. FRANCIS AVE.
TIPPECANOE
1ST ZONE
BOLIVAR
6.30
AVE.
CUDAHY
DEPOT
7.28
CUDAHY
2ND ZONE
GRANGE AVE.
8.57
PACKARD AVE.
3RD ZONE
COLLEGE AVE.
9.38
4TH ZONE
SOUTH MILWAUKEE
10.46
5TH ZONE
HAWTHORNE AVE.
MARQUETTE AVE.
11.34
11.96
6TH ZONE
CHICAGO AVE.
5TH AVE.
SO. MIL. LIMIT
12.36
12.99
FIGURES SHOW DISTANCE
● Distance in Miles from this Point Shown by Figures
P.S.B. Public Service Building
● Center of Gravity of Traffic
✖ " " " Population
● Fare Points
OVERLAP ZONES
❶ 2650'
❷ 5213'
❸ 2600'
❹ 2645'

ZONE MAP OF MILWAUKEE AND VICINITY

If the ride was through three zones or fractions thereof, three zone tickets or 6 cents were collected. Except on the South Milwaukee line there was, and for that matter is now, very little local riding, and the only precaution employed to prevent overriding was that of having conductors "spot" riders paying local fares while the car was running through suburban zones. When the city fare zone limit was reached, the conductor glanced through the car to see if any local passengers were overriding, collecting the city fare in case they were. Transfers to other city lines were issued on request at the time the fare was paid.

Outbound passengers paid on entrance to the car a 5-cent city fare and at each zone limit the conductor carried the fare box through the car, collecting zone tickets or cash fares, as the case might be.

As indicative of the care with which the zone system was planned and carried into effect, it may be stated that comparatively few changes in operating methods



T.M.E.R.&L.Co.

JUL -8

WELLS-FARWELL

Downer College
Downer & Folsom
Murray & North
Wis. & E. Water
Grand & W. Water
Grand and 3rd
Grand and 6th
Wells and 11th
Wells and 27th
Wells and 35th

14442

CAR TO CAR

Receipt for Suburban Fare Paid to

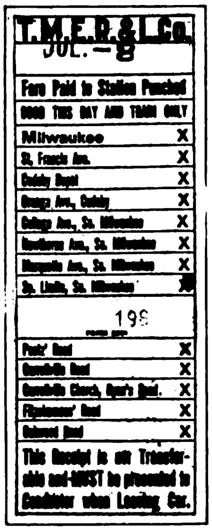
West Main and Wauwatosa Ave

County Bldgs. Term

Pabst and Spring

Woodlawn

PRESIDENT



T.M.E.R.&L.Co.

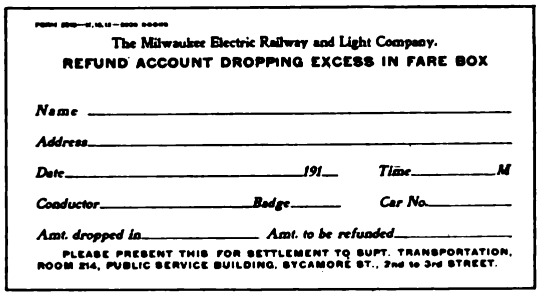
JUL.-8

Fare Paid to Station Punched

GOOD THIS DAY AND TRAIN ONLY

Milwaukee	X
St. Francis Ave.	X
Cudahy Depot	X
Oregon Ave., Cudahy	X
College Ave., So. Milwaukee	X
Hawthorne Ave., So. Milwaukee	X
Marquette Ave., So. Milwaukee	X
So. Limits, So. Milwaukee	X
198	
Puetz' Road	X
Carrollville Road	X
Carrollville Church, [illegible]	X
Fitzsimmons' Road	X
Oakwood Road	X

This Receipt is not Transferable and MUST be presented to Conductor when Leaving Car.



The Milwaukee Electric Railway and Light Company.

REFUND ACCOUNT DROPPING EXCESS IN FARE BOX

Name ____________________

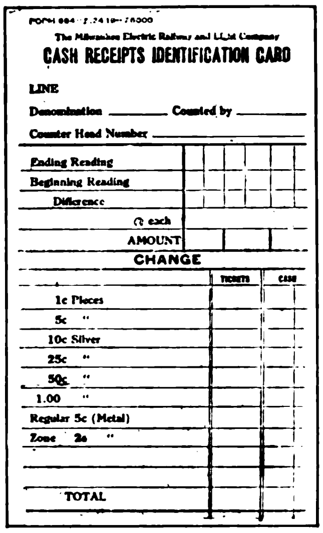
Address ____________________

Date ____________ 191__ Time ________ M

Conductor ____________ Badge ________ Car No. ________

Amt. dropped in ____________ Amt. to be refunded ____________

PLEASE PRESENT THIS FOR SETTLEMENT TO SUPT. TRANSPORTATION, ROOM 214, PUBLIC SERVICE BUILDING, SYCAMORE ST., 2nd to 3rd STREET.



The Milwaukee Electric Railway and Light Company

CASH RECEIPTS IDENTIFICATION CARD

LINE

Denomination ____________ Counted by ____________

Counter Head Number ____________

Ending Reading					
Beginning Reading					
Difference					
@ each					
AMOUNT					

CHANGE

	TICKETS	CASH
1c Pieces		
5c "		
10c Silver		
25c "		
50c "		
1.00 "		
Regular 5c (Metal)		
Zone 2c "		
TOTAL		

First, typical transfer zone receipt used on Milwaukee suburban lines.

Second, fare receipts used on South Milwaukee line.

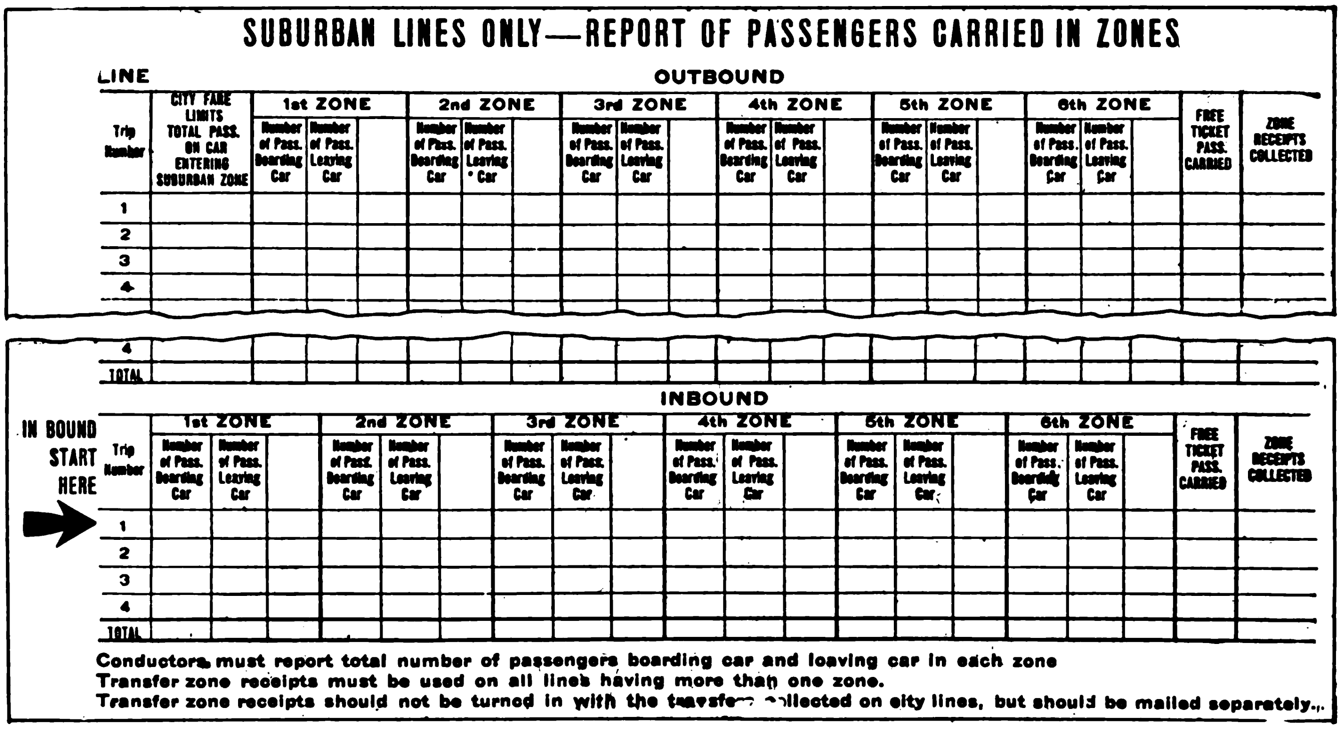
Third, refund slip issued to passengers dropping too much money into the fare box.

Fourth, card used in recording daily receipts from a given line.

have been found necessary during the past five years. Most of the changes which have occurred have been either the result of progress in the art or for financial reasons rather than because of defects in the zone system. Petitions to the Railroad Commission from some of the communities involved have resulted in some slight changes in the zone limits. These changes are noted in Table I. Possibly the most important of these has been the change from seven to six zones on the South Milwaukee line. The rolling stock has been gradually undergoing the change from open-door to the closed-door construction, and some modifications have been made in the rates of fare since the inauguration of the mile-zone system. As the result of an agitation in the community for lower fares, the commission ordered the sale of zone tickets at the rate of thirty tickets for 50 cents in October, 1914. On account of the increasing cost of operation the company in January, 1915, finally secured from the commission an order rescinding the ruling requiring the sale of thirteen tickets for 50 cents and twenty-six tickets for $1, and in June, 1918, the reduced rate on city and suburban tickets was also rescinded. The city fare was thus made 5 cents straight and the zone fare 2 cents. The company discontinued the sale of paper tickets as it was found that their use permitted some fraud.

METHODS OF FARE COLLECTION

Possibly the most important change made since the inauguration of the mile-zone system has been the change in the method of fare collection. This change was made not so much to reduce the number of acci-



SUBURBAN LINES ONLY—REPORT OF PASSENGERS CARRIED IN ZONES

LINE

OUTBOUND

Trip Number	City Fare Limits Total Pass. on Car Entering Suburban Zone	1st ZONE			2nd ZONE			3rd ZONE			4th ZONE			5th ZONE			6th ZONE			Free Ticket Pass. Carried	Zone Receipts Collected
		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car			
1																					
2																					
3																					
4																					
4																					
TOTAL																					

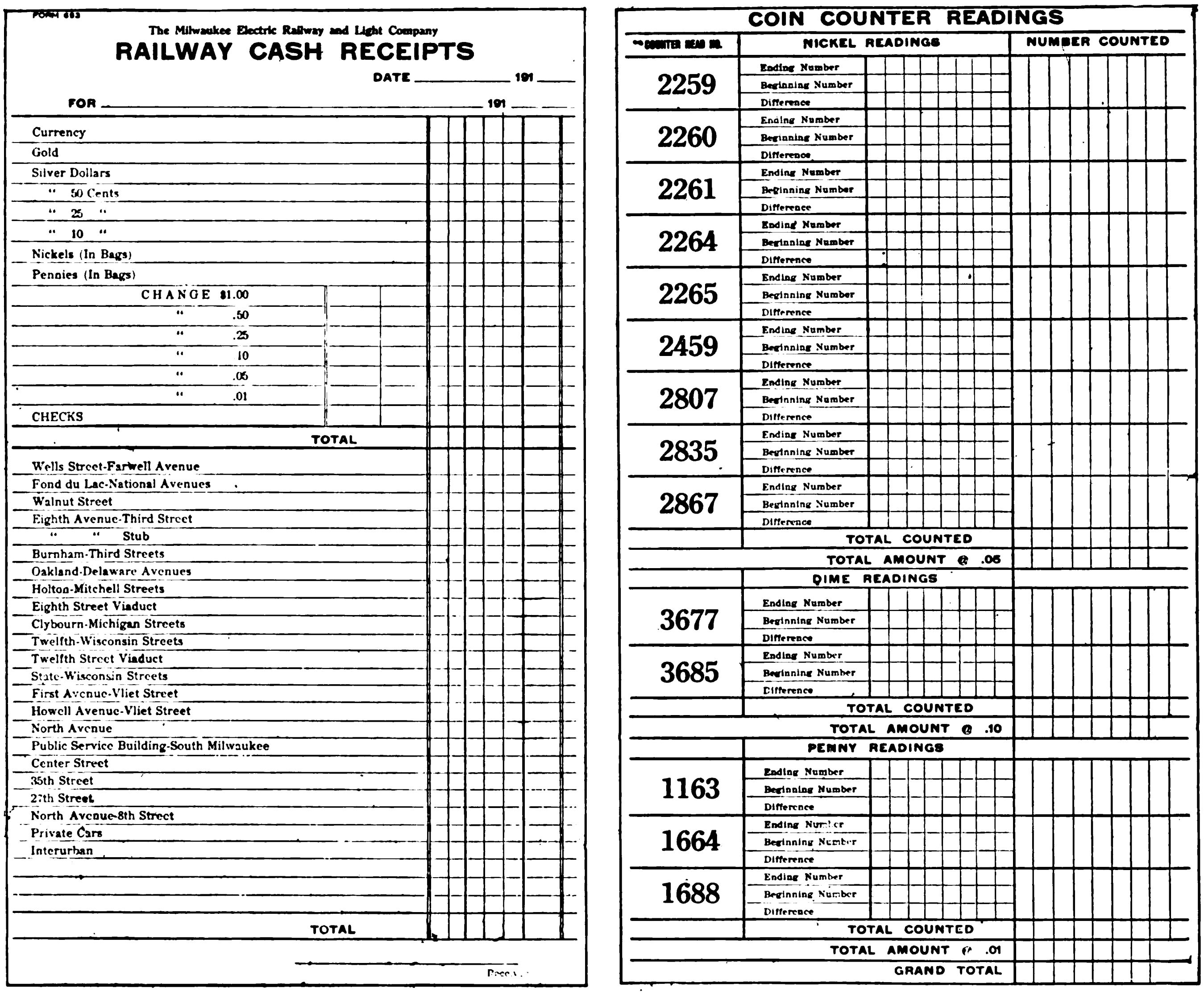
INBOUND

IN BOUND START HERE

Trip Number	1st ZONE			2nd ZONE			3rd ZONE			4th ZONE			5th ZONE			6th ZONE			Free Ticket Pass. Carried	Zone Receipts Collected
	Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car		Number of Pass. Boarding Car	Number of Pass. Leaving Car			
1																				
2																				
3																				
4																				
TOTAL																				

Conductors must report total number of passengers boarding car and leaving car in each zone
Transfer zone receipts must be used on all lines having more than one zone.
Transfer zone receipts should not be turned in with the transfers collected on city lines, but should be mailed separately.

CONDUCTOR'S TRIP SHEET FOR RECORDING ZONE PASSENGER FLOW dents, missed fares and cases of fraud, as to locate the conductor at the rear of the car where he could be of most assistance in speeding up car operation. Under the present plan of operation outbound passengers on all of the suburban lines, except the South Milwaukee line, pay a city fare of 5 cents as they enter the car. If they are transferring from another car line the conductor is handed a transfer. All cash fares are deposited in a fare box, which is of the lock type and was designed and built by the company in its own large, well-equipped shops. Metal tokens have been provided for the convenience of telegraph and telephone companies, department stores, and other organizations who prefer supplying transportation to their messenger boys and other traveling employees in some form other than money. The company is planning to increase its supply of tokens as it is felt that a number of employees in industrial plants would prefer to purchase a week's supply of transportation very much as they purchase a week's supply of flour or other provisions.



FORM 663

The Milwaukee Electric Railway and Light Company

RAILWAY CASH RECEIPTS

DATE ______________ 191 ____

FOR ______________________________ 191 ____

Currency
Gold
Silver Dollars
" 50 Cents
" 25 "
" 10 "
Nickels (In Bags)
Pennies (In Bags)
CHANGE $1.00
" .50
" .25
" 10
" .05
" .01
CHECKS
TOTAL

Wells Street-Farwell Avenue
Fond du Lac-National Avenues
Walnut Street
Eighth Avenue-Third Street
" " Stub
Burnham-Third Streets
Oakland-Delaware Avenues
Holton-Mitchell Streets
Eighth Street Viaduct
Clybourn-Michigan Streets
Twelfth-Wisconsin Streets
Twelfth Street Viaduct
State-Wisconsin Streets
First Avenue-Vliet Street
Howell Avenue-Vliet Street
North Avenue
Public Service Building-South Milwaukee
Center Street
35th Street
27th Street
North Avenue-8th Street
Private Cars
Interurban
TOTAL

COIN COUNTER READINGS

COUNTER HEAD NO.	NICKEL READINGS	NUMBER COUNTED
2259	Ending Number	
	Beginning Number	
	Difference	
2260	Ending Number	
	Beginning Number	
	Difference	
2261	Ending Number	
	Beginning Number	
	Difference	
2264	Ending Number	
	Beginning Number	
	Difference	
2265	Ending Number	
	Beginning Number	
	Difference	
2459	Ending Number	
	Beginning Number	
	Difference	
2807	Ending Number	
	Beginning Number	
	Difference	
2835	Ending Number	
	Beginning Number	
	Difference	
2867	Ending Number	
	Beginning Number	
	Difference	
	TOTAL COUNTED	
	TOTAL AMOUNT @ .05	
	DIME READINGS	
3677	Ending Number	
	Beginning Number	
	Difference	
3685	Ending Number	
	Beginning Number	
	Difference	
	TOTAL COUNTED	
	TOTAL AMOUNT @ .10	
	PENNY READINGS	
1163	Ending Number	
	Beginning Number	
	Difference	
1664	Ending Number	
	Beginning Number	
	Difference	
1688	Ending Number	
	Beginning Number	
	Difference	
	TOTAL COUNTED	
	TOTAL AMOUNT @ .01	
	GRAND TOTAL	

FRONT AND BACK VIEWS OF RECEIPT SUMMARY FORM

At present the only paper tickets used on the city and suburban lines are those issued to company employees. These tickets are all numbered and carefully accounted for.

All zone limit points are marked with a pole sign and the passing of a zone point is called to the attention of the passengers by the conductor. Passengers entering the car beyond the city fare limit pay either the minimum 5-cent fare or if riding through more than two zones, as on the Fox Point line, pay their fare to destination, receiving a punched receipt. This receipt, as shown in an accompanying illustration, is printed on the bottom end of the ordinary transfer and shows both destination and time. After passing the city fare limit, the conductor passes through the car supplying those passengers who entered the car within this limit with penny change to facilitate the payment of their zone fares. The conductor then moves his fare box to the front end of the car closing the rear entrance and exit doors. As the passengers leave the car those having entered while within the central city limits deposit 2 cents in the fare box, if the car is in the first zone, or 4 cents if in the second zone. These passengers who entered the car after it passed the city fare limit return the zone fare receipt to the conductor. This prevents over-riding. Conductors are not permitted to handle fares, the passengers being expected to place the proper fare in the box. Each conductor when he enters the employ of the company is given $15 for change money. This he keeps as long as he is in the employ of the company. The men are expected to supply themselves with penny change, and facilities are provided at the carhouses and ticket offices to assist them in doing this.

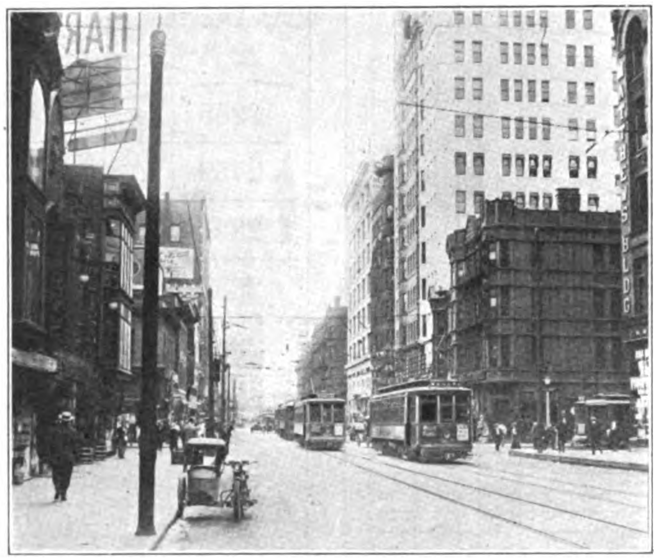
For inbound passengers the fare collection is handled in a slightly different manner. The passenger upon entering the car pays his full fare to destination. For example, if he enters the car in the second zone and wishes to ride into the city proper, he deposits 9 cents in the fare box. Should he desire to ride only into the first zone, his deposit is 5 cents. Over-riding is prevented by the conductor spotting the passengers who pay only 5 cents. This is not a difficult matter, as very few passengers ride within outer zones only. Should a passenger wish a transfer, it is obtained when he boards the car and pays his fare.

The only overlaps in the suburban system are those noted on the accompanying map. These overlaps permit rides through the towns of Wauwatosa and West Allis on 5-cent fares.

To facilitate car loading at congested corners during the rush hours, the company employs ground conductors, or fare collectors. These men carry a fare box slung over their shoulder by means of a strap. They station themselves at the front doors of the cars and thus permit loading at both ends.

As noted elsewhere, a different method is followed on the South Milwaukee suburban line. The reason for this is that this line serves a heavy traffic industrial district and passes through a densely populated foreign district. Foreigners representing nearly all of the nationalities on the globe reside here. The line also includes a number of zones and passes through the town of St. Francis and the cities of Cudahy and South Milwaukee. In Cudahy are located the plants of the Federal Rubber Company, the Cudahy Packing Company, the Worthington Pump & Machinery Company, the Ladish Drop Forge Company, the Helmholz Knitting Company, and the Froedtert Lumber Company. In South Milwaukee the principal industrial plants are those of the Bucyrus Steam Shovel Company, the Stowell Manufacturing Company, the Badger Malleable Manufacturing Company, and Pfister & Vogel Leather Company. These companies employ about 15,000 people, of which more than 3000 use the South Milwaukee suburban line going to and from their work.

Fare collection on this line is handled as follows: Upon entering the car an outbound passenger names his destination, the conductor gives him the necessary change, if change be necessary, and a fare receipt, the passenger depositing the fare in a locked fare box. On this line the Cleveland fare boxes are used. One of the fare receipts is here reproduced. It will be noted that the punch mark shows the point to which the fare was paid. The passenger retains this receipt until he leaves the car, at which time it is collected by the conductor. Over-riding is prevented by the conductor checking the receipt to see whether the punch mark agrees with the point at which the passenger leaves the car. Should a passenger not have a receipt he is required to pay full fare from the beginning of the run to the point in question. In case of dispute the conductor is instructed to collect the fare and refer the passenger to the office of the transportation department at the Public Service Building in Milwaukee.



LOOKING EAST ON GRAND AVENUE FROM THIRD STREET, MILWAUKEE, WIS.

Fares are collected from inbound passengers in the same manner, except that upon reaching the city limit the conductor passes through the car and collects the fare receipts. This simplifies the collection of fares from passengers entering the car within the city fare limits. Transfers are given upon request at the time the fare receipts are collected.

Some idea of the density of the traffic on this line during rush hours can be gained from the fact that three-car trains are operated on five-minute headways from 5.55 a.m. to 6.20 p.m. between Cudahy and Milwaukee. The loading of industrial workers near one of the Cudahy plants is shown in an accompanying illustration on page 614.

TYPES OF CARS USED

Since June, 1916, the zone system of suburban fares has been effective on three interurban lines which run through suburban zones. Single-truck cars are operated on the Fox Point, Wanderers' Rest and Tippecanoe lines. Except during rush hours, and on Saturday afternoons, Sundays and holidays, these cars are operated by one man, the traffic being very light. These single-truck cars weigh 10 tons, seat twenty-six passengers, have manually operated doors, and are arranged for double-end operation with front-door entrance.

The motor cars ordinarily used on the South Milwaukee line are of the company's standard interurban type. They weigh 65,000 lb. and seat sixty-four passengers. They are of the open-door type and are arranged for double-end operation, the passengers entering and leaving through the rear car. At times a type of center-entrance car is used on this line. These cars are arranged for multiple-unit operation, weigh 43,000 lb., and seat fifty-six passengers. They were built in the company's Cold Spring shops in 1917. The cars used on the other suburban lines range in size from small double truck cars to the center-entrance cars just mentioned. Zone fares in Milwaukee, therefore, are being collected on cars varying greatly in size and type.

ACCOUNTING METHODS

Fare receipts, transfer zone receipts and transfers are all handled in exactly the same manner. They are bundled separately by the conductor and wrapped with what is called a transfer band, which is nothing but a manila sticker with a printed form on one end to be filled in by the conductor for the purpose of identification. These are not placed in the fare box, but are turned in separately. On the South Milwaukee line employees' tickets are placed in the cash opening of the Cleveland fare box. On the other lines which employ a fare box of the company's own design the tickets are placed in a small opening designed for this purpose. Cash and metal tokens are dropped into the main cash opening. When the zone system was first inaugurated an overhead register was used in connection with the fare box. The overhead register was dispensed with several years ago, and the method now used for accounting is comparatively simple. For each trip the conductor fills out a form which shows on the one side the number of passengers in the various zones. On the reverse side blanks are provided for reporting extra car mileage, trip number, leaving time, and data relative to the number of transfers issued and collected.

In case a passenger by mistake has dropped more than the required fare into the fare box, he is supplied by the conductor with a refund slip. This is refunded by the company upon presentation at the transportation department office in the Public Service Building in Milwaukee. The reverse side of this slip is a receipt which the passenger signs upon receiving his refund.

At the end of his tour of duty each conductor turns in his trip sheets and transfer zone receipts. The fare boxes are turned in at the end of a day's run by men assigned to that work at the carhouses. In the cash opening of each fare box is placed a slip to indicate the line on which the car was operated. No attempt is made to segregate the fare collections by cars or by conductors. From the carhouses the cash fare boxes are taken to the auditing department, where they are assembled by lines. The contents of all of the boxes for a given line are then dumped upon the hopper board of a coin counting machine. After the contents of the fare boxes have been run through the coin machine the dial records are recorded on a 3-in. x 5-in. card, which is also reproduced in an accompanying illustration. There is one of these cards for each line for each day's operation.

The Milwaukee Company Operates Its Cars in Trains

HE PRIME STEEL COMPANY.
PATTERN SHOP.
MITCHELL
HOLTON
MITCHELL
719

At top, a two-car train in front of the Public Service Building.

Below, multiple unit train used on some of the suburban lines.

The transfers, transfer zone receipts and South Milwaukee line fare receipts are checked in order that some check on the conductors can be maintained.

RESULTS OF THE ZONE SYSTEM

The effect of the application of any new fare system on the riding habit of the public and the revenues of the company is always a matter of great interest. The traffic on the Milwaukee suburban lines, however, has been so affected by the fluctuation in industrial conditions incident to the war that it is practically out of the question to draw any really trustworthy general conclusions from traffic and revenue statistics. Some of the traffic statistics are given in the Table II.

TABLE II—TRAFFIC STATISTICS OF MILWAUKEE SUBURBAN LINES

Year	1913	1914	1915	1916	1917	1918
Number of revenue passengers per year	3,513,691	4,256,232	4,400,700	4,889,378	5,149,217	5,244,313
Per cent	100	121	125	139	146	149
Number of revenue car-miles per year	759,190	833,366	772,181	810,672	850,892	845,153
Per cent	100	110	102	107	112	111
Number of revenue car-hours per year	73,053	75,516	73,188	76,982	79,678	78,645
Per cent	100	103	100	105	109	108
Revenue passengers per car-mile	4.62	5.06	5.70	6.03	6.05	6.20
Revenue passengers per car-mile per cent	100	110	123	130	131	134

It will be noted that the revenue passengers per car-mile have increased from 4.62 in 1914 to 6.20 in 1918. This represents a total increase of 34 per cent. The corresponding increase in total revenue passengers is 49 per cent. It seems impossible, however, to determine the influence of the fare system upon these increases.

Some idea of the magnitude of the zone traffic at present can be gained from Table III, which shows the passenger flow through the two zones of the North Milwaukee line. With the exception of the South Milwaukee line, for which similar data are given in Table IV, this line carries heavier traffic than any of the other suburban lines. These tables show very clearly the lightness of the local traffic in the zones as compared with the long haul traffic to the city proper.

TABLE III—TOTAL ZONE TRAFFIC NORTH MILWAUKEE LINE, APRIL, 1919

	First Zone		Second Zone	
	Outbound	Inbound	Outbound	Inbound
Number of passengers entering zone	26,738	16,553	18,626	......
Number of passengers boarding car	4,341	12,947	195	16,675
Passenger flow	31,079	29,500	18,821	16,675
Number of passengers leaving car	12,453	3,966	18,821	122

In any attempt to draw conclusions from the operation of the Milwaukee zone system it must be borne in mind that in the inauguration of this system no great changes were made, or have been made since, in the limits covered by a single city fare. The zone system as applied affects the suburban and not the shorter-haul city rider. On all of the lines except the South Milwaukee and Fox Point lines the net result of the zone system has been a fare reduction, the amount of the reduction depending on whether one or two 2-cent zones replaced the old 5-cent zone. The 2-cent zone charge was a compromise between the figured cost of transportation, which was nearer 3 cents per mile, and the charge which in the opinion of the commission would increase the traffic within the zones. As has already been noted, there has been an increase in traffic since 1914 but the territory served is for the most part so sparsely populated that the increase in number of fares as yet has not been sufficient to make the suburban lines paying property from the investor's standpoint.

In other respects the experience in Milwaukee with zone fares has been highly satisfactory. The old argument that congestion is produced by the zone system has not been borne out in Milwaukee, as the lower rents and property values in the suburbs to which the total fare was increased, more than offset the higher fares. The matter of fare collection has not proved to be a difficult one. The method may sound somewhat complex to one familiar only with the straight 5-cent fare system, but the actual operation works out nicely as the bulk of the riders are those who live in the city and are familiar with the local transportation methods. That zone fares can be collected with speed and certainty under difficult operating conditions the satisfactory operation of the South Milwaukee line is convincing evidence. The inauguration of any new scheme, as for instance the collection of fares by a different method, always causes more or less trouble at first. In time, however, the public becomes familiar with the operation of the new plan and the trouble disappears. This has been the case in Milwaukee. When the zone fare system was first inaugurated, maps showing the fare limits were printed on posters, and considerable publicity was given to the method of collecting fares.

As far as the company has been able to determine, the use of the zone system has in no way influenced the number of accidents. The method of accounting used involves no serious difficulties. As a matter of fact, the present method requires only about 50 per cent of the work required by the system formerly in use, which involved the overhead fare register, since troublesome overages and shortages no longer occupy a great deal of time in checking up.

One of the most important advantages of the zone system has been its flexibility as compared with the rigid flat-rate system. This flexibility is indicated in part by the fare history reviewed in earlier paragraphs of this article. So firmly convinced of the inherent merits of the zone system is the company that it hopes in time to be able to apply the system to the central zone which at present is too large to secure proper flexibility in the matter of fares.

TABLE IV—TOTAL ZONE TRAFFIC, SOUTH MILWAUKEE LINE, APRIL, 1919

	First Zone		Second Zone		Third Zone		Fourth Zone		Fifth Zone		Sixth Zone	
	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound
Number of passengers entering zone	73,185	25,776	25,845	18,401	20,244	17,697	19,870	13,451	16,351	759	811	....
Number of passengers boarding car	3,714	45,695	5,176	12,247	866	2,097	370	5,255	195	13,077	14	825
Passenger flow	76,899	71,471	31,021	30,640	21,110	19,794	20,240	18,706	16,546	13,836	825	825
Number of passengers leaving car	51,054	4,679	10,777	4,872	1,240	1,393	3,889	1,009	15,735	385	825	66

Zone System in Portland

Maine Public Utilities Commission helps to solve fare problem—Special tickets used for collection purposes — System works satisfactorily on all types of cars

OVERLOOKING PORTLAND HARBOR

THE Portland Railroad Company, which is leased and operated by the Cumberland County Power & Light Company, connects Portland (Me.) with the outlying cities and towns of Saco, Old Orchard, Cape Elizabeth, Windham, Falmouth, Cumberland and Yarmouth. The system comprises slightly more than 100 miles of track. It is estimated that the population served, with the exception of the four summer months approximates 100,000, but that during the months of June, July, August and September, due to the influx of vacationists from all parts of the country, the tributary population is increased to 175,000.

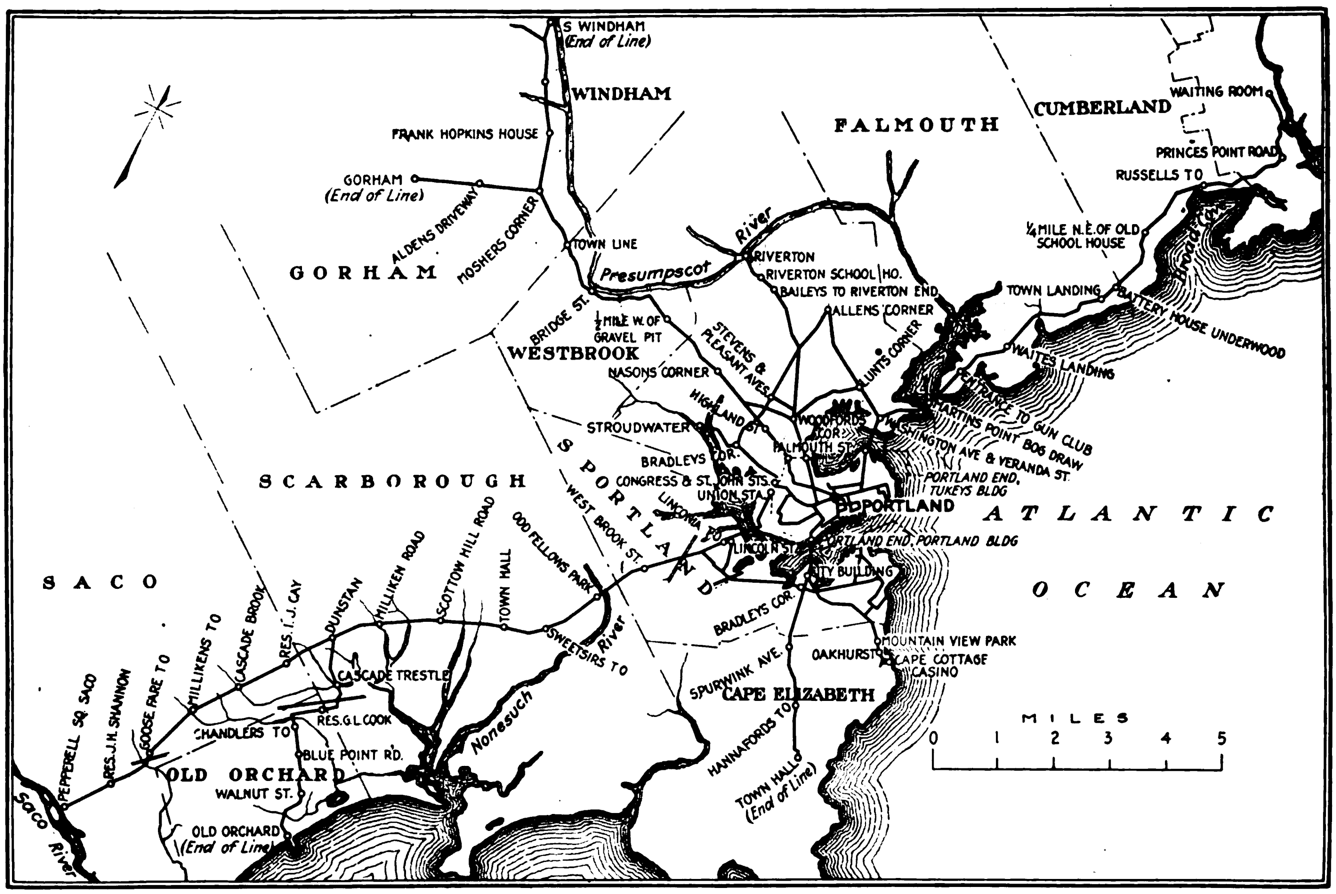
Previous to August, 1918, when the Public Utilities Commission of Maine first authorized a change in fares, the rate of fare was based on the nickel as a unit with free transfers, with the exception of the lines extending to Old Orchard, Saco, Yarmouth, Westbrook, Riverton and Cape Elizabeth where the fares were in 5-cent increments, as a rule one for each of the towns traversed. On July 25, 1918, the commission authorized the establishment of a zone system with a central area, comprising practically all of the built-up section of the city of Portland, and with mileage zones beyond. The rate of fare was 5 cents on three lines wholly within this central area, with a 1-cent charge for a transfer, while on all other routes nearly all of which extend beyond this area, the rate was 2 cents per zone, with a minimum fare of 6 cents. Free transfers, however, were given upon request to other city cars. These rates were put into effect on Aug. 2, 1918. The increase in revenue derived from this change of fare was almost nothing, and after two months of operation the company filed a new petition asking that the minimum fare on all lines, irrespective of whether they were within or without the central area, be made 6 cents.

Something should be said relative to the publicity campaign planned and carried out for the purpose of acquainting the car-riders with the system of fares which the company desired to have established. The methods employed are probably unique in the annals of the electric railway industry in that other companies have never actually carried out the plan in all its details as was done in Portland.

In order that the car riders might become better acquainted with the officials of the company, its financial affairs, and the reason for increasing fares, an extensive educational campaign was planned, and put into effect. This plan called for the hiring of halls in various communities, extending invitations to the residents to come and talk over the affairs of the railway and for public spirited citizens of the communities involved to be the leaders of the meetings. Officials of the company were in attendance and had full authority to talk on all subjects pertaining to the railway and also to grant any reasonable concessions in the way of improvements in service that might be asked for by anyone in the audience. It was realized that in order for these public meetings to accomplish the desired results the same spirit of co-operation desired of the public should be shown by the railway employees, especially those on the cars. In order to secure this co-operation the company held two meetings at the headquarters of the local union of the Amalgamated Association of Street & Electric Railway Employees of America.

These meetings were addressed by A. H. Ford, vice-president and general manager, who outlined his plan for community meetings, the need for more revenue and how the company was planning to obtain it. The need of co-operation from the men in putting the new fares into effect was pointed out, and every effort was made to have them feel that the campaign was as much for their benefit as for the benefit of the community and of the company; that without the co-operation of the men on the cars, the traveling public, and the city government, any increased rate of fare when put into effect would not produce the desired results.

The second step in insuring the success of the plan was to secure proper publicity in the daily press. Space for paid advertisements was contracted for in each of the several papers, but in addition reading notices and reports of the meetings were desired. To secure these and to obtain further suggestions as to publicity, the newspaper men, not only the reporters, but in some cases the city editors, were gathered together and the matter fully discussed. As they were fully convinced of the needs of the company for increased revenue, the newspaper men readily agreed to co-operate in the undertaking to report each of the community meetings and, further, to give the subject the widest publicity possible. About ten community meetings were held. The company's representative, after being duly introduced at these meetings, discussed the need for increased revenue, the general plan of a zone system, the proposed zone limits as they affected the community in question, the method of fare collection, and brought out the fact that if this plan or schedule of fares did not bring forth the necessary revenue within a two-months trial period the company would be forced to ask for another increase. To show that the company desired the full co-operation of all the communities served, the company held another series of meetings in the course of which the reasons for the deficit were outlined in detail so that everyone could satisfy himself as to the real need for higher fares. An opportunity to ask questions and make suggestions for bettering the service was always given the audience.


S WINDHAM
(End of Line)
WINDHAM
FRANK HOPKINS HOUSE
GORHAM
(End of Line)
ALDENS DRIVEWAY
MOSHERS CORNER
GORHAM
TOWN LINE
Presumpscot
River
RIVERTON
RIVERTON SCHOOL HO.
BAILEYS TO RIVERTON END
ALLENS CORNER
FALMOUTH
CUMBERLAND
WAITING ROOM
PRINCES POINT ROAD
RUSSELLS TO
¼ MILE N.E. OF OLD SCHOOL HOUSE
TOWN LANDING
Broad Cove
BATTERY HOUSE UNDERWOOD
WAITES LANDING
ENTRANCE TO GUN CLUB
MARTINS POINT BOG DRAW
WASHINGTON AVE & VERANDA ST.
PORTLAND END, TUKEYS BLDG
LUNTS CORNER
BRIDGE ST.
½ MILE W. OF GRAVEL PIT
WESTBROOK
NASONS CORNER
STEVENS & PLEASANT AVES.
HIGHLAND ST.
STROUDWATER
WOODFORDS COR.
FALMOUTH ST.
BRADLEYS COR.
CONGRESS & ST. JOHN STS.
UNION STA.
PORTLAND
ATLANTIC
LINCONIA PO
LINCOLN ST.
PORTLAND END, PORTLAND BLDG
CITY BUILDING
OCEAN
S PORTLAND
WEST BROOK ST.
ODD FELLOWS PARK
SCARBOROUGH
SACO
TOWN HALL
SCOTTOW HILL ROAD
MILLIKEN ROAD
DUNSTAN
RES. I. J. CAY
CASCADE BROOK
MILLIKENS TO
GOOSE FARE TO
RES. J. H. SHANNON
PEPPERELL SQ. SACO
CASCADE TRESTLE
SWEETSIRS TO
River
Nonesuch
RES. G. L. COOK
CHANDLERS TO
BLUE POINT RD.
OLD ORCHARD
WALNUT ST.
OLD ORCHARD
(End of Line)
Saco River
BRADLEYS COR.
MOUNTAIN VIEW PARK
OAKHURST
CAPE COTTAGE CASINO
SPURWINK AVE.
CAPE ELIZABETH
HANNAFORDS TO
TOWN HALL
(End of Line)
MILES
0
1
2
3
4
5

MAP SHOWING ROUTES AND LAYOUT OF ZONES IN PORTLAND AND VICINITY

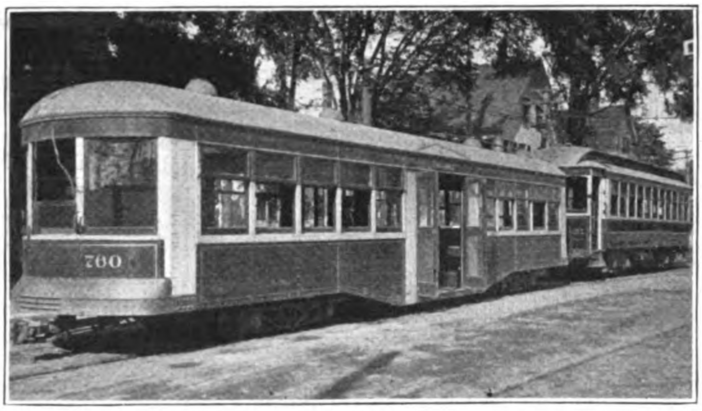
Throughout all of these meetings the interest taken by the public was manifest, and the spirit of criticism which it showed led the company to feel that its patrons were entirely in sympathy with its endeavors, and if the service wants were provided the public would pay its share of the transportation expenses. Much good, it was felt, was obtained from several of the criticisms of the service that were brought up at these meetings. Where possible, suggested changes were promptly adopted. It was this show of the company's attitude toward its patrons that made the people feel the company wanted to do what was just and fair to the community.

After the usual hearing, the commission, in order to aid both the company and the community interested, held a meeting and dinner in connection with the Portland Chamber of Commerce, at which the members of the city government and other prominent men of the city were invited. The purpose of this meeting was to discuss public utility affairs, and the importance of a street railway to the welfare of any community. The commission at this meeting gave out the information that it was about to issue an order allowing an increase of fare to 6 cents on the lines of the Portland company, and asked that each and every one connected, not only with the city government but with the city's industries, do all that they could to further the welfare of the railway, for that without such co-operation the railway could not exist.

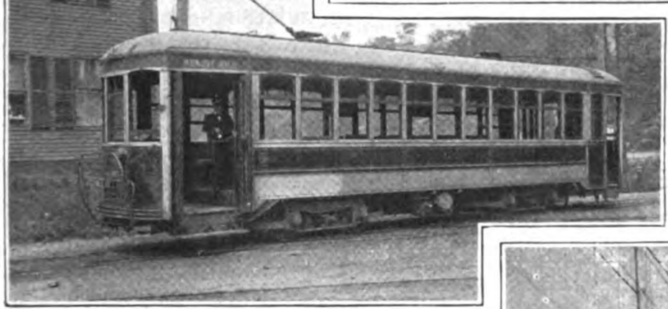
COMMISSION ORDERS ZONE FARES

While the company had petitioned for an increase in the minimum fare to 6 cents, the commission in its decisions of Jan. 7 and Feb. 3, 1919, felt that the best results would be obtained by an entirely new system of fares based solely on distance traveled. On March 2, 1919, the zone system of fares, which had been designed by the railroad company to accord with the above-mentioned orders of the commission, was put into effect for a trial period in order to determine whether it would produce the necessary revenue. This plan was outlined in detail in the ELECTRIC RAILWAY JOURNAL, April 12, 1919, page 728, and inasmuch as it failed to produce sufficient revenue to pay the increased cost of operation it was changed to the present schedule on June 15, 1919.

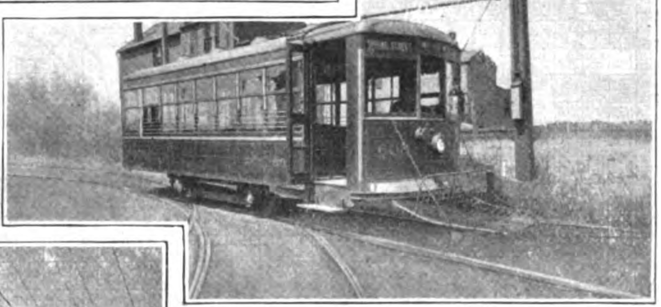
STANDARD CLOSED CAR AND CENTER ENTRANCE TRAILER ON WESTBROOK DIVISION



The present schedule of fares was presented to the commission for approval in a petition filed on May 26, 1919. This schedule, suggested by A. S. Richey of Worcester, Mass., was that the previous zone limits or transfer privileges, effective March 2, 1919, remain unchanged, but that the minimum cash fare be made 9 cents, or 3 cents a mile, with a reduced ticket rate of 7 cents or 2⅓ cents per mile, tickets to be sold in lots of five, or fifteen for 35 cents.

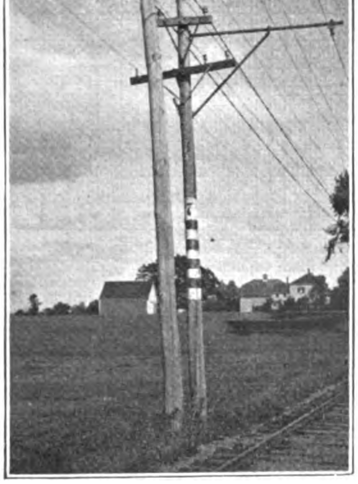


STANDARD TYPE OF PREPAYMENT CAR OPERATED ON UNION STATION ROUTES



SAFETY CARS OPERATED ON SPRING STREET ROUTE IN PORTLAND

The general layout of zones, the central area for transfers around Monument Square, and the number of zones per route are all shown in the accompanying map. Zone limits are marked with distinctive black and white bands on the poles with the zone numbers stencilled at the top, as shown in the illustration. The central zone, in the downtown district where transfers are issued, has Monument Square as the center. The limits of this zone on the various lines are shown by the dotted lines on the map, and are the same as the outer limits of the first-fare zone from Monument Square, viz., Union Station, junction of Congress and St. John Streets; Falmouth Street, southerly end of Tuykey's Bridge, and the Portland end of the new bridge to South Portland.



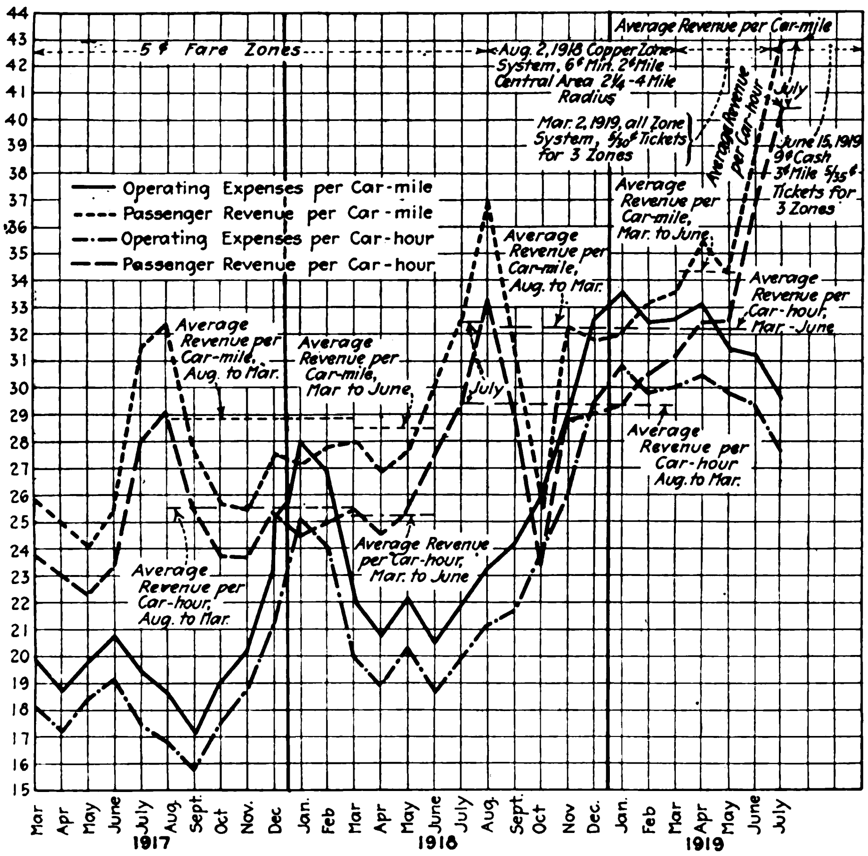
STANDARD METHOD OF MARKING ZONE LIMITS

A cash fare of 9 cents entitles the passenger to ride three consecutive zones or less. The cash fare per zone, however, for each zone beyond those covered by the payment of the minimum fare is 3 cents for each zone or fraction thereof traveled. Coupon tickets can be purchased either from the company at its Monument Square waiting room and other regularly established agencies or from conductors on the cars. For convenience in handling, the tickets come in pads of fifty with an agent's stub as the first leaf so that when a pad is given to a conductor, record can be kept by the issuing agent.

The illustrations show the form of ticket good for five three-zone or minimum fare rides, sold for 35 cents giving a fare of 7 cents; the form of ticket good for fifteen single-zone rides, sold for 35 cents giving an average fare of 2⅓ cents per zone; also the form of ticket good for six five-zone rides, sold for 70 cents. This ticket is sold only for the convenience of passengers who frequently ride through five zones. The minimum ticket fare for each continuous ride is one coupon from the 7-cent three-zone ticket or three coupons from the single-zone ticket. It is possible, however, for a passenger to use a 7-cent ticket as an initial fare and to pay cash at the rate of 3 cents per zone for all zones beyond those covered by the 7-cent ticket, or to use a fifteen-zone ticket, one coupon for each zone. School tickets in coupon strips as illustrated are sold only to the cities of Portland and Saco and the towns of Old Orchard, Scarborough and Falmouth, which in turn furnish them to pupils for transportation to and from school. In general the rate is 7 cents, less 33⅓ per cent discount, each ticket being good for a three-zone ride. Between Falmouth and Yarmouth and between Falmouth and Portland a twenty-ride strip ticket is sold for $1.40. These tickets, however, are good for a five-zone ride. All tickets are of the same style except in color and the name of city or town.

TRANSFER PRACTICE IN PORTLAND

The passenger who has paid a single minimum fare is entitled to ride through three full zones, and having ridden only a part of these on one car is entitled without payment of additional fare, to a transfer, which will enable him to complete the balance of his ride on a connecting car. All inbound passengers paying fares to Monument Square are entitled under this rule to a transfer to any connecting car within the central zone described and bounded by the dotted line on the map.



CURVES SHOWING RELATIONSHIP OF CAR-MILE AND CAR-HOUR EARNINGS AND EXPENSES UNDER VARIOUS RATES OF FARE

The form of transfer used, in addition to being punched for month, date, time, and destination, must be punched for the number of zones that the passenger is still entitled to ride on the connecting car for the fare paid to the initial conductor. For example, a passenger boards a car at the Union Station (Zone 1) and pays his fare with a 7-cent ticket or 9 cents cash. The conductor, on request at the time of payment of fare, issues a three-zone transfer by punching the large figure three shown in the lower right-hand corner. If a passenger boards a car at or between Ligonia turnout and Union Station (Zone 2) the conductor punches out Zone 2, similarly, if a passenger boards a car within Zone 3, the conductor punches out Zone 1.

If a passenger has ridden three full zones and desires to change at a junction point, which is also a zone limit, the conductor issues a transfer punched for month, date, time and "Zone 0." A transfer so punched shows the accepting conductor that the passenger has paid at least the minimum fare on a previous car, and is therefore entitled to ride with him for the sum of the zone fares traveled, that is, if only one zone is desired this can be obtained on payment of 3 cents or one coupon from the 2½-cent green ticket. Transfers, however, are not issued to allow a passenger to return to a point on another route near where he originally boarded the car, nor are they issued to another line which passes over the same route or by the point where the passenger boarded the car. Transfers to be valid must be presented on the first car passing the transfer point designated after the time canceled and then only by the person to whom issued. It is a rule of the company to allow free transportation to its employees, and effective on Aug. 1, 1919, a card form of pass good for 40 rides superseded the 100-ride coupon book which heretofore had been used. Two colors of passes are used to prevent manipulation, viz., gray for the men, white for the women employed. Conductors are required to punch out a block number for each fare collection made, using the regular ticket punch. In order to renew the pass it is necessary to return what is left of the pass previously issued. Passes are renewed only by one person at the central office of the company. Conductors on going to work are furnished with a supply of the different kinds of commutation tickets estimated to last for the day on the line on which he works. A ledger account is kept with each man, and to facilitate matters in handling these accounts an auditor's stub is attached to each pad of fifty tickets, which is signed by the conductor and sent by the disbursing agent to the auditing department for billing. If the conductor has to obtain additional tickets during the day they are charged to him in the same manner.

At the end of the day's work the conductor makes up his day card record and settles with the receiver at the car house for the number of tickets sold. His ledger account is likewise credited in accordance with the day card record. In this way the daily balance shown by the conductor's ledger account must agree with the conductor's day card record.

For canceling these coupon commutation tickets conductors carry a special punch which will clip off a quarter inch square with one operation. These punches are left-handed in that the right-hand side of the punch is blocked in order to force the conductor to clip off the numbers of the tickets in their numerical order. This punch is generally carried on a string so as to be readily available, for the conductor has to use it practically every time a fare is collected.

The company operates cars of five distinct types: safety cars on the Spring Street route; prepayment type cars with folding steps and doors on the Union Station-Munjoy Hill and the Union Station-Grand Trunk station routes; ordinary closed cars; center-entrance trail cars to Westbrook; cross-bench open cars on practically all routes with the exception of the Westbrook line. All cars carry either a double-face register at one end or two single registers, one at each end.

On routes entirely within the central zone such as Spring Street, Union Station-Munjoy Hill, or Union Station-Grand Trunk Station the cash registers have a value of 9 cents, while on all other lines the value is 3 cents. Ticket registers are the same on all cars and are used to register stubs of commutation tickets collected by the conductors when last used for a ride; school tickets; and coupons from Boston & Maine and Grand Trunk railroad tickets that are good for fare across the city of Portland. Transfers and complimentary tickets are not registered, but are accounted for on the day card each half trip and inserted in a trip envelope properly marked on its face. At the end of each round trip the envelope is deposited in a box in the car provided for the purpose. All revenue tickets and commutation stubs rung up on the ticket register are likewise included in this envelope. The conductor also keeps a record on his day card of the tickets, transfers, free tickets, etc., inserted in the envelope, so that when he makes up his report at the end of the day his tot on the day card must agree with the number of tickets deposited in the envelope.

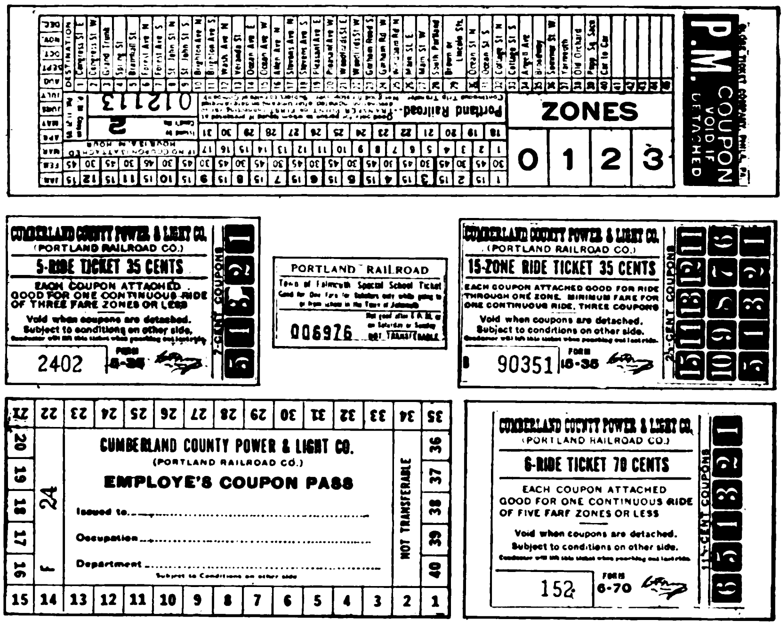
In general with the exception of four routes which are operated entirely on the prepayment plan, fares are collected pay-leave on outbound trips from Monument Square and prepayment on inbound trips. At Monument Square, and also at Union Station, the company maintains ticket sellers on the streets, whose duty it is to announce cars and sell commutation tickets to passengers before they board the cars. This is done with the idea of relieving the conductor from extra duty in connection with fare collection, and it has been found that by so doing considerable time is saved in getting the cars started, especially at Union Station where they are operated on the prepayment plan.

COLLECTION METHOD DEPENDS ON ROUTE AND TYPE OF CAR

Cross-bench open cars which are operated to some extent on several lines have received special study in relation to fare collection. In general the routes are divided for fare collection purposes so that conductors make collections every three or six-fare zones. On the Old Orchard and Saco cross-bench open cars, a ticket seller is put on with the conductor as the car leaves the heavy traffic terminal to sell tickets to all passengers. Inasmuch as it takes a 35-cent ticket to go to either of these places, each person must of necessity purchase a ticket. Experience with the use of these ticket sellers has shown that schedules can be maintained better as the motorman is not required to slow down in order to allow the conductor time to collect fares before points are reached where a large number of passengers desire to leave the car. Observations indicate that the speed with which fares are collected varies largely with the conductor, as some are able to work a fifteen cross-bench open car in three to four minutes, while others take as much as eight or ten minutes.

The plan of collection followed on the various routes extending beyond the central dotted area on the map is as follows:

Portland-Yarmouth, (eleven zones)—On closed cars, outbound passengers pay as they leave to Martin's Point Bridge, three zones. Beyond this point an inside collection to destination is made. Inbound passengers pay to destination on boarding the car. On open cars operating in either direction, fares are collected to destination.



P.M.

ZONES

0 1 2 3

COUPON VOID IF DETACHED

CUMBERLAND COUNTY POWER & LIGHT CO.
(PORTLAND RAILROAD CO.)
5-RIDE TICKET 35 CENTS
EACH COUPON ATTACHED GOOD FOR ONE CONTINUOUS RIDE OF THREE FARE ZONES OR LESS
Void when coupons are detached.
Subject to conditions on other side.
2402
FORM 5-35
7-CENT COUPONS
1 2 3 4 5

PORTLAND RAILROAD
006976
NOT TRANSFERABLE

CUMBERLAND COUNTY POWER & LIGHT CO.
(PORTLAND RAILROAD CO.)
15-ZONE RIDE TICKET 35 CENTS
EACH COUPON ATTACHED GOOD FOR RIDE THROUGH ONE ZONE. MINIMUM FARE FOR ONE CONTINUOUS RIDE, THREE COUPONS
Void when coupons are detached.
Subject to conditions on other side.
90351
FORM 15-35
2⅓-CENT COUPONS

CUMBERLAND COUNTY POWER & LIGHT CO.
(PORTLAND RAILROAD CO.)
EMPLOYE'S COUPON PASS
Issued to..........
Occupation..........
Department..........
Subject to Conditions on other side
NOT TRANSFERABLE
24

CUMBERLAND COUNTY POWER & LIGHT CO.
(PORTLAND RAILROAD CO.)
6-RIDE TICKET 70 CENTS
EACH COUPON ATTACHED GOOD FOR ONE CONTINUOUS RIDE OF FIVE FARF ZONES OR LESS
Void when coupons are detached.
Subject to conditions on other side.
152
FORM 6-70
11⅔-CENT COUPONS
1 2 3 4 5 6

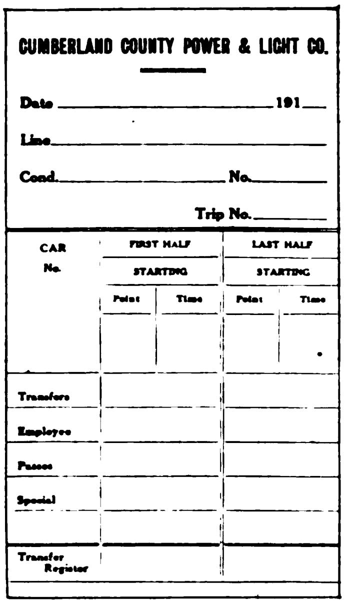
FORMS OF TICKETS: READING FROM THE TOP AND LEFT TO RIGHT, UNIVERSAL TRANSFER; FIVE-RIDE COMMUTATION TICKET; SCHOOL TICKET; FIFTEEN-ZONE RIDE COMMUTATION TICKET; EMPLOYEE'S COUPON PASS; SIX-RIDE FIVE-ZONE COMMUTATION TICKET

Westbrook Division, (ten zones)—On these lines closed cars are used. Outbound passengers pay as they leave to Nason's Corner, Portland, five zones. Beyond this point an inside collection is made to destination, either Westbrook, Gorham or South Windham. This applies to both motor and trail cars. Outbound passengers boarding cars in Zone 2 get a blue check, in Zone 3 a yellow check; and in Zone 4 a white check. Such passengers pay as they leave, the amount depending on the destination and the color of the check. Such passengers pay as they leave, the amount side collections to destination for all passengers boarding between Gorham or South Windham and Westbrook and issue identification checks for collection as the passenger leaves the car. Passengers boarding at or east of Bridge Street pay as they enter to destination.

Portland, Old Orchard or Saco, (fifteen zones)—Closed cars are used on this line. Outbound passengers pay as they leave to Westbrook Street, three zones. From there on two inside collections, six zones at a time, are made. On inbound runs three inside collections are made.

On open cars hand collection is used in both directions. The first collection is made between Portland and Westbrook Street, the second, between Westbrook Street and Dunstan's Corner and the third, between Dunstan's Corner and either Saco or Old Orchard.

South Portland Heights or South Portland and Meeting House Hill either via New Bridge, (three zones); *Riverton Line,* (five zones); *Brighton Avenue Line,* (three zones); *Stroudwater Line,* (three zones)—On closed cars, outbound passengers pay as they leave to the commencement of the last zone, when the conductor enters the car and collects the fares before the passengers leave. This does away with delay in unloading at the end of the route. Inbound passengers pay to destination at the time of boarding. On open cars the conductor always collects to destination and tries to remember if passengers over-ride.



CUMBERLAND COUNTY POWER & LIGHT CO.

Date ________________ 191__

Line ________________

Cond. ________________ No. ________

Trip No. ________

CAR No.	FIRST HALF STARTING		LAST HALF STARTING	
	Point	Time	Point	Time
Transfers				
Employes				
Passes				
Special				
Transfer Register				

CONDUCTOR'S TRIP TURN-IN ENVELOPE

As illustrated, a simple form of day card is used. On the face of the card the conductor keeps, by half trips, records of the car-miles and car-hours operated and also the cash and ticket receipts. In order that the record of car-miles operated may be correct a booklet giving distances in miles on each route from or between all regular terminals and the various turnouts and crossovers en route is carried by each conductor. From these distance tables the conductor can determine the proper mileage to insert in the required column. The conductors are required to post the readings of the register dials whenever taking or leaving cars. Trip readings are read directly from the dial before the clocks are turned back at the end of each half trip.

In the column headed "Ticket-Other" the conductor posts the numbers of all kinds of revenue tickets rung up on the ticket register with the exception of the stubs from commutation tickets. The "B & S Trans." column is used only by conductors on the Portland-Saco cars. This column is used to keep the record of Biddeford and Saco Street Railway transfers accepted in part payment of fare. In the column "Transfer-Ending No." is listed the serial number on the face of the transfer pad for each half trip, and inasmuch as transfer pads are kept by the conductors until used up this is the only report of transfers issued. In the last column on the face of the day card the relieving conductor's number is posted. The back of the day card provides means for the conductor to balance his day's business, both as to tickets sold and fares collected. The auditing department fills out the cash value of tickets turned in but other than this all columns are filled out by the conductor.

The envelope boxes on the cars are emptied in the carhouse each night and the contents sent to the auditing department for checking. These envelopes show the conductor's number so that they can be sorted and tickets counted to show each conductor's collection for the day.

RESULTS OF OPERATION

The system in operation works very smoothly irrespective of the type of car. Safety car operators on the Spring Street line take to the system readily and do not report any serious difficulty in collecting fares. Some of the older men do not work as rapidly as the younger ones. The company, however, plans to equip the safety cars with electrically-driven foot registers in place of the hand-operated clocks. This will be done simply as a refinement in the method of handling fares. Conductors handle their work satisfactorily, whether on prepayment, center-entrance, old-style closed cars or cross-bench open cars.

This system of zone collection is one which requires little or no capital expenditure, the only charge being for punches which cost approximately $3.60 each in lots of 100 or more. The same, however, cannot be said of the cost of operation, as it is large in comparison with other systems due to the fact that paper tickets are used which do not permit of their being used more than once. Ticket sales for July were in the following ratio:

Five for 35 cents—7-cent tickets	65.3%
Fifteen for 35 cents—2⅓-cent tickets	26.7%
Six for 70 cents—11⅔-cent tickets	2.5%
Cash fares	5.5%

Tickets cost approximately $2.00 per thousand and the company orders quantities of 500,000 in anticipation of each month's use.

About 95 per cent of the passengers riding on the cars pay fare with either one of the classes of commutation tickets. The only lines on which cash fares are paid to any extent are the lines running between Monument Square and the depots. Most of the cash fares are paid by transients in the city who do not care to avail themselves of the reduced rate ticket.

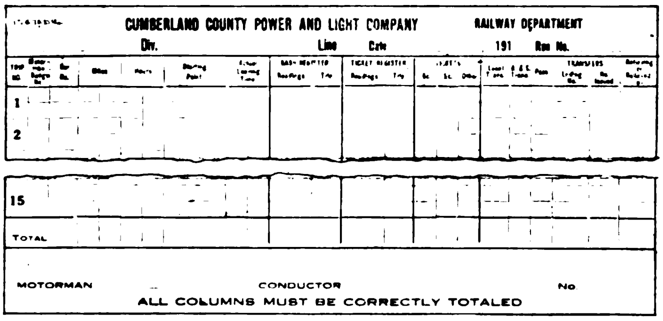
A conductor in his day's work will sell on an average of from 250 to 300 tickets, and of all the tickets sold 80 per cent are sold on the cars. Ticket sellers on the street and on the cars operating to Saco and Old Orchard sell about 10 per cent of the total, and from 10 to 12 per cent are likewise sold by the ticket agents in the Monument Square waiting room.

FINANCIAL RESULTS OBTAINED

The present schedule of zone fares is the third that has been in effect during the past year, these schedules being:

On Aug. 2, 1918, the copper-zone system with a central area was established and continued in operation until March 2, 1919, when the central area previously established was cut up into three belts or zones and the rates of fare established at 3 cents per zone—or 2 cents if tickets were used. This plan continued in operation until June 15, 1919. All of these different schedules produced more revenue than the original 5-cent fare, but due to the fact that wage increases to motormen and conductors and the steady increases in the cost of materials so increased the cost of operation, the net operating revenue in reality decreased all the time, and made it necessary to change radically the basis of fares so there would be a greater increase in revenue than in the cost of operation. The chart on page 624 shows the relationship between the earnings per car-mile and per car-hour as well as the expenses per car-mile and per car-hour for the past two years. The chart likewise is marked so as to show the fares in effect during various periods, and should be of much interest to those who are trying to determine what different scales or rates of fares are likely to produce.

The first complete month of operation (July) under the last schedule shows that with an actual increase in the unit of fare from 5 to 7 cents, that is, a 40 per cent increase, the passenger revenue increased 32 per cent over the corresponding months of 1918. Passenger revenue in each year constituted 95 per cent of the total operating revenue. Car-mile passenger revenue which, in the month of July is exceeded only by that of the month of August, showed an increase of 10.89 cents or 33.4 per cent over the corresponding months of 1918. Car-hour passenger earnings increased from $2.94 to $4.05 or 37.7 per cent for the same period. This system affords by far the largest increase in revenue and can be said to hold the traffic far better than some of the schedules previously tried, although it might be said that this is largely due to the publicity and educational campaign carried on by the company to show the people the correct status of affairs.



CUMBERLAND COUNTY POWER AND LIGHT COMPANY RAILWAY DEPARTMENT

Div. Line Car 191 Run No.

1

2

15

TOTAL

MOTORMAN CONDUCTOR No.

ALL COLUMNS MUST BE CORRECTLY TOTALED

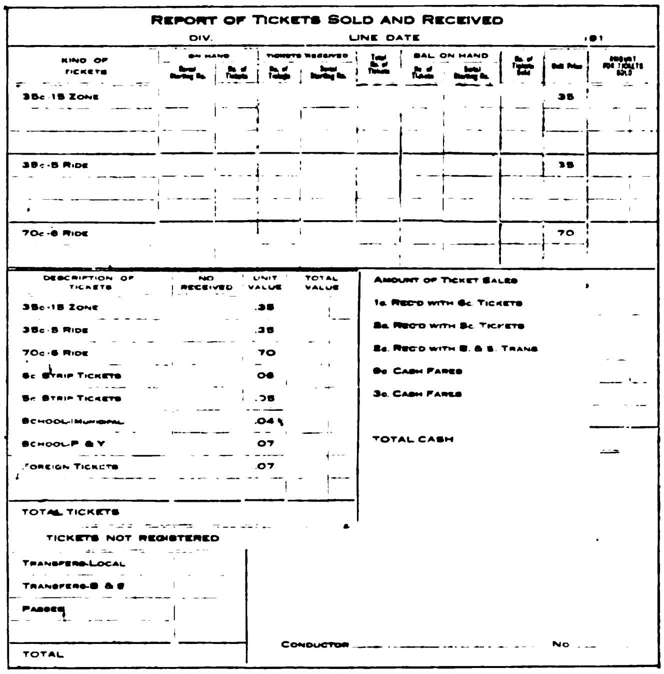
FACE OF CONDUCTOR'S DAY CARD

OTHER FARE SCHEMES TRIED SINCE JULY, 1918

For the copper-zone system effective Aug. 2, 1918, the theoretical increase was 20 per cent and it was estimated to return 60 per cent of the theoretical increase, which amounted to $185,700. The actual results were far less than estimated, being less than $4,000 a month, and on analysis it was found that the sale of transfers on the three so-called "Island lines," that is on the lines that were entirely within the central area, provided $1,400 per month of the increase.

A comparison of some of the increases shows that in the first month of operation, August, 1918—passenger revenues increased 1.27 per cent over August, 1917, whereas the passenger revenue per car-mile and per car-hour both showed 14 per cent increase over the previous year.

Taking the whole period of operation, that is from Aug. 2, 1918, to March 2, 1919, when the second system of fares was put in effect, the financial results showed an increase only of 3.42 per cent in passenger revenue with about 15.5 per cent increase in passenger revenue per car-mile or per car-hour. Decrease in traffic during this same period caused a decrease of 246,000 and 26,000 respectively in car-miles and car-hours, or about 11.5 per cent. This accounts for the increase in car-mile and car-hour earnings without any material increase in gross revenue.



REPORT OF TICKETS SOLD AND RECEIVED

DIV. LINE DATE 191

KIND OF TICKETS	ON HAND		TICKETS RECEIVED		Total No. of Tickets	BAL. ON HAND		No. of Tickets Sold	Sell Price	AMOUNT FOR TICKETS SOLD
	Serial Starting No.	No. of Tickets	No. of Tickets	Serial Starting No.		No. of Tickets	Serial Starting No.			
35c-15 ZONE									35	
35c-5 RIDE									35	
70c-6 RIDE									70	

DESCRIPTION OF TICKETS	NO RECEIVED	UNIT VALUE	TOTAL VALUE
35c-15 ZONE		.35	
35c-5 RIDE		.35	
70c-6 RIDE		70	
6c STRIP TICKETS		06	
5c STRIP TICKETS		.05	
SCHOOL-MUNICIPAL		.04½	
SCHOOL-P & Y		07	
FOREIGN TICKETS		.07	

TOTAL TICKETS

TICKETS NOT REGISTERED

TRANSFERS-LOCAL

TRANSFERS-S & S

PASSES

TOTAL

AMOUNT OF TICKET SALES

1c. REC'D WITH 6c. TICKETS

2c. REC'D WITH 5c. TICKETS

2c. REC'D WITH S. & S. TRANS

6c CASH FARES

3c. CASH FARES

TOTAL CASH

CONDUCTOR No.

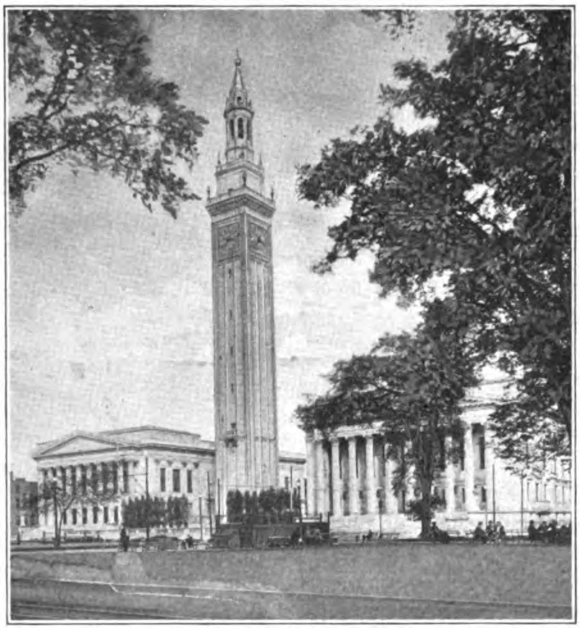
REVERSE SIDE OF CONDUCTOR'S DAY CARD

The schedule of fares in effect between March 2, 1919, and June 15, 1919, was the first real zone system tried out and had a 10-cent cash fare with a 4-cent rebate and a minimum fare of 3 cents per zone with a 1-cent rebate. Tickets sold five for 30 cents made the fare 6 cents for regular patrons. Under this fare system passenger revenue increased $46,000 or 17.3 per cent and car-miles operated were still further decreased 61,700 or 6.43 per cent. Car-hours were decreased about 8500 or 8.04 per cent. This decrease in car-miles and car-hours was not brought about by a cut in service but by the elimination of layovers in schedule runs; the average speed in miles per hour being increased from 9.12 in 1918 to 9.3 in 1919. The revenue per car-hour increased 27.8 per cent, while the revenue per car-mile increased only 24.4 per cent.

This article was prepared from information furnished by A. H. Ford, vice-president and general manager, and George T. Fisher, general superintendent.

Zone Fares in Springfield

Are based on central city zone with outer zone belts and two reduced-rate tickets to points in first outside zone—Pay-enter and pay-leave system of fare collection



CITY HALL, SPRINGFIELD, MASS.

SPRINGFIELD, MASS., in August, 1919, had in effect a schedule of fares based on a central area with an outer belt or zone in which a second fare was charged. The rate per zone was 6 cents with two overlapping ticket rates from the central area amounting to 37.5 per cent reduction in fare to points approximately 5 miles from the center of the central area, and 23.2 per cent to the end of the second zone.

The Springfield Street Railway owns and operates twenty-three routes over 187.5 miles of track. It is not a city system entirely, but operates lines into interurban or rural territories. The road is divided into three divisions, Springfield, Westfield and Palmer. The Springfield division takes in all of that city and the adjacent towns of West Springfield, Longmeadow, East Longmeadow, Agawam, Ludlow, and the city of Chicopee. The Westfield division connects at West Springfield with the main line extending through Westfield and Russell to Huntington, and includes the local lines in the city of Westfield itself. The Palmer division connects at Indian Orchard, and takes in the lines of Palmer, Monson, and Ware, with the main line extending to Brimfield through Wilbraham and Palmer and then on to Worcester.

Through service is given to Holyoke in connection with the Holyoke Street Railway; to Hartford in connection with the Hartford & Springfield Street Railway; and to Worcester, in connection with the Worcester Consolidated Street Railway.

The mileage and population served are shown in the following table:

TABLE I—MILEAGE AND POPULATION SERVED BY THE SPRINGFIELD STREET RAILWAY COMPANY

Division	Miles of Track	Per Cent of Total Mileage	Estimated Population Served 1915	Per Cent of Total Population
Springfield*...............	115.07	61.4	158,975	76.70
Westfield..................	27.96	14.9	20,942	10.12
Palmer.....................	44.47	23.7	27,273	13.18
Total..................	187.50	100.0	207,190	100.00

*Has 61.5 square miles area.

On May 1, 1918, ten months after filing, the Massachusetts Public Service Commission approved a new tariff, which reduced the length of ride possible within the central area of the city of Springfield from a maximum of approximately 15 miles [illegible] one of 7 miles

The zone limits were located by taking Court Square as the center on a map of the Springfield division, and with the aid of a compass describing a circle having a radius of 3 miles and then spotting the nearest traffic points, of course exercising reasonable discrimination. This gave an area having an average track distance of 3.2 miles from Court Square to the outer limits of the central zone. The balance of the Springfield division was made into an outer zone belt, with the outside limits those of the former 5-cent fare, with the exception of the Westfield route where the limit was extended from Tatham to the Westfield town line, a distance of 1.3 miles. The fare established, when the zones were first laid out, was fixed at 5 cents per zone, with two reduced-rate tickets, but due to increased cost of operation, particularly the cost of transportation, the company on Sept. 15, 1918, was again permitted to increase its fares to those now in effect, 6 cents per zone, with two overlapping reduced-rate tickets.

Table II shows the track system in miles from Court Square to the limits of the Springfield division, and how each route extending beyond the central area, Zone A, is divided into zones.

TICKET PRACTICE IN SPRINGFIELD

The nearest zone limit to Court Square is on the Brightwood line to Chicopee, and is fixed at a distance of 2.28 miles. This point was chosen for two reasons, viz.; Had it been placed farther out Chicopee would not have the advantage of a single fare within its own limits; the territory immediately beyond the zone limit which is the Springfield city line is sparsely settled and so would be of small advantage in any event. Similar conditions governed the fixing of the limits on the Glenwood and Liberty Street lines to Chicopee and Chicopee Falls.

The longest distance from Court Square within the central area is on the St. James Avenue line. This limit was placed at the Westinghouse plant, which when the fare schedule was laid out, was employing a large number of men and women on government con-

TABLE II—SPRINGFIELD STREET RAILWAY FARE SYSTEM, IN MILES, FROM COURT SQUARE

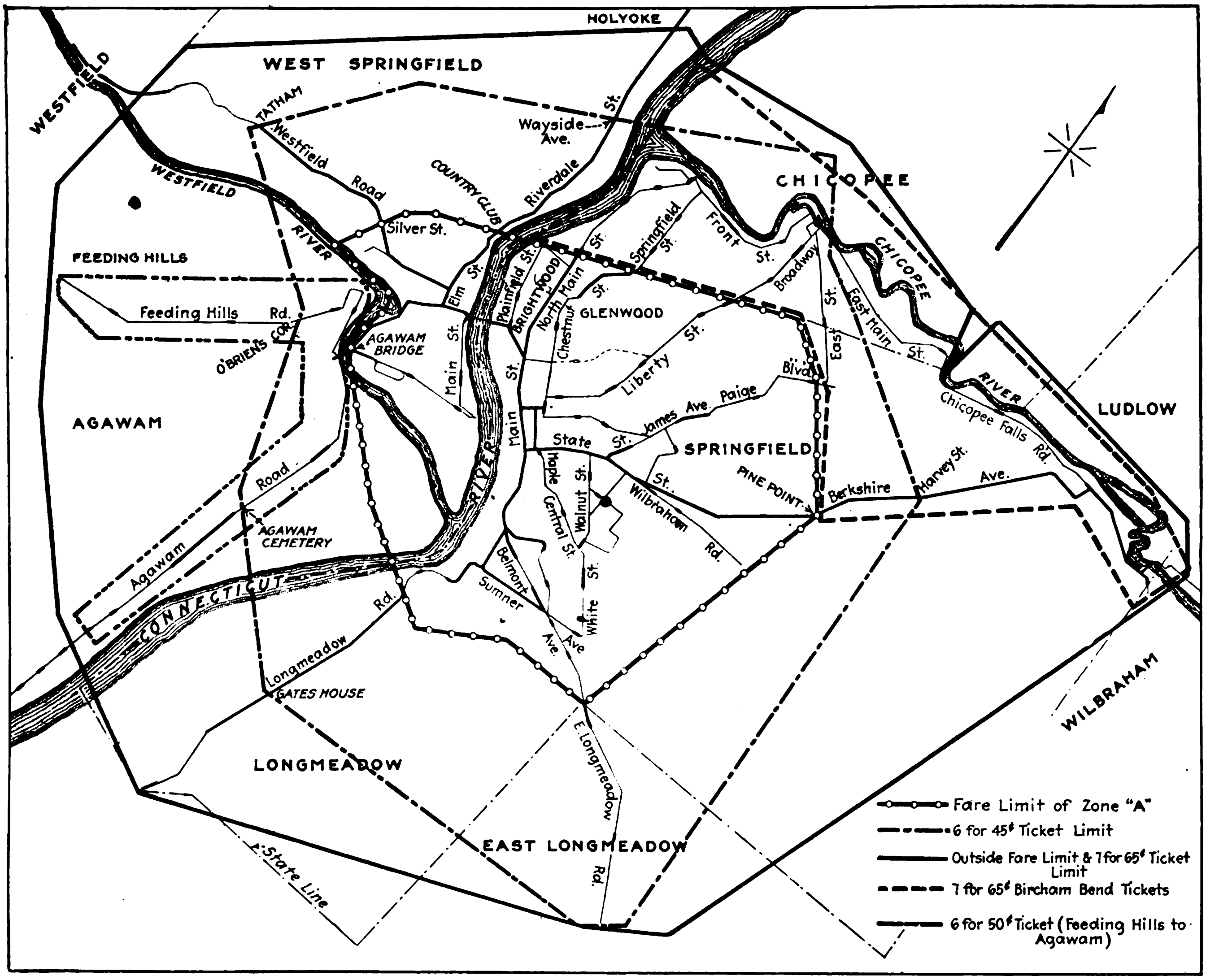
Route	Central Zone Fare Limit: Distance from Court Square, Miles	Central Zone Fare Limit: Point	7½c. Ticket Limit: Distance from Court Square, Miles	7½c. Ticket Limit: Point	Outer Zone Limit 9½c. Ticket: Distance from Court Square, Miles	Outer Zone Limit 9½c. Ticket: Point
Chicopee and Chicopee Falls:						
Via Liberty Street	3.155	City Line	4.595	All points in Chicopee and Chicopee Falls, except east of corner of Broadway and Main Street on Bircham Bend Line	.....	Springfield Chicopee Line via Bircham Bend only
Via Brightwood	2.284	City Line	4.262		.....	
Via Glenwood	2.747	City Line	4.135		.....	
Via St. James Avenue (East Springfield)	3.653	Cottage Street and Paige Boulevard	5.763		8.610	
Ludlow	3.201	Pine Street (St. Michael's Cemetry)	4.505	Harvey Street	8.371	End of line
East Longmeadow	3.155	City Line	5.081	End of Line	.....	....
Longmeadow	2.874	City Line	.....	Gates House	6.136	Mass.-Conn. State Line
Agawam	3.350	Agawam Bridge	5.474	Agawam Cemetery	7.759	Mass.-Conn. State Line
Feeding Hills	3.350	Agawam Bridge	5.210	O'Brien's Corner	7.794	End of Line
Westfield	3.324	Silver Street, West Springfield	5.118	Tatham Turnout	6.235	West Springfield-Westfield Line
Holyoke	3.504	County Club	.....	Wayside Avenue	6.262	West Springfield-Holyoke Line

tracts. The distance is 3.65 miles. By having the zone limit at this point, it enables workingmen living in Springfield or Chicopee to reach their place of employment for a minimum fare.

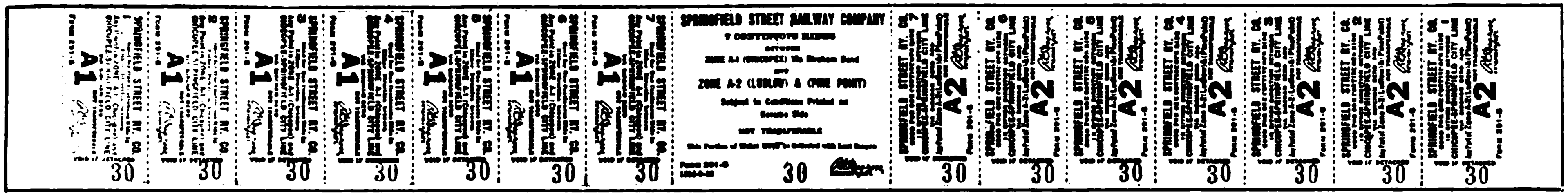
All zone limits and ticket limits are indicated by yellow bands painted on street poles about 5 ft. above the ground. These bands are about 3 ft. in width, and show up very prominently.

The Massachusetts Public Service Commission in approving new layouts for fare zones has always taken the stand that unless the "copper zone" system is established, reduced rate tickets must be sold to points between the central zone and the first outer zone, this being so the fares of regular riders are not unduly increased, and the loss in traffic is kept as small as possible.

Two general classes of reduced rate tickets are sold at some fifty agencies in and around the city and suburban towns. Conductors on cars do not sell any form of tickets, whatsoever. Six-ride coupon tickets are sold for 45 cents. These tickets give a maximum ride

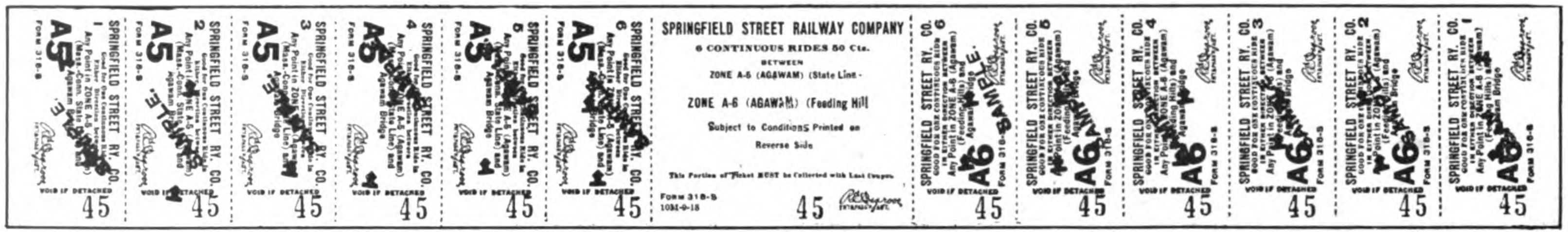

HOLYOKE
WEST SPRINGFIELD
WESTFIELD
WESTFIELD RIVER
TATHAM
Westfield Road
Wayside Ave.
Country Club
Riverdale St.
Silver St.
CHICOPEE
FEEDING HILLS
Feeding Hills Rd.
O'BRIEN'S COR.
AGAWAM BRIDGE
Elm St.
Main St.
Plainfield St.
BRIGHTWOOD
North Main St.
Springfield St.
Chestnut St.
GLENWOOD
Front St.
Broadway
East St.
East Main St.
CHICOPEE RIVER
Liberty St.
Paige Blvd.
James Ave.
State St.
SPRINGFIELD
AGAWAM
LUDLOW
Chicopee Falls Rd.
Harvey St.
Ave.
Berkshire
PINE POINT
Maple St.
Central St.
Walnut St.
Wilbraham Rd.
Agawam Road
AGAWAM CEMETERY
CONNECTICUT RIVER
Belmont Ave.
Sumner Ave.
White St.
Longmeadow Rd.
GATES HOUSE
E. Longmeadow Rd.
WILBRAHAM
LONGMEADOW
EAST LONGMEADOW
State Line
Fare Limit of Zone "A"
6 for 45¢ Ticket Limit
Outside Fare Limit & 7 for 65¢ Ticket Limit
7 for 65¢ Bircham Bend Tickets
6 for 50¢ Ticket (Feeding Hills to Agawam)

LAYOUT OF SPRINGFIELD DIVISION AND FARE ZONES



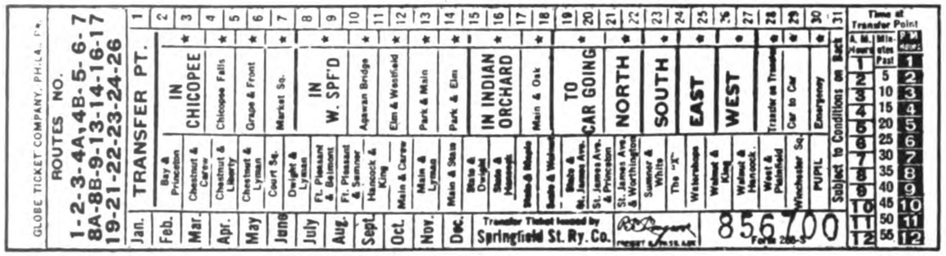
SPRINGFIELD STREET RAILWAY COMPANY
7 CONTINUOUS RIDES
BETWEEN
ZONE A-1 (CHICOPEE)
AND
ZONE A-2 (LUDLOW) & (PINE POINT)
Subject to Conditions Printed on
Reverse Side
NOT TRANSFERABLE
This Portion of ticket MUST be Collected with Last Coupon
Form 291-8
30

1



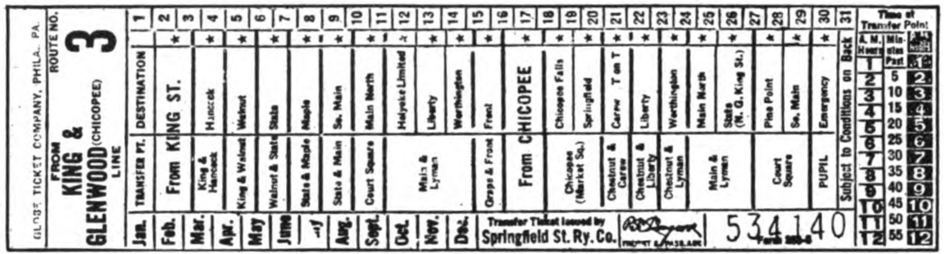
SPRINGFIELD STREET RAILWAY COMPANY
6 CONTINUOUS RIDES 50 Cts.
BETWEEN
ZONE A-5 (AGAWAM) (State Line -
ZONE A-6 (AGAWAM) (Feeding Hill
Subject to Conditions Printed on
Reverse Side
This Portion of Ticket MUST be Collected with Last Coupon
Form 318-S
10M-9-18
45

2



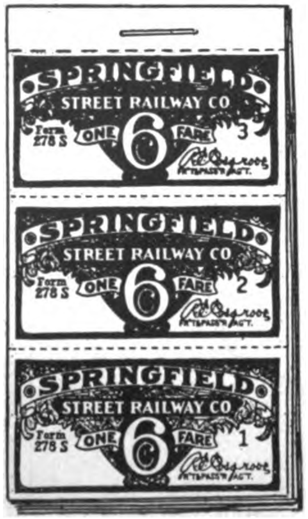
GLOBE TICKET COMPANY, PHILA. PA.
ROUTES NO.
1-2-3-4A,4B-5-6-7
8A-8B-9-13-14-16-17
19-21-22-23-24-26
TRANSFER PT.
IN CHICOPEE
IN W. SPF'D
IN INDIAN ORCHARD
TO CAR GOING
NORTH
SOUTH
EAST
WEST
Transfer Ticket Issued by Springfield St. Ry. Co.
Time at Transfer Point
856700

3



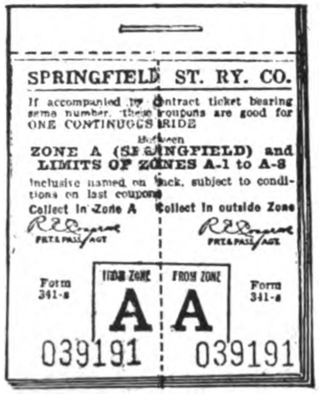
GLOBE TICKET COMPANY, PHILA. PA.
ROUTE NO.
3
FROM KING & GLENWOOD (CHICOPEE) LINE
TRANSFER PT.
DESTINATION
From KING ST.
From CHICOPEE
Transfer Ticket Issued by Springfield St. Ry. Co.
Time at Transfer Point
534140

4



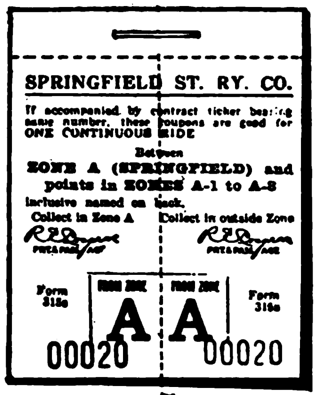
SPRINGFIELD STREET RAILWAY CO
ONE 6 FARE
Form 278 S

5



SPRINGFIELD ST. RY. CO.
If accompanied by contract ticket bearing same number, these coupons are good for ONE CONTINUOUS RIDE
Between
ZONE A (SPRINGFIELD) and LIMITS OF ZONES A-1 to A-8
Inclusive named on back, subject to conditions on last coupon
Collect in Zone A | Collect in outside Zone
Form 341-s | FROM ZONE A | FROM ZONE A | Form 341-s
039191 | 039191

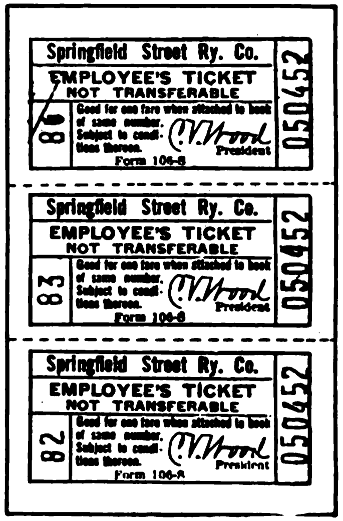
6



SPRINGFIELD ST. RY. CO.
If accompanied by contract ticket bearing same number, these coupons are good for ONE CONTINUOUS RIDE
Between
ZONE A (SPRINGFIELD) and points in ZONES A-1 to A-8
inclusive named on back.
Collect in Zone A | Collect in outside Zone
Form 31So | FROM ZONE A | FROM ZONE A | Form 31So
00020 | 00020

7

1. Seven-ride commutation ticket between Chicopee and Ludlow.
2. Six-ride commutation ticket between State Line and Feeding Hills.
3. Emergency transfer.
4. Standard route transfer.
5. Full fare ticket, seventeen rides for $1.02.
6. Seven-ride commutation ticket between Zone A and limits of first adjacent outlying zone.
7. Six-ride commutation ticket between Zone A and points approximately 5 miles from Court Square.
8. Employees' tickets.



Springfield Street Ry. Co.
EMPLOYEE'S TICKET
NOT TRANSFERABLE
Good for one fare when attached to book of same number. Subject to conditions thereon.
C. V. Wood
President
Form 106-8
84 | 83 | 82
050452

8

Some Forms of Tickets and Transfers used in Springfield of about 8 miles for 7½ cents, or less than 1 cent per mile. They are good between any point in the central zone "A" and a point in the first outer zone approximately 5 miles from Court Square, Springfield.

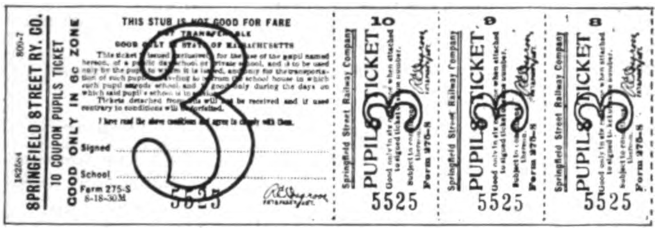
Seven-ride coupon tickets are sold for 65 cents, good between any points in the central zone and any point in the first outer zone. These tickets give a possible maximum ride of 11.5 miles for 9 2/7 cents, or practically 0.8 cent per mile.

These two kinds of tickets constitute the largest percentage of the tickets used, although other tickets are sold in order to provide a reduced rate from Chicopee to Ludlow, on account of the mill districts in the last named town, and also between separate parts of the town of Agawam. The first named ticket is sold in lots of seven rides for 65 cents, and the latter in lots of six rides for 50 cents.

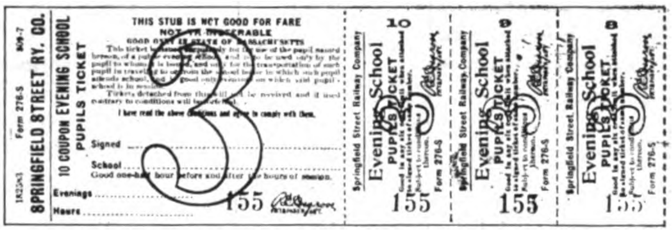
CONDITIONS OF TICKET SALES

The conditions under which all of these tickets are sold are:

A continuous ride between points named thereon; coupons must be detached by, or in the presence, of the conductor, and are worthless unless attached to a contract bearing the same number; the contract portion of the ticket is not good for a fare, but is collected by the conductor with the last coupon. Transfers are issued on all tickets, with the exception of the six for 50 cents Agawam tickets, but only if requested at the time fare is paid. The so-called 7½-cent and the 9 2/7-cent tickets are printed in pads of six and seven leaves respectively, each leaf having two coupons. The last leaf of coupons is on green stock with the conditions printed on the back. The left hand coupon, which is tinted blue, is good only in Zone A, while the right hand coupon is good in outer zones to points printed on the reverse side.


SPRINGFIELD STREET RY. CO.
10 COUPON PUPILS TICKET
GOOD ONLY IN 6c ZONE
THIS STUB IS NOT GOOD FOR FARE
Signed
School
Form 275-S
5525
10
9
8
Springfield Street Railway Company
PUPILS TICKET
Form 275-S
5525
5525
5525

FORM OF DAY SCHOOL PUPILS' TICKET


SPRINGFIELD STREET RY. CO.
10 COUPON EVENING SCHOOL PUPILS TICKET
Form 276-S
THIS STUB IS NOT GOOD FOR FARE
Signed
School
Good one-half hour before and after the hours of session.
Evenings
Hours
155
10
9
8
Springfield Street Railway Company
Evening School
PUPILS TICKET
Form 276-S
155
155
155

FORM OF EVENING SCHOOL PUPILS' TICKET

The tickets good between Chicopee and Ludlow or in the town of Agawam are printed in strips, with a center stub, which is not good for a fare, on the reverse side of which are the conditions of sale. Coupons good in the same zone are printed consecutively on the same side of the center stub.

In addition to these special tickets the company is required by the Massachusetts laws to sell tickets in lots of ten at one-half the regular fare to pupils attending day and evening public schools, and also private schools giving equivalent education. To care for this requirement there are two distinct forms of tickets, one printed on white stock and the other on pink stock. Each coupon is good for a fare in a 6-cent zone. The company also sells for $1.02 pads of seventeen 6-cent coupons for the convenience of its patrons, who buy in quantities, each coupon representing one 6-cent fare.

All employees are entitled to receive free transportation on the cars of the company, and are furnished with a coupon pass book containing 102 coupons. Books can be renewed at the office of the company only upon presentation of the cover of the old book. One employee's coupon is collected for each 6-cent zone or fraction thereof traveled.

TRANSFERS AND HOW THEY ARE HANDLED

The form of transfer in effect is shown in an illustration on page 630. There is a separate form for each route, and the transfer points and destinations are arranged geographically for each direction.

Conductors assigned to regular day runs, before taking a car, obtain a sufficient supply of route transfers to last the entire length of time the car is out. This practice cuts in half the waste in unissued transfers. A conductor when taking a supply of transfers makes a record on the face of his day card of the lowest serial number issued to him. At relief points, the conductor who is being relieved turns over to the relief conductor all unissued transfers still in his possession and makes a record on his day card of the highest serial number which he has issued. The relief conductor makes his own record of opening numbers of transfers received. The conductor, who returns the car to the car house, turns in all unissued transfers in an envelope provided for that purpose, making records on the face of the envelope as required.

Conductors assigned to extra runs or trippers obtain a sufficient supply of transfers for such trips as are operated.

The time of arrival at transfer points is punched by conductors to the nearest five-minute period, and the destination, opposite the proper transfer point for the direction in which the car is traveling. On special transfers the transfer point and direction in addition to the time, must be punched.

Conductors found punching regular transfers "Emergency" other than those allowed (when line is blocked or proper destination is not provided on transfer or upon orders from proper officials), are required to pay full cash fare for all transfers so punched.

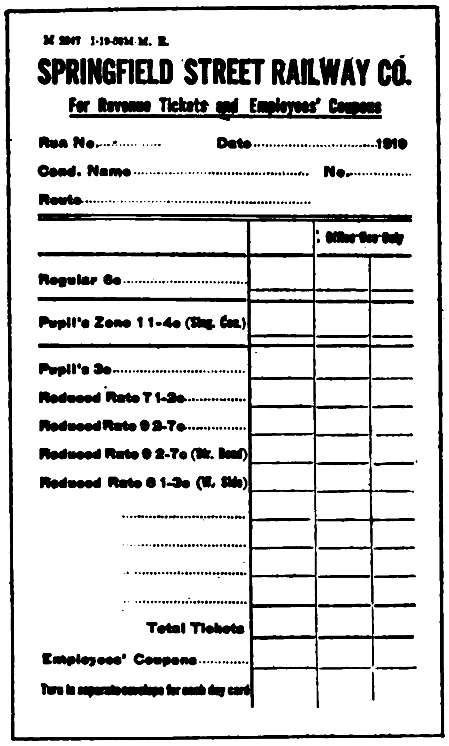
Passengers desiring to transfer to a car that does not pass a point on the route ridden are entitled to a transfer that will take them to the nearest transfer junction, and an issuing conductor in addition to punching the transfer for time and destination, punches out

"T on T" so that the accepting conductor will issue another transfer on the transfer accepted, thus enabling the passenger to reach his desired destination.

RULES FOR ISSUANCE OF TRANSFERS

Transfers are not issued when a car from the stopping place at which a passenger boards, goes direct to his destination. Nor will transfers be issued to passengers after they alight from cars, or from certain points on routes where, due to loops and crosstown lines, it would be possible to return to the starting point for one fare.

Transfers wherever possible are issued upon payment of the fare, except on prepayment cars when the issuance would cause delay in loading. In such cases the conductor collects the fares and then goes through the car issuing transfers on request. Conductors operating cars on routes which have two zones go through the car at some convenient point in the city zone and issue transfers. At the same time they make change and announce that passengers must pay their fare on leaving the car by the rear door. A special form of "emergency" transfer is designed for use only when the supply of route transfers becomes exhausted or where a tripper operates over several different routes or parts of routes. Destinations are shown on this form of transfer only as directions, North, East, South or West. Conductors when issuing this transfer punch the route number at the top and also the transfer point and direction in which the transfer is valid.


M 2047 1-19-5M M. E.

SPRINGFIELD STREET RAILWAY CO.

For Revenue Tickets and Employees' Coupons

Run No.......... Date..........1919

Cond. Name.......... No..........

Route..........

Office Use Only

Regular 6c..........

Pupil's Zone 1 1-4c (Sing. Cou.)

Pupil's 3c..........

Reduced Rate 7 1-2c..........

Reduced Rate 9 2-7c..........

Reduced Rate 9 2-7c (Br. Beef)

Reduced Rate 8 1-3c (W. Side)

....

....

....

....

Total Tickets

Employees' Coupons..........

Turn in separate envelope for each day card

FACE OF ENVELOPE FOR TURN-IN OF TICKETS COLLECTED

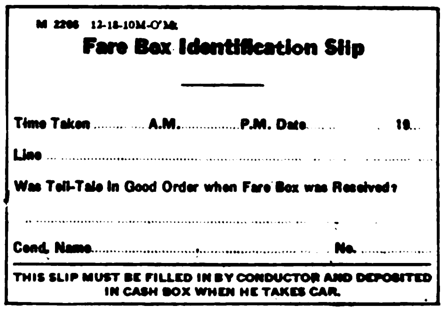
PROVISIONS FOR TRANSFER COLLECTION

Conductors in accepting transfers are required to comply so far as physically possible with stringent rules. Torn or mutilated transfers will not be accepted. In case of dispute over the acceptance of a transfer, the conductor is expected to explain in a courteous manner why the transfer cannot be accepted and to collect cash or ticket fare. If the regular fare is collected the passenger is referred to the local superintendent for settlement of the dispute. If the passenger refuses to pay the fare, the conductor retains the transfer, secures the names and addresses of witnesses, makes out a written report of the incident and forwards it, together with the transfer in dispute, to the superintendent. Transfers which are collected under such conditions are not registered.

All cars are equipped with two overhead registers one for cash and the other for tickets and transfers. When cars carry fare boxes, overhead cash registers are not used.

On cars not equipped with fare boxes, and on open cars, conductors collect the fares by hand in each zone. The second collection in either direction is started immediately after passing the first fare limit. On prepayment cars the first collection in both directions is made when the passenger boards the car. The second collection, if there is one, is made as the passenger leaves the car. On cars of this type it is customary for passengers to enter by the front door, and leave by the rear door when the car is in a zone where fares are paid on leaving. In this way the conductor is enabled to determine the amount of the fare to be collected at the point where the passenger leaves the car.

It was found, after several weeks use of the 7½- and 9$\frac{2}{7}$-cent reduced rate tickets, that car riders had begun to abuse the ticket privilege in that they were obtaining a ride giving up only one coupon of a ticket, in other words were riding at half the reduced rate ticket fare. Two steps were taken to overcome this: First a change in the method of handling the ticket collection; second, a change on Nov. 25, 1918, in the design of the ticket to that illustrated on page 630.


M 2266 12-18-10M-O'M.

Fare Box Identification Slip

Time Taken.......... A.M.......... P.M. Date.......... 19..

Line..........

Was Tell-Tale in Good Order when Fare Box was Received?

....

Cond. Name.......... No..........

THIS SLIP MUST BE FILLED IN BY CONDUCTOR AND DEPOSITED IN CASH BOX WHEN HE TAKES CAR.

LOCKED FARE BOX IDENTIFICATION SLIP

TICKET COLLECTION PRACTICE

When a passenger boards a car on a line not requiring a transfer, the conductor takes the two coupons, folds them on the perforation and cancels both coupons with one operation of his hand punch. If a passenger is riding from Zone A the conductor punches in the space marked "From Zone A," but if riding from the outer zones he punches somewhere in the body of the coupon, being careful to keep the punch away from the space marked "From Zone A." The proper coupon is retained and rung up on the ticket and transfer register for the zone in which the passenger boards the car, the other coupon is returned to the passenger for the second collection. In the second collection only coupons having the conductor's own punch mark are accepted unless he has been relieved en route by another conductor.

On a line requiring transfers, the conductor takes both ticket coupons, punches them in regular manner, retains the coupon for the zone in which the passenger boards and issues a transfer punched in accordance with the instructions. In addition two punch marks are put in the space at the top of the transfer where the route number is printed. This indicates to the conductor collecting the transfer that the passenger is riding on a reduced rate ticket. When the passenger presents this transfer for fare the conductor requests the second zone coupon of the reduced rate ticket, and registers it on the ticket and transfer register, allowing the passenger to retain the transfer as an identification check. The transfer is collected and registered on the second collection in the place of the usually accepted second coupon ticket.

Conductors refuse to accept punched ticket-coupons for fare unless accompanied by a transfer punched in accordance with the above rules. Conductors when issuing transfers on reduced rate tickets explain to passengers why they must show both the transfer and cancelled coupon to the collecting conductor.

LOCKED FARE BOXES ARE USED ON SPRINGFIELD-HOLYOKE LIMITED ROUTE

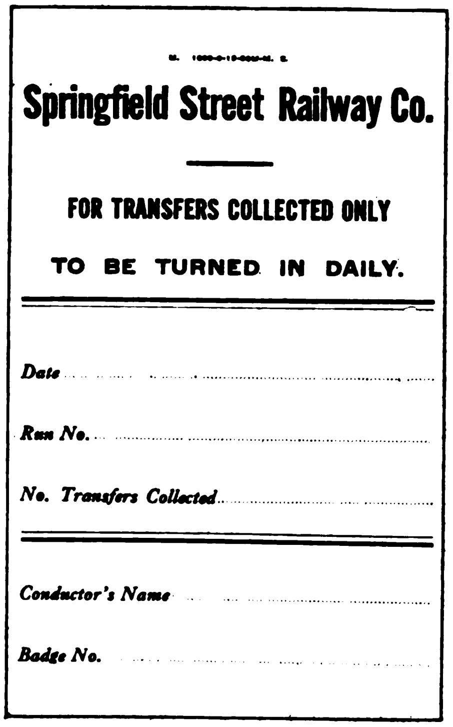
In the Springfield-Holyoke Limited service Cleveland fare boxes are used when closed cars are operated. Open cars are usually operated during the warm summer days except during inclement weather. This route is jointly operated by two companies, and each has an equal number of cars assigned to the line. The Springfield Street Railway Company operates all cars to the West Springfield-Holyoke city line where they are turned over to the crews of the Holyoke Street Railway Company. Inasmuch as the rate of fare and the method of accounting used by the Holyoke company is entirely different from that used in Springfield, conductors in changing off also change overhead registers and fare boxes. In case the car becomes disabled on the road, and it is necessary to change off, fare boxes are shifted to the new car. On setback trips when crews change to regular time and regular car the fare boxes are also changed.

So far as the passenger is concerned closed cars are operated pay-as-you-enter outbound from Springfield, and pay-as-you-leave when inbound from Holyoke, and all passengers riding on these cars are required to pay for two zones; that is, 12 cents.

Conductors when taking charge of cars either at the car house or on the road fill out and deposit in their fare box an identification slip, showing the date, conductor's number, and name, line, etc. Notation is also made on this slip as to the condition of the fare box tell tale, if in good order or otherwise.

Since all the cars on this route are operated express to the outer limit of the central area passengers on boarding a car in Springfield Zone A, are required to deposit fares to the second zone limit, the West Springfield-Holyoke city line. These fares may be 12 cents cash, 6 cents cash and transfer, transfer and outer zone coupon of 9⅜-cent ticket, two coupons of 9⅜-cent ticket, two 3-cent pupil's tickets, two regular 6-cent tickets, or two coupons from an employee's ticket book. Both cash and ticket fares are deposited in the fare box. Transfers are collected by hand, and reported in the regular manner by the conductor on his day card, but are not registered. Transfers collected on outbound trips from Springfield are placed in the regular transfer envelope and deposited on the next inbound trip in a box on the pole at the junction of Main and Carew Streets.

On inbound trips from Holyoke, conductors, after tak-



M. 1000-6-19-50M-M. E.

Springfield Street Railway Co.

FOR TRANSFERS COLLECTED ONLY

TO BE TURNED IN DAILY.

Date ....

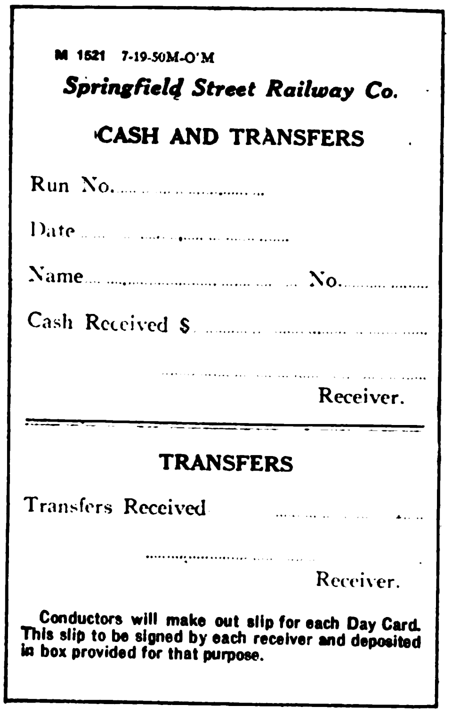
Run No. ....

No. Transfers Collected ....

Conductor's Name ....

Badge No. ....

FACE OF ENVELOPE FOR TURN-IN OF TRANSFERS COLLECTED



M 1521 7-19-50M-O'M

Springfield Street Railway Co.

CASH AND TRANSFERS

Run No. ....

Date ....

Name .... No. ....

Cash Received $ ....

....

Receiver.

TRANSFERS

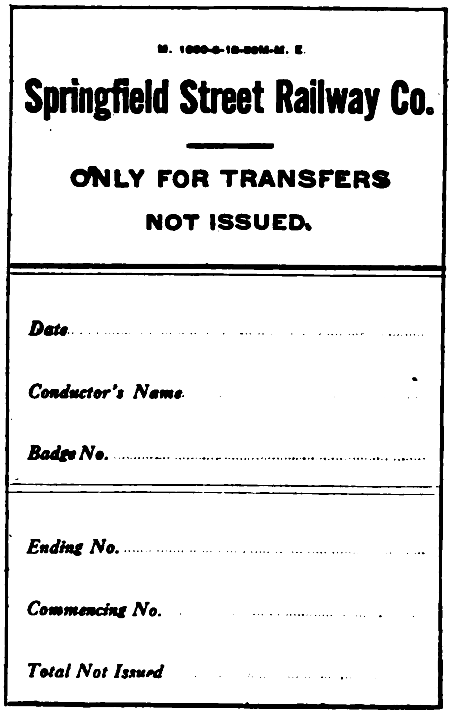
Transfers Received ....

....

Receiver.

Conductors will make out slip for each Day Card. This slip to be signed by each receiver and deposited in box provided for that purpose.

FORM OF RECEIPT FOR CASH AND TRANSFER TURN-IN



M. 1000-6-19-50M-M. E.

Springfield Street Railway Co.

ONLY FOR TRANSFERS

NOT ISSUED.

Date ....

Conductor's Name ....

Badge No. ....

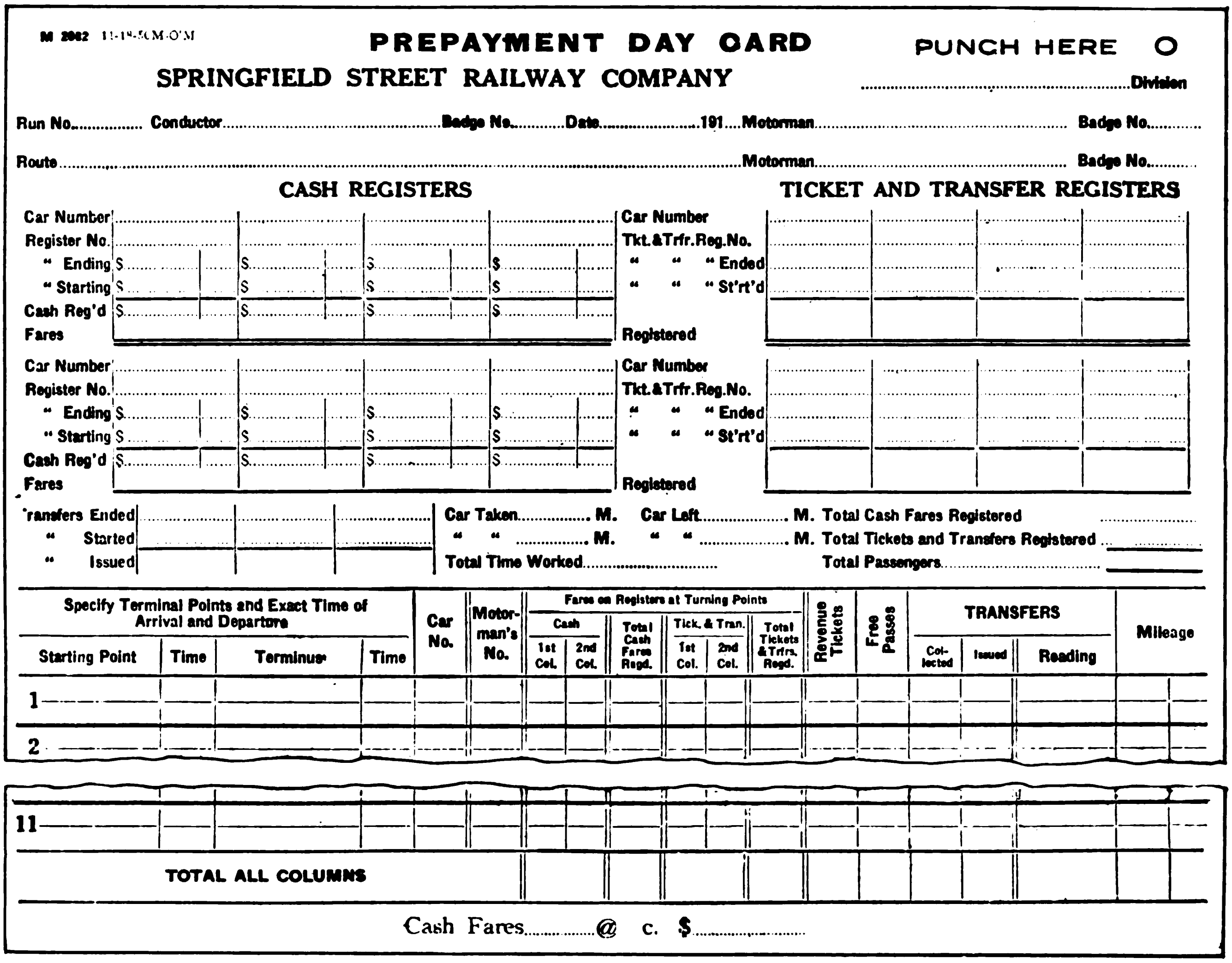
Ending No. ....

Commencing No. ....

Total Not Issued ....

FACE OF ENVELOPES FOR TURN-IN OF UNISSUED TRANSFERS ing the car, immediately go through and issue transfers on request and at the same time make change so as to reduce to a minimum the time required for the payment of fare on alighting from the car. Conductors, so far as possible, considering the lack of overhead registers, keep the same day-card records.

When open cars with two registers are operated, conductors make but one running board collection of the full fare to destination as outlined above. Cash fares of 12 cents are rung up on a 6-cent cash register, two rings for each fare collected, and each ticket coupon or transfer is rung up on the ticket and transfer register.



M 2982 11-19-5CM-O'M

PREPAYMENT DAY CARD

PUNCH HERE ○

SPRINGFIELD STREET RAILWAY COMPANY

..........Division

Run No.......... Conductor.......... Badge No.......... Date..........191.... Motorman.......... Badge No..........

Route.......... Motorman.......... Badge No..........

CASH REGISTERS

Car Number				
Register No.				
" Ending	$	$	$	$
" Starting	$	$	$	$
Cash Reg'd	$	$	$	$
Fares				
Car Number				
Register No.				
" Ending	$	$	$	$
" Starting	$	$	$	$
Cash Reg'd	$	$	$	$
Fares				

TICKET AND TRANSFER REGISTERS

Car Number				
Tkt.&Trfr.Reg.No.				
" " " Ended				
" " " St'rt'd				
Registered				
Car Number				
Tkt.&Trfr.Reg.No.				
" " " Ended				
" " " St'rt'd				
Registered				

Transfers Ended			
" Started			
" Issued			

Car Taken.......... M. Car Left.......... M. Total Cash Fares Registered ....

" " .... M. " " .... M. Total Tickets and Transfers Registered ....

Total Time Worked.......... Total Passengers..........

Specify Terminal Points and Exact Time of Arrival and Departure				Car No.	Motorman's No.	Fares on Registers at Turning Points						Revenue Tickets	Free Passes	TRANSFERS			Mileage
						Cash		Total Cash Fares Regd.	Tick. & Tran.		Total Tickets & Trfrs. Regd.						
Starting Point	Time	Terminus	Time			1st Col.	2nd Col.		1st Col.	2nd Col.				Collected	Issued	Reading	
1																	
2																	
11																	
TOTAL ALL COLUMNS																	

Cash Fares..........@ c. $..........

FACE OF DAY CARD USED ON PREPAYMENT CARS

RECORDS KEPT BY CONDUCTORS

Each car is equipped with a car register card on which conductors record the "taking" and "leaving" numbers of all fare collection registering devices. Two forms of car cards are used, one being for cars equipped with fare boxes, and the other for cars carrying but two overhead registers.

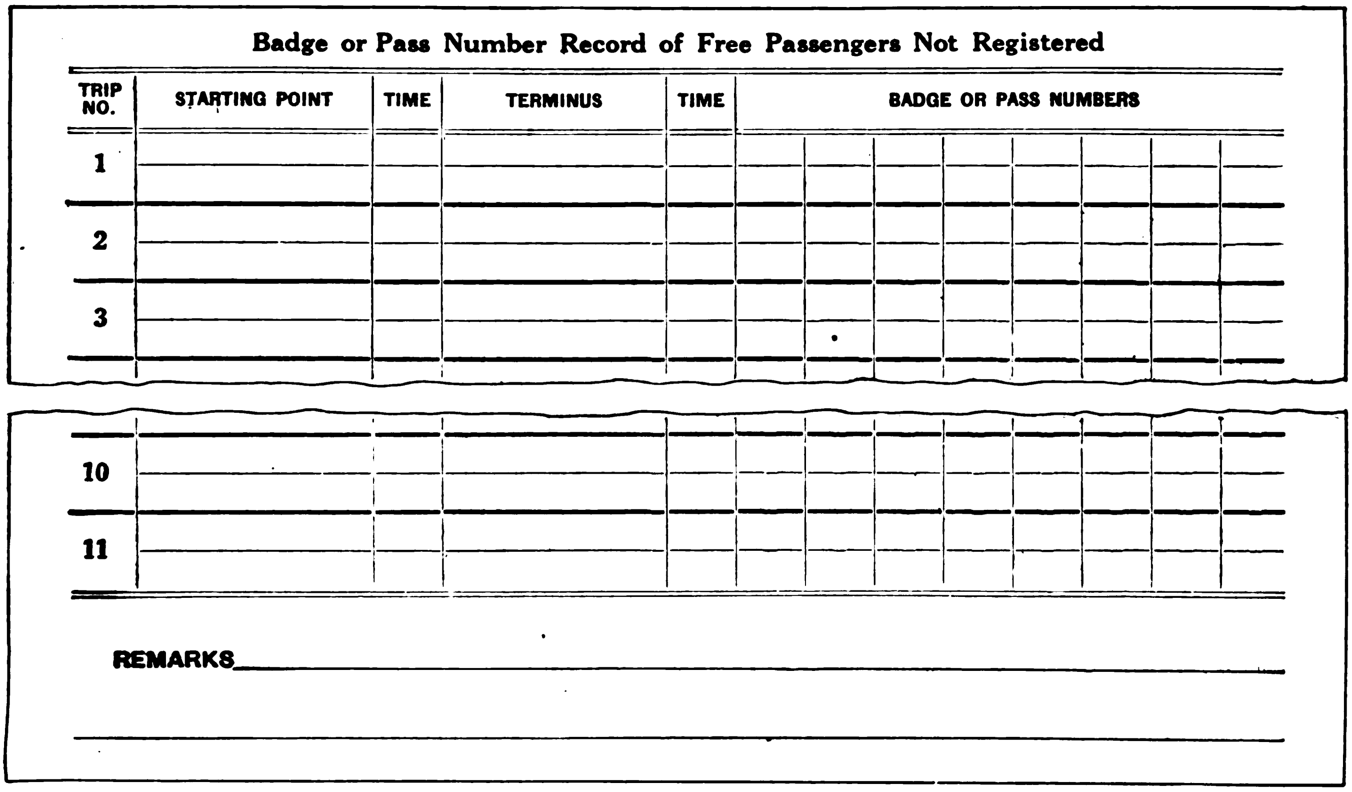
The form of day card used depends on the fare collection devices on the car, two forms being available for use on the cars having two overhead registers, while another form is for use on regular prepayment type cars having International fare boxes as part of their equipment.

On the face of the day cards conductors keep the usual records of destination, time and fares collected in each zone, and for convenience in keeping records ordinarily turn back the trip dial on the overhead registers at each 6-cent zone limit. The time worked by the car crew, together with conductor's and motorman's name and number is also kept. On the reverse side of the day card the conductor keeps a record of all honored pass numbers of passengers that are rung up on the overhead registers. This covers Massachusetts Public Service Commission inspectors riding on card passes. These numbers are kept by 6-cent zones ridden so as to allow the accounting department to keep a true record of all zone riders.

At the Hooker Street carhouse a 12 x 12 ft. room has been fitted up with shelves for the storage of current transfer stock. Space is also provided for a V-notching machine and it is the duty of the clerk on the night shift to notch out the month and date of a sufficient quantity of transfers for the day's use and to have them all sorted out and ready to be signed off to conductors with a minimum of delay when the conductor reports for duty. To facilitate sorting of the transfers a portable rack is used which can be pulled up to the window where the transfers are issued. A separate record form for each route is kept showing run number, conductor's number, serial numbers of transfers, and the quantity issued to each conductor.

All unissued transfers, having been put in the transfer envelope by the conductor on returning the car at night, are checked off by the car house receiver, the differences are then totaled to show the numbers of transfers issued during the day. This amount is then checked against the conductor's day card for verification.

The company is establishing a new practice in making a definite endeavor to check as many of the transfers collected per day as possible, checking not only the manner in which they have been issued but also their acceptance. A form was prepared to cover many of the discrepancies practised in the collection and issuance of transfers by conductors so that the examiner could more readily standardize the complaints lodged against them. The system has not been in effect a sufficient length of time for the examiner to become fully accustomed to all the different transfer points and junctions on the system and to be able to really determine all that can be accomplished by the close checking of transfers. What checking has already been done has demonstrated that some benefits will accrue, for it has been found that a large number of conductors do not punch their transfers correctly and that others, in accepting transfers, do not seem to appreciate that each invalid transfer is just so much loss in revenue.



Badge or Pass Number Record of Free Passengers Not Registered

TRIP NO.	STARTING POINT	TIME	TERMINUS	TIME	BADGE OR PASS NUMBERS
1					
2					
3					
10					
11					

REMARKS____

REVERSE SIDE OF BOTH FORMS OF DAY CARD

The checking plan contemplates that these forms will be made out in duplicate by the examiner, one copy being sent to the conductor at fault and the other filed away in his record envelope by the superintendent.

Conductors on completing their runs foot up their respective day cards and turn in all cash and tickets to a carhouse receiver. They receive a receipt from the receiver for the total amount of cash and number of transfers turned in. It is the rule of the company to allow a conductor one-half hour for making this turn-in—15 minutes was formerly allowed prior to the fare schedule calling for so many tickets—which on the request of the local union was however increased to one-half hour.

Conductors are also required to make up a ticket envelope showing the different kinds and number of revenue tickets collected. Tickets are not put in the envelopes by the conductors but are turned into the receiver who puts them in a ticket counting machine and posts on cash receipt the number turned-in by the conductor. After the tickets have been counted they are put in the ticket envelope for future checking.

FINANCIAL RESULTS OF OPERATION

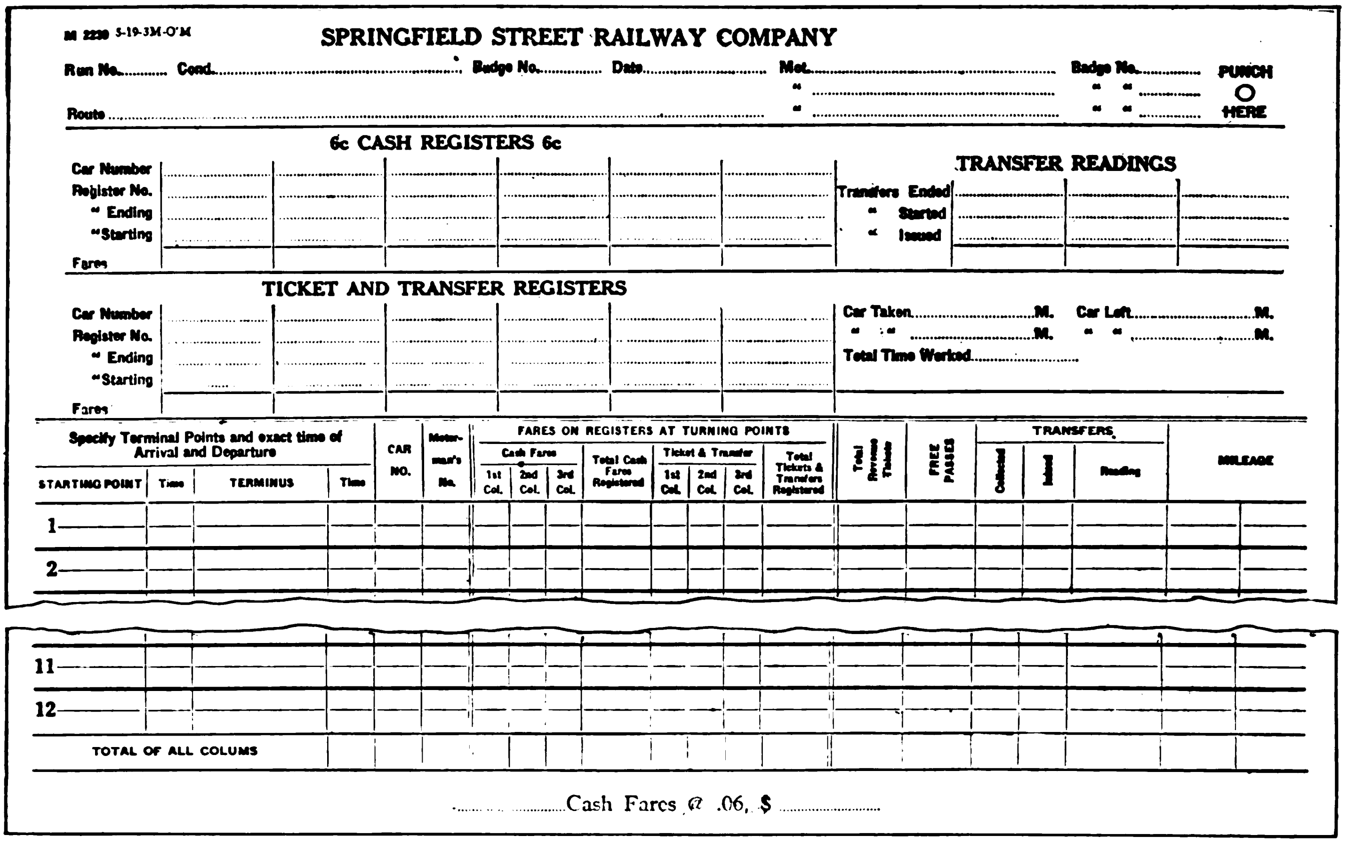
The schedule put in effect on May 1, 1918, calling for two 5-cent zones and two reduced rate tickets, was estimated to produce a total increase of passenger revenue of $400,000, or 17.5 per cent based on the year ending June 30, 1917. Of this $400,000 the Springfield division was to produce $340,000. Actual results from operation during the first month this schedule was in effect showed a gain in passenger revenue of $30,000 or 16 per cent over the previous year. The number of revenue zone fares collected increased 570,000 or 15.5

per cent while the number of transfer passengers carried decreased 83,000 or 13.82 per cent. Later months of operation failed to show such gains, these being approximately 11.5 per cent in revenue while the revenue zone riders increased only 10.7 per cent and transfer passengers decreased nearly 25 per cent.

An increase in wages awarded in September, 1918, by H. B. Endicott, then executive manager of the Massachusetts Public Safety Committee, called for an increase of $400,000 per year in expenses. The schedule of fares established on May 1, 1918, had also failed to earn its estimates by 25 per cent and in order to comply with the award the company again petitioned for an increase in fare. On Sept. 16, 1918, the 5-cent zone fares in the Springfield division were increased to 6 cents and the reduced-rate tickets to points in the outer zone, from $6\frac{2}{3}$ to $7\frac{1}{2}$ cents and from $8\frac{1}{3}$ to $9\frac{2}{7}$ cents. This increase, it was estimated, would increase the passenger revenue $208,839, or a little less than 10 per cent.

Actual results from operation, however, show that the passenger revenue increased 31 per cent in April, 1919, over April, 1918, the last month of the universal 5-cent fare in the Springfield division, while the number of revenue zone fares increased only 9.5 per cent and transfer passengers decreased 26 per cent.

Comparing the first two months operation of the 5-cent zones with the corresponding months of the following year with 6-cent zones, shows that a 20 per cent increase in zone fares produced an increase of only 12.8 per cent in passenger revenue, a falling off in zone riders of 4.7 per cent and a decrease of 14.5 per cent in transfer passengers. In regard to the decrease in transfer passengers carried, some of this can be attributed to the perfection of the transfer system over the previous year. The month of August, 1918, the second month of the new transfer schedule, showed a decrease of 37 per cent in transfer passengers, while the month of June, with the old transfers, showed only 26.4 per cent. It would therefore seem that the new transfers cut down the transfer abuse and decreased the number of transfer riders nearly 12 per cent.



M 2230 5-19-3M-O'M

SPRINGFIELD STREET RAILWAY COMPANY

Run No.......... Cond.......... Badge No.......... Date..........
Route..........
Mot.......... Badge No.......... PUNCH ○ HERE
" .... " " ....
" .... " " ....

6c CASH REGISTERS 6c

Car Number
Register No.
" Ending
" Starting
Fares

TRANSFER READINGS

Transfers Ended
" Started
" Issued

TICKET AND TRANSFER REGISTERS

Car Number
Register No.
" Ending
" Starting
Fares

Car Taken..........M. Car Left..........M.
" " ....M. " " ....M.
Total Time Worked..........

Specify Terminal Points and exact time of Arrival and Departure				CAR NO.	Motorman's No.	FARES ON REGISTERS AT TURNING POINTS								Total Revenue Tickets	FREE PASSES	TRANSFERS			MILEAGE
						Cash Fares			Total Cash Fares Registered	Ticket & Transfer			Total Tickets & Transfers Registered						
STARTING POINT	Time	TERMINUS	Time			1st Col.	2nd Col.	3rd Col.		1st Col.	2nd Col.	3rd Col.				Collected	Issued	Reading	
1																			
2																			
11																			
12																			
TOTAL OF ALL COLUMS																			

..........Cash Fares @ .06, $..........

FACE OF DAY CARD USED ON NON-PREPAYMENT CARS

Due to a further increase of 32.5 per cent in wages granted in August, 1919, by Henry B. Endicott to all employees the company has been forced to file a new petition with the Public Service Commission for additional increases in rates to make up the increased cost of service. The company contemplates keeping the zone system and establishing a 7-cent cash fare with a $6\frac{1}{2}$-cent ticket and a special 10-cent rate between Springfield and Chicopee. These rates, however, are subject to the approval of the Public Service Commission.

On the whole it can be said that the two schedules of zone fares tried have increased the revenue over the previous schedule. It is felt, however, that the reduced rate tickets and transfers offer large opportunity for improper use. The company by agreement with its employees is forced to register each fare collected and inasmuch as all ticket and transfer fares, whether valued or not, are rung up on the same register, it is difficult properly to check the work performed by the conductors

Zone-Mile System of the Public Service Railway

Full details are given of how the zones are laid out, how the fares are collected, and how the trainmen and public were educated to the new plan

COURT HOUSE IN NEWARK, N. J.

On SUNDAY, Sept. 14, 1919, the new zone fare plan of the Public Service Railway, authorized by the Public Utility Commissioners of New Jersey, went into effect. The plan provides a fare of 3 cents for the initial zone on any car and 2 cents thereafter for each zone or fraction thereof traversed, and with 5 cent zones on three routes, operating over heavy grades where pleasure resorts are located at short distances from terminals. School tickets are sold at the same rate and in the same places as heretofore.

The first day's operation proved successful, except that on lines where the travel was heavy some loss in schedule was caused by both the public and the trainmen not being entirely familiar with or accustomed to the working of the system. However, in the opinion of the management, no fundamental difficulties developed and the existing causes of friction will disappear after the public and men become more fully versed in the operation.

The real test of the system came on the first Monday morning rush, which was aggravated to some extent by inclement weather. In anticipation of delay in the operation of the pay-leave plan, ticket sellers handling full fare tickets, which were sold singly or in strips of ten, were assigned to board cars terminating at heavy loading points not having post-payment areas. Material advantages were gained from this innovation, for at points not covered by ticket sellers there was some delay in unloading and the schedules became considerably disarranged, due to passengers not knowing the fare and the slowness of conductors in making calculations. Except for violence in the southern division, which started on Monday morning, by shipyard employees wrecking cars so as to evade payment of fare, things went as planned. On Tuesday the violence in Southern New Jersey continued and although confined to Camden and vicinity became so general that the trainmen of that division refused to operate the cars and on Wednesday it was necessary to enlist the aid of the authorities to patrol the streets over which the cars operated.

From the results obtained in Northern Jersey, however, the company is enthusiastic over its ultimate outcome and predicts that within a very short time the newness will wear off and the plan will then be much liked by all its patrons. At the time of going to press the car riders have become sufficiently acquainted with the plan so that crews are able to maintain their schedules without much difficulty, and the company looks forward to successful operation of the plan.

The Public Service Railway is one of the largest electric railway properties in the United States and operates in over 140 different municipalities having a combined population of slightly over 2,000,000 people. The company for convenience of operation has divided the property into six divisions. To care for the traffic originating on the system about 1400 cars are operated daily from twenty-eight different car houses, requiring a force of 4100 trainmen.

Zero or starting points were taken at Edgewater terminal; Hudson Place terminal; Exchange Place terminal; Federal Street Ferry terminal; Main and Market Sts., Paterson; Railroad Arch, Elizabeth; Albany and George Sts., New Brunswick, or at West Front and Somerset Sts., Plainfield, points where a very large proportion of the traffic either originates or terminates.

In starting from these zero points, zones of approximately 1 mile in length were laid out as nearly as possible, departure from this distance being made only in cases whereby a reasonable exception would bring the location of the zone point at a natural traffic dividing line, such as an intersection with another route, or a point of heavy loading due to the existence of traffic controlling industries, a railroad station or the like. In general, a tolerance of 500 ft. was adopted in either direction. Wherever possible, former transfer junction points and other heavy loading points were fixed as zone limits. In cases where cars operate between common points but via different routes, the number of zones on each route has been made the same, holding, however, to the standard length on the shorter of the two routes. All routes jointly using the same track have been zoned so that the limits are common to all routes passing that point, this becomes necessary not alone as a protection to the company's patrons, but as an aid to the company in the proper collection and registration of fares. In all 510 zones were laid out. All zone limit poles are marked by a yellow band on the pole at the right hand side of roadway. On the side of the pole is stencilled the approaching zone number in 6-in. black letters. Where vision of the poles is obscured by trees, etc., a sign is suspended from the trolley span wire. On joint routes the number of the zone for each route appears on a bracket hung from the face of the pole. It is a rule that passengers riding beyond the zone point must pay for that zone, but at junction points such as Broad and Market Sts., Newark, where the zone limit has been extended in all cases for alighting passengers to the far side of the crossing, and the reverse is true for boarding passengers who are allowed to get on at the near side of the crossing.

RIDERS WILL BOARD
CARS AT
FRONT END
AND LEAVE AT
REAR END
UNDER THE ZONE PLAN
Effective Sept. 14

BEGINNING SEPT. 14

PAY-AS-YOU-LEAVE
UNDER THE ZONE PLAN
INSTEAD OF
Pay-As-You-Enter

GET ZONE CHECK
FROM MOTORMAN
GIVE TO CONDUCTOR
WHEN PAYING FARE
PAY-AS-YOU-LEAVE

POSTERS CARRIED IN CAR VESTIBULES PRIOR TO INAUGURATION OF ZONE-FARE PLAN

ENTER FRONT
EXIT REAR
PAY AS YOU LEAVE

CAR DASHER

The company points out that this is not an arbitrary ruling but is determined by statistics which show that practically every passenger wishing to alight at this point or in fact at similar points in other parts of the system, gets out at the near side and that those who remain are going to points considerably beyond.

EDUCATION OF CAR RIDERS AND TRAINMEN

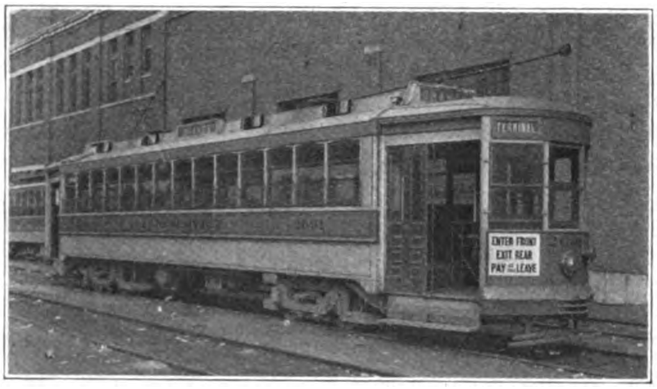
Immediately after the promulgation of the order of the commissioners on Aug. 1, 1919, giving both a definite rate and effective date, steps were taken to utilize all possible means of publicity and to that end plans were formulated for newspaper advertisements, supplemented by posters and leaflets in the cars, dashers on the fronts of the car vestibules, as well as moving pictures in the various theatres on the system.

Newspaper advertisements had been carried in all daily and weekly publications throughout the entire system since the company had submitted its report to the Commissioners to place before the people the merits and necessity of the zone system and to show that it was by far the most equitable basis for fares, due to the fact that it required a passenger to pay only for the ride taken. A full account of the publicity carried on by the company was given in ELECTRIC RAILWAY JOURNAL for Sept. 6, 1919, page 484. After the Utility Board had rendered its decision, the newspaper advertisements were utilized to explain the proposed methods of boarding and leaving cars, and how passengers should pay their fare and to pointing out that the new plan of boarding and leaving cars was but a change in habit and a reversal of former procedure. The company plans to continue this class of advertising as long as the necessity for public information through the press continues.

More than 3,000,000 leaflets, separated as to routes and bearing the zone points were printed and were put in the "Take one" boxes in all the cars, commencing Sept. 1, 1919. Signs were also displayed to supplement the signs on the boxes, reading, "Zone limit leaflets in boxes: Take one.". Plans are for three weeks' distribution of these leaflets, and it hoped that in that time all passengers riding regularly on the various routes will become familar with the zone locations and the fares between their regular points of travel.

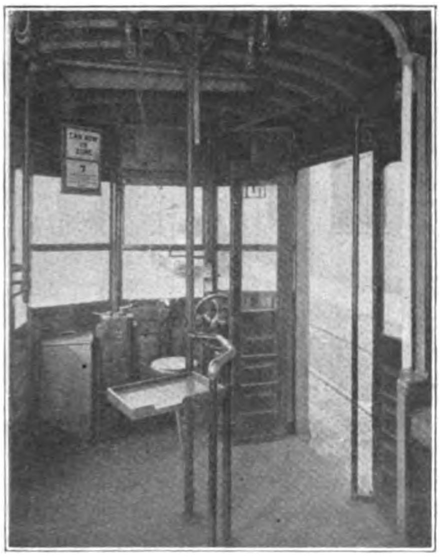
Commencing Aug. 31, a series of posters was carried in all the car vestibules, explaining the procedure to be followed in boarding and alighting from cars after the zone fare plan becomes effective. These posters were changed weekly and on the effective day the third poster of the series was displayed. The poster will be carried for some time to come on all the cars.

In addition to these posters all cars have, since the day the zone fares became effective, carried a large dasher sign on each end, printed in type sufficiently large to be easily read by people on the sidewalk.



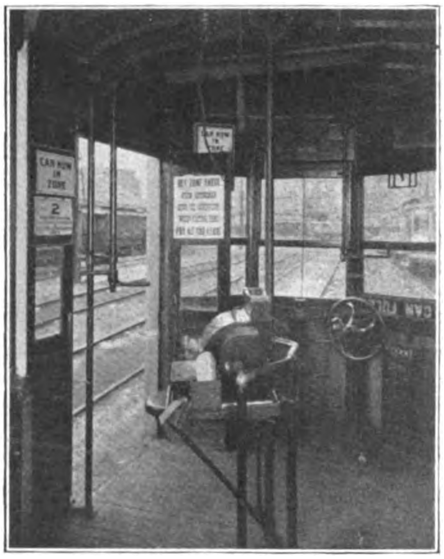
SHOWING SIGNS ON FRONT DASHER OF CAR

During the week prior to the inauguration of the plan, moving pictures of "Taking a Trolley Ride" were displayed in some ninety moving picture houses throughout the system. These pictures give in complete detail all the enjoyments of taking a trolley-ride, showing in sequence of happening how a passenger should conduct himself from the time of boarding by the front end of the car and receiving zone check from the motorman, entering and taking his seat as near the rear of the car as possible, signaling for his stop at his destination, immediately paying the conductor the fare as shown on the reverse side by the zone check and then, when the car is at his destination, being ready to leave without further delay as soon as the conductor opens the rear door.



VIEW OF FRONT VESTIBULE—TRAY FOR HOLDING CASH REGISTER IS NORMALLY ON REAR PLATFORM

FRONT ENTRANCE SHOWING ZONE INDICATOR FROM STREET

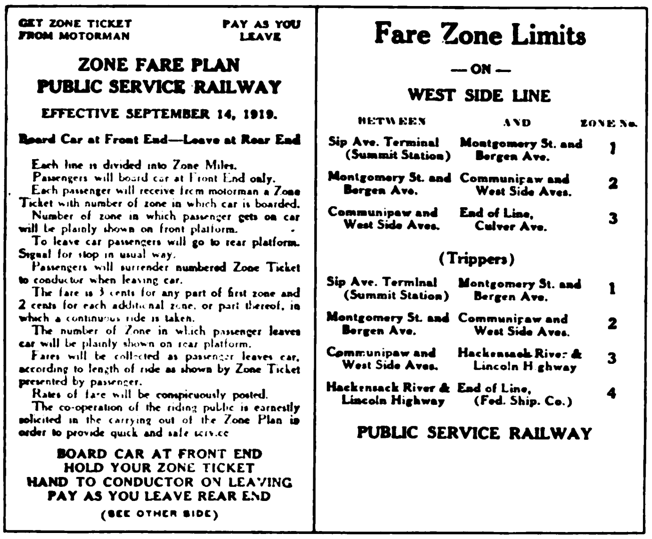


ARRANGEMENT OF REAR VESTIBULE SHOWING CASH REGISTER AND ZONE INDICATOR

In the early part of August a general meeting of division superintendents, supervisors, carhouse foremen, inspectors and those who had been selected as instructors was held at the assembly hall in the Public Service Building, Newark, where the plans for instructing the rank and file of the men on the cars as to the fare collection methods on the various routes was explained in detail.

This plan was to equip eight or nine cars with the actual fare collection devices and send them around to the various carhouses in charge of some member of the general instructing force. At each of these carhouses all the trainmen were called to the car, and the fare collection scheme was thoroughly explained in detail and demonstrated, so that each man whether motorman or conductor had individual instruction as to his duties. After this demonstration all trainmen were given a special questionnaire on the zone system which they were required to fill out and turn in to the depot instructor, and in case the answers were not given correctly it was his duty to take the man in hand and see that he was thoroughly acquainted with the necessary details. The company took every means possible to insure that a man did not go to work after the zone system became effective unless he had been properly instructed and could answer the questionnaire. All new men were put through the regular instruction schools maintained at various points.

Two printed booklets were issued to all concerned—the first of which was in the early part of August



GET ZONE TICKET FROM MOTORMAN

PAY AS YOU LEAVE

ZONE FARE PLAN
PUBLIC SERVICE RAILWAY

EFFECTIVE SEPTEMBER 14, 1919.

Board Car at Front End—Leave at Rear End

Each line is divided into Zone Miles.

Passengers will board car at Front End only.

Each passenger will receive from motorman a Zone Ticket with number of zone in which car is boarded.

Number of zone in which passenger gets on car will be plainly shown on front platform.

To leave car passengers will go to rear platform. Signal for stop in usual way.

Passengers will surrender numbered Zone Ticket to conductor when leaving car.

The fare is 3 cents for any part of first zone and 2 cents for each additional zone, or part thereof, in which a continuous ride is taken.

The number of Zone in which passenger leaves car will be plainly shown on rear platform.

Fares will be collected as passenger leaves car, according to length of ride as shown by Zone Ticket presented by passenger.

Rates of fare will be conspicuously posted.

The co-operation of the riding public is earnestly solicited in the carrying out of the Zone Plan in order to provide quick and safe service

BOARD CAR AT FRONT END
HOLD YOUR ZONE TICKET
HAND TO CONDUCTOR ON LEAVING
PAY AS YOU LEAVE REAR END

(SEE OTHER SIDE)

Fare Zone Limits

— ON —

WEST SIDE LINE

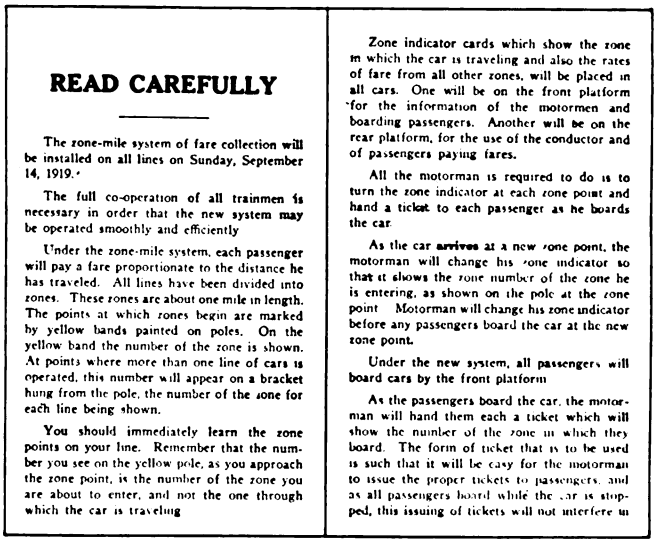
BETWEEN	AND	ZONE No.
Sip Ave. Terminal (Summit Station)	Montgomery St. and Bergen Ave.	1
Montgomery St. and Bergen Ave.	Communipaw and West Side Aves.	2
Communipaw and West Side Aves.	End of Line, Culver Ave.	3

(Trippers)

BETWEEN	AND	ZONE No.
Sip Ave. Terminal (Summit Station)	Montgomery St. and Bergen Ave.	1
Montgomery St. and Bergen Ave.	Communipaw and West Side Aves.	2
Communipaw and West Side Aves.	Hackensack River & Lincoln Highway	3
Hackensack River & Lincoln Highway	End of Line, (Fed. Ship. Co.)	4

PUBLIC SERVICE RAILWAY

ZONE LEAFLETS PUT IN "TAKE ONE" BOXES IN CARS



READ CAREFULLY

The zone-mile system of fare collection will be installed on all lines on Sunday, September 14, 1919.

The full co-operation of all trainmen is necessary in order that the new system may be operated smoothly and efficiently

Under the zone-mile system, each passenger will pay a fare proportionate to the distance he has traveled. All lines have been divided into zones. These zones are about one mile in length. The points at which zones begin are marked by yellow bands painted on poles. On the yellow band the number of the zone is shown. At points where more than one line of cars is operated, this number will appear on a bracket hung from the pole, the number of the zone for each line being shown.

You should immediately learn the zone points on your line. Remember that the number you see on the yellow pole, as you approach the zone point, is the number of the zone you are about to enter, and not the one through which the car is traveling

Zone indicator cards which show the zone in which the car is traveling and also the rates of fare from all other zones, will be placed in all cars. One will be on the front platform for the information of the motormen and boarding passengers. Another will be on the rear platform, for the use of the conductor and of passengers paying fares.

All the motorman is required to do is to turn the zone indicator at each zone point and hand a ticket to each passenger as he boards the car.

As the car arrives at a new zone point, the motorman will change his zone indicator so that it shows the zone number of the zone he is entering, as shown on the pole at the zone point Motorman will change his zone indicator before any passengers board the car at the new zone point.

Under the new system, all passengers will board cars by the front platform

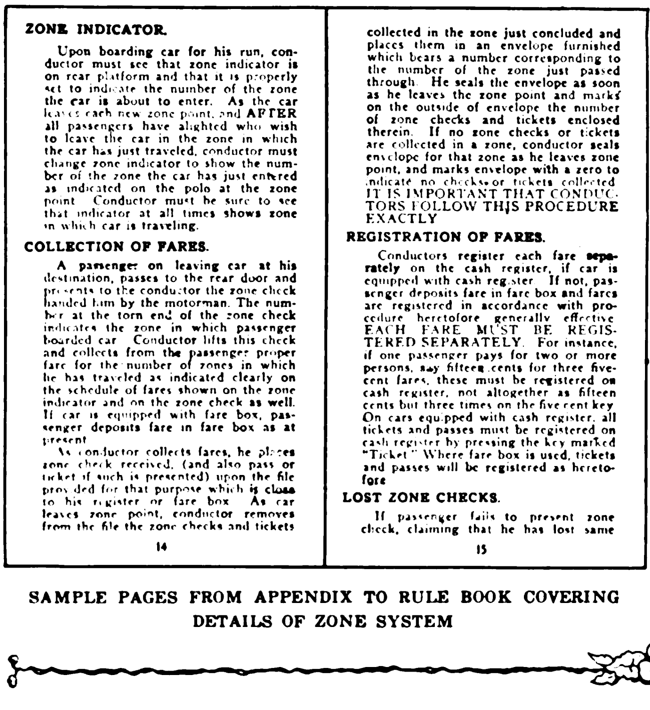
As the passengers board the car, the motorman will hand them each a ticket which will show the number of the zone in which they board. The form of ticket that is to be used is such that it will be easy for the motorman to issue the proper tickets to passengers, and as all passengers board while the car is stopped, this issuing of tickets will not interfere in

PAGES FROM PRELIMINARY FOLDER ISSUED TO TRAINMEN

entitled "Facts About the Zone System for Motormen and Conductors" and covered in a general way what was explained more in detail in an appendix to the company's rule book which was given out a few days prior to the inauguration of the plan. Fac-simile pages of both these booklets are reproduced herewith to show the manner in which they were prepared. The first booklet mentioned had an added feature of two blank pages that proved of material value for making notes. These pages were headed "Memorandum—Note any questions that may occur to you and ask your supervisor."

THE CAR EQUIPMENT ADOPTED

At the start two general plans of fare collection were effective. On 650 cars equipped with class 700 cash registers, two of the overhead registers formerly used were locked, and the cash register located in approximately the space occupied by the fare box. No change was made in the other cars as they carried Johnson registering fare boxes and two or three overhead registers depending on whether or not they operated into either postpayment or prepayment terminals.



ZONE INDICATOR.

Upon boarding car for his run, conductor must see that zone indicator is on rear platform and that it is properly set to indicate the number of the zone the car is about to enter. As the car leaves each new zone point, and AFTER all passengers have alighted who wish to leave the car in the zone in which the car has just traveled, conductor must change zone indicator to show the number of the zone the car has just entered as indicated on the polo at the zone point Conductor must be sure to see that indicator at all times shows zone in which car is traveling.

COLLECTION OF FARES.

A passenger on leaving car at his destination, passes to the rear door and presents to the conductor the zone check handed him by the motorman. The number at the torn end of the zone check indicates the zone in which passenger boarded car Conductor lifts this check and collects from the passenger proper fare for the number of zones in which he has traveled as indicated clearly on the schedule of fares shown on the zone indicator and on the zone check as well. If car is equipped with fare box, passenger deposits fare in fare box as at present

As conductor collects fares, he places zone check received, (and also pass or ticket if such is presented) upon the file provided for that purpose which is close to his register or fare box As car leaves zone point, conductor removes from the file the zone checks and tickets

14

collected in the zone just concluded and places them in an envelope furnished which bears a number corresponding to the number of the zone just passed through. He seals the envelope as soon as he leaves the zone point and marks on the outside of envelope the number of zone checks and tickets enclosed therein. If no zone checks or tickets are collected in a zone, conductor seals envelope for that zone as he leaves zone point, and marks envelope with a zero to indicate no checks or tickets collected IT IS IMPORTANT THAT CONDUCTORS FOLLOW THIS PROCEDURE EXACTLY

REGISTRATION OF FARES.

Conductors register each fare **separately** on the cash register, if car is equipped with cash register If not, passenger deposits fare in fare box and fares are registered in accordance with procedure heretofore generally effective EACH FARE MUST BE REGISTERED SEPARATELY. For instance, if one passenger pays for two or more persons, say fifteen cents for three five-cent fares, these must be registered on cash register, not altogether as fifteen cents but three times on the five cent key On cars equipped with cash register, all tickets and passes must be registered on cash register by pressing the key marked "Ticket" Where fare box is used, tickets and passes will be registered as heretofore

LOST ZONE CHECKS.

If passenger fails to present zone check, claiming that he has lost same

15

SAMPLE PAGES FROM APPENDIX TO RULE BOOK COVERING DETAILS OF ZONE SYSTEM

The company however plans in the next thirty or forty days to change over and equip all cars operating on routes having more than three zones with cash registers. This will make about 1300 cars so equipped.

The company's plans contemplate the continued use of fare boxes on all cars operating on short lines of three zones or less. One man cars and cars operated only in a single zone are operated as prepayment cars.

GENERAL METHOD OF FARE COLLECTION

All cars with the exception of two or three short-routes, entirely within a single zone, are operated under the pay-leave plan. Under this plan all passengers must board by the front and leave by the rear door. On boarding, the motorman issues a zone check torn from a pad in a holder at a point to correspond with the zone number in which the passenger boarded. A zone indicator, illustrated, is displayed at the left of the motorman to show the boarding passenger the number of the zone in which he boarded the car. This number must agree with that shown at the left end of the check he receives from the motorman.

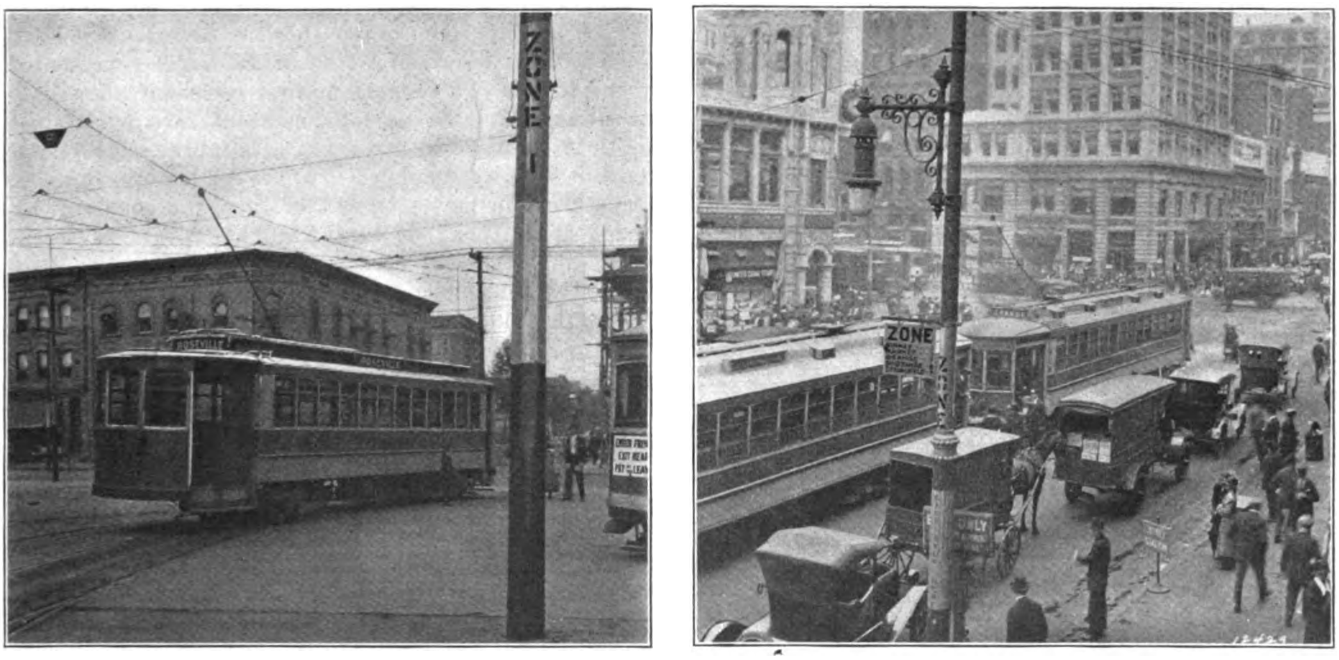
Zone checks are issued to all passengers on boarding except employees, policemen and firemen riding free in uniform or children under seven years of age when accompanied by an adult, irrespective of whether such passenger is paying cash fare or riding on a pass.

Tin boxes are supplied by the company to carry the supply of zone checks. These are marked by route and run number and are kept ready for service in special racks in each carhouse.

The motorman is held responsible for all zone checks issued to him, and in case one is mutilated by mistake when it is being torn off it must be retained and turned in along with the stubs and unused portion of pad. Motormen are not allowed to tear off more checks for a zone than they need for issuance in that zone.

Two checks of different color and a holder for each are issued to each motorman for use on his route. One color denotes outbound trips and the other is used only on inbound trips. On an average a motorman during the day's work of nine hours will issue approximately 750 checks. The number at the left hand end of the check indicates the zone in which the passenger boards the car. As a convenience to passengers in learning the fares, and to enable them to have the exact fare ready when leaving the car, thereby avoiding delay not only to themselves but to following fellow passengers, there is set up in tabular form on the reverse side of the zone check the fare to all other zones on the same route to which it is possible for passengers to ride. For example, suppose a passenger boarded a car in zone 4 on an outbound trip and wanted to ride to zone 9. The fare would be found in the column headed "From zone 4 to" where, opposite "Zone 9" the fare would be found to be 13 cents.

Passengers must retain the zone checks issued to them. If the checks are thrown away or lost en route the conductor is obliged to charge the passenger on leaving the car for the entire number of zones from the beginning of the line to the zone where the passenger alights. Should a car terminate in a postpayment area a passenger failing to present a zone check is required to pay the full fare for the longest line entering that terminal.



AT LEFT, METHOD OF MARKING ZONE POLES WHERE ONLY ONE ROUTE IS CONCERNED. AT RIGHT, METHOD OF MARKING POLES AT JUNCTION OF BROAD AND MARKET STREETS, NEWARK, WHERE MORE THAN ONE ROUTE IS CONCERNED

Special zone checks are issued for each route regularly operated and also for trippers and night cars that travel over parts of more than one route. In all, some 300 different forms of zone checks were printed.

On the platforms of each car are located zone indicators placed so they can be readily seen by passengers and also conveniently turned by the motormen when entering a zone. On double-end cars two indicators are located in each vestibule, only one of which however is in use at any one time. Single end cars have only one in each end.

One indicator is hung at the left of the motorman from the top of the window sash and the other is just back of the conductor's position, being on the inside of the folding door next to the bulk head. Trainmen are required to turn one indicator in each end of the car in proceeding from one zone into another. The motorman turns his indicator at a zone limit prior to the time he opens the door to allow passengers to board, while the conductor at a zone limit allows all passengers to leave prior to turning the one in the rear vestibule.

The zone indicator is so constructed that on the bottom portion is given a zone number and a table showing the fares from that zone to any other zone en route.

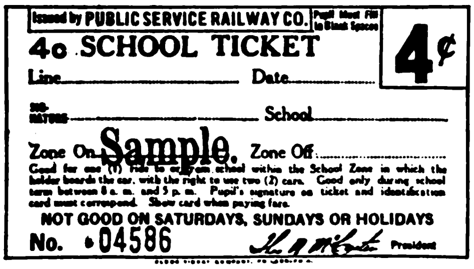
Company employees are allowed free transportation over the entire system. In order that the number of persons riding on passes may be accurately determined, books of coupon passes are issued to each employee. An employee on presenting these coupons for a ride must fill them out, so as to show the ride taken and hand them to the conductor along with the zone check when he leaves the car. Similar coupon books except for the color are issued to police inspectors, and for others entitled to free transportation.

CHECKS AND TICKETS USED

Under the "three and two" plan, the use of transfers is eliminated entirely. There are however instances when continuous trip checks of some character must be issued to allow a passenger to take the ride for which he pays. This is required by the ruling of the Commission that continuous trip checks must still be issued at some twenty-four places under the zone system just as they were formerly issued under the old fare schedule.

This form of ticket is shown as No. 1 on page 645 and, as will be noticed, must be punched by conductor, on issuance, for the day of the month and time.

An emergency ticket for use only in case of breakdowns or interruption in service is also used. Under no other conditions will this ticket be issued, and in order to have it accepted, the conductor on the second car must know that an emergency existed and that this form of ticket had been issued. This ticket is of a different color than the "continuous trip" ticket and also about one inch longer so that it is readily distinguishable for collection purposes. When this ticket is issued, the passenger pays the first conductor the proper fare to the zone limit and the conductor issues a check punched for the month, day, time, direction and zone for which fare has been paid. This form of ticket is issued to passengers when a car is turned back before completing its trip and passengers are compelled to change to another car. In such cases the conductor collects all fares of passengers to the end of the zone in which the car is turning back (lifting zone checks from passengers as usual) and issuing to all passengers on payment of fare an emergency ticket, punched to show the zone in which the turnback occurs. When he boards the change-off car, the passenger secures a new zone check from the motorman on that car and on leaving he presents both the new zone ticket and proper fare for all zones beyond that punched on emergency ticket.



Issued by PUBLIC SERVICE RAILWAY CO. Pupil Must Fill in Blank Spaces

4c SCHOOL TICKET **4¢**

Line ________ Date ________

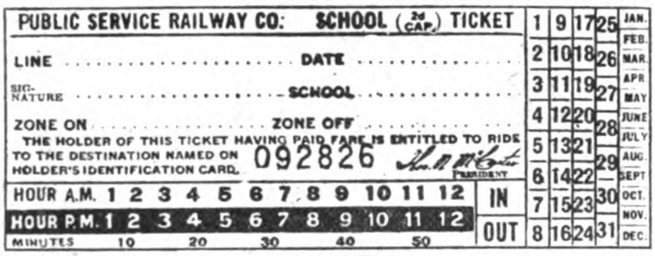
Signature ________ School ________

Zone On ________ Sample. Zone Off ________

Good for one (1) ride to or from school within the School Zone in which the holder boards the car, with the right to use two (2) cars. Good only during school term between 8 a. m. and 5 p. m. Pupil's signature on ticket and identification card must correspond. Show card when paying fare.

NOT GOOD ON SATURDAYS, SUNDAYS OR HOLIDAYS

No. •04586 President



PUBLIC SERVICE RAILWAY CO: SCHOOL (2d CAP.) TICKET

LINE .... DATE ....

SIGNATURE .... SCHOOL ....

ZONE ON .... ZONE OFF ....

THE HOLDER OF THIS TICKET HAVING PAID FARE IS ENTITLED TO RIDE TO THE DESTINATION NAMED ON HOLDER'S IDENTIFICATION CARD. 092826 PRESIDENT

HOUR A.M. 1 2 3 4 5 6 7 8 9 10 11 12 IN

HOUR P.M. 1 2 3 4 5 6 7 8 9 10 11 12 OUT

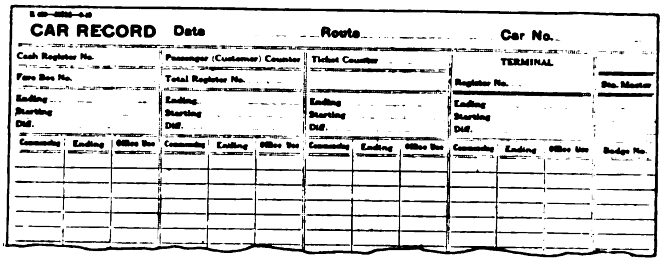
MINUTES 10 20 30 40 50

1	9	17	25	JAN.
2	10	18	26	FEB.
3	11	19	27	MAR.
4	12	20	28	APR.
5	13	21	29	MAY
6	14	22	30	JUNE
7	15	23	31	JULY
8	16	24		AUG.
				SEPT
				OCT.
				NOV.
				DEC.

AT TOP, FORM OF SCHOOL TICKET USED ON TWO CARS; AT BOTTOM, FORM OF SCHOOL TICKET ISSUED BY CONDUCTOR, FORMERLY COVERED BY TRANSFER

If a passenger in leaving the first car presents a pay ticket which entitles him to ride beyond the limit of the zone in which the car is turned back, the pay ticket is accepted and an emergency ticket issued punched for the zone number to which the passenger is entitled to ride on his ticket. The conductor on the second car in such cases, lifts the zone check and emergency ticket but collects no additional fare, providing the passenger leaves the car in the zone punched on the emergency ticket. Where crews change cars and passengers also change along with the crew, the conductor is held responsible for collecting the fares of all passengers who do not board the second car. If this change takes place at a carhouse the station master makes note on a special form of the number of passengers transferred.

Pay-tickets, so-called, are sold in strips of ten as a convenience to patrons by the company at all Public Service commercial offices, carhouses, and terminals and in some cases at department stores at 3 cents, 5 cents, 7 cents, 9 cents, etc., up to 15 cents per ticket. Each ticket is good only for a ride of the value represented by the ticket. Passengers at first were not allowed to use these tickets in part payment of fare nor to use one ticket to pay two fares, but after three days' operation this rule was changed to allow conductors to accept such tickets in part payment of fare, the company believing that it had no legal right to refuse to accept tickets and money if presented. It is hoped that these tickets will enable the regular riders to save time in paying fare as the conductors will be relieved of making change.



CAR RECORD Date ________ Route ________ Car No. ________

Cash Register No. ________

Fare Box No. ________

Ending

Starting

Diff.

Passenger (Customer) Counter

Total Register No. ________

Ending

Starting

Diff.

Ticket Counter

Ending

Starting

Diff.

TERMINAL

Register No. ________

Ending

Starting

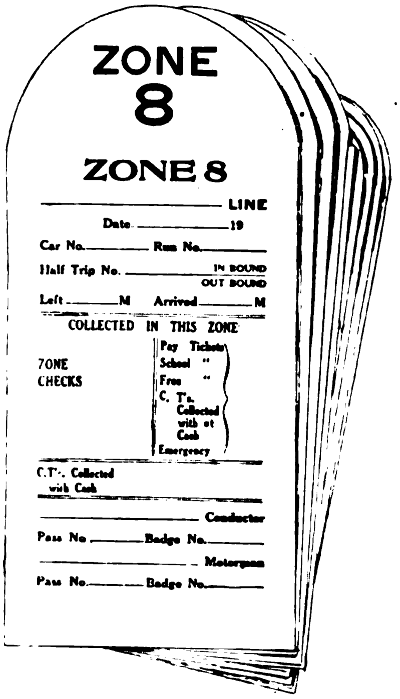
Diff.

Sta. Master

Commencing	Ending	Office Use	Commencing	Ending	Office Use	Commencing	Ending	Office Use	Commencing	Ending	Office Use	Badge No.

CAR RECORD CARD CARRIED BY ALL CARS

The commission's decision that school tickets should be still sold at the same rate and good between the former points made necessary still another form of ticket. Existing tickets are redeemable at their face value. The new form of ticket requires that the pupil carry and show, when he presents coupons, an identification card duly filled out, as illustrated. They must also fill out the coupons giving the name of line, date, name of school attended, zones "on" and "off" and sign their name.



ZONE 8

ZONE 8

________ LINE

Date ________ 19

Car No. ________ Run No. ________

Half Trip No. ________ IN BOUND / OUT BOUND

Left ________ M Arrived ________ M

COLLECTED IN THIS ZONE

ZONE CHECKS

Pay Tickets

School "

Free "

C. T's. Collected with or Cash

Emergency

C. T's. Collected with Cash

________ Conductor

Pass No. ________ Badge No. ________

________ Motorman

Pass No. ________ Badge No. ________

ZONE ENVELOPES USED BY CONDUCTORS

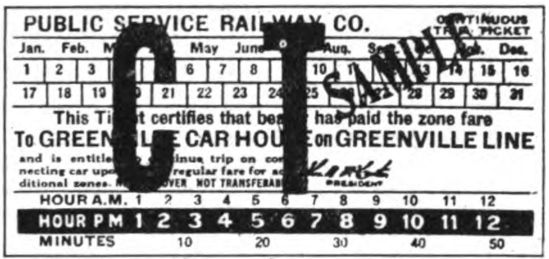
In some cases pupils had formerly received transfers to reach their destinations and had paid one cent for each transfer. Under the present school ticket rate this same charge is retained and on tickets permitting a change in cars an extra cent is charged for each coupon. On request pupils presenting this form of ticket can receive a school second-car ticket which will be good on the transfer car to the destination named on the holder's identification card. This ticket must also be filled out by the pupil.

WORK OF THE CONDUCTOR

A conductor on going to work obtains from the station office his day card, continuous trip tickets, three pads of fifty emergency tickets, school continuation tickets and a sufficient supply to last the day of trip envelopes in which to place the zone checks and tickets collected in each zone. A tin box is provided for holding the envelopes, etc., and is marked for his line and run number.

The zone envelopes are sewed at the bottom into sets, each set including one envelope bearing the zone number in each half trip. Thus on an eight-zone route a set consists of eight envelopes numbered 1 to 8.

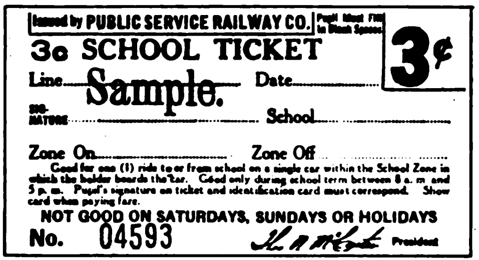
Passengers on leaving the car do so by the rear door and pay their fare to the conductor, depending on the zone check surrendered and the zone in which the car happens to be when the passenger alights, who registers the fare of each passenger on the cash register only. The bunching of amounts collected consecutively from several passengers on the cash register is not allowed, as each fare must be registered separately. If the car is equipped with a fare box, the passenger is expected to deposit his exact fare in the fare box and the conductor to register each fare deposited on the overhead register. Tickets are also registered on this same register. As the conductor collects fares, he places the zone checks, passes and tickets collected in each zone on a filing spindle attached to the side of the cash register or the fare box. When the car completes that zone the conductor removes from the spindle all checks and tickets thereon and inserts them in the envelope marked for that zone. He seals the envelope and marks on its face, in the space provided, the contents. If no zone checks or tickets are collected in a particular zone the conductor simply seals up the envelope and marks on its face "zero" to show that nothing was collected.


PUBLIC SERVICE RAILWAY CO.
CONTINUOUS TRIP TICKET
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

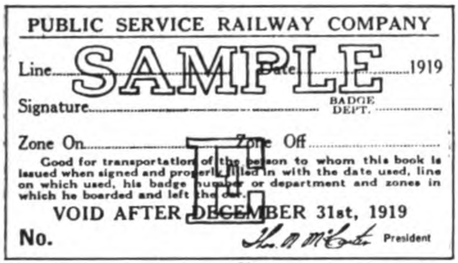
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

This Ticket certifies that bearer has paid the zone fare
To GREENVILLE CAR HOUSE on GREENVILLE LINE
and is entitled to continue trip on connecting car upon paying regular fare for additional zones. NO STOP OVER NOT TRANSFERABLE
PRESIDENT
HOUR A.M. 1 2 3 4 5 6 7 8 9 10 11 12
HOUR P M 1 2 3 4 5 6 7 8 9 10 11 12
MINUTES 10 20 30 40 50
CT
SAMPLE

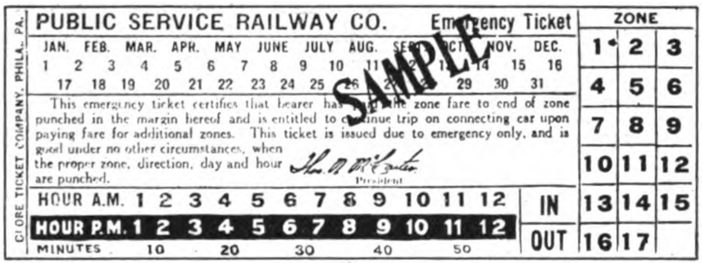
1


Issued by PUBLIC SERVICE RAILWAY CO.
Pupil Must Fill in Blank Spaces
3c SCHOOL TICKET
3¢
Line Sample. Date
SIGNATURE School
Zone On Zone Off
Good for one (1) ride to or from school on a single car within the School Zone in which the holder boards the car. Good only during school term between 8 a. m. and 5 p. m. Pupil's signature on ticket and identification card must correspond. Show card when paying fare.
NOT GOOD ON SATURDAYS, SUNDAYS OR HOLIDAYS
No. 04593
President

2


PUBLIC SERVICE RAILWAY COMPANY
Line SAMPLE Date 1919
Signature BADGE DEPT.
Zone On Zone Off
Good for transportation of the person to whom this book is issued when signed and properly filled in with the date used, line on which used, his badge number or department and zones in which he boarded and left the car.
VOID AFTER DECEMBER 31st, 1919
No.
President
E

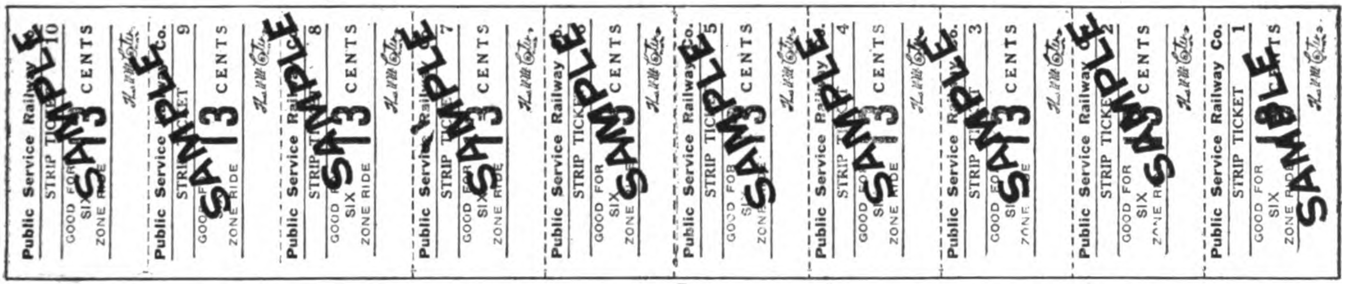
3


GLOBE TICKET COMPANY, PHILA., PA.
PUBLIC SERVICE RAILWAY CO. Emergency Ticket
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
This emergency ticket certifies that bearer has paid the zone fare to end of zone punched in the margin hereof and is entitled to continue trip on connecting car upon paying fare for additional zones. This ticket is issued due to emergency only, and is good under no other circumstances, when the proper zone, direction, day and hour are punched.
President
HOUR A.M. 1 2 3 4 5 6 7 8 9 10 11 12
HOUR P.M. 1 2 3 4 5 6 7 8 9 10 11 12
MINUTES 10 20 30 40 50
IN
OUT

ZONE		
1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	

SAMPLE

4


Public Service Railway Co. STRIP TICKET 10 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 9 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 8 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 7 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 6 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 5 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 4 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 3 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 2 GOOD FOR SIX ZONE RIDE 13 CENTS
Public Service Railway Co. STRIP TICKET 1 GOOD FOR SIX ZONE RIDE 13 CENTS
SAMPLE

5

NO. 1. CONTINUOUS TRIP TICKET
NO. 2. GENERAL FORM OF SINGLE-ZONE SCHOOL TICKET
NO. 3. GENERAL FORM OF FREE TRANSPORTATION
NO. 4. EMERGENCY TICKET
NO. 5. FORM OF FULL FARE OR PAY-TICKET

VARIATION IN METHODS OF COLLECTING

On the routes terminating at heavy unloading points such as Broad and Market Streets, Newark, or the H. & M. tube station at Park Place, especially where there are no terminal facilities, special ticket sellers board all cars at the commencement of the last zone and sell to passengers a ticket covering their fare to the terminal in accordance with the zone check held. In other words, in order to speed up the unloading of passengers at heavy junction points, it was found necessary to help out the conductor, due to the fact that many of the passengers did not have the exact fare, and consequently held up other passengers when leaving the car.

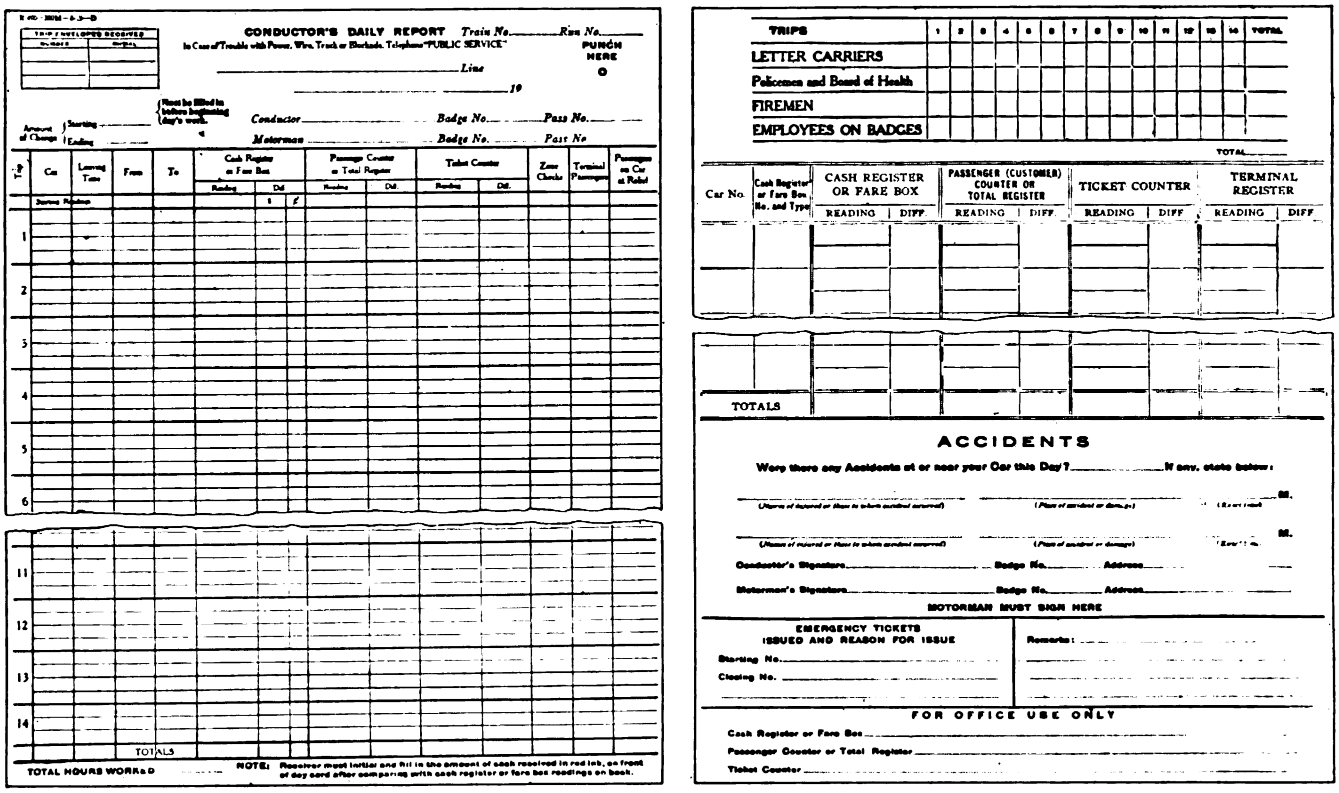
PAY-ENTER TERMINALS MADE PAY-LEAVE

The company has for some time maintained at heavy loading points prepayment areas to increase the terminal capacity. Under the zone plan with pay-leave operation these areas have been converted into post-payment areas and a sufficient number of turnstiles and pay booths installed to care for handling the traffic. Postpayment areas are located at the Public Service terminal in Newark, Hudson Place terminal in Jersey City, Edgewater Ferry terminal, Summit Terminal, Submarine Boat Corporation, Federal Shipbuilding Company, and, originally, at two shipyards in South Jersey.

It is also planned eventually to operate these terminals again as prepayment areas as well as to continue their operation as post-payment areas. In their operation as prepayment areas, zone checks will be issued to passengers as they pass through the turnstiles, and full-fare tickets will be sold at the cashier's booth. When the passenger is about to leave the car he presents his zone check and pay ticket to the conductor, who registers the ticket on the ticket key. On the cars operating from prepayment terminals, therefore, the total number of registrations on the fare register should equal the number of zone checks issued on the car, plus the number of zone checks issued at the terminal to passengers on that car.

A car record card, similar to the form previously used, is carried on each car on which the opening records for the day are certified by the station master. In the first column the conductor posts the "taken" and "left" reading of the "total-adding counter" under the lid of the register, which shows the total amount of money registered. In the second column is posted a similar reading of the "passenger (customer) counter" which shows the number of registrations of passengers carried during the trip, run or day, as the case may be. In the third column of the car record is posted the "taken" and "left" reading of the so-called special transaction counters which are now known as "ticket counters."

In the fourth column is posted the "totalizer" reading of the overhead register when used to show the number of passengers taken into a terminal. The record card also shows the date, route, car number and badge number of the conductor who daily uses the various registers on the car.



TRIP ENVELOPES RECEIVED	
Number	[illegible]

CONDUCTOR'S DAILY REPORT Train No.________ Run No.________

In Case of Trouble with Power, Wire, Track or Blockade, Telephone "PUBLIC SERVICE"

PUNCH HERE ○

________________ Line

________________ ________ 19

Amount of Change { Starting ________ Ending ________ } Must be filled in before beginning day's work.

Conductor ________________ Badge No.________ Pass No.________

Motorman ________________ Badge No.________ Pass No.________

Trip	Car	Leaving Time	From	To	Cash Register or Fare Box		Passenger Counter or Total Register		Ticket Counter		Zone Checks	Terminal Passengers	Passengers on Car at Relief
					Reading	Diff.	Reading	Diff.	Reading	Diff.			
	Starting Readings												
1													
2													
3													
4													
5													
6													
11													
12													
13													
14													
			TOTALS										

TOTAL HOURS WORKED ________ NOTE: Receiver must initial and fill in the amount of cash received in red ink, on front of day card after comparing with cash register or fare box readings on back.

TRIPS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	TOTAL
LETTER CARRIERS															
Policemen and Board of Health															
FIREMEN															
EMPLOYEES ON BADGES															

TOTAL________

Car No.	Cash Register or Fare Box No. and Type	CASH REGISTER OR FARE BOX		PASSENGER (CUSTOMER) COUNTER OR TOTAL REGISTER		TICKET COUNTER		TERMINAL REGISTER	
		READING	DIFF.	READING	DIFF.	READING	DIFF.	READING	DIFF.
TOTALS									

ACCIDENTS

Were there any Accidents at or near your Car this Day?____________ If any, state below:

________________ (Name of injured or those to whom accident occurred) ________________ (Place of accident or damage) ________ (Exact time) M.

________________ (Name of injured or those to whom accident occurred) ________________ (Place of accident or damage) ________ (Exact time) M.

Conductor's Signature________________ Badge No.________ Address________________

Motorman's Signature________________ Badge No.________ Address________________

MOTORMAN MUST SIGN HERE

EMERGENCY TICKETS ISSUED AND REASON FOR ISSUE

Starting No.________________

Closing No.________________

Remarks: ________________

FOR OFFICE USE ONLY

Cash Register or Fare Box ________________

Passenger Counter or Total Register ________________

Ticket Counter ________________

FRONT AND REVERSE OF CONDUCTOR'S DAILY REPORT

When a conductor takes his car he posts on the back of his daily report the numbers of the car and cash register as a means of identification and also the reading of the three dials on the cash register as well as that on the terminal register. A similar reading must be posted when the conductor leaves the car.

On the face of the daily report are entered, by half-trips, the readings of all the dials on the cash register, the numbers of zone checks inserted in the zone envelopes, and the numbers of passengers on car entering a post-payment terminal. On relief trips the relieving conductor also records the numbers of passengers on his car when he turns it over to the relieving conductor.

State Subsidies for the Street Railway Companies

State ownership and maintenance of the way structure is suggested as a remedy for present conditions and justified by public expenditures for improved highways

By R. W. PERKINS

President the Shore Line Electric Railway Company, Norwich, Conn.

EVERY industry, whether private or public, aside from those that are purely charitable, should be self-sustaining, that is, the revenue derived from its operations should be sufficient to meet the operating needs of the industry and leave a sufficient margin for the investor in order that the new money needed for development and extension may be attracted. This is particularly true in the case of the street railway, for the business is not static. The service it renders tends constantly to develop the community, increase the grand list, as well as the population, and extend the borders of the settlement. These things call for a further investment for extension of tracks, more and better equipment, and added facilities of every nature that can be met only by further capital expenditures.

R. W. PERKINS

That virtually every industry, except the public utilities that come under government regulation and control, has been able to maintain itself as an industry in a healthy financial condition, even though the strain of the Great War, is reason to assume that regulation and control without responsibility is to a large extent the direct cause of the desperate plight in which the street railway industry is now placed. With the natural laws of supply and demand affecting the cost of all material and supplies, with negotiation by intimidation fixing the wages paid, and with the public dictating the selling price of the product without consideration of the cost of production, the industry is forced to violate all the laws that govern every other form of merchandising. The fact, now so generally admitted, that the industry as a whole is threatened with extinction, should satisfy any thinking man that the trouble is not personal or managerial but fundamental.

In a study of the present, or in prophesying for the future of any business, one naturally goes back to the history of the business, if it has a history. Without going back to the genesis of the street railway industry—the old horse car days—we find that the roads have in general been built and extended by a grant from the legislature that gave the corporation the assurance, if not the guarantee, of monopoly of highway transportation. Local franchises, where these govern, were granted with this understanding, for it was then recognized that the nature of the business, and the permanency of the investment necessary to establish it, demanded a monopoly. In order to protect the public against abuse that might perhaps follow, certain restrictions were made in charters, and by ordinance or franchise that were designed to protect the public against abuse of the monopolistic privilege.

The amazing thing in connection with the early development of this great industry is that shrewd business men were willing to accept the risk that accompanied an enterprise deprived by law of the right to conduct its affairs on sound business principles, for it goes without saying that no business can safely obligate itself to continue for an indefinite time to sell its output at a fixed price, unless at the same time its cost of production is in some way permanently fixed. Changes and improvements in the generation and application of electricity during the early days of its application to the street railway industry called for such changes in the industry itself that the costs of service were somewhat clouded. It is doubtful if the business could have survived the pressure from above and below, even though no new form of transportation had come into being to retard its natural growth.

But the constantly increasing use of the self-propelled vehicle, both private and public, has had a most disastrous effect upon the gross revenue of the business, and has increased its operating expense to an extent that is little appreciated by those who are the greatest sufferers; namely, the street car riders. The advent of the automobile produced a demand for improvement in the highways of the state, and this demand met a ready response that resulted in the expenditure by the state of vast sums of money for the almost exclusive convenience and comfort of one class of tax payers, while, because of the operation of laws that should not now apply, another class of tax payers, the car riders, were shouldered with a burden that was never contemplated when those laws were enacted—a burden that bore no proper relation to the ordinary conduct of the business and over which the management had no control. For in the old days of the gravel road the cost of maintenance of the street car company, even though its rails were in the highway, was not materially affected by the action of the highway department of the state or city. But with the adoption of the macadam, brick and concrete modern, so-called, permanent pavement, the maintenance of way instead of being a modest and legitimate item of the operating expense has become an oppressive burden demanding an increase of capital which, in many cases, it is impossible to secure.

Added to this abnormal burden of expense, the state, through its failure properly to regulate and control the automobile passenger bus and freight truck, has violated an implied contract or obligation to the street railways by permitting parallel transportation lines, thus destroying the monopoly originally granted to street railways. And, worse than this, it has actually become a partner in the transportation business that is cutting into the earnings of the street railways to a tremendous extent. This partnership has resulted in direct loss to the state which has been paid out of the general tax receipts of the state.

CAR RIDERS PAY FOR AUTOIST'S WAY

It is an unusual situation that apparently has attracted but little attention, in spite of the fact that in a sense it operates as class legislation, for the State of Connecticut, since 1895, at which time the highway department was established, has expended, up to December 31st, 1918, $24,493,475.30 for the construction and maintenance of trunk line highways, and, in the meantime, its receipts from automobile and drivers' licenses have been but $5,166,673.00. The users of one class of transportation have enjoyed, at the expense of all of the people of the state, an investment of $19,331,402.30. The users of the other class of highway transportation, namely, the street car riders, have been obliged to contribute, through passenger fares paid, a tax equal to an average of about 4.5 per cent of gross revenue, and, in addition to this, have paid a considerable part of the cost of the highways devoted almost exclusively to the use of automobilists. These figures do not include the amount expended within the cities of the State, where the burden of the car rider is much greater in proportion to the total amount involved.

It is a pathetic and almost tragic thing to see cities, by the action of their common councils and the vote of their citizens, plan for highway improvements involving the traction companies sometimes in more expense than that assumed by the city itself and in other city meetings vote to oppose increases in passenger fares suggested by the street railway companies in the hope of securing the funds necessary to produce such results in net revenue as would help them to establish credit and thus secure the funds that the city was forcing them to expend without benefit to the corporation. Had this industry been permitted to observe and follow the natural laws that govern the conduct of other businesses, it is safe to say that it would have protected itself as other businesses have protected themselves by promptly adapting itself to modern conditions, even though this meant abandonment of properties and a diversion of assets to other lines of industry offering greater opportunity. Having been by law deprived of this right, is it not reasonable to demand that the state go just one step further than regulation and control, and assume the responsibility that should always go with regulation and control? That responsibility in this case means income obligation, for since that state has virtually, through its own acts, brought the industry into a condition of bankruptcy, is it not morally bound to re-establish it on a sound basis and restore to its owners the property which it has, through depreciation, confiscated.

The construction, development and operation of the highway transportation properties has had a greater influence upon the commercial, social and economic development of the state than any other single factor. Their continuance in operation is a matter of vital importance to every citizen of the state, regardless of his occupation or residence, for whether he be manufacturer, tradesman, professional man, employer, employee or farmer, he is benefited in some way by the commercial and social circulation which is furnished by these arteries of trade. This fact, while applying to every community, whether served directly or not, is most apparent when the growth in appraised value and population of the towns directly served is compared with those that are not so served.

An individual who deliberately, though innocently, destroys the property of another is holden responsible for his acts, and it would seem that the conscience of an enlightened people should be as sensitive as that of an individual and as ready to correct a wrong. It should be necessary to bring only convincing proof of the wrong. How should this wrong be righted, the investors' rights protected, and this necessary utility preserved for the use of the people?

WHY NOT LET THE STATE OWN THE RIGHT-OF-WAY?

State subsidy as provided for in the Act affecting the Boston Elevated Railway Company recognizes the state's obligation to the creators and owners of the property by guaranteeing a fair return on investment, any deficit resulting from the operation to be made good by general taxation of the community served. But the payment of a deficit is wrong in principle, for it destroys the incentive for efficient and economical management without which there is quite likely to be a letting down of the high standards that prevail where personal advancement and financial gain are the incentives. The same is true of government or municipal ownership, and while economics and morals, in this particular instance, strongly suggest public ownership and operation as expedient, if not absolutely necessary to right a great wrong, is it not possible to retain all the manifold advantages that accompany private ownership and operation with responsible public regulation and control by letting the state own and maintain the right of way of the trolley riders' means of conveyance just as it now owns and maintains the right of way of the automobile riders and the jitney bus riders' conveyance? Is there any real distinction between these several means of transportation except that one is operated for both private pleasure and profit and the other for public convenience and pleasure and private profit but under such conditions of regulation and control that the investment is virtually dedicated to the use and enjoyment of the public at a very low rate of interest return? So low, and accompanied by such risk is this rate that it should be possible to forget the corporation and think only of the trolley rider as contrasted with the automobile rider.

It would then appear that the highway, like the navigable water ways, should be constructed and maintained at public expense for the use and benefit of all the people. The water ways while dredged, charted and maintained at public expense are just as freely used by the freighter and the passenger boat as by the private yacht or pleasure craft. To discriminate and legislate against one class of people and in favor of another is indefensible.

Then let state subsidy take the form of a publicly maintained right of way, let mileage be extended or contracted in the interest of all the people under control of the Public Utilities Commission, in co-operation with the Highway Commissioner, and let the properties continue under private ownership and operation, and under conditions that will remove unfair competition. Repeal laws that are destructive in their effect; add responsibility to regulation and control, or give the owners and operators of this great industry that which is enjoyed by all industries free from the strangling effect of government regulation, the right to conduct their affairs in response to fundamental law, the enforced violation of which has so nearly accomplished their ruin.

The Possibilities in Readiness-to-Serve Fare Schedules

"Readiness-to-serve" charge as applied to fares analyzed—Modifications of "service-at-cost" franchises suggested—Railway fares and central station rates compared

By L. R. NASH
Stone & Webster, Boston, Mass.

THE street railway industry in the United States has been unique in its merchandising methods in that it has offered its wares at a fixed price without regard for the scope of individual sales. The only extended adoption of similar methods is found in our postal service, but in recent years the universal flat postal rate has been limited to very light-weight matter. Furthermore, the business methods of the Post Office Department have never been seriously considered as a model for any sound commercial enterprise.

A flat street car fare was not wholy illogical in the early days of the industry. The distances between homes and business or industrial centers were short, and it seemed to make little difference whether passengers rode all the way between these terminals or not. With the growth of our cities, with more and more widely separated industrial developments, there came of necessity a corresponding extension of car lines, a lengthening of the average passenger ride, and a still greater expansion of transfer privileges. This evolution, together with refinements in service and equipment, paving and other municipal burdens, was so gradual that the industry failed fully to realize the resulting inadequacy and illogical character of the conventional nickel fare until the present period of war disturbances and prices made such realization universally inevitable. The belated efforts of the railways to secure added revenue to take care of increasing costs are recorded on the current pages of history.

A feeling exists in the minds of a number of people, within as well as outside of the industry, that the railways have not yet applied the most effective remedies in their efforts to secure necessary increased revenues. To the extent that this critical attitude is the result of an intelligent study of the effects of fare increases upon revenues and traffic, it should have the careful attention of railway executives. A brief historical summary of experiences with various fare increases, typical of the kinds so far made, may throw some light upon the shortcomings of the past and suggest the direction in which improvements should be sought in the future.

It is not surprising that the first move in the program for increased revenue was a straight increase in the flat fare. The cost of all commodities and labor had gone up. If, with the reduced purchasing power of money, it required 8 cents to buy what formerly cost 5 cents, and if incomes had so increased as to make the 8 cents equally available, the increased flat fare seemed quite as logical as the old 5-cent fare, and it should not have involved permanent loss in traffic. Furthermore, the flat fare has been one of our cherished national institutions and we have boasted of its effect in distributing population through large suburban areas. While this claim is by no means without foundation, it must be remembered that our own cities contain the highest population density of the world, and that fundamental economic laws tend to equalize living costs, so that where transportation costs are high, rents and other factors will be low.

The revenues resulting from higher flat fares have so far been disappointing to a material extent. With only a 1-cent increase, theoretically yielding a 20 per cent increase in revenue, the actual increases have averaged little more than half that amount except in quite large cities. With greater increases in fare the traffic losses have been proportionately larger and, the losses being in short riders, the unit cost of carrying the remaining passengers has increased. With increasing actual as well as unit costs, successive fare increases, even to double the original rate, have been necessary in some cases to cover the full cost of service. This means a very large though not proportional loss in traffic and inconvenience to many former patrons.

The reasons for the large traffic losses are not clear. They appear to be more psychological than economic. Many cases still exist where wages or salaries have not been advanced in proportion to the cost of living, but in others the advances have been greater and general equalization is ultimately to be expected. The practice of many politicians of vehemently opposing needed fare increases and consistently stirring up public resentment against utility corporations has had an important effect, harmful to communities as well as utilities. There is no reason why these and other less-important causes of traffic losses should not in time lose a large part of their effect. In the meantime the losses and inconvenience, for which the public are to a large extent responsible, remain an uncertain and disturbing factor.

In a number of large cities and mixed urban and interurban territories the zone system of fares has been adopted. The economic soundness of a tariff based on distance is not seriously questioned except as to the disturbance in real estate values and other living conditions which follow the substitution of a zone system for a flat fare. Our experience so far with zone fares in urban and suburban service has not been wholly successful. In several cases they have been abandoned after a not very extended trial. There are reasons for thinking that in most such cases the original zone schedules were not properly designed or were based on inconclusive data or were rendered inadequate by increasing costs. The zone system itself has apparently not been primarily responsible for its failures but rather the conditions of its application. In other cases where the application has been more carefully worked out the whole system has been a demonstrated success. A suitable zone fare collection and accounting system of general applicability has apparently not yet been perfected and its lack has had much to do with past failures. The results of the novel system devised by the Public Service Railway of New Jersey will be watched with much hopeful interest. To the extent that the zone fare difficulties lie in the machinery of application rather than in the system itself, there is every reason to suppose that inventive genius will not fail in a reasonably prompt and satisfactory solution.

HIGHER FARES FOR CASUAL RIDERS

Other recent fare systems have sought to avoid the annoyance of odd change for increased urban fares by the combination of a comparatively high cash fare, usually 10 cents, with a lower ticket rate, the cash fares making up whatever deficiency may exist in the ticket rate. This system is not entirely new, although in the past it was generally used to give a ticket fare somewhat less than the prevailing 5-cent cash fare.

As it has been common practice with odd cash fare rates to minimize the annoyance of odd change by the sale of tickets or metal tokens at full price or an approximation thereto, it is evident that another principle is involved in the system just described in which the cash fare is materially higher than the ticket fare. The principle is that of a higher fare for an infrequent patron than for a regular one. That it may be deserving of more than passing attention is indicated by suggestions from several sources that this principle might be more specifically and widely applied to street railway service.

It is at once apparent that if two tickets are sold for 15 cents where the cash fare is 10 cents, as has been done or proposed in several cities, only an occasional stranger or other very infrequent rider will pay the cash fare. A resident who is only a casual rider would usually buy tickets. In order to force the casual rider to pay the higher fare intended for him it would be necessary to sell tickets only in considerably larger numbers, say twelve for 90 cents, this number to be carefully adjusted in each city so that the poor but regular rider would not find them beyond his means to an unnecessary extent. This practice would not differ essentially from that of the steam railroads which sell twelve-ride suburban tickets at about one-half the normal cash fare. All such practice is, however, a makeshift or compromise rather than a definite application of a principle. If a more definite application is theoretically possible and might have practical advantages it should be given careful attention, particularly at this time when the whole question of fares is so unsettled.

RAILWAY AND CENTRAL STATION RATE PROBLEMS COMPARED

Successful precedents involving conditions in some degree comparable should always be helpful in the solution of new problems. In this case we may gain useful suggestions, without going far afield, from the central station industry. This industry is somewhat older than the electric railway and has maintained, particularly in recent years, a higher degree of prosperity. Generally speaking, the central stations started with fixed rates per unit of service and continued them for a term of years covering a very considerable portion of their whole history. The leaders of the industry were not satisfied with its development under these conditions. Much desirable business could not be secured because the rate schedules were not suitable. A careful study of rate theories and structures was made by experts; in fact, such studies are still actively continued by a national organization. It became early apparent in these rate investigations that discrimination was being practiced between customers, that some were paying less than cost, others were paying more, and a large volume of profitable possible business was lost because of inequitable rates.

New schedules of the so-called "demand" form were developed under which extended users paid less per unit than the limited users. The initial rate, for what may be called casual use, was the same for all customers, but for excess use a much lower rate was offered. This form of charge is not essentially different in its effect from the fare schedule already discussed having a combination of high-cash fare for casual riders and low-ticket fare for frequent riders. The demand electric rate served a very useful purpose in developing business and it still retains a prominent place in the schedules of progressive companies. It has complications which have restricted its use, particularly for small business of fairly uniform characteristics to which class rates may be applied. Furthermore, it is to a considerable extent a compromise in that it does not accurately represent the cost of service. For this reason it has failed to reach a volume of large business which the central stations coveted.

Resort was finally had to a still more complicated rate, devised years before by Hopkinson, which could be made to conform closely to costs of the service and to vary with operating conditions encountered in competitive isolated plants. This so-called "readiness-to-serve" rate has brought a large amount of otherwise unobtained business to the central stations and has contributed in very large measure to their success.

L. R. NASH

THE "READINESS-TO-SERVE" CHARGE IN FARES

If the readiness-to-serve form of rate is of such usefulness to central stations, may it not also find some place in electric railway fare schedules? Its fundamental demonstrated advantage to the utility is that an enrolled customer is encouraged to make liberal specific uses of service because of low direct cost. Surely if by some such means the use of street cars can be made an inexpensive habit for those whose need of transportation is reasonably frequent, it should receive most serious consideration.

There are wide differences between central station service and transportation by street cars, and many obvious objections will of course be raised to a readiness-to-serve fare schedule. They include its general complications, the periodical payment of a comparatively large fixed charge at a railway office or agency, the difficulty of distinguishing passengers who are subscribers to the readiness-to-serve plan from the casual riders (which in reality involves a plan to prevent loaning or transferring subscribers' identification cards), the difficulty of checking conductor's fare registrations, and others which would doubtless disclose themselves through an intimate study or trial of the plan.

Assuming for the moment that these objections, admittedly serious, can be successfully overcome, the practical workings of the plan may be further considered. Some discussion of the subject and specific suggestions have already appeared in recent issues of ELECTRIC RAILWAY JOURNAL. They do not, however, conform fully to the principles applied in central station rates of the same form. These rates involve the determination of the investment involved in each unit of customer's demand, the fixed charges thereon and other costs varying with the customers demand, also the costs varying with the units of energy furnished. The rate is therefore a combination of two factors, one a function of the facilities used by or reserved for each customer (kilowatts), the other based upon the cost of the service actually used (kilowatt-hours).

READINESS-TO-SERVE CHANGE ANALYZED

A determination of analagous charges entering into a readiness-to-serve fare schedule would involve the investment in railway facilities per unit of passenger carrying capacity, the fixed charges thereon and other costs independent of the extent of actual use. Supplementing this would be a charge, based on cost, for the passenger mile or passenger haul. The latter charge would probably be so comparatively small that a mileage charge would be an unnecessary refinement for city service.

Actual calculations in any specific case would involve numerous complications and approximations. The investment in or value of the property would be determinable without serious difficulty. With the return to investors, taxes and provision for depreciation there should be included a material portion of maintenance costs and other routine expenses of operation, possibly amounting to 10 per cent of the total operating expense, to arrive at the costs which would continue regardless of the amount of service offered. Under average ordinary conditions considerably less than one-half the facilities offered by street railways are utilized, measured by the ratio of seat-miles to passenger-miles. If this condition is inherent in the nature of the business, it would be logical to include not less than one-half the variable expenses of operation among the stand-by costs and this has been done in recent careful analyses of service costs.

If the normal investment in a street railway is five times its annual revenue, not less than 50 per cent of this revenue will be required for charges independent of the service rendered and, as stated above, at least one-half the balance may also be considered as applicable to stand-by costs. It therefore appears that less than one-fourth of the revenues derived from passenger service are directly assignable to the passenger haul, the balance being largely independent of the actual traffic.

Under conditions permitting a profitable 5-cent fare, only about 1 cent would be paid for service actually used, the balance being wholly for readiness to serve. It follows that a passenger whose riding was an exact average of all passengers could logically enjoy a certain number of additional rides at one cent each without loss to the railway. With the old uniform 5-cent fare, if this average passenger takes an additional ride he contributes 4 cents toward the cost of carrying the casual riders.

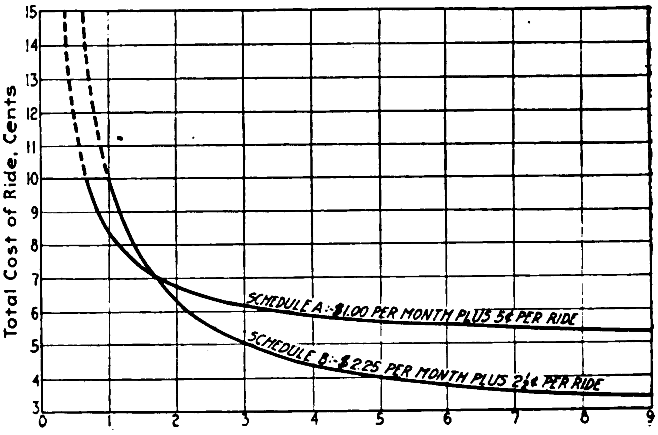
The foregoing analysis is very general and throws no light on the necessary passenger stand-by charge per year or per month to supplement the low haulage fare indicated. To determine this charge it is necessary to divide the total annual stand-by costs by a figure representing the passenger capacity of the system. This might be the maximum number of seats normally available or this number increased by a standing factor, or still further allowance might be made for the diversity which doubtless exists to an unknown extent and which is an important factor in similar central station rate calculations.

FIGURING A "READINESS-TO-SERVE" SCHEDULE

Some typical figures may here be of assistance to illustrate the essential calculations and the limitations on their accuracy. These figures do not apply to any specific railway but are representative of moderate-sized systems not overburdened with paving or other special construction requirements. The investment in such a system will be not less than $1,000 per seat of total passenger car equipment. Allowing for equipment necessarily out of service for repairs or inspection, and for a conventional number of standing passengers, it will be found that the annual fixed charges for return, depreciation and taxes amount to about $100 per annum per unit of passenger carrying capacity of available equipment. This equipment is usually sufficient to accommodate at any one time only about one-fifteenth of the total population in the area served. If every person in the served area used the cars at some time and all subscribed to the readiness-to-serve fare system, the subscription per person, to make up $100 per year per unit of capacity, would be a little over 50 cents per month. But there are many people to whom street cars are accessible who never use them. There are no statistics to indicate the proportion of tributary population which never rides but it is quite large. It is probable that when it has been excluded from the present calculations the monthly subscription to the readiness-to-serve fare system for charges on the investment by the entire balance would be not less than one dollar. With large and expensively constructed systems with a proportionately large non-riding population, the readiness-to-serve subscription might be much higher although greater density of service would tend to offset an increase. The monthly charge so far considered does not cover the entire readiness-to-serve cost, as it does not include that part of operating expenses which are independent of actual traffic. If allowance is made for this additional element of cost, the total charge will be increased by about 50 per cent, making it somewhere near $1.50 per month for systems of moderate size and possibly twice as much for our largest surface railways. The $1.50 charge would be equivalent to about 3 cents per ride for a person who rode twice on each working day.

EXPERIMENTAL DATA ON FARES ARE NEEDED

If, as has been assumed, the direct cost of the passenger haul is 1 cent per mile, the cost for a normal, average haul would be in the neighborhood of 3 cents. If the readiness-to-serve charge for the average rider is added to this, we have 6 cents or more as the total average charge for a ride. This is not far from the present actual cost in many of the smaller cities. In the large cities, which have longer hauls and larger unit investments, both factors in the charge would be higher and their sum might easily reach the 7 cents, 8 cents or more which is found by experience to be the actual cost.



COST OF A RIDE UNDER TYPICAL READINESS-TO-SERVE FARE SCHEDULES

The uncertainty existing in the readiness-to-serve charge calculations, as above illustrated, is so great as to make the problem for the present largely one of experimental determination, complicated by the effect of the casual and indifferent riders who would pay the arbitrary alternative higher cash fare which might not fully cover the cost of their service.

The uncertainties mentioned, the rather high stand-by charge involved, the small change required for the actual cost of the passenger haul, the convenience of a 5-cent fare, the general need of a charge of more than 5 cents to cover the full cost of service, all suggest the compromise ready-to-serve schedule which has been proposed, of a 5-cent cash payment for the haul plus a monthly readiness charge adjusted from time to time to make up the deficit in total service cost. The initial risk in establishing such a system would be comparatively small and a payment of the order of a dollar-per-month readiness charge would not be unduly burdensome to the average rider.

If such a system was successfully established and resulted in a definite traffic stimulus, it might be clearly desirable to take at least one more step toward a true readiness-to-serve schedule, namely, a ticket fare optional with the 5 cents cash, at a rate of six for 25 cents or four for 15 cents, plus a readiness charge more nearly approaching the readiness cost, to make up the balance of the full service cost. If changes in the direction of a lower charge for the haul continued to stimulate traffic, they might be extended indefinitely or until the increase in rush-hour traffic required an unprofitable added investment in equipment not otherwise used. In any case the alternative full cash fare should be not less than 10 cents. This amount would probably not cover the cost of very infrequent rides but the deficits would not be appreciable when spread over the remaining business, and the inexpediency of a possible prohibitive charge to cover actual cost would be avoided.

A diagram is shown herewith more clearly to illustrate the workings of readiness-to-serve schedules. The two curves included in the diagram show the cost of a ride for a wide range of daily use under monthly and haul charges which represent the extremes beyond which it probably would not be expedient to go in actual use. The curves show equal cost at fifty rides per month, and the lines are broken for costs in excess of 10 cents on the assumption that an alternative cash fare would then be effective. If either of these curves represents actual costs with any approach to accuracy, it is quite clear that the very casual rider is an unprofitable one at any obtainable rate of fare.

FARE COLLECTION A SERIOUS PROBLEM

An obvious problem in any such fare system is that of identifying subscribing passengers. The writer does not share in the opinion that it would not be a serious difficulty. Identification has been attempted in connection with transfers but without sufficient success to warrant extended use. Close, extended scrutiny of identification cards is not practicable in connection with expeditious fare collections. A miniature photograph attached to the card, such as required on some railroad commutation tickets, would be effective but unduly expensive and otherwise objectionable. However, it may not be at all impossible to devise some system or combination of sizes, colors, notches, perforations, etc., to accomplish the necessary result.

It is not entirely clear without experimental data that full prevention of transfer of cards would be necessary. If a subscriber to the readiness-to-serve system who had paid to have certain facilities available for his use saw fit to loan them to a friend, the railway might thereby gain a passenger who would otherwise walk, and the subscriber himself could not use the loaned facilities until his card had been returned. But, even if a noticeable increase in traffic resulted from failure fully to restrict the use of cards to their original purchasers, it does not follow that it would be equitable or that revenues would be similarly increased if the charge for the card was fixed, as assumed, on the basis of individual use. If, on the other hand, the cards were issued on a good-for-bearer basis, there might be a further stimulus to traffic in certain directions, but the charge for such a card would necessarily be considerably higher than for an individual card to offset the reduction in number issued, and this higher charge might be prohibitive for a large class of riders who would not find the transferable feature of any advantage to themselves. A possible compromise in the form of a family ticket suggests itself with a monthly rate between that of individual and unrestricted tickets. The rate would necessarily approach that for unrestricted tickets because identification would be impossible. The problem of registration and accounting for fares under this system should not involve insurmountable difficulties if that of identification were successfully solved.

THE CASUAL VERSUS THE REGULAR RIDER

Even if the railways should be able effectively to solve the difficulties in connection with a readiness-to-serve form of fare schedule and the system was acceptable to the riding public as a whole, it should not have indorsement unless it squares with sound economic principles, conforming to "cost of service" rather than "what the traffic will bear." The basic question is as to whether it costs more to haul the casual rider than the regular rider. Casual riders may be divided into two classes as to whether their movements from place to place, regardless of the means, are casual or regular. The latter groups may ordinarily walk or use automobiles, resorting to the cars only in unpleasant weather or under other unfavorable conditions. They are more apt to ride during rush hours than otherwise. The former group, including shoppers, strangers, amusement seekers, etc., may ride at any time but probably much more in off-peak than rush hours. The point may be raised that any casual riding in off-peak hours requires no additional investment in facilities and therefore costs less than the regular rush-hour riding. The facts are that, while certain investment is used only during rush hours the balance is used both in these hours when the traffic density is at its maximum and in the off-peak hours when the load factor is comparatively quite low. The charges on this continuously used investment should properly be spread over the entire traffic which it handles, and the cost per passenger would in equity be highest during the hours of lightest travel.

Except on small systems the facilities furnished are adjusted through headway changes to meet expected travel. Normal rush-hour travel is fairly uniform, while at other hours, when the casual rider is more in evidence, there is more fluctuation and a lower load factor. In other words, the casuals make less use of the service furnished for them than do the regulars, this being true of the casuals as a group regardless of the diversity in individual riding. It necessarily follows that to the extent that casual riding leads to low load factors it also necessitates higher cost both for investment charges and operation. If diversity is ignored and the casual rider is considered as an individual rather than part of a group, his responsibility for costs would appear much greater.

COMPLICATED FARES MAY HAVE AN EDUCATIONAL VALUE

With respect to the second group of irregular car riders, those who ordinarily use other means of travel, it may be stated that they are not only largely rush-hour riders but also there is comparatively little diversity in their riding because of the similarity in their motives or needs for car service. They therefore impose a doubly added demand for facilities which are not otherwise needed, or they impose added burdens upon regular facilities and inconvenience and discomfort upon the riders who regularly use and pay for these facilities. In either case the justice of a higher charge for such use of street railway service cannot be questioned. A charge on the basis of "all the traffic will bear" would naturally be favored by both railway officials and their regular patrons for those casual riders who ordinarily and preferably use automobiles. It appears from the above reasoning that a higher fare for all casual riders is justifiable.

The electric railway fare problem of the past was primarily one of expediency and simplicity. In the very early years the promise of liberal profits made refinements seem unnecessary. In the later years, when railway executives realized such profits were dreams rather than reality, the public had come to regard the fixed flat fare as an inalienable right. The eradication of this idea is essential to the life of the industry. It may be brought about through systematic publicity regarding railway finances by which the public will become familiar with their complicated character and through service-at-cost franchises or other modern methods of regulation under which fares are systematically adjusted to cost. The closer the adjustment, the greater will be the departure from the rigid simplicity of the past. Other classes of public service have successfully handled constantly increasing complications in their rate structures. It is not improbable that the complications themselves and occasional minor adjustments therein have aided in establishing confidence in the justice of the rates as a whole.

The suggestion is made that in some of the various service-at-cost franchises which will doubtless be negotiated in the near future, a trial might be made of the readiness-to-serve fare schedule by establishing a fixed full cash fare of, say, 10 cents and a fixed fare for a ride by readiness-to-serve subscribers of 5 cents, leaving the automatic feature, characteristic of such franchises, to apply only to the monthly readiness subscription. There would be a definite psychological advantage in such an arrangement. A large part of the difficulties and loss in traffic occasioned by fare increases lies in the frequency with which the passenger is confronted with the fact of the increase. Daily, whenever he boards a car, he is irritated by the odd change or special tickets which have taken place of the time-honored nickel. The monthly payment of a higher electric light bill does not worry him much more than the higher grocery bill, although the professional politician will maintain that he is being robbed in the former case. A similarly complacent frame of mind would logically attend the monthly payment of a possibly variable subscription to the excess cost of his street car service over the old established standard and his daily contact with the problem of the increased cost of living would disappear, as far as street cars are concerned. It is believed that too much emphasis cannot be placed upon the psychological aspects of the fare situation, and any fare system which recognizes them should receive consideration.

The Need of the Hour

IN THE PRESENT PERIOD it is necessary that we as operators be allowed the greatest latitude in devising ways and means for bringing service into proper relation with the cost and cost into relation with the service—that we be allowed to experiment with modifications of service, with various systems of charges and fare collection and with the many ingenious devices which have been suggested for reducing the cost of operation and consequently lessening the burden of fares imposed upon the car riders.

—JOSEPH K. CHOATE *in an address before executives of electric railways of the New York Electric Railway Association, Syracuse, N. Y., Sept.* 18, 1919.

The Collection of Odd Street Railway Fares

The speed of their collection is greatly increased by the proper design of car—The sale of tickets at reduced rates is also helpful—Ten-cent fares often justified

By R. T. SULLIVAN
General Manager Mahoning & Shenango Railway & Light Company, Youngstown, Ohio

THE collection of any street car fare, whether 5, 6 or 7 cents or more, interests railway operators from two angles. One of these is the convenience of collecting the fare, or, in other words, the separation of the fare from the passenger with the greatest ease to the passenger. The other is the efficiency of the collection or the turning over to the treasury of the maximum number of exact fares from passengers carried. It is not the purpose of this article to discuss the question of the reasonableness of any particular fare, although it is difficult to treat the subject of odd fares without some consideration of what is a reasonable fare, especially since the choice of an increased fare should be made with full consideration of the two aspects mentioned above, as well as of the increase desired in receipts.

R. T. SULLIVAN

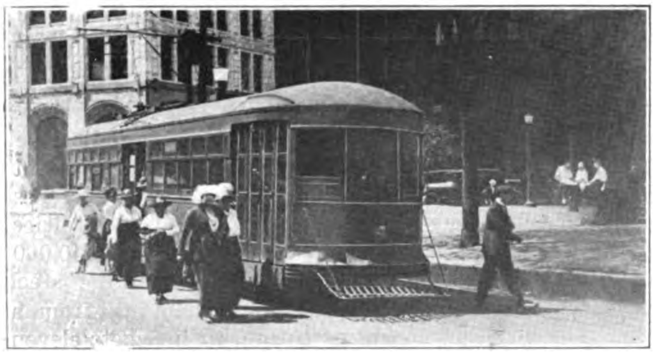
The problems of collecting odd fares unfortunately are presented at a time when the methods of collecting even a straight 5-cent fare are far from perfect. In consequence, it is not possible to consider any standard method for the collection of 5-cent fares as one to be followed in collecting odd fares.

Odd fares have been effective on a large number of properties for periods of such length that certain phenomena are self-evident and need only be mentioned. Thus, it has been found that any fare higher than and replacing the 5-cent fare has caused a reduction in traffic. The extent of the reduction has been dependent upon the class of traffic, average length of ride, amount of service, feeling in the community for or against the utility, the type of publicity campaign preparatory to making the fare effective and the financial ability or disposition of the railway company to make some noticeable expenditure in the community where the fare has been raised.

There are several communities that have experienced a year or more of higher fares, but this includes the period of the influenza epidemic of 1918, thus impairing the value of any statistics that can be cited as indicative of the true effect of higher fares. The 6- and 7-cent fares, as previously mentioned, have caused decreases in traffic which have not been the same even in cities of the same size. One city of approximately 50,000 inhabitants, most of whom are engaged in the steel industries, when changing from a 5-cent cash fare, with tickets eleven for 50 cents, to a 6-cent cash fare, with tickets eleven for 60 cents, experienced a 17 per cent increase in revenue as compared to the previous month. The increase declined monthly and gradually for a period of six months, at the end of which time no increase was shown. Then the conditions changed, and inside of two months there was a 15 per cent increase. This was in September, 1918, when the influenza epidemic occurred and heavy decreases were shown for three or four months. However, after a period of one year, there were increases of from 18 to 20 per cent. Some of this increase might have been experienced regardless of the fare, but it would indicate that from a psychological standpoint the antipathy against higher fares wears off with time. Therefore, it would seem that the riding habit under a 6-cent fare tends to reach the same value as under a 5-cent fare with the progress of time and provided a proper provision has been made to make the collection of fare as convenient as possible for the passenger.

In another community of 40,000 population the fare was increased from 5 cents cash to 7 cents cash, with tickets sold six for 40 cents. It was estimated that tickets would constitute 15 per cent of the total paid passengers and that riding would decrease 15 per cent, producing an increase in revenue of 18 per cent. The figures for the first month of the increase show an actual increase of 18½ per cent. This increase has varied somewhat during the first year and has ranged between 14 and 18½ per cent. In this particular instance the variation of increase in revenue was not as great as in the case of the 6-cent fare, but in the latter case the average haul per passenger was not as great as in the community operating under the 7-cent fare. In the 6-cent fare community, the average haul was approximately 1¼ miles, a distance so short that, under good weather conditions, traffic would naturally decrease when the higher fare became effective.

The City of Youngstown operated under a 5-cent cash fare with a 1 cent charge for transfers from Jan. 15, 1919, to July 1, 1919, at which date the fare became 6 cents cash with tickets sold nine for 50 cents. On Aug. 1, a 7-cent fare became effective, with tickets sold eight for 50 cents. The transfer charge was retained with both increases.



UNLOADING MOVEMENT FROM PETER WITT TYPE OF CAR AT CENTRAL SQUARE, YOUNGSTOWN

Although the 6-cent fare was in effect for only one month, some interesting comparisons can be made. The increase in receipts amounted to 8.4 per cent, with a decrease in paid passengers of 6.45 per cent. It had been estimated that 50 per cent of the passengers would use tickets and therefore the theoretical average fare would be 5.775 cents, or an increase of 15½ per cent. At the time that this article is being written August figures only are available for comparing the results with the 7-cent fare.

During the first week of the 7-cent fare, increases were shown of 5.63 per cent over the 6-cent fare and 15.8 per cent over the 5-cent fare. The second week produced an increase of 14.2 per cent over the 6-cent fare and 22 per cent over the 5 cent fare. The paid passengers for the first comparative week of the 7-cent fare decreased 7.9 per cent as compared with passengers under the 6-cent fare, and 12.2 per cent as compared with the passengers under the 5-cent fare. In the second week of the 7-cent fare, the paid passengers showed an increase of almost 1 per cent as compared with the 6-cent fare and a decrease of 7.3 per cent as compared with the 5-cent fare.

From this it is apparent that after the 7-cent fare had been in effect two weeks the paid passengers were equal in number to those carried under the 6-cent fare, and when it is considered that the 6-cent fare had been in effect only one month and therefore afforded little opportunity for traffic to regain its former value, it is evident that gradually the riding habit will increase and the paid passengers will be equivalent to those carried under the 5-cent fare. On the assumption that 50 per cent of the passengers would use tickets, the theoretical increase of the 7-cent fare over the five is 32½ per cent. The actual results for the two weeks of this 7-cent fare has been 22 per cent. Since the 7-cent fare followed the 6-cent fare after a period of one month, the effect upon decreased riding was no greater than under the 6-cent fare, and while it is true that if the 7-cent fare had followed a 5-cent fare the decrease in riding would be greater, the same effect did not occur under the circumstances of this case. Moreover, I believe that the fact that the change occurred automatically according to the provisions of the service-at-cost franchise was another reason why the decrease under the 7-cent fare was no greater than actually resulted. There was an entire absence of agitation and comments when the fare increased from 5 to 6 cents and from 6 to 7 cents.

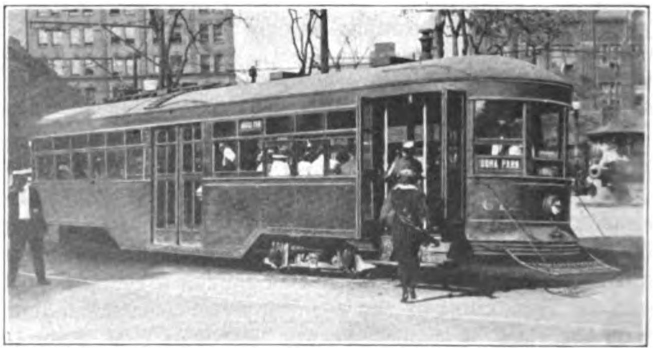
Previous mention has been made of the fact that a penny charge for a transfer was made under all fares. The use of transfers did not vary to any great degree for any one of the various changes in rates. This is another proof that it is the short haul passenger who is affected by an increase in rates. The percentage of transfers of total passengers under the various rates was as follows:

Fare	Per Cent
5 cents	17.1
6 cents	18.0
7 cents	19.0

TICKETS INCREASE RIDES

With the 5-cent fare there was little call for tickets, but with the arrival of odd fares, tickets seemed to be a matter of both convenience and necessity. Moreover, if the inauguration of higher fares can be accompanied with the sale of tickets at reduced rates, much of the popular feeling against street car companies and against the higher fare largely disappears.

On our own property we have had experience both where tickets have been sold upon the cars and where they have been sold only at ticket offices and certain stores. In the former case the percentage of tickets to total paid passengers has been over 30 per cent and in the latter case the percentage has been only 10 per cent. This condition applies to two cities of approximately the same size, namely, 50,000 population. In the City of Youngstown which passed from a 5-cent cash fare to a 6-cent fare, with tickets sold at the rate



PASSENGER BOARDING PETER WITT CARS AT CENTRAL SQUARE, YOUNGSTOWN of nine for 50 cents, the percentage of tickets to the total number of paid passengers for the one month was 45. In this case tickets were sold upon the cars, as has been a custom in Youngstown for several years. With 7-cent fares, the percentage of tickets to the total paid passengers was 52.5 per cent, an increase of 12 per cent in the actual number of tickets used as compared with those used under the 6-cent fare. The average fare per passenger for the 6-cent fare, including transfer, was 4.95 cents, and for the 7-cent fare was 5.55 cents.

The sale of tickets upon the cars is an application of a principle of selling transportation. The possession of a ticket by a street car patron is apt to increase his inclination to ride more than if he did not have a potential ride in his pocket. With the collection of odd fares, some passengers with the intent of getting by the conductor without paying full fare, have dropped in pennies of a less number than the proper fare. The number of such passengers probably do not constitute a very high percentage of the total carried, but in view of such possibility the greater the encouragement for the use of tickets the fewer the opportunities there will be of dropping short fare in the fare box. The sale of tickets in multiples of 25 cents will tend to increase their use. This is because there is a decrease in the riding habit with the adoption of an odd fare.

It is interesting to know whether tickets are used more in rush-hour traffic than in the off-peak periods. In an effort to find the exact condition, a check was taken on one line where tickets were sold eleven for 60 cents. Results are given in the tabulation below, where total ticket passengers, total paid passengers and the per cent of tickets to the total are shown for hourly periods:

TABLE I—SHOWING PERCENTAGE OF TICKET PASSENGERS AT DIFFERENT HOURS

Time	Ticket Passengers	Paid Passengers	Per Cent Tickets of Total
5 to 6 a.m.	6	22	29
6 to 7 a.m.	22	177	12
7 to 8 a.m.	33	212	16
8 to 9 a.m.	23	203	11
9 to 10 a.m.	21	148	14
10 to 11 a.m.	12	169	7
11 to 12 a.m.	20	166	12
12 to 1 p.m.	33	193	7
1 to 2 p.m.	28	202	14
2 to 3 p.m.	13	152	9
3 to 4 p.m.	16	219	7
4 to 5 p.m.	19	235	8
5 to 6 p.m.	59	378	16
6 to 7 p.m.	25	259	10
7 to 8 p.m.	18	256	7
8 to 9 p.m.	13	235	6
9 to 10 p.m.	4	254	2
10 to 11 p.m.	30	247	12
11 to 12 p.m.	11	305	36
	406	4,129	10

The falling off in ticket riding during the off-peak hours, indicated by the above table, lends great interest to experiments being carried on to stimulate off-peak riding by issuing weekly passes at a fixed sum good for off-peak hours.

For the collection of odd fares the Peter Witt type of car has a decided advantage over the double-end pay-as-you-enter type. The reason for this is obvious. The collection of an odd fare undoubtedly involves more time than the collection of the 5-cent or ticket fare, and with the pay-as-you-enter type, with the conductor stationed near the entrance, some congestion is unavoidable. With the Peter Witt car, the front portion of the car serves as a huge platform, enabling the ready entrance of a large number of passengers before the congestion of fare collection starts. As the car proceeds with a rush-hour load, half of the fares have been collected, and it has been observed that as the rest of the passengers in the front portion of the car unload, no greater delay has been experienced than with the 5-cent fare. At heavy points of unloading also it has been noted that the passengers pass from the car as rapidly as with the 5-cent fare. Statistics of passenger interchange time for Peter Witt and double-end car are given in Table II and III.

FARE BOXES AND TRANSFERS

There has been a serious question as to whether a fare box was efficient in collecting odd fares. It has been claimed that with the collection of odd fares it has been impossible with heavy loads for a conductor to observe whether all passengers drop in the exact fare. To determine the correctness of such a contention observations were made on a car operating in rush-hour traffic where a total of 340 passengers was carried in three trips. Two checkers were assigned to the car so as to guarantee correct data. It was found that 229 tickets and transfers were collected during this period, leaving a total of 111 passengers on board of the car for whom there should be 6 cents each. Therefore, the cash in the fare box should have been $6.66. Actually, the amount of cash was $6.59. This difference of 7 cents might have been a case of one passenger getting by and another depositing one cent short, or the entire amount might have been distributed among several passengers. On the basis of this test, the efficiency of collection was 99 per cent.

PASSENGER BOARDING PETER WITT CAR AT CENTRAL SQUARE, YOUNGSTOWN

The fare box is surely a very convenient method of collecting the fare so far as the passenger is concerned. If he has the exact fare, either in cash or in tickets, he has only to deposit it in the box, and there is no delay such as occurs when there is a physical transfer of the fare to the conducter.

Transfers should be issued with the smallest delay, therefore the design of the transfer should be such as to make this possible. The form of transfer which seems preferable for this purpose is the one upon which it is necessary to punch only the time at which the transfer will be good. The transfer points at which the transfer is valid are printed upon the back of the transfer. With such a transfer a conductor at the beginning of this trip can generally estimate the number of transfers to be issued and upon them can punch the proper time. Thereafter, the only operation required in issuing the transfer is its presentation to the passenger.

The title of this article indicates that its scope is limited to odd fares, but the discussion will inevitably bring about the thought, why should there be odd fares?

TABLE II—TIME OF PASSENGER INTERCHANGE ON PETER WITT CAR, WITH COLLECTION OF 7-CENT CASH FARE AND TICKETS SOLD EIGHT FOR 50 CENTS

Time of Trip	Total Time in Seconds	Passenger Movement	Interchange per Passenger in Seconds
2:12 p.m.	283	202	1.40
2:38 p.m.	95	46	2.06
3:04 p.m.	223	162	1.38
3:30 p.m.	207	162	1.28
4:38 p.m.	151	114	1.32
5:04 p.m.	224	176	1.27
5:30 p.m.	253	204	1.44
5:56 p.m.	321	278	1.14
6:22 p.m.	84	60	1.40
6:48 p.m.	153	104	1.47
	1,994	1,508	1.32

NOTE—Tickets constitute 52.5 per cent of total paid passengers, and transfers 19 per cent of total passengers.

TABLE III—TIME OF PASSENGER INTERCHANGE ON DOUBLE-END CAR

Time of Trip	Total Time in Seconds	Passenger Movement	Interchange per Passenger in Seconds
3:24 p.m.	93	46	2.04
3:48 p.m.	95	52	1.83
4:12 p.m.	192	68	2.82
4:36 p.m.	108	78	1.38
5:00 p.m.	306	156	1.74
5:24 p.m.	125	58	2.16
	919	458	2.00

Fares on inbound trips are paid as passengers enter and on outbound trips a passengers leave the car.

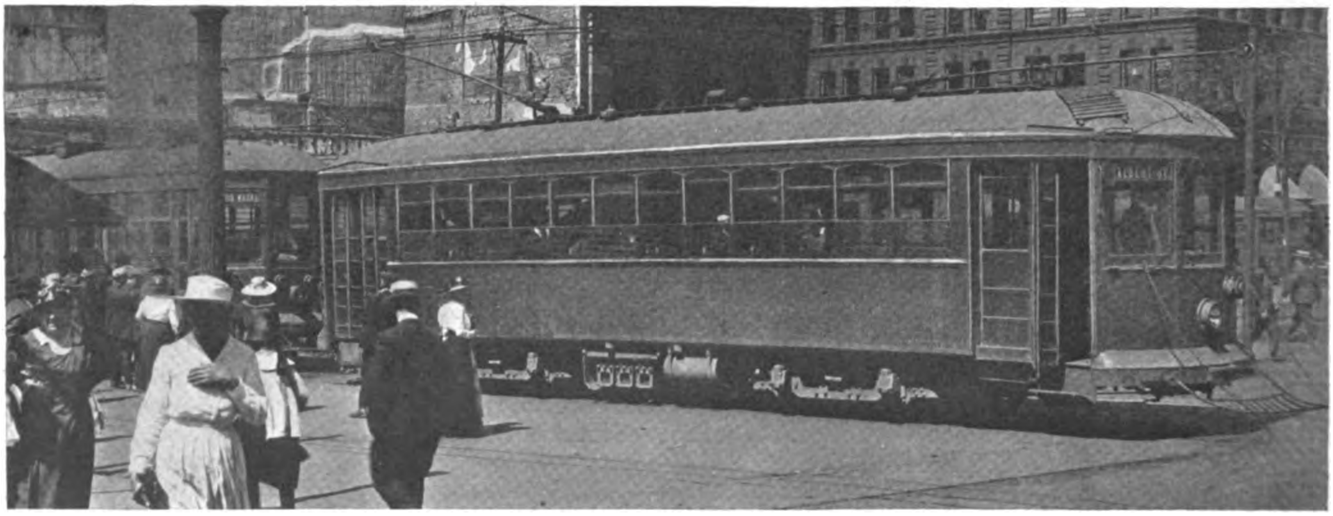
Time of passenger interchange on double-end car......	2.00 seconds
Time of passenger interchange on Peter Witt car......	1.32 seconds
Increase per passenger with double-end car.........	0.68 or 51.5 per cent

The end of high operating cost is not in sight as long as there is a prospect of increased trainmen's wages, and as operating costs are now double those existing in 1914 it follows that 6- and 7-cent fares are not going to provide the necessary revenue except under the most favorable circumstances. The only traction companies that can survive under a 5-cent fare, 6-cent fare, or even a 7-cent fare, are those which under prewar conditions could have maintained successful operation under a 3- or 4-cent fare. Inasmuch as no substitute has been found for street railway facilities, civic authorities must recognize the justice of a fare that will not only pay for the service rendered but will enable the utility properly to maintain its lines, provide for extensions and protect the capital investment.

In a great many cases such a fare will be 10 cents and not an odd fare. Psychological reasons have been the chief cause of decreased riding with the adoption of higher fares. One of the reasons is simply hatred and distrust of public utilities. A second reason has been that the passenger feels that the spending of an odd fare has been equivalent to using 10 cents, inasmuch as the breaking of the dime has practically destroyed its purchasing power. If there is any merit to the view that the last reason has had any effect, the effect in decreasing riding following fare increases after the first raise up to 10 cents should be less marked.

When a company that has been compelled to adopt a 6- or 7-cent fare must reduce service, skimp maintenance and refuse extensions on account of inadequate revenues, the result from every standpoint, both of the public and the company, must be less satisfactory than if it had squarely faced the issue and demanded a 10-cent fare, at the same time providing the service that formerly went with the 5-cent fare. Ten cents will be a fare of such convenience for both patron and railway company that if operating expenses should subsequently decrease, I believe there would be a preference for more service rather than a decrease to an odd fare with the inconvenience of handling pennies, the delay in change making and other difficulties of an odd fare.

This 10-cet fare condition might be termed visionary, but if the public is convinced that the service rendered must be in direct proportion to the fare paid, I believe it will prefer maximum service for a convenient fare rather than odd fares and skimped service.



TESTS ON THIS DOUBLE-END CAR HAVE SHOWN THAT THE TIME OF PASSENGER INTERCHANGE WITH IT WAS OVER 50 PER CENT GREATER THAN ON A PETER WITT CAR

Advantages of Higher Schedule Speeds

They are of benefit to both the company and to the public — What the railway company should do and how the city officials can help to secure the desired results

By JOHN A. BEELER
Consulting Engineer, New York City

FEW electric railway operators realize how completely their prosperity is dependent on their schedules. It is a fact that schedules may either make or break a company. Earnings come in by the car-mile and expenditures go out by the car-hour. A failure to keep these fundamentals in mind may defeat what otherwise would be a successful management.

JOHN A. BEELER

Volumes might be written concerning the advantages of higher schedule speeds. The subject has been approached from various angles, but always with the same conclusion: that the schedule speed should be as high as possible consistent with the safe operation of the cars. But the tremendous advantage to be gained through the higher speed is rarely brought out.

The best way of illustrating the subject is through a concrete example. The following tables relate to two systems of similar size, doing the same business, but with different schedules. They may be known as A and B. Their principal statistics are given in the first table in this column.

These systems so far are identical. Their trackage, earnings, and wages are the same. The two would stand on the same plane as to ultimate results were it not for the difference in their schedule speeds, which from now on is the controlling factor in the operations of the two systems. (See second table).

	A	B
Miles of track operated................	40	40
Car-miles per annum..................	2,857,000	2,857,000
Gross earnings	$1,000,000	$1,000,000
Earnings per car-mile.................	35c.	35c.
Earnings per mile of track............	$25,000	$25,000
Average trainmen's rate per hour......	50c.	50c.

While the car-mile earnings are the same as shown before, note the effect of the difference in speed on that most vital factor, the earnings per car-hour. The largest single item in operating expense today is trainmen's wages. After this item ($1 per hour for two men) is deducted, system A has left $1.45 to pay all other operating expenses and fixed charges, while B has $2.68, or more than the entire receipts per car-hour in the former case. The resulting operating ratios are respectively 90 per cent and 60 per cent. System A has but 10 cents of each dollar of gross receipts left, while in the case of B 40 cents or four times as much remains after operations that is available for interest and other charges.

	A	B
Speed, miles per hour.......................	7.0	10.5
Expenses per car-hour......................	$2.20	$2.20
Earnings per car-hour......................	$2.45	$3.68
Operating ratio	90%	60%

HIGHER SPEED REDUCES INVESTMENT ALSO

Neither in the amount of fixed charges to be paid are the two roads on a par, although the interest rate is the same. While both systems operate the same amount of trackage and the same number of car-miles, the slower speed of A necessitates the use of more cars to provide an equal amount of service. This in turn requires a greater investment not only for cars but also for car house, shop, and plant facilities, greatly increasing the interest, depreciation, replacement and overhead charges generally. This is shown in the investment table in this column.

From the above it is seen that system B is doing as much business with sixty-six cars as A is doing with 100. In one case each car has annual gross earnings of $15,000 and in the other but $10,000; consequently, the more extensive plant required by the slower schedules of A make an investment of $4.50 for each dollar's worth of annual business, while B with its better schedules has but $3.50 invested. B is thus given a further advantage in interest charges of 6 cents on each dollar of income, which alone will equal $60,000 annually for the system.

	A	B
Number of passenger cars required....	100	66
Total system investment..............	$4,500,000	$3,500,000
Investment per dollar of business.....	$4.50	$3.50

The financial difference between the two roads is summed up in the condensed operating statements below:

	A	B
Gross earnings	$1,000,000	$1,000,000
Operating expenses	900,000	600,000
Net earnings from operation	$100,000	$400,000
Interest on investment:		
Six per cent on $4,500,000	270,000	....
Six per cent on $3,500,000	....	210,000
Surplus	....	$190,000
Deficit	$170,000	....

Thus after providing for all outgo one system shows a huge deficit and the other a splendid surplus. One is prosperous while the other is in the hands of a receiver. It must be remembered that these roads and the volume of business done by them are identical, the difference being entirely in their schedules and the effects resulting therefrom.

In some cases an even greater difference between two roads similarly situated will be found. A large portion of the public desire more rapid transportation. Even comfort seems to be a secondary consideration to many. This is seen in the survival of the jitney evil in many places even at the same rate of fare. People will put up with all kinds of inconvenience and poor service because they are taken to their destinations quickly. This will naturally result in greater receipts for a fast line than for a slow one. Higher schedule speeds have the effect of increasing the per capita earnings, and so of making the property more prosperous.

It may appear difficult to understand how there can be such a wide difference in the speeds of two different roads. A and B represent the two extremes of operation found in city service. One maintains exceptionally slow schedules, the other exceptionally fast. Extremes have been selected purposely to illustrate the vital importance of this subject.

MANY OPERATING EXPENSES, BESIDES WAGES, ARE LOWER PER CAR-HOUR WITH HIGH SPEED

The expenses per car-hour, on the other hand, are practically the same on the two systems. The wages, which comprise by far the largest single item, are identical. Since the higher speed in road B is largely due to the fewer stops and less running on resistance the power is slightly less in spite of the higher speed. Every stop eliminated saves almost one-half pound of coal. A car operating on the full running points takes nothing like so much as one running on resistance. The track maintenance is virtually the same in the two cases, as the maximum speed has but a limited effect unless the track is in very bad shape. The car maintenance, however, is very largely increased with the added stops and resistance running, due to the increased wear and tear on the brake shoes, trucks, armatures, controllers, doors and car bodies.

While it appears almost paradoxical, the accident cost for the high-speed road is less per car-mile than for the slow one. This same condition has been borne out on other roads that have reduced the number of stops and increased the schedule speed. Figures from Philadelphia show that the introduction of the skip stop there caused a decrease in accidents. My experience as an operator showed that there was a 50 per cent decrease in accidents when the speed was increased from 8 m.p.h. to 10 m.p.h. The slow, halting progress of cars in some cities tends to make for carelessness on the part of public and employees, while fast movement requires the motorman to be on his toes, with his hands on the controller and brake and his eyes watching the track. He is the first one to get hurt in the event of a collision, and naturally the higher the speed the more he will be on the lookout to avoid accident.

Because of the smaller investment, and smaller number of cars and of employees on road B the items of general expense are lower. Taxes and insurance are also less. On the other hand the items of general expense will be divided by a smaller number of car hours, so that the various items of operating expense offset each other, resulting in the same cost per car hour in the two cases.

HOW TO GET INTO CLASS B

For the average street railway system the question today is how to get out of the class of roads in the condition of A and get into the B class. The problem is much more difficult than might appear at first glance, in fact, so much so that the manager usually makes a few attempts, excites the opposition of the public and the employees, and gives up in despair. True, there are physical limitations on some properties that make it impossible to operate at as high a schedule speed as on others. Very frequently, however, many of these physical handicaps are the result of custom and can be overcome or greatly minimized by various means.

The manager of a property will find that the limitations to speed fall into a few general classes. First of all he should see that the mechanical condition of the various elements is such that higher schedule speeds are possible. The track must, of course, be in such condition that it is not necessary to reduce speed on account of its poor condition. This does not necessarily mean that large additional amounts must be spent on track maintenance for the purpose, but that the track should be kept in the proper condition to insure safe operation and give normal maintenance costs.

It is in the equipment that the most can be done to make higher schedules practicable. Usually a system of any size will have a number of different types of equipment, with different motors and with varying speed characteristics. On some properties these different types are used indescriminately. The simplest move that can be made is to segregate these different cars by routes so that the slow cars can be placed on lines incapable of high speed and keeping them separate so far as possible to prevent them holding back the faster cars. If new cars are to be purchased, the fetich of "local conditions" should for the moment be forgotten, and a standard type of car designed along modern lines, and capable of faster schedules, should be selected. Frequently changes can be made in the steps and doors that will make for faster loading. Automatic devices for opening and closing the doors, and for signaling the motorman, will aid in reducing the dead time. A study of the gear ratio should be made to see if all that is in the motors is being obtained. Doubtless when the manufacturer furnished the motors they were properly selected for their work, but perhaps a few years have changed conditions. The cars may even be on different routes or on different service from that which they were originally chosen. Frequently attention to this item of gear ratio will make it possible not only to speed up the schedules but to save power at the same time.

Having done everything possible with the mechanical features of the property, the next is to utilize them to the fullest advantage in the construction of the actual time-tables. At this point is the greatest chance to save or lose money. The bane of most companies today is excessive layovers. Often two or three cars will be found at the end of each line, ostensibly to "protect the headway," but more frequently they are an ill-advised concession to labor. This practice saps the prosperity of the company and ultimately will affect the employees adversely. Superintendents and others in authority should see to it that this important phase of the subject is understood and appreciated by the employees. Then, too, it is frequently possible to reduce the actual running time. Faster acceleration and braking, less running on resistance and wasted time all along the line, will permit of tightening up the schedules a minute here and a minute there, always with the same beneficial result.

MUCH BENEFIT FROM PROPER TEAM WORK

In this work the Instruction Department will necessarily play a leading part. In the past far too little attention has been paid to the instruction of the trainmen for best results. The conductor is shown how to take in the money and get it safely to the treasurer, and the motorman how to apply power and brakes to get the car over the road without accident. But the fine points of the game are seldom brought to the attention of the men. The value of the second should be brought out forcibly, and methods discussed and explained for reducing the waste of time. The two men on the car must work together. The motorman must be alert and on the job. He must take advantage of every opportunity to keep his car moving. The conductor has a much larger influence on the schedule than is generally recognized. He can assist by always being ready when the car stops, opening the doors promptly, announcing the route, making change quickly, getting the passengers past him into and out of the car. Then he should not waste any time in giving bells to the motorman, and should always give a sharp, clear signal that will not have to be repeated. While the car is moving he should call the streets, prepare transfers, make up his trip record, and so at the end of the line be ready to turn the car around for the return trip.

The passengers, too, can do their share by moving quickly, having change ready, asking for transfers promptly, and getting near the exit door when ready to leave instead of waiting until the car stops. Moving away from the doors to prevent congestion will also be found a great aid in reducing running time. When the employees and public are brought to realize that these things have an effect on car fares and on wages a long step will have been taken toward better schedules.

The greatest assistance of all in the establishment of faster schedules can come from the authorities. Their co-operation may assist in many ways. During the war the railways were given the assistance of the Fuel Administration to reduce excessive stops through the medium of the skip-stop. In some cases the introduction of skip-stops was unfortunately arranged, so that the antagonism of the public was aroused. Where the skip-stop has been properly installed there has been little or no complaint; but in some cases a careful study was not made, with the natural result that on the cessation of hostilities the public demanded the abolition of the system. Even where it has been abandoned attention to the present crisis may call for a reconsideration and introduction of the skip-stop, perhaps in a modified form. Even where the skip-stop cannot be re-installed *in toto*, attention should be called to the matter of unnecessary stops. In almost every city will be found locations, especially in the congested business section, where stops are poorly placed and where a little attention to the matter may result in the elimination of from one-fourth to one-half of the stops. In such a locality the elimination of a few stops may be worth much more than the elimination of many stops in the suburbs, for in the first case all the cars on a main artery will be affected, while in the other a comparatively few cars will be concerned. Then, too, in the business district nearly every car will make all stops, while in the suburbs the cars frequently pass by a number of stop locations.

Stops in the downtown district are often poorly located. Cars may stop in locations where they will block other cars, vehicles, or pedestrians. This is especially true at junctions. By making the stops outside the junction the delay will be materially reduced.

PLATFORMS AID TO SPEED UP LOADING

Loading platforms and safety zones can be used to great advantage in speeding up the movement. Platforms should be very generally used at heavy loading points where the street is wide enough to permit. In fact, the possibilities of loading platforms have not as yet been fully appreciated. They have a marked effect in speeding up the time of loading and unloading. They reduce street congestion and prevent accidents.

Where platforms are not possible, safety zones may possibly be employed at certain periods of the day to assist in loading. It may be said, however, that if there is room in the street to permit of safety zones during the hours of maximum traffic, when vehicle congestion is usually most acute, there seems little reason why they should not be made permanent and become raised loading platforms.

The greatest assistance from the authorities can be obtained in the regulation of street traffic in general. As the street car is the vehicle of the many, while the automobile is the conveyance of the few, the street car should be given precedence generally at street intersections. This principle should be brought out forcibly before the police departments in all principal cities, as it has a tremendous influence in speeding up the cars. When the congestion at the street corner is acute a great deal can be done to speed up the cars and traffic generally by the elimination of left-hand turns for vehicles. The left-hand turn in some cases is almost a menace to the safe handling of the traffic, and getting rid of it makes the life of the traffic officer much more endurable.

On downtown streets the cars are frequently slowed down by the unlimited parking of automobiles and other vehicles, particularly where the street is narrow. It is not possible to eliminate all parking in the business districts, as the occupant of a building is entitled to free ingress and egress, but there are limitations to the use of the streets for garage and storage purposes that should not be forgotten. During the rush hours especially the streets should be reserved for the free movement of traffic. On the busiest thoroughfares the parking should be limited strictly to that necessary for the conduct of business.

One-way streets may be resorted to in order to reduce congestion, but their use is limited. With single-track lines they may become necessary, but otherwise it is usually well to confine their use to the narrower streets at right angles to the car tracks.

All-in-all, the entire subject may be summed up in one word: co-operation. Only in this way can the result so sorely needed by the street railways be obtained, and it matters not the exact form in which it is desired.

Business Follows Service

Service means giving the people what they want when they want it—The safety car meets the requirements when it provides fast, frequent and safe transportation

By E. M. WALKER

General Manager Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.

THE past few years have given to us all an experience of conditions we never knew before. The war suddenly compelled us to revise our ideas as to some industries which we had come to think were indispensable, teaching us that they were non-essential. We have passed through a period when the pruning-hook has been beaten into a sword. Industries have been bent to the uses of warfare. As a consequence of the waste and devastation of war, a great change has intruded itself into the relation between buyer and seller. Catering to the buyer has seemed at times to become a forgotten art in a state of the existence of more buyers than sellers. It has become a question of not what is the price, but have you got the goods and can you deliver them? It is no wonder that under such conditions, service has often given place to dis-service.

But the order will again change to its normal routine, just as readily as it was upturned. People will have to be served, and they will depend upon each other for service just as much as in the past. The buyer will again learn to "beware" that he is getting not only goods but service. As it used to be in the good old steady comfortable days, the seller who sells service along with his merchandise will be rewarded with business.

E. M. WALKER

Perhaps no single industry has felt so keenly the effect of the hard conditions of war as that of city street railway transportation. The fixed rate of fare, declared by many experts to be a psychological necessity, the lengthened ride, the higher cost of power and of equipment, and lastly, the rise of platform wages to figures never heretofore deemed compatible with the fixed rate of fare—all have combined to increase the difficulty of making both ends meet. In many cases, even with increased rates of fare, it has become impossible to maintain operation, and the struggle has been given up.

Now, can we determine whether this is due to economic causes that are operating to push the street cars off our streets and let their places be taken by something else, or it is that the business, subject to always-changing conditions, has changed more rapidly of recent years? If so, what are we to do to get enough business to make the industry not only self-sustaining but profitable? Because the people are fair and will patronize the man who gives the best service and will pay a fair price for the service. One man stops at a certain hotel in a city which has a number of first-class hotels, because every employee in the hotel invariably says "Good morning!" to him when he is starting the day. What a simple, and yet what a carefully thought-out way to get his business regularly.

Many now in the street railway business have seen the development of the means of city transportation from the small capacity horse car to the larger car, electrification, still larger cars, then double-truck cars. Strangely enough, when the large cars were put on, in many cases schedules were lengthened, on the theory that the movement of traffic could be controlled. Indeed in many instances the development of the larger capacity street car had been due to a need of reducing the cost of carrying a passenger. For the platform wage, at first merely nominal, had steadily risen higher and higher, until its relation to the carrying capacity of the car was out of all reasonable proportion. Therefore, we saw cars of twice the carrying capacity operated less frequently in an effort to correct this relation. This necessarily brought on another burden, for the increasing size brought with it increased weight and increased power requirements to move the cars. Also, the rush-hour periods, taxing the capacity of even the large cars, required service and schedules which, for the periods of light travel during the remaining hours of the day, were unwieldy.

The mind of man has ever been at work studying how he could make his living by catering to the needs or habits of his fellows. For we must all live off each other, and these needs and habits are so many and so varied that they continually engage the mental activities of the thoughtful.

Thus came the automobile and by easy stages of development, the cheap automobile, to try its hand at the problem of moving the streams of city passenger traffic. There are few communities that have not had, or are not having, their jitney experiences. And in all cases these transportation agents have made serious inroads into the revenues of city street car companies, endangering the welfare of properties in which large permanent investments have been made.

WHY THE JITNEY?

Now why the jitney? Why should this generally reckless vehicle have been accepted by the erstwhile car rider as a means of carrying him down town and back, when he had previously and for years depended solely on the street car? There is no denying that the jitneys were doing the business. Were they giving the service? They were able to, and did, carry the worker, the clerk, the business man and the shopper, up town or down town and in a hurry, much more quickly than a street car, and as it happened in many cases, much oftener, and for that reason they seized and held a part of what we will call the legitimate business of the street railway.

Why do people ride in jitney buses? Simply because they have come to think that they are in a hurry at all times, and because they are impatient of waiting long on a street car. Many a street railway manager has had the experience of feeling that he has a certain close personal friend who is so much, and so strongly, his friend that he would never ride in a jitney, only to be completely disillusioned by seeing that selfsame friend seated in the next jitney bus that passed.

Either the jitneys have given the kind of service the people wanted, or else many of our street railways have not done so, otherwise the jitneys would have packed up and moved away long ago. They could have gone as easily as they came, with no impairment of capital investment beyond ordinary wear and tear. And surely the employment conditions of the past few years have been such that any jitney driver could have easily transferred his activities at good wages if he were not doing well enough to suit him in his newly developed profession of "uncommon carrier." It has been of no avail to write theses on the prohibitive cost of operating jitney buses or their relative rights on the streets; they are still here, and they quickly drop in on the stream of human travel whenever it may be found to be flowing in paying quantities.

On the other hand, what have we done to meet this competition which has tortured us so grievously during the past five years? And there is no gainsaying that the gross earnings of all the jitney busses in the United States during the past few years, added to the earnings of city street car lines, would have put a different sort of curve on the charts of the statisticians. Perhaps we have kept right on building too many large and heavy cars which entailed heavy maintenance charges, heavy power cost and heavy track repair cost, and yet which could not move with the attractive speed and flexibility of the jitney bus? If we have not built new ones in great quantities, we may have at least kept right on operating those that we had. Perhaps we have been unable to do otherwise. Perhaps we have thought that there was nothing else to be done except keep right on dying, slowly but surely. We may be sure that this habit of the people wanting and needing quick transportation will never cease while there are people. And the people will be served, and therefore he who furnishes adequate service in the transportation field, will reap the reward in business.

Statistics recently published in connection with the hearings at Washington before the President's special commission on street railways showed that in some of our larger cities more people are riding daily in automobiles than in street cars. This proves two things: one, that the individual rider finds that he can get to the place where he wants to go more quickly by automobile than by street car, and two, that the individual rider is not particularly interested in the seating capacity or the size of the vehicle in which he is transported, his principal thought being that there must be provided a seat for him, or else speed to compensate for the lack of a seat.

The crowd on a street corner waiting for a transportation medium will yield more readily to the quick-moving, frequent, jitney bus, each one taking away four, five or six passengers, than it will to the heavy and comparatively slow-moving street car which comes along past the corner every ten or fifteen minutes. This is a proposition that has been so frequently demonstrated as to have become axiomatic. The jitney buses themselves have shown to us in these few short years that Business follows Service.

Let us cross the water, and see what our compatriots are doing on the other side. The very interesting series of articles by Walter Jackson, which have recently appeared in this JOURNAL, have shown us some conditions of city street railway transportation from which we can make deductions which will at least serve for a basis of comparison, if they are not indeed most helpful.

Generally speaking, over there, in representative cities where conditions have been described by word and picture, as well as by statistical compilations, we find cars which to us look small. It is true that many of them are double decked, but the weight per seated passenger is comparatively light. This makes possible the provision of a larger number of car units, which can readily provide for increased service at rush hours. Published pictures, notably those of Glasgow, show this. The general practice of the zone system of fare collection with a low initial rate is another significant feature. The earnings per car mile, even with smaller cars, and the carrying of more passengers per mile on these smaller cars than are carried in many of our American cities, is also an impressive fact. Lastly, at least for our present purpose, the jitney as we know it here, is unknown, or at least its presence is unremarked in the articles mentioned.

The conclusion we may draw from our brief foreign trip is that the "tram" cars are giving the service needed or wanted, as they are doing the business. Furthermore, the tramways of Great Britain are quite generally supplementing their rail service with bus service which is of a complementary nature extending into urban or suburban districts not deemed as quite justifying a permanent investment.

The psychology of the whole matter is quite plain. The public will have what it wants, and when it wants it, and where it wants it. And service means catering to this condition. We can not make the people take or keep something they don't want or like. This was never better illustrated than years ago by the building of a large and expensive railroad station at Council Bluffs, Iowa. The railroad builders had decided that was the logical place to make the investment, and yet the people built their big city across the river.

WHAT SHALL WE DO TO KEEP THE BUSINESS?

What then is to be done to get or regain, and keep, the business that will and must follow the furnishing of adequate means of city railway transportation? We have tried to keep in mind that the people will have the kind of transportation service they want.

It rarely happens in life or in nature that conditions get so hard that there is not a way out. "It can be done" is a pretty safe motto, and is applicable as readily to the street railway business as to any other. What to do about the jitney bus quickly engaged the imagination and thought of forward looking men in the industry, with the result that the safety car made its advent, and in the short space of three years over one thousand of these cars have been placed in operation. This is not the place to describe the new type of standard car. The literature of the industry has been replete with descriptive matter pertaining to installations of safety cars here and there all over the country. The meeting of street railway men within the past three years at which the safety car has not come up for discussion has been the exception.

The car is extremely light in weight, speedy, comfortable, of ample seating capacity, and so fitted with so-called safety devices as to make its operation by one man not only possible but preferable. For the centralized control of the vehicle in the mind of one man promotes safety. Here then is a means of carrying the people that can be operated a mile as cheaply as a jitney bus. It has the speed of a jitney bus, over six times its seating capacity, many times its safety and comfort, and it affords protection against inclement weather which the jitney bus does not pretend to do. Its very lightness in weight and ease of operation make possible much more frequent schedules; in short, the service can be readily adapted to the business that is to be done.

All these things being true, the safety car must be a worthy competitor of any other means of city transportation, and so it has proven. The results have been the same here and there following the installation of this type of car. Business has followed Service. Service of a high class has been possible, the people have been satisfied, have grown more and more so, and have bestowed their patronage where the service was best.

PROOF THAT BUSINESS FOLLOWS SERVICE

An almost endless array of figures could be given to show that this type of car has abundantly proved that "business follows service." If we were to take the results of its operation in every place where it has been introduced, we should find a difference in figures that would be only as to the degree, not in the kind of results obtained. For the sake of a few supporting illustrations, however, to the truth of the statement with which we started out, I will quote an example:

One street railway company, operating a number of safety cars, having commenced less than a year ago, is now carrying on its cars more passengers than in any year of its history, though its "passengers carried" had shown a steady decline for four years previous to the change. It has increased its car miles 28 per cent on a reduced power consumption, and its earnings have shown an even greater increase than its car miles. As an evidence that business follows service, consider the case of one of its city lines, on which, without increasing the number of cars, the schedule was speeded up 10 per cent and an increase in earnings of 14 per cent followed and continued to be maintained. Most noticeable of all has been the satisfaction of the people whose appreciation and support was won by this effort to give the wanted kind of service, and the corollary which has been shown in the greatly decreased number of jitney busses operating.

These are not days for pessimism about any business, least of all the street railway business. The people will be served, they can be, and they must be served. The optimist will find the way to do it under the changed conditions which we now see on every hand. To these changes he will readily adapt himself, and he will find a ready proof here, as elsewhere, of the statement that business follows service.

Advertising for Traffic

Advertisements should drive home facts—Newspapers, car dash signs, and employees are effective mediums—Both interurban and city line advertising discussed

By F. G. BUFFE

General Manager the Kansas City Railways Company, Kansas City, Mo.

WE HAVE transportation to sell. Most of us have more stock on hand than the trade today is using. Some have marked up the goods and many patrons are showing a disposition to go without rather than pay the increase. In many places our transient friends, the jitney drivers in Mr. Ford's contraptions, are running off with much of our old-established trade.

The question arises: Is it good business policy to hire an advertising manager, buy newspaper space and offer our wares to the public through the medium of printer's ink? There have been many and divers opinions on this subject more or less freely expressed in the past seven or eight years. It may be that the rapid change in conditions brought about recently will to some extent affect the whole subject.

The question naturally falls under the two main sub-divisions, interurbans, and city lines. Also it generally presents more or less of a local problem in every instance. For the interurban road, an experience with one of the largest interurbans in the United States has been convincing that advertising does sell transportation. A large majority of interurbans are competitors of the steam roads and perhaps all of them today charge practically the same rates. It follows, then, that where a customer has his choice between two methods of transportation it is up to the one who wants his business to go after it. The average interurban certainly has enough talking points to justify their being expressed: Rapid, frequent service, comfortable, clean cars, the absence of smoke, dust and cinders are all good things to impress upon the public. In addition the interurban is more of a home product than the steam road. Advantage can be taken of this feeling and proper advertising can make not only customers of its traffic prospects but friends of its customers.

F. G. BUFFE

WHEN YOU DO SOMETHING TELL THE PUBLIC ABOUT IT

Traffic naturally falls into two classes: First, the regular day-to-day travel; second, travel stimulated by special events, excursions, etc. Both should be advertised.

Any road having its terminal in a large city should by all means make itself, its route, its service known to the people of that city. To cite a concrete illustration, I have in mind when the Illinois Traction System completed its bridge and terminals into St. Louis, Mo. Although for three years it had been engaged in building the heaviest bridge across the Mississippi River, the largest interurban bridge in the world, with all the publicity which such an enterprise would naturally secure, yet a thorough advertising campaign was necessary to acquaint the people of St. Louis with the exceptional service that had been made possible for them. This company since its St. Louis entrance in 1910 has been consistently advertising and even yet there are many people in that city who know the McKinley line service only in a vague sort of a way. Tourists visit large cities with excellent interurban facilities offering exceptional side trips of real merit, and in many cases these are never called to their attention.

A WELL ORGANIZED TRAFFIC DEPARTMENT IS NECESSARY

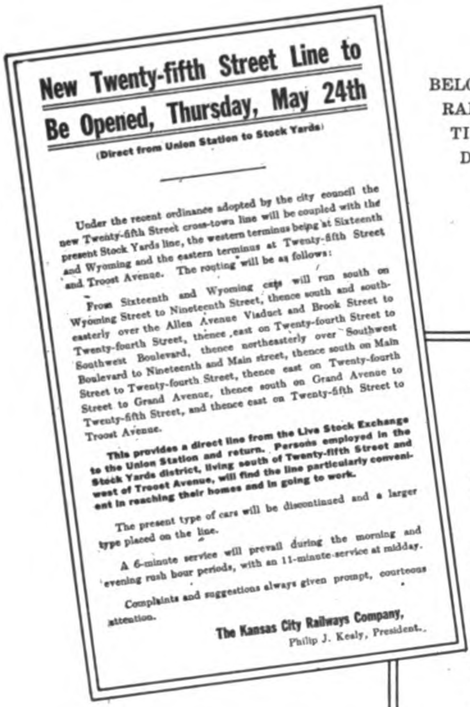
In addition to a thorough advertising campaign, those roads large enough to support it should have a well-organized traffic department whose agents will solicit and build up business. In such cases their efforts should be supported and assisted by proper advertising. As a general proposition, there is no advertising medium which equals the newspaper; however, this does not mean that posters, car cards and other methods are not useful and do not have their place in any well-planned campaign. Posters, if used extensively enough to cover the field, offer an excellent medium. Street-car cards are good. Up-to-date maps should always be used in all advertising matter. Every piece of copy should bring home in some manner the system's route. The effort should be to educate the public to an extent that a mention of the system would instantly bring up a mental picture of the system's map. Frequent service is a lesson to drive home. The steam road may take one to his destination, but the parallel interurban will not only do that same thing but will do it many times a day to the steam road's once. An interurban's adver-

tising should be consistent. Its monogram or design should appear in every piece of copy and on everything used by the road.

The foregoing covers briefly some reasons for the necessity of day-to-day interurban advertising. Special service and special events from their very nature depend for success on advertising. A live traffic department will take advantage of everything of this nature which will bring travel to the road. It is the general consensus of opinion of the operating officials of 90 per cent of the interurban roads that advertising is essential; that a lengthy discussion of this division of the subject is superfluous.

WHY SHOULD THE CITY LINE ADVERTISE?

We now come to the question of advertising by city lines. On this subject there is more diversity of opinion without so many concrete examples on which to base decisions. During the last few years everyone has been so busy trying to make a 1913 fare cover 1919 expenses, **or in an endeavor to secure from the unwilling public the right to sell our service at somewhat near its cost, that we may have had time for little else. Street railway riding is done as a matter of necessity and not for pleasure. People use street cars in the same frame of mind that they do sidewalks. Our city transportation systems are the arteries through which the business and civic life of the cities flows. There are certain local conditions that obtain in some communities where parks or other special-event advertising may increase the volume of traffic. However, in the past many railways have discovered that much of this business once secured was the most unprofitable of all. While advertising may not directly sell our transportation, there are several phases of the situation. Like equipment, advertising methods should change, and the old stuff of 1912 will not do in 1920. The accompanying illustrations show specimens of recent advertisements of the Kansas City Railways Company. They were prepared by E. B. Atchley, director of publicity.**



New Twenty-fifth Street Line to Be Opened, Thursday, May 24th

(Direct from Union Station to Stock Yards)

Under the recent ordinance adopted by the city council the new Twenty-fifth Street cross-town line will be coupled with the present Stock Yards line, the western terminus being at Sixteenth and Wyoming and the eastern terminus at Twenty-fifth Street and Troost Avenue. The routing will be as follows:

From Sixteenth and Wyoming cars will run south on Wyoming Street to Nineteenth Street, thence south and southeasterly over the Allen Avenue Viaduct and Brook Street to Twenty-fourth Street, thence east on Twenty-fourth Street to Southwest Boulevard, thence northeasterly over Southwest Boulevard to Nineteenth and Main street, thence south on Main Street to Twenty-fourth Street, thence east on Twenty-fourth Street to Grand Avenue, thence south on Grand Avenue to Twenty-fifth Street, and thence east on Twenty-fifth Street to Troost Avenue.

This provides a direct line from the Live Stock Exchange to the Union Station and return. Persons employed in the Stock Yards district, living south of Twenty-fifth Street and west of Troost Avenue, will find the line particularly convenient in reaching their homes and in going to work.

The present type of cars will be discontinued and a larger type placed on the line.

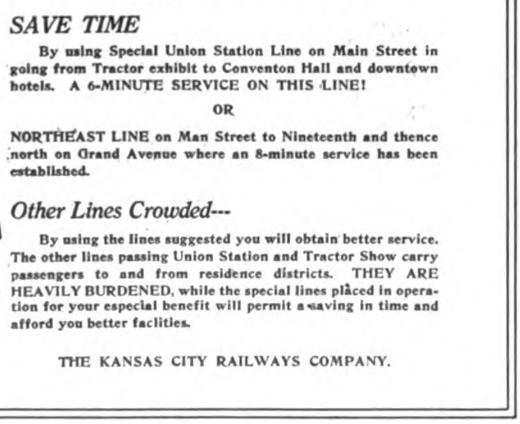
A 6-minute service will prevail during the morning and evening rush hour periods, with an 11-minute service at midday.

Complaints and suggestions always given prompt, courteous attention.

The Kansas City Railways Company,
Philip J. Kealy, President.

ABOVE, TELLING THE PUBLIC ABOUT ROUTING CHANGES IN KANSAS CITY

BELOW, KANSAS CITY RAILWAYS' ADVERTISEMENT INTRODUCING SPECIAL LINES TO ITS PATRONS



To Tractor Show and Hotel Patrons:

SAVE TIME

By using Special Union Station Line on Main Street in going from Tractor exhibit to Conventon Hall and downtown hotels. A 6-MINUTE SERVICE ON THIS LINE!

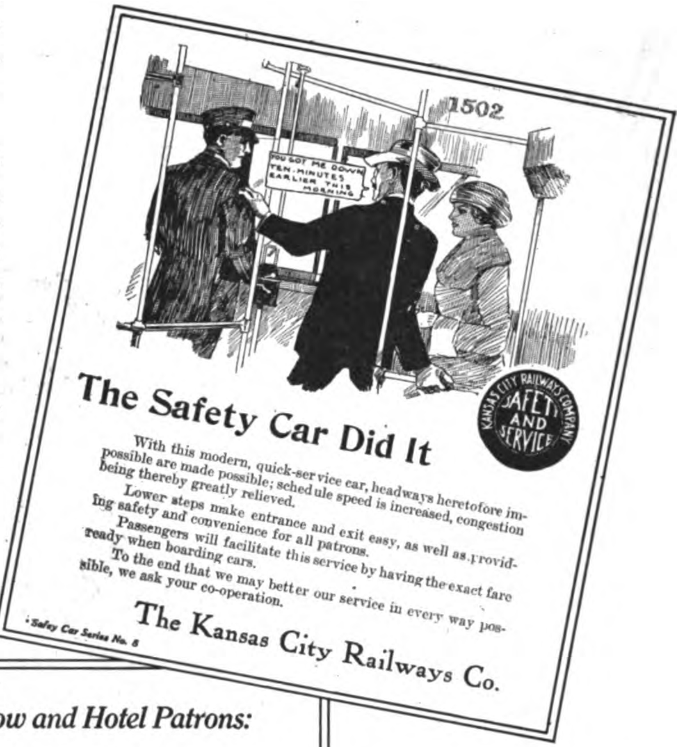
OR

NORTHEAST LINE on Man Street to Nineteenth and thence north on Grand Avenue where an 8-minute service has been established.

Other Lines Crowded---

By using the lines suggested you will obtain better service. The other lines passing Union Station and Tractor Show carry passengers to and from residence districts. THEY ARE HEAVILY BURDENED, **while the special lines placed in operation for your especial benefit will permit a saving in time and afford you better faclities.**

THE KANSAS CITY RAILWAYS COMPANY.



1502
YOU GOT ME DOWN TEN-MINUTES EARLIER THIS MORNING
KANSAS CITY RAILWAYS COMPANY SAFETY AND SERVICE

The Safety Car Did It

With this modern, quick-service car, headways heretofore impossible are made possible; schedule speed is increased, congestion being thereby greatly relieved.

Lower steps make entrance and exit easy, as well as providing safety and convenience for all patrons.

Passengers will facilitate this service by having the exact fare ready when boarding cars.

To the end that we may better our service in every way possible, we ask your co-operation.

The Kansas City Railways Co.

Safety Car Series No. 6

ABOVE, EFFECTIVE METHOD FOR ADVERTISING SERVICE IN KANSAS CITY

Those who have secured fare increases are suffering from a mental state on the part of the public when it comes to paying a higher fare than 5 cents for street-car transportation. The same people who willingly pay double the old price for the movies, three times and the war tax what they used to pay for an ice cream soda, twice what they used to pay for a cigar, act as if their pockets are being picked when they are asked to pay 6, 7 or 8 cents for a street-car ride. The short-haul rider, in order to express his mental objection to a fare increase, wears out his $13.50 shoes for which

he used to pay $5. Many more of our ex-patrons in order to express their indignation against the street railway company getting enough for a ride to pay the wages of the train crew willingly pay 10 cents for the privilege of hanging on to an already crowded jitney.

In addition, many of our old friends who were regular morning and evening customers have become affluent and now use their automobiles for the daily trip to the city and back. Inasmuch as man is a gregarious animal and likes company, most of them are in the habit of picking up their friends and neighbors. Not only could we secure this revenue which we so badly need but we would be doing a real service to these people if we could pursuade them to leave their automobiles at home. Congestion is a serious problem in every city, and anti-parking laws are making it more and more necessary to put the car in a garage or parking station during the day. Based on the actual cost of operating an automobile and including the parking charge, people are spending all the way from 50 cents to $1 per day to go from their homes to their business and back.

The jitney is a fair weather pest which in many places is eating large holes in the revenue. Operating a jitney is merely a method of junking an automobile. There is not one jitney driver in 500 who looks far enough ahead to do other than provide for actual running expenses. Some of them may provide for tire trouble, but practically none look to the fateful day when the installment plan "Tin Henry" is no longer servicable. Everything above operating expenses is lived up. As a general rule jitney drivers are a happy-go-lucky irresponsible set of humans who prefer driving a jitney to swinging a pick. Gasoline and rubber at present-day prices are never going to supplant steel rails and electricity for transportation purposes. That being the case, is not any city that tolerates jitneys merely cutting off the municipal nose to spite its face? In other words, those who patronize these pirates are supporting a competition for the benefit of a limited number and penalizing the great majority who now and in the future must depend upon street railways for their transportation.

HAMMER HOME THE COST OF AUTO OPERATION

Do not these conditions afford an opportunity for some life-size advertising campaigns which, while not directly selling transportation, should accomplish the result indirectly? An advertisement asking the people to ride street cars will not get them to do so any more than an advertisement begging them to walk on the sidewalks. There is a chance, however, that if the cost of private automobile transportation is hammered home to the man paying gasoline and tire bills, sooner or later he will awaken to the fact that his regular morning and evening trips are costing him money which could be better spent for joy riding. The average automobile owner pays his automobile bills without reducing the cost to a mileage or a daily basis and is thunderstruck when these costs are shown. If the average citizen with any respect at all for the shrunken American dollar of to-day can be made to realize this expense and at the same time introduced to a street railway service which is 50 per cent better than it was in the days when he used it a lot of private machines might be kept in the home garage, where they belong, during the day.

The average automobile owner is generally a loyal citizen of his town; he is the fellow you will find giving his time boosting civic enterprises and supporting a multitude of outside interests for the good of his city. If a man of this caliber comes to understand that street railway transportation must be supported if his town is to grow, there is a chance of awakening him to the importance of riding the cars and letting his four or five friends who are depending on him for daily transportation pay fare again. The right kind of a publicity campaign may have the effect of waking up a city to the dangers of unrestricted jitney competition. Some of our real estate friends who have turned cow pastures into residential districts at the expense of the street railway in the good old days may come to life and help stop an unfair competition that threatens the transportation upon which their success depends.

THE INDUSTRY NEEDS SOME PSYCHOLOGY

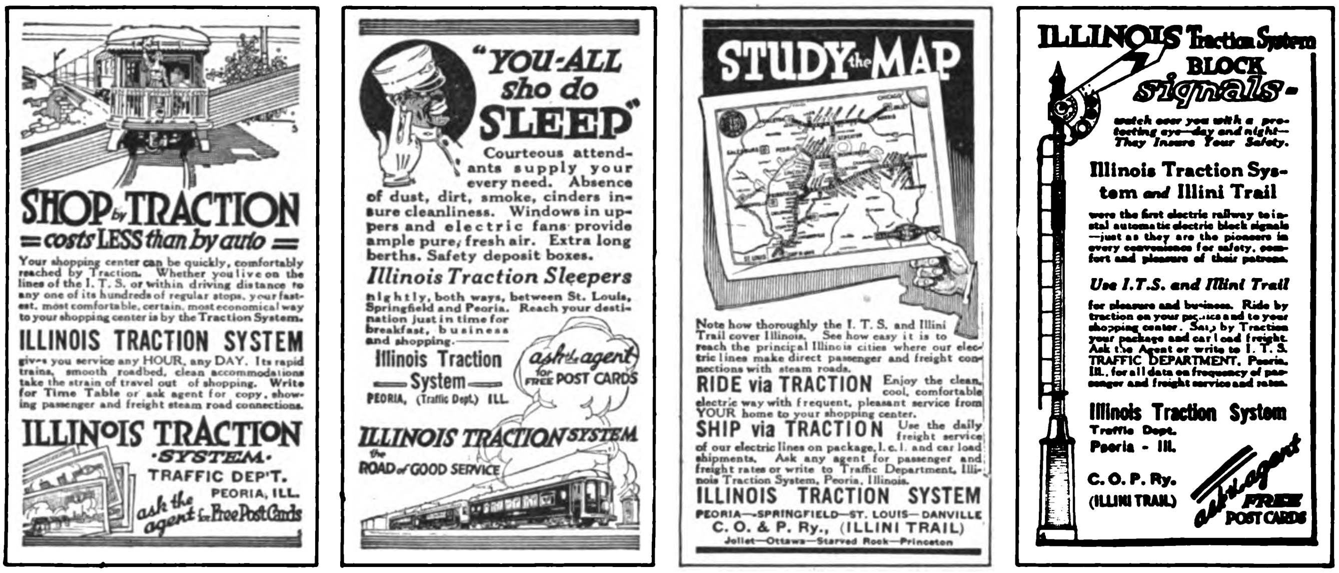
As stated before, the street railway industry is up against a mental strain, which is all any advertiser faces when he starts to peddle his wares. The advertising man's job is to change this mental state, and there are many reasons why it can be done. What can be done to bring the revenue passenger's figure back to the point where it was when the ride was 5 cents? Most large city rates now admit of tickets, then why not go after ticket sales on a merchandising basis? Put a sales manager in charge whose job is to see that everyone buys street car tickets. Our poker playing friends state that a man will raise a pot a whole lot quicker when using chips than with hard money. The short-haul rider with tickets in his pocket will take many a ride when he otherwise may hesitate to pay cash. Show the public that increases are not only justified but are absolutely necessary if street cars run at all. Create the mental atmosphere that an 8-cent fare is an honest fare and that any man who talks otherwise is seeking to get something for nothing by asking that somebody else pay his expenses.

It is pretty hard to get anyone who has seen some mighty big issues staked on the turn of the publicity dice time after time and who has seen these forlorn hopes turned into successes say anything but good of the advertising proposition. A large city railway need not go into the circus business or run the system as an adjunct to an amusement park. This business is all right if it comes naturally and if the other fellow is spending the money to furnish the amusement.

The very best advertising medium in any city are street car dash cards. They can push a limited number of words in black ink in the face of more readers per day than any other medium. Donate this space liberally to attractions that are supplying traffic to the line. However, advertising for all this traffic is secondary to getting the 365-day a year back-and-forth business that by right belongs to the street cars and that has been earned by years of bitter experience and finanical loss.

We are public servants in every sense of the word and are conducting the biggest single public enterprise in any community. On us falls the obligation to keep the civic, social and business life of our communities going, and we have not even had the reward that the Bible says should be given to the ox that used to trample out the corn. There is no reason why today's trouble should cast a cloud over to-morrow's sun. The street railway is an absolutely essential institution. Anything in our present civilization that is absolutely essential is going to survive. We have done more than our share of civic building and it is time to get off the defensive.

Of course all this is based on the assumption that the service is worthy of support. Increased service means increased gross. The use of the safety car has demonstrated in every section of the United States that decreased headways and better service mean more riding. Now is the time to impress upon the minds of our traffic prospects the fact that the street railway systems of the United States helped build their cities and now have the right to demand support. This is an idea of the basis upon which to key our publicity campaigns. We have service to sell, therefore it follows that we should tell of the service. The best standing advertisement a company can have is the appearance of its cars on the street. The public does not care about the condition of the shops, the power plant or the interior of the car barns; it sees cars, it meets the trainmen and its impression is formed entirely by appearances. An advertising campaign might be started by freshening up as much as possible. Have the cars cleaned inside and out, teach trainmen to be courteous, uniformed and neat appearing, see that the little things are right, such as signs, fenders, curtains, signal bells, etc. Keep headways regular. These things go with good service, and appearances count for everything. Let the public know just what is being done.



SHOP by TRACTION

= costs LESS than by auto =

Your shopping center can be quickly, comfortably reached by Traction. Whether you live on the lines of the I. T. S. or within driving distance to any one of its hundreds of regular stops, your fastest, most comfortable, certain, most economical way to your shopping center is by the Traction System.

ILLINOIS TRACTION SYSTEM

gives you service any HOUR, any DAY. Its rapid trains, smooth roadbed, clean accommodations take the strain of travel out of shopping. Write for Time Table or ask agent for copy, showing passenger and freight steam road connections.

ILLINOIS TRACTION
·SYSTEM·
TRAFFIC DEP'T.
PEORIA, ILL.
ask the agent for Free Post Cards

"YOU-ALL sho do SLEEP"

Courteous attendants supply your every need. Absence of dust, dirt, smoke, cinders insure cleanliness. Windows in uppers and electric fans provide ample pure, fresh air. Extra long berths. Safety deposit boxes.

Illinois Traction Sleepers

nightly, both ways, between St. Louis, Springfield and Peoria. Reach your destination just in time for breakfast, business and shopping.

Illinois Traction
System
PEORIA, (Traffic Dept.) ILL.

ask the agent for FREE POST CARDS

ILLINOIS TRACTION SYSTEM
the ROAD of GOOD SERVICE

STUDY the MAP

Note how thoroughly the I. T. S. and Illini Trail cover Illinois. See how easy it is to reach the principal Illinois cities where our electric lines make direct passenger and freight connections with steam roads.

RIDE via TRACTION Enjoy the clean, cool, comfortable electric way with frequent, pleasant service from YOUR home to your shopping center.

SHIP via TRACTION Use the daily freight service of our electric lines on package, l. c. l. and car load shipments. Ask any agent for passenger and freight rates or write to Traffic Department, Illinois Traction System, Peoria, Illinois.

ILLINOIS TRACTION SYSTEM
PEORIA—SPRINGFIELD—ST. LOUIS—DANVILLE
C. O. & P. Ry., (ILLINI TRAIL)
Joliet—Ottawa—Starved Rock—Princeton

ILLINOIS Traction System BLOCK signals-

watch over you with a protecting eye—day and night—They Insure Your Safety.

Illinois Traction System and Illini Trail

were the first electric railway to instal automatic electric block signals—just as they are the pioneers in every convenience for safety, comfort and pleasure of their patrons.

Use I.T.S. and Illini Trail

for pleasure and business. Ride by traction on your pleasure and to your shopping center. Ship by Traction your package and car load freight. Ask the Agent or write to I. T. S. TRAFFIC DEPARTMENT, Peoria, Ill., for all data on frequency of passenger and freight service and rates.

Illinois Traction System
Traffic Dept.
Peoria - Ill.

C. O. P. Ry.
(ILLINI TRAIL)

ask the agent FREE POST CARDS

RECENT EFFECTIVE ADVERTISING FOR TRAFFIC BY THE ILLINOIS TRACTION SYSTEM
(Courtesy of E. E. Soules, manager department of publicity I. T. S.)

If safety cars are operated and headways thereby reduced 20 per cent, tell it. Use dash cars stating that such cars run on a 3½-minute schedule or whatever it may be. When impressing the public with the necessity for riding the cars, tell it how they run, where and when.

Every street railway has a wonderful potential advertising force in its employees, if it is only possible to secure their co-operation. On some unionized properties this is almost an impossibility at times, but hard, consistent, patient work will do wonders. Make the public understand that further increases in wages and shortening of hours must come from public purses. The Amalgamated Association has to some extent lost its sense of proportion and the point has been reached where an awakened public sentiment will not tolerate further unreasonable demands. If trainmen can be made to realize that their success depends in direct ratio on the success of the road; if their co-operation can be secured each one of them can be made a walking publicity bureau. The men must be trained and given ammunition to shoot. Stories that are printed for the public should be printed for the men in neat pamplet form; frequent meetings should be held and the men impressed with the necessity of acting as a unit with the management along these lines.

Advertise service, make it worth selling and sell it. Increased service means increased receipts. Put every ounce of argument you have in your talk with the public. Get off the defensive, do not let an unmerited attack or an unwarranted statement go unchallenged. If a hearing cannot be gotten in any other way print a paper and distribute it on the cars. Instead of merely following our old publicity methods of telling the public our financial condition and "laying the cards on the table," to use a hackneyed and time-worn expression, it is possible to make advertising the medium for carrying the new message of service and the necessity for its use. The street railway is necessary to the life of our cities and what is necessary will be supported.

The Safety Car in the Movies

How a romance has been woven about the operation of the safety car--Film well adapted to demonstrate advantages of this car from popular viewpoint

THROUGH the courtesy of the The J. G. Brill Company, the General Electric Company, the Westinghouse Electric & Manufacturing Company and the Safety Car Devices Company, the Industrial Department of the Universal Film Company, New York, is distributing an entertaining and instructive film of the Birney safety car entitled: "Fares, Please."

The original plan of the four companies was simply to get a picture that could be used for instruction purposes and as an accompaniment to the report of the American Electric Railway Association's one-man car committee at the 1919 convention. However, after becoming aquainted with the character of the car, the Universal Company suggested that the subject be expanded to make the picture attractive to the general public. Accordingly, the picture combines a description of the safety car in action with a story that drives home several strong points in the cause of better public relations and better car service. The following outline of the scenario and the accompanying "stills" will give some idea of the moving picture man's way of conveying an idea direct to the ultimate consumer—in this case, the man who rides on the street car. The picture as shown by the committee is an abbreviated one-reel version of the following scenario.

THE PLOT IS OUTLINED

The opening picture is a marching scene upon which appears the statement that of all the men who volunteered to go to France for Uncle Sam, none gave a larger proportion of physically and mentally alert individuals than the car platform men, because electric railways select for platform service only those who are capable of passing a severe examination. Continuing, this statement points out that the reckless jitney driver is self-selective.

Of all the platform men who entered the service there was no finer specimen than Fighting Jack O'Malley, a handsome Irishman noted for good humor that did not fail him. even in the rush hours. Jack is shown as he steps off of a car to revisit the carhouse that he has not seen since the day he enlisted. Upon arrival at the carhouse he receives an uproarious (it looks uproarious!) welcome from his old comrades. They begin questioning him on how he won the croix de guerre and other decorations that bespangle his bosom, but he waves them aside with a laugh and says that the first thing he wants to know is whether the old job is waiting for him. As a proof that it is, his friends show him a poster on the carhouse reading: "Soldiers, Sailors, Marines! Your job awaits you."

In the meantime, the noisy greetings below have disturbed the division superintendent just as he is dictating a letter about the wonderful increases in traffic due to the inauguration of safety-car service. Upon looking out of the window, he espies Jack and immediately invites him up. After the first jovial greetings have been passed, the superintendent, still full of the safety-car letter, asks him if he wouldn't like to try his hand on the new safety cars. Jack is rather nonplussed as he had never heard of that kind of car before. Looking at his wound stripe, he confesses that he does not even know whether he would have the strength to operate the new car. The superintendent laughingly assures him that brain, not brawn, is what is needed to operate the safety car, and there was no doubt that his record showed he had plenty of the former article.

Thereupon the superintendent describes to Jack the characteristics of the first line upon which the cars were installed, portions of the line being cut in to illustrate his conversation in the approved movie manner. At one end of this line is the finest residential section in the city. Here many of the residents have ceased to use their automobiles for the short trips downtown because they are getting more service with a faster car. Next is shown the business district with its variety of big cars, open-bench cars and safety cars, private automobiles, jitney automobiles and jitney buses.

From the business district, Jack is conducted in imagination to the opposite end of the line. Here the neighborhood is much poorer, but the riding has increased—not because the people are putting their machines in garages but because they have less temptation to walk.

Continuing his enthusiastic story, the superintendent explains to Jack that the low wheels of the safety car permitted the abolition of one step, thus making the car popular with old people, children and women. This feature, the methods of boarding, alighting and paying fare are all illustrated by cut-ins made under actual traffic conditions without the knowledge of the passengers filmed. The superintendent lays great stress upon the emergency applications which give the car its name.

Having worked Jack up to almost his own degree of enthusiasm, the superintendent tells him that this car really saved both their jobs. He then calls up the division foreman and asks him to send Jack out with an instructor. In the following scenes, Jack is shown all the manipulations of the control apparatus and its inter-operation with the doors, steps and sander, until he is considered fit to take the instructor's stool. All the emergency applications are repeated in a number of close-up scenes.

THE SAFETY STOP IS BROUGHT INTO ACTION

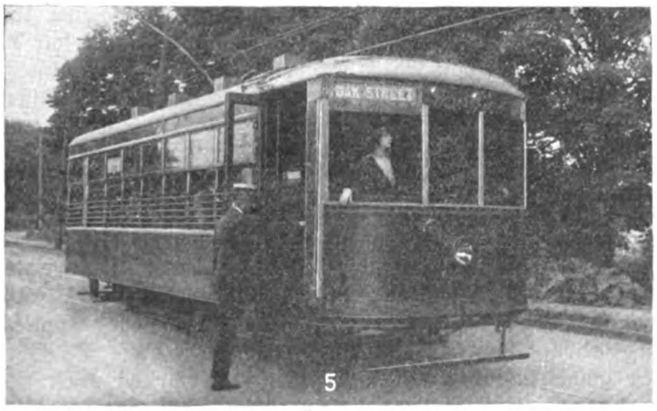
Shortly after Jack has begun to run the car, a pretty girl steps aboard. Jack is looking at the fare-box out of one corner of his eye but does not see the features of his fair passenger. No sooner, however, are the doors closed and the car under way than the young lady

1

2

3

4



5

Scenes in the Moving Picture Scenario Featuring the Safety Cars

6

No. 1—Jack returning to take up his old job.

No. 2—Jack telling how he won the Croix de Guerre

No. 3—The division superintendent sees Jack return.

No. 4—The division superintendent suggests that Jack operate a safety car.

No. 5—Jack while operating his car recognizes his sweetheart.

No. 6—The small boy tells Jack to run the car or he will do it himself.

looks up at the operator in khaki and utters one delighted shriek: "Jack!" Jack is so startled upon recognizing his sweetheart (for who else could it be?) that he lets go of the control instantaneously. On other cars, the audience is told, this pardonable neglect might have led to an accident; but not so on the safety car, for no sooner had Jack forgotten himself than the emergency equipment goes into action with its customary vim and certainty. Again the breaker brakes, the sander sands and the scenery comes to rest.

So immersed is our hero in finding his sweetheart thus unexpectedly that he has failed to observe either the stopping of the car or the injunctions of his good-natured instructor. However, one passenger has taken particular notice of the goings-on. Finding that his yells are unproductive of results, this ragged young gamin steps forward and tells the infatuated Jack that if he doesn't get busy said gamin will prove he can run the car himself! Thereupon the young lady retires to the background and Jack returns to the job of running the car.

In the final scene, Jack is shown on his return to the carhouse. After he has told the boys the story of the wonderful little car and of his adventure on it, he consents to tell them of his days in France when the Hindenburg line was subjected to such severe corrugations.

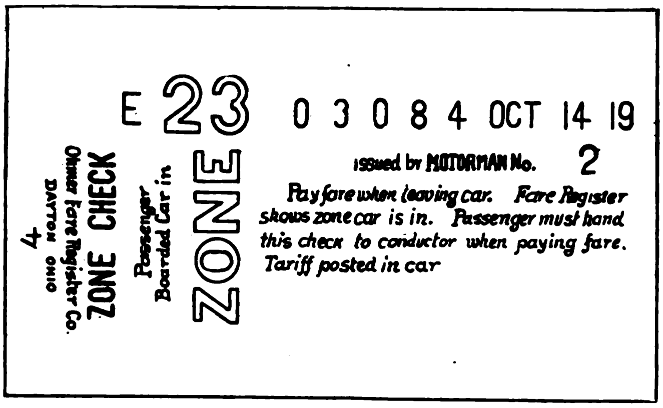
Developments in Fare-Registering and Ticket-Issuing Devices

Changes in Fare Systems and Rates Charged Have Produced New Conditions Which Require New Methods and Apparatus in Collecting and Accounting

MACHINES have been developed for use with zone-fare collections together with modifications of standard machines which will facilitate use on roads applying the zone system of fare collection.

The general consideration being given by electric railways to the zone fare system as a means of meeting increased costs has led to the design of several new fare collecting and registering devices for use with this class of service. For example, the Ohmer Fare Register Company has brought out two new machines to meet the requirements of zone collection methods. The first of these is a zone-ticket printing and issuing machine. This prints from a roll of plain white paper a ticket bearing the zone number, the date, the conductor's number, the direction of operation, the machine number, the number of the motorman or conductor operating the machine and special instructions and advertisements as required. When the passenger enters the car he receives a ticket from this machine. An indicator in the machine shows the number of the zone in which the car is operating, which number corresponds to the zone number printed on the ticket. The machine is operated by means of setting levers or knobs at the back and by a pedal. The machine does all the printing so that tickets are issued quickly and conveniently and the operation of the machine is positive.

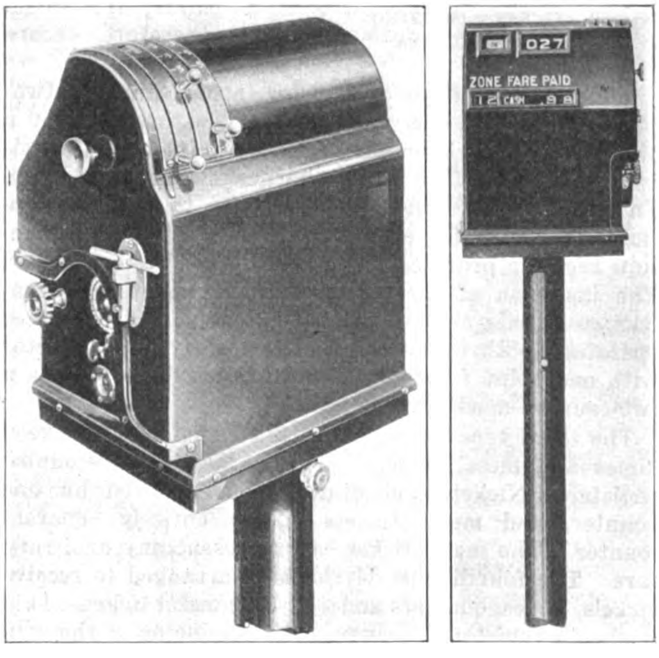
The second machine which this company has developed is a universal zone-fare register. This is intended to stand on a pedestal on the rear platform and is operated by the conductor. As the passenger pays his fare the amount is registered by using a pedal. The amount registered is clearly indicated to the passenger, the number of the zone to which the passenger pays his fare is indicated, and a printed record of the transaction is made. The register will record any cash amount up to 99 cents, together with the necessary non-cash denominations such as tickets, pass, transfer, etc. The construction is so arranged that the register can be quickly removed from the supporting column if desired and placed at the other end of the car where a similar support is located. Where the Ohmer zone ticket-issuing machine is used the zone register and ticket machine may be used interchangeably on the supports and operated by the foot pedals.


4
Ohmer Fare Register Co.
DAYTON OHIO
ZONE CHECK
Passenger
Boarded Car in
ZONE
E 23 0 3 0 8 4 OCT 14 19
issued by MOTORMAN No. 2
Pay fare when leaving car. Fare Register shows zone car is in. Passenger must hand this check to conductor when paying fare. Tariff posted in car

SAMPLE ZONE-FARE TICKET

FOUR NEW PORTABLE MODELS DEVELOPED

The Rooke Automatic Register Company has brought out four new models to satisfy the present demands. These are similar in appearance, size and method of use to the familiar Rooke models, but have different coin



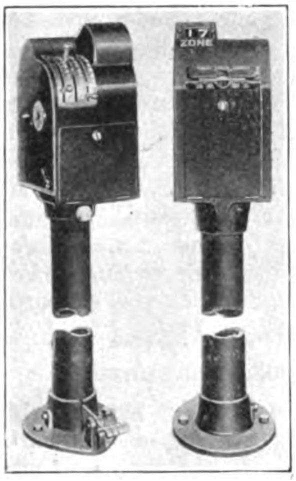
Operating Side Passenger Side

UNIVERSAL ZONE-FARE REGISTER

capacities. Substantial improvements have also been made to provide more rugged construction.

Heretofore the Rooke register has been regarded as a one-coin proposition, although several companies have used adaptations of the register to receive and classify separately nickels and dimes, also nickels and one size of metal ticket. The manufacturers have always considered, however, that the dime could not be received into the old type registers on the basis of the accuracy which had always attached to the receipt of nickels. If nickels only, however, were accepted in city operation the passenger who tendered a dime, wishing to pay two fares, had to be given two nickels in exchange from the conductor. This involved some delay and objection to the register. This handicap of limitation to one coin has now been eliminated and the new register will receive nickels, dimes and quarters.

In regard to pennies the manufacturers state that they can arrange to register pennies apart from other cash if it is desired, but there is some difficulty in providing for the registration of pennies and dimes together, as the difference in diameter of these two coins is so small. In cases where six-cent or seven-cent fares are to be collected, the manufacturer of the Rooke register recommends the use of a metal ticket to cover the fare. A passenger who does not secure one of these metal tickets would simply insert the nickel in the register and hand the penny to the conductor, who would be charged at the rate of six cents a point. He would naturally, therefore, secure the penny.



Operating Side Passenger Side

OHMER TICKET PRINTING AND ISSUING MACHINE

The four new types of register include first the two-coin type for nickels and dimes. The insertion of a nickel in this register moves up one point on the totalizing counter. The dime charges two counts more. The conductor's turn-in is figured at the rate of five cents per point for each numerical point. The three-coin register provides for nickels, dimes and quarters. The insertion of nickels and dimes charges the conductors exactly as with the two-coin type. The quarter operates another counter, and charges the conductor with one point for every 25 cents received. This is a two-counter machine.

The third type is the three-coin register for nickels, dimes and metal tickets. This is also a two-counter register. Nickels and dimes are registered on one counter, and metal tickets on an entirely separate counter. The metal ticket can represent any arbitrary fare. The fourth type developed is arranged to receive nickels, dimes, quarters and a 2½-cent metal ticket. This four-coin register will charge the conductor at the rate of 2½ cents for each point accumulated on the totalizing counter. The insertion of the 2½-cent metal ticket registers one point on the totalizing counters, the insertion of a nickel two points and the dime four points, etc. The quarter registers one point on the separate counter. In the several types all coins are paid into the one coin slot, and the registration is carried out in the usual manner.

SEVERAL NEW TYPES OF FARE BOXES AND AUXILIARY DEVICES

The Johnson Fare Box Company, Chicago, Ill., has developed several devices in an endeavor to solve the new problems of fare collection. Its instantaneous registering fare box will be shown for the first time at the Atlantic City convention. This fare box is arranged to receive coins of four denominations, consisting of nickels, dimes, pennies, and Canadian nickels, and three sizes of tickets. Immediately after the fare is deposited it will be registered and shown on the overhead indicator in full view of the paying passenger. The coins then come into view on an examination plate so that any defective coins may be discovered. This system appears to offer the advantages of a double check with the added safeguard of immediate visible registration which is entirely automatic.

A new type of transfer-issuing machine has also been developed, also electrically operated. By pressing a lever a transfer is printed and issued immediately. The transfer shows the route number in letters or numerals, the date, time limit, direction of operation, serial number and conductor's voucher number. This prevents fraudulent or careless extension of the time limit or date or any other mistake in the transfer, and the railway operators will thus be saved disputes with passengers. There should also be a considerable saving in paper because no transfer need be printed or issued until required by the passenger. This transfer machine can also be used for the purposes of printing and issuing a zone-fare ticket.

05927
06537
0710
1445

FOUR-DIAL FARE BOX

Still another device brought out by the Johnson Company is an adjustable change maker which can easily be adjusted to eject any number of coins. This should be of convenience to systems which are using a rate of fare different from the former five-cent standard.

The Johnson Fare Box Company also announces that it has in the course of preparation for the market, a new type of zone-fare machine. This has been developed as a result of the study of zone-fare problems and in conjunction with several railway executives who are considering or have tried the zone-fare system. Details of this machine are not yet available.

American Association News

TENTATIVE PROGRAMS FOR AMERICAN, ACCOUNTANTS', ENGINEERING, CLAIMS AND TRANSPORTATION AND TRAFFIC ASSOCIATIONS ARE GIVEN—PLANS OF PUBLICITY MEN ALSO ARE ANNOUNCED

Convention Programs for All Associations

Secretary Burritt Has Announced the Following Tentative Programs Giving Much More Detail Than the Preliminary Announcement Appearing in Last Week's Issue of This Paper

PROGRAM OF AMERICAN ASSOCIATION

MONDAY, OCT. 6

9:30 a.m. to 5 p.m.

Registration and distribution of badges at booth, right of entrance, Young's Million Dollar Pier.

TUESDAY, OCT. 7

9:30 a.m. to 12:30 p.m.

Meeting held in Greek Temple

Annual address of the president.

Annual report of the executive committee.

Annual report of the secretary-treasurer.

Appointment of convention committees:
- (a) On resolutions.
- (b) On nominations.
- (c) On recommendations in president's address.

Reports of committees:
- (a) On electrolysis.
- (b) On company sections and individual membership.
- (c) On valuation.
  Discussion.
- (d) Committee of One Hundred.

WEDNESDAY, OCT. 8

9:30 a.m. to 12:30 p.m.

Meeting held in Greek Temple

Reports of committees:
- (a) On federal legislation (subcommittee of committee on national relations).
- (b) On compensation for carrying United States mails.
- (c) On affiliated association of manufacturers.
- (d) On changes in constitution and by-laws.
- (e) On standards of the Engineering Association.

Some Features of the Service-at-Cost Plans:

Cincinnati—Walter A. Draper, vice-president, Cincinnati Traction Company.

Cleveland—Col. J. H. Alexander, vice-president, Cleveland Railway.

Youngstown—R. P. Stevens, president, Mahoning & Shenango Railway & Light Company.

Montreal—K. E. Hutcheson, general manager, Montreal Tramways.

THURSDAY, OCT. 9

9:30 a.m. to 12:30 p.m.

Meeting held in Greek Temple

Report of committee:

On zone systems.

Paper on "Public Service Railway Company's Zone System," by Thomas N. McCarter, president, Public Service Railway, Newark, N. J.

Discussion.

Address on "Labor and the Electric Railway Industry," by Job E. Hedges, receiver, New York Railways.

Address on "The Relationship of Items of Cost under Pre-War Conditions and To-day," by F. W. Doolittle, Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

Address on "The Collecting of These Costs from the Traveling Public," J. D. Mortimer, president, North American Company, New York, N. Y.

Address entitled "Are These High Costs of Service Likely to Develop Competition?" by L. H. Palmer, assistant to the president, United Railways & Electric Company, Baltimore, Md.

Reports of convention committees:
- (a) On recommendations in president's address.
- (b) On resolutions.
- (c) On nominations.

Unfinished business.

Election of officers.

Installation of officers.

Adjournment.

PROGRAM OF ACCOUNTANTS' ASSOCIATION

MONDAY, OCT. 6

9:30 a.m. to 5 p.m.

Registration and distribution of badges at booth.

TUESDAY, OCT. 7

2 to 5 p.m.

Meeting held in Accountants' Hall

Annual address of the president.

Annual report of the executive committee.

Annual report of the secretary-treasurer.

Appointment of convention committees:
- (a) On resolutions.
- (b) On nominations.

Report of committee:

On standard classification of accounts.

Address on "Accounting Measures to Meet Business Depression," by Earle A. Saliers, professor in Yale University.

Address on "The Preparation of Accounting and Statistical Data in Connection with Rate Cases," by Clarence R. Bitting, certified public accountant, Philadelphia, Pa.

WEDNESDAY, OCT. 8

2 to 5 p.m.

Joint Session with Transportation & Traffic Association.

Meeting held in Greek Temple

Report of committee:
- (a) On collection and registration of fares.
- (b) Discussion of above report.

THURSDAY, OCT. 9

2 to 5 p.m.

Meeting held in Accountants' Hall

Paper on "Methods of Fare Collection When Frequent Changes in Rates Are Anticipated Under the Cost of Service Plan," by W. A. Doty, auditor, The Denver (Colo.) Tramway.

Paper (title to be announced) by Carl Nau, certified public accountant, Cleveland, Ohio.

Reports of convention committees:
- (a) On resolutions.
- (b) On nominations.

Election of officers.

Installation of officers.

Adjournment.

PROGRAM OF ENGINEERING ASSOCIATION

MONDAY, OCT. 6

9:30 a.m. to 12:30 p.m.

Registration and distribution of badges at booth.

2 to 5 p.m.

Meeting held in Engineers' Hall

Annual address of the president.

Annual report of the executive committee.

Annual report of the secretary-treasurer.

Appointment of committee on resolutions.

Report of committee on power distribution.

TUESDAY, OCT. 7

2 to 5 p.m.

Meeting held in Engineers' Hall

Reports of committees:
- (a) On power generation.
- (b) On equipment.

(c) On standards (on recommendations contained in above report).

Address on "Construction Work in France," by Col. Henry Hodges, consulting engineer, New York City.

WEDNESDAY, OCT. 8

2 to 5 p.m.

Meeting held in Engineers' Hall

Reports of committees:

(a) On buildings and structures.

(b) On way matters.

(c) On standards (on recommendations contained in above report.)

Address on "Field Artillery," by Major-Gen. Wm. J. Snow, chief of field artillery, United States Army.

THURSDAY, OCT. 9

2 to 5 p.m.

Meeting held in Engineers' Hall

Report of committee on standards.

Report of committee on resolutions.

Report of committee on nominations.

Address on "Electric Motor *vs.* Gasoline Motor in Street Railway Service," by N. W. Storer, general engineer, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

General business.

Election of officers.

Installation of officers.

Adjournment.

PROGRAM OF CLAIMS ASSOCIATION

MONDAY, OCT. 6

9:30 a.m. to 12:30 p.m.

Registration and distribution of badges at registration booth.

2:30 to 4:30 p.m.

Meeting held in Claims Hall

Annual address of the president.

Annual report of the secretary-treasurer.

Report of the executive committee.

Reports of committees:

(a) On employment.

(b) On ways and means.

Appointment of convention committees:

(a) On nominations.

(b) On resolutions.

Paper on "Claim Agents' Experience with One-Man Cars," by M. Alves Dixon, claim agent, El Paso (Texas) Railway.

Written discussion by H. G. Winsor, claim agent, Tacoma Railway & Power Company, Tacoma, Wash.

General discussion.

TUESDAY, OCT. 7

2:30 to 5 p.m.

Meeting held in Claims Hall

Paper on "Advisability of Fixed Schedules for Injuries to Persons Other than Employees," by Leonard J. Tynan, attorney, Public Service Railway, Newark, N. J.

Written discussion by E. P. Walsh, attorney, United Railways of St. Louis (Mo.)

General discussion.

"Comrades of Success"—Safety Educational Motion Picture, by courtesy of Public Service Corporation, Newark, N. J.

WEDNESDAY, OCT. 8

2:30 to 5 p.m.

Meeting held in Claims Hall

Paper on "Organization for Public Accident Prevention Campaign," by R. E. McDougall, claim agent, New York State Railways, Rochester, N. Y.

Written discussion by C. B. Proctor, claim agent, The Memphis (Tenn.) Street Railway.

General discussion.

THURSDAY, OCT. 9

2:30 to 5 p.m.

Meeting held in Claims Hall

Paper on "Speed and Its Relation to Accidents," by Ellis G. Carpenter, chief claim agent, Northern Ohio Traction & Light Company, Akron, Ohio.

Written discussion by H. K. Bennett, general claim agent, Eastern Massachusetts Street Railway, Boston, Mass.

General business.

Report of committee on resolutions.

Report of committee on nominations.

Election of officers.

Installation of officers.

Adjournment.

PROGRAM OF TRANSPORTATION AND TRAFFIC ASSOCIATION

MONDAY, OCT. 6

9:30 a.m. to 12:30 p.m.

Registration and distribution of badges at registration booth.

2 to 4:30 p.m.

Annual address of president.

Annual report of the executive committee.

Annual report of the secretary-treasurer.

Appointment of convention committees:

(a) On resolutions.

(b) On nominations.

Report of committee on code of traffic principles.

TUESDAY, OCT. 7

2 to 3:30 p.m.

Meeting held in Greek Temple

Report of committee on one-man car operation.

Discussion.

WEDNESDAY, OCT. 8

2 to 5 p.m.

Meeting held in Greek Temple

Report of committee on collection and registration of fares.

Discussion.

THURSDAY, OCT. 9

2 to 5 p.m.

Meeting held in Greek Temple

Report of committee on joint use of tracks and terminal facilities.

General business.

Report of committee on resolutions.

Report of committee on nominations.

Election of officers.

Installation of officers.

Adjournment.

Train Service from New York City

Bertram Berry, Chairman of Committee on Transportation, New York City, announces that delegates who are planning to go to the Convention on Sunday, Oct. 4, 1919, should communicate at once with C. E. McCullough, the District Representative of the Pennsylvania Railroad, at 253 Fifth Ave., New York City. The railroad company will put sufficient extra parlor cars on the 9.50 a.m. train to care for the needs of all. In case the demand for seats warrants a special parlor car train will be operated.

Publicity and Public Relations

On Sept. 20 a tentative program for informal sessions of publicity men was outlined by a committee consisting of Leake Carraway, Virginia Railway & Power Company, Norfolk, chairman; Luke Grant, Elevated Railways of Chicago, and John W. Colton, The Connecticut Company, New Haven, assisted by Harlow C. Clark, and E. B. Burritt of the Association office, Perry Arnold of the committee of one hundred and G. J. MacMurray, ELECTRIC RAILWAY JOURNAL.

At the convention the first meeting will be held on Tuesday, Oct. 7 at 2 p.m. At this it is expected F. W. Hild, general manager Denver Tramway, will address the publicity men; Z. V. Taylor, president Southern Public Utilities Company, Charlotte, N. C., will take up the value and nature of publicity, and the problem as seen by a publicity man will be presented by W. Dwight Burroughs, United Railways & Electric Company, Baltimore, Md. After the session just noted there will be a round table on ways and means for coordinating the publicity work of individual companies, and for persuading such companies as do not now have publicity departments that they should establish such departments.

After the round-table conference a committee will prepare a practical plan for carrying out the purposes of the meeting and will report to a second session of the publicity men on Wednesday afternoon. At this meeting the report will constitute the special order of business. On Thursday the findings of the conference will be presented to the American Association with the view of securing the approval and support of the entire industry.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Detroit's Streets Saturated

Traffic So Dense That Downtown Subways Have Become Imperative

At a meeting of the City Council of Detroit, Mich., with the Street Railway Commission members and city traffic experts on Sept. 16 plans were outlined for relieving congestion in Detroit's downtown section by means of subway construction. Both the construction of subways in the downtown districts and the extension of surface lines into sections not served by street cars or where service is now inadequate, were discussed, and it is hoped by Mayor James Couzens and members of the Council that the project will have advanced to a stage where it can be voted on by the people about Dec. 1.

BOND ISSUE PROPOSED

A bond issue to finance these improvements will be asked. It was pointed out by Mayor Couzens that these bonds would be in the form of a public improvement issue, in as much as the subway proposition is of the same nature as other betterments which tend to increase the city's traffic facilities. By relieving the congested conditions in the heart of the city service will be relieved in the outlying districts.

Mayor Couzens emphasized the fact that Detroit had reached the condition where the streets are inadequate for the volume of traffic, both electric railway and vehicular, and while improvements are contemplated for vehicular traffic by widening several streets, thus to lessen congestion, more room must also be provided for the electric railway cars.

Details of the plan of co-operation between the city and the Detroit United Railway in regard to the proposed subways and extensions in outlying territory remain to be worked out. It is realized that co-operation with the Detroit United in the matter of extensions is necessary if the best results are to be obtained.

VOTE ON DEC. 1

It is planned to ask the voters on Dec. 1 to authorize a bond issue of about $8,000,000, providing for the construction of the Woodward Avenue subway from Adelaide Street, to the River and the Fort Street dip from Cass Avenue, to Cadillac Square, as well as the necessary stations and the reconstruction of the streets after the tracks are submerged. It is expected by the engineers to have a report on the number of miles of needed extensions, ready about Oct. 1. After the necessary surveys are made, the amount of bonds required for the extensions will be determined.

PLAN TO ABOLISH AUTO PARKING

In the two years' time which it is estimated the construction of the subways would require, conditions of electric railway traffic could be materially improved by rerouting the existing surface lines, and by placing rigid restrictions on the parking of automobiles along streets, where the lines of the Detroit United Railway now exist, the Councilmen were told by the street railway experts. It was recommended that all parking of autos in Woodward Avenue in the vicinity of the City Hall be abolished at once.

A renewal of the Kronk ordinance restraining the Detroit United Railway from increasing fares to more than 5 cents provides for the continuation of the 5-cent fare rate on the city lines.

Will Municipalize English Coast Tramway

There is a prospect that the whole of the tramways and light railways out Lancashire coast from Fleetwood through Blackpool and St. Anne's to Lytham, a distance of about 20 miles, will soon be municipally owned and operated. The places named are highly popular seaside resorts and during the summer and the autumn an enormous traffic is done. The Blackpool Tramways have for many years been owned and worked by the Town Council, but before their time of city ownership the sea front line was worked by a company on the electric conduit system—one of the first if not the very first example of the kind of thing in the world. Overhead wires were substituted long ago. Recently the Blackpool Town Council purchased from the company owning it the Blackpool and the Fleetwood Tramroad, which is a railway in its own right-of-way for most of the distance. Now St. Anne's Urban Council proposes to buy the undertaking of the Blackpool, St. Anne's & Lytham Tramway, for £140,000. The line is 7½ miles long. Many years ago the cars were worked by gas engines mounted under the bodies, but the trolley was substituted. Possibly through cars will be run all the way from Fleetwood to St. Anne's.

Temporary Subsidies Favored

Prof. Bullock So Believes, While Mr. Babson Is for Private Control or State Ownership

Hearings by the special legislative commission in Massachusetts which is investigating electric railway affairs will be resumed on Sept. 30. At the last hearing, which was held on Sept. 18, Prof. Charles J. Bullock of the economics department of Harvard University; Roger W. Babson, the economist, and Charles M. Rogerson, a Boston banker, addressed the commission.

SUBSIDIZATION SHOULD BE TEMPORARY

Prof. Bullock maintained that if subsidies are granted to operating companies, these should be only temporary. He conceded that it is not feasible at present to fix a rate of fare which will yield sufficient revenue to meet all the present charges upon the operating companies. The witness urged the repeal of the present excise tax, but held that other existing taxes should remain. He agreed that all users of the public highway should be taxed in a sum fairly commensurate with the damage they cause to the highway. Comparison of taxes levied upon motor trucks and on the street car indicates that the motor truck tax is too low.

BOSTON TRUSTEES RIGHT

In discussing the Boston Elevated Railway, Prof. Bullock said that the trustees are proceeding along the right lines as to fares. Practically everyone realizes, but grudgingly admits, that the purchasing power of the dime to-day equals that of the nickel of a few years ago. The psychological effect of the foregoing fact being impressed upon the public twice daily is a troublesome factor. If it were possible for car riders to pay for their transportation once a month, much of the present opposition to the 10-cent fare might be dissipated. Prof. Bullock said that in his observation most of the complaint as to increased fares had come from the laboring classes, whose wages in almost all instances have been at least doubled in the past few years. Mr. Babson declared that either unrestricted private management or positive municipal or state ownership should be established, and not a mixture of the two.

Mr. Rogerson said that some limit should be set upon the share of gross revenue which is to be paid for labor.

The commission's report must be completed on or before Nov. 15.

Muscatine Has Labor and Fare Problem

Railway Officials Arrested in City Where There Has Been No Service Since Aug. 1

Two electric railway officials at Davenport, Ia., have been arrested and fined "for the crime of not running street cars." The men are President B. J. Denman and Vice-president and General Manager J. G. Huntoon of the Clinton Davenport & Muscatine Railway, which operates in Muscatine. Messrs. Denman and Huntoon were placed under $300 bonds each to insure court appearance and fined $100 and costs each. They have appealed the case.

SERVICE SUSPENDED SINCE AUG. 1

Cars have not been running in Muscatine since Aug. 1, when the men went out on strike and got a 60-cent scale. The city refused to give the company a 7-cent fare and the company refused to resume operation after the strike was settled. The present fare runs from 3 cents to 5 cents.

An equity case on the same count "of not operating street cars" in accordance with the franchise has been filed against the company in the Muscatine District Court. The company filed an answer stating that operation on the new wage scale and the old fare would be confiscatory.

The city of Muscatine filed a motion to strike certain paragraphs from this answer. There were twenty-one counts in the city's motion. Judge William Theophilus in the Muscatine District Court sustained nine of these counts and ruled out twelve others.

In the meantime Judge M. F. Donegan of Davenport had taken a hand in the situation. He issued a mandamus ordering the company to begin operation forthwith. No notice was served on the company, and Judge Donegan issued an order instructing Sheriff R. B. Wiley of Mascatine County to take charge of the Muscatine lines and operate them.

SHERIFF A POOR OPERATOR

The sheriff ordered the trainmen to report for duty. He took one car out of the carhouse and got the tracks cleaned up ready for the schedule. He announced to the city that the regular service would begin at 2 o'clock on the afternoon of Sept. 5. It was then found that the cars were lacking in equipment and that there were no spare parts at the carhouse. In consequence, service could not be resumed and the sheriff gave up his position of railway manager as a bad job.

The company maintained that Judge Donegan had no right to issue a mandamus ordering service in terms of the franchise, which is two-man car operation, when the Supreme Court of Iowa had issued a mandamus restraining all interference with the one-man car system.

Here the situation remained on Sept. 16, with no cars running and city officials at loggerheads with company heads. The situation had become so tense that at a mass meeting on Sept. 12, attended by 1200 persons, organization of the People's Protective Association & Motor Bus System was advocated.

This latest cure-all for electric railway ills is to be capitalized at $75,000, and stock sold for $10 a share. The audience was urged to "use the thinker God Almighty gave them and not let any corporation do their thinking for them."

After indicting the company on this last count an attempt was made to secure stock subscriptions at $10 a share but the move met with very little success.

Cincinnati "Loop" Contracts Awarded

The Cincinnati Rapid Transit Commission has awarded to D. P. Foley a contract for the construction of part of the rapid transit loop. The contract includes the construction of all walls and supports from Walnut to Charles Streets and the erection of the central station on Vine Street. Mr. Foley's bid was $524,000, the lowest of four bids submitted.

The contract for the construction of the dam at Ludlow Avenue for the purpose of draining the canal was awarded to the John Reuble Construction Company whose bid was $2,700.

The commission announced that the water would not be drained from the canal until Oct. 15, in answer to a protest filed by the Union Gas & Electric Company against draining the canal on Sept. 15, as originally planned, because of damage that might result to the generating plant at Front and Rose Streets.

Mr. McLimont's Work Appreciated

The employees of the Winnipeg (Man.) Electric Railway have formed an athletic association which, in point of numbers, is one of the strongest in Western Canada. The association is encouraged in every way by the company, and A. W. McLimont, the vice president and general manager, takes a personal interest in the association's activities.

The annual meet of the association held on Sept. 6 scored the biggest success of any athletic meet ever held in the city. Over thirty events were scheduled — including nine championship contests — and more than 4000 people attended.

A very pleasing incident took place during the afternoon when Joseph Fahey, one of Winnipeg's most prominent citizens, seized a megaphone and told the crowd that they were indebted for that day's splendid outing to Mr. McLimont whom he described as "the most popular and most wide-awake sporting and business man Winnipeg ever had." He then called for three cheers for Mr. McLimont. As spontaneous as was Mr. Fahey's action, the huge crowd rose to its feet and the whole arena rang with the cheering. The men in the crowd took off their caps and waved them, and a "tiger" reached the climax of enthusiasm. It was a remarkable demonstration to the popularity of Mr. McLimont, who has been in Winnipeg only two years.

New York Executives Meet at Syracuse

Executive heads of most of the important electric railway systems in New York State met at Syracuse on Sept. 18 to hear reports as to the present condition of the industry in the State and to formulate plans for further activities. The meeting was called by President E. A. Maher, Jr., of the New York Electric Railway Association, at the request of the "committee of ten," of which Joseph K. Choate is chairman.

The first speaker was Mr. Choate. He read a carefully prepared paper outlining the present situation which is particularly bad in New York State on account of the conflicting jurisdictions of State and municipal authorities. An extended abstract of Mr. Choate's paper will be given in a later issue of the ELECTRIC RAILWAY JOURNAL. A significant quotation is given on page 652 of this week's issue.

The discussion was opened by James L. Quackenbush, general attorney, Interborough Rapid Transit Company. He criticized very severely the city administration in New York and expressed the fear that the people are overlooking the fact that there is a representative government in the State. He emphasized the point that to secure relief in the present emergency it will be necessary to work through the Legislature and the Governor.

Mr. Maher then called on a number of representatives of electric railways for statements regarding the status of their respective properties. Before doing so, however, he pointed out how on the Third Avenue Railway System in New York City, of which he is vice-president, it had been found necessary to shut down several lines. Many other railway officers testified to the extremely critical condition of most of the electric railways.

A ray of light was shed on the gloomy picture presented by most of the speakers by James F. Barnes, who stated that in Schenectady public sentiment was turning toward the railway and that the result of the fare increases there has been very gratifying.

The conference appointed a committee on resolutions, which will report at a later meeting, with the following personnel: James L. Quackenbush, chairman; J. W. Killeen, Buffalo, N. Y.; H. B. Weatherwax, and Harlow C. Clark, New York City.

News Notes

Columbus Linemen Return to Work.—Linemen of the Columbus Railway, Power & Light Company, Columbus, Ohio, returned to work on Sept. 10, after having been idle since Aug. 8.

Interurban Employees Accept Wage Increase.—Employees of the Boston & Worcester Street Railway have voted to accept the offer of the company for a maximum wage of 52 cents an hour, an increase of 5 cents over the previous rate.

Platform Men Choose Arbitrator.—The local branch of the Amalgamated Association at Columbus, Ohio, has selected J. C. Dougherty, a barber, to represent the men on the board of arbitration which is to consider the demands made upon the Columbus Railway, Power & Light Company recently.

Court Approves Brooklyn Wage Agreement.—Judge Mayer of the Federal District Court has directed Receiver Lindley M. Garrison of the Brooklyn (N. Y.) Rapid Transit Company and its subsidiaries to pay the 25 per cent advance in wages promised the employees in the strike settlement agreement.

Strike in Chickasha.—Service on the lines of the Chickasha (Okla.) Street Railway was suspended on Sept. 8 when the conductors and motormen went out on strike. They had demanded an increase in wages from 35 cents to 40 cents an hour. When the demands were refused, the men put all cars in the carhouse and refused to work longer.

Civic League Wants Municipal Ownership. — Municipal ownership of the United Railways, St. Louis, Mo., has been advocated in a report issued on Sept. 18 by the executive board of the Civic League after long study of the situation. The league is starting a campaign to have the lines taken over by the city. The report pointed out the steps to be taken—"recapture" of the franchise, elimination of State Commission control of St. Louis utilities, and amendment of the State Constitution to increase the city's bonded debt.

I. T. S. Wage Conferences On.—At a conference held at Springfield, Ill., on Sept. 15, trainmen on the Illinois Traction System discussed whether they would accept the proposal made by General-Manager Handshey in the wage controversy. Mr. Handshey is said to have offered the men 55 cents an hour for conductors and motormen to Dec. 1, 1919, and 68 cents an hour for the year following. The men are said to have receded from their demand of 75 cents an hour and offered to take the 68 cents an hour immediately. The company refused this.

Ontario Hydro-Radial News.—At a largely attended meeting in the Pickering Township Council Hall, Sir Adam Beck, chairman of the Hydro Commission, outlined in detail the proposed Toronto & Eastern Electric Railway system. The line will run from Toronto to Bowmanville, passing through Pickering, Whitby, Oshawa and on to Bowmanville, having a total length of 43½ miles. The cost of the road is estimated at $8,360,794, of which Toronto's share is $4,328,665. The estimated revenue per year totals $1,118,003, and operating expenses $1,076,175, leaving net revenue of $41,828. Sir Adam announced that the radial would operate 6 miles into Toronto without a grade crossing and intimated that there would be a downtown loop.

Quincy May Run Local Railway.—In response to the position set forth by the trustees of the Eastern Massachusetts Street Railway recently to the effect that many of the company's routes in Quincy, Mass., cannot be operated if unrestricted jitney competition is allowed to continue, Mayor Whiton has arranged a conference with representatives of the company on behalf of the city. The trustees claim that some of the local lines have been losing money all summer, especially in relation to Hodgh's Neck service. It is probable that the operation of the local lines by the city will be discussed at the conference, but nothing immediate in this respect seems apparent.

Mayor Attacks New Minneapolis Grant.—Mayor J. E. Meyers has begun district court proceedings in Hennepin County to prevent preparations for a vote by the people on Dec. 9 upon the proposed cost-of-service franchise for the Minneapolis Street Railway. The petition will ask a temporary restraining order to prevent the special election or any expense attendant thereon. The complaint is directed against the city clerk, city controller, city treasurer, aldermen and railway. The franchise was passed by the Council on Sept. 3. The Mayor had no power to veto the ordinance. It is alleged the ordinance is in violation of the enabling act and that the $24,000,000 agreed upon as a valuation basis is too high. Request will be made at the proper time to make the injunction, if granted, perpetual.

Strike in Clinton.—Demanding an eight-hour day and an increase of wages from 50 cents to 90 cents an hour, fifty trainmen of the Clinton (Ia.) Railway struck on Sept. 15, tying up the entire system. The men were organized at the time of the strike on the Tri-City Railway's lines. They operate one-man cars and have been drawing the 50-cent scale since September, 1918. The fare in Clinton is 5 cents. The company, although not making any money on this fare, is not asking for an increase. Jitney bus lines have been organized, but are charging such extortionate rates, that they have received scant patronage. Factories have organized truck service for their employees. Up to Sept. 16 city authorities had not taken a hand in the situation.

Railway Committee for Connecticut.—Appointment of an electric railway commission by the Connecticut Chamber of Commerce was voted at a recent executive meeting of the state chamber in Hartford. The informal approval of the State Public Utilities Commission, to which the official investigation of the Connecticut electric railway problem was confided at the close of the last general assembly, has been obtained. The purpose of the commission as stated in the vote passed at the executive session is "to continue the study of the street railway problem and to report to the General Assembly of 1921 the conditions at the close of the year 1920, together with recommendations and necessary legislation which they believe to be required in order to place the street railways of the State on a safe, fair and efficient operating basis."

Program of Meeting

Investment Bankers Association of America

The eighth annual meeting of the Investment Bankers Association of America will be held at St. Louis, Mo., on Oct. 20, 21 and 22. On Oct. 21 the railroad securities committee, Allen B. Forbes, of Harris, Forbes & Company, New York, chairman, will report. On Oct. 22 the public service securities committee, O. B. Willcox of Bonbright & Company, New York, chairman, will report.

Financial and Corporate

Rental in Default

Brooklyn Rapid Transit Receiver Reports Leased Surface Lines Are Not Paying Their Way

Lindley M. Garrison, receiver of the Brooklyn (N. Y.) Rapid Transit Company, will inform Federal Judge Julius M. Mayer on Sept. 29 that he will not be able to pay rental due the Brooklyn City Railroad on Oct. 1 and ask for instructions. A circular sent on Sept. 20 by Frank Lyman, president of the Brooklyn City Railroad, to stockholders of that company announced the appointment of a committee that "has been charged with power to take such steps as may be found to be necessary to protect the interests of the company and its security holders."

Non-payment of the October rental instalment will cause the Brooklyn City Railroad to pass payment of its October dividend. The company has $12,000,000 of stock outstanding, no part of which is owned by the Brooklyn Rapid Transit Company. Its lease is to the Brooklyn Heights Railroad, a subsidiary of the Brooklyn Rapid Transit Company, for 999 years at $1,200,000, payable in quarterly instalments, with taxes and interest on bonds additional. Taxes amount to more than $150,000 a year.

The lease gives the lessee sixty days of grace in the event of a tentative default in a rental payment, so that an adjustment will be possible until Dec. 1.

The Brooklyn Rapid Transit Company made default on Sept. 15 in the payment of $46,034 due as the income tax for 1918 of the lessor company. The lessor paid the tax instalment to avoid the penalties.

As an independent system the Brooklyn City Railroad, with its 231 miles of surface lines, has been losing $50,000 a month on operating expenses, according to the estimates of the receiver's experts. The company had $200,000 in cash reserve on July 15.

More Bay State Abandonments

Since the trustees assumed control of the property, the Nashua, N. H., and Newport, R. I., lines of the Bay State Street Railway, Boston, Mass., have been separated from the system, and about 60 miles of non-paying lines have been discontinued from service. On Sept. 2 the line from Bridgewater through Middleboro to the outskirts of New Bedford, Mass., and the line of the Georgetown, Rowley & Ipswich Street Railway, a subsidiary of the company, were discontinued. These remain out of service, but under the terms of Chap. 188, Acts of 1919, towns are permitted to levy up to $1 per thousand of the last year's valuation and cities up to 50 cents per thousand, to meet deficits in the cost of local electric railway service. It has been shown that to restore service in the town of Ipswich, about $6,000 a year would have to be contributed by the town. It has not yet been determined what action the residents of the above localities will take in regard to the restoration of service.

Financial News Notes

Ohio Road Purchased by Bondholders.—The property of the Pennsylvania & Ohio Railway, Ashtabula, Ohio, with a line between Conneaut and Jefferson, Ohio, has been purchased by the bondholders for $233,000. The company has been in the hands of a receiver since June 15, 1917.

St. Louis Company Has Balance in July.—The report of the United Railways, St. Louis, Mo., for July has been filed in the United States District Court by Rolla Wells, receiver. It shows total receipts, including cash on deposit, of $2,724,037 and disbursements of $2,146,312, leaving a balance of $577,725. It was explained by the company that the payroll disbursement for July represented only two weeks' pay, including that of the office force.

Receiver for St. Louis Subsidiaries.—Rolla Wells, receiver of the United Railways, St. Louis, Mo., has been appointed receiver of three subsidiary companies, by Judge Dyer in the Federal Court. The appointment was made on the request of Thomas Francis, attorney for the United Railways. The three subsidiary companies are the Missouri Electric Railway, which runs cars to St. Charles; the Florissant Construction, Real Estate & Investment Company and the Merchants' Express Company.

Puts High Value on McKinley Bridge.—The Board of Tax Assessment Review of Madison County, Illinois, has announced that it has fixed the assessed valuation of the Illinois portion of the McKinley bridge, the property of the Illinois Traction System, McKinley Lines, Peoria, Ill., at a higher figure than ever before. The valuation is fixed at $1,090,221. In former years this valuation has annually been a subject of controversy. Up until 1915 the McKinley Bridge valuation was fixed at $600,000. In 1915 it was dropped to $420,000. In 1916 it was raised to $1,080,000, but in 1917 and 1918 it was again placed at $420,000. The present valuation is higher than the previous high figure by $102,221.

Arbitration Hearing Postponed.—The hearing on the Cleveland (Ohio) Railway's request for an increase of the rate of dividend from 6 per cent to 7 per cent, which was to have been opened on Sept. 15, has been postponed for a few days at the request of the company's attorneys. It is the intention of the arbitrators to define more clearly the question to be decided before proceeding with the hearing. The company contends that as money for investment is commanding a premium investors in the company are entitled to a 7 per cent return on their stock although the service-at-cost grant under which the company operates provides for a return of only 6 per cent.

Power Bills a First Lien.—The Nassau Electric Railroad, a subsidiary of the Brooklyn Rapid Transit Company, informed Federal Judge Julius M. Mayer recently that it is unable to pay bills aggregating $528,880 which it owes to the Brooklyn Rapid Transit Company for power supplied during the past seventy-five days. Both companies are in the hands of Lindley M. Garrison as receiver. Judge Mayer made an order that all power bills shall hereafter accrue as a first lien against the properties of the railroad. The court directed the receiver to present a plan for a permanent remedy.

Receiver Has Hope for Inland Empire.—F. E. Conners, receiver of the Spokane & Inland Empire Railroad, Spokane, Wash., is said to have declared on Sept. 10 that the railway, of which there was talk of junking all or part when it went into the hands of a receiver seven months ago, is now on a paying basis. For the last three months the road has been accumulating a considerable fund toward the interest on the bonded indebtedness, with the result that in the seven months of the receivership nearly half this interest has been earned. Mr. Conners is quoted as follows: "I maintain that the Inland can be made to pay permanently. All departments—the city car lines, the Coeur d'Alene division and the Inland division to the Palouse—are paying at the present time."

Traffic and Transportation

More Bargain Rides

Fall River Boosting for a Permanent Six-Cent Fare, Now on Trial as an Experiment

Fall River, Mass., is now getting fifty rides over the Bay State Street Railway for $3—a 6-cent fare made possible by a thirty-day commutation ticket. This was explained very briefly in the ELECTRIC RAILWAY JOURNAL for Sept. 13, but at that time nothing was said about the local viewpoint. As for that, the entire community has become intensely interested in the promotion of electric railway traffic and a large percentage of the population is actively engaged in efforts to popularize the trolley.

EVERYBODY BOOSTING

"Take the trolley" has become the slogan and talking up the trolley the favorite indoor and outdoor sport in Fall River. The department stores, drug and jewelry stores and banks are selling car tickets. One may buy a ticket at the gas company's office or at the office of the electric company in Fall River. The Chamber of Commerce and the Merchants' and the Manufacturers' Associations are campaigning for increased railway patronage and the four daily newspapers are boosting the game.

S. V. D'Unger, assistant manager of the Chamber of Commerce of Fall River, says that the explanation of this wonderful community interest in a public utility is that the public trustees of the Eastern Massachusetts Street Railway (formerly the Bay State) and the people of Fall River have been rigidly, ruggedly honest with each other. The trust of the community in the railway officials has been gained through an open, manly exchange of confidence embracing all railway problems affecting patron and carrier. Mr. D'Unger's explanation follows:

> In Fall River electric railway patrons have been paying a 10-cent fare and sidewalk and jitney competition has grown by leaps and bounds. Street car riding has been reduced to a "must" proposition—one "must" pay 10 cents only if one "must" ride. So the hosts became devotees of pedestrianism. The trials of the railway were set at naught by those who felt they should and would walk when they could. Only regular riders who were obliged to patronize the railway maintained its existence and the occasional rider whose need of street cars was either great or not at all was the prodigal who enjoyed the fatted calf.
>
> No one in Fall River seems to know how it happened, but, of a sudden, there came an awakening. Street car riding was a neglected community practice. People sought homes nearer to their work or work closer to their homes, the 10-cent fares doubling distance, in cost, at least, between home and work. Landlords demanding increased rents further complicated the problems involved and Fall River woke up.
>
> The Chamber of Commerce, taking the initiative, launched an educational campaign and the public was quick to respond to it. That the railway unquestionably had a fundamental place in the community as a requisite of business activity and industrial life was acknowledged.
>
> "A city without a street railway, like a sun without a spot, exists in theory only." So say the people of Fall River. They will tell you they are out to support the railway for the signal purpose of making it support them. They will tell you frankly that disaster threatens any community which fails to maintain an adequate railway. The realization that constant riders—the regular daily patrons of the cars were forced to pay an increased carfare only because the intermittent rider proved pusillanimous, using the trolley when a 10-cent ride proved a bargain, and at no other time, came like a bolt from a clear sky.
>
> When the public trustees frankly confessed to a representative committee of Fall River citizens, led by the Chamber of Commerce, that sidewalk competition and jitney progress had reduced electric railway traffic and increased electric railway fares, they threw down the gauntlet.
>
> "Do you mean you will give us a cheaper fare if we will ride more than we do?" demanded Fall River of the public trustees.
>
> "That is exactly what we mean," smiled the same trustees.
>
> Now Fall River, almost as a unit, is boosting the electric railway in the hope that the 6-cent fare, allowed by the trussees for a trial period only, may be retained. Producing electric railway traffic by enlisting car riders is an extraordinary community undertaking in these days of strife between the average community and public utility. For this precendent Fall River people demand credit.

City and Company to Co-operate

A telegram to the ELECTRIC RAILWAY JOURNAL from Kansas City, Mo., dated Sept. 22 is to the effect that the Kansas City Railways, which was authorized by the Public Service Commission of Missouri to charge an 8-cent fare, has agreed with city officials to charge only a straight 7-cent fare. The city on the other hand has agreed to help work out a cost-of-service plan. As the first step toward performing its part of the agreement the city will put into effect an ordinance regulating jitneys. Under the order of the Public Service Commission railway fare checks in quantities were to be sold at seven checks for 50 cents and two for 15 cents. It is hoped that the jitney regulation and other helps by the city will offset the loss to the company by charging only a straight 7-cent fare. The company reserves the right to charge eight cents if the new plan does not result in adequate revenue.

Sherbrooke Increases Fares

This and Other Concessions Secured After Case Is Put Forcefully Before the Public

Sherbrooke, Que., has gone on record in no uncertain manner concerning its electric railway service and has earned the distinction of being the first city in Canada, and one of the very few on the continent, where the people have voted, by a good sized majority, to grant a substantial increase in fares and allow other concessions.

Some months ago a committee of citizens was appointed to investigate the railway situation in Sherbrooke and to recommend some plan that would meet the conditions. This action was taken despite the fact that the Sherbrooke Railway & Power Company had a contract with the city that had several years to run. The committee finally submitted a report in which it was urged that the fares be increased from 5 cents to six tickets for 25 cents with an 8-cent cash fare. The company is also relieved of the cost of snow removal for a period of five years.

An important feature of the new by-law presented by the citizens' committee was in regard to paving costs. The city is undertaking a pretentious paving campaign and instead of having to pay the usual proportion of the cost of this work the company will be required to pay only so much as is made necessary by the presence of the company's tracks in the streets. Moreover, the company has five years to pay.

In return for the concessions allowed by the new by-law the company agrees to make several extensions and to double-track the line on the main street.

The recommendations of the citizens' committee were approved by the City Council and indorsed by the Board of Trade. The whole matter was then put up to the people and on Sept. 15 the vote was taken with the result that the measure was carried in every ward in the city. The returns showed that the people not only were strongly in sympathy with the new agreement and were willing to waive the old contract but also that they were opposed to municipal ownership, which had been offered as a substitute for the new by-law.

A feature of the campaign was the publicity work which was instituted as soon as the issue was fairly before the people. The case was thoroughly explained in a series of articles in the papers, and several public meetings were held at which speakers for and against the new measure were allowed to present their respective views. It is certain, therefore, that the people understood the case well.

Southern Jersey Still Boycotts Zone Plan

Candidates for Public Office Inject Fares Into Campaign—Commission Ordered to Show Reason for New System

Last week's issue gave in brief detail the inauguration of the zone-mile system on the lines of the Public Service Railway of New Jersey and mentioned the violence that took place in the Southern division comprising Camden and vicinity. A resumé of happenings since that time and of conditions as they stood at the time of going to press follows:

For three days, Wednesday to Saturday of last week on account of the ship workers refusing to pay fares, no cars were operated to the shipyards in Camden or Gloucester. In fact part of the time cars were entirely discontinued in the Camden division. On Saturday morning trippers for the first time were operated to take the men to work to the New York Shipbuilding yards. Twenty-four cars were used, the majority being those that belonged to the Emergency Fleet Corporation. In addition to having the name of the shipbuilding company painted on the car sides, large placards written only in English were hung inside and out giving notice that they were government cars and that to damage them would invite Federal prosecution. It is reported that not more than twenty-five shipyard employees rode on these cars. No violence occurred but those that rode came in for a bitter denunciation by their boycotting fellow employees, who lined up in front of the plant, where the cars passed.

In starting operation the company changed the original plan of fare collection to which the workers had objected so that on the trippers in the rush hours the riders to the yard would not be required to alight at the so-called "Bull pens" which are some 700 ft. from the gates and pay their fares at the turnstiles, but should be discharged at the main gate.

There are three zones on the route from Camden to the New York Shipbuilding yard, and passengers pay fare on boarding depending at the zone point where they board the car. This allows passengers to alight at the main gates with a minimum of delay.

At the Camden Ferry, where there is also a postpayment area, the system of fare collection will not be changed. No trouble has been experienced at this end of the line. Since Tuesday no real violence which was not traceable to vicious youths and unresponsible idlers, has developed and the authorities express the conviction that there will be none in the future. The workers at Pusey & Jones did however endeavor to destroy the postpayment area at that plant on Wednesday last, and someone did try to fire a bridge. There were also several other outbreaks of minor importance earlier in the week.

Fares in Camden as a rule are lower under the zone system yet all the people as a unit are said to be against the change for the fares to outlying points have been increased. The public has refused to patronize the cars as before the change and the steam railroads have in some instances put on extra service. Bus lines are also heavily patronized.

The Public Utilities Commission on Sept. 18, replied to the candidates for public office who have been making political capital of the zone system at their expense. In referring to the attacks on the zone system the statement says such attacks "lately have become so vicious and are reiterated with so much effrontery that patience has ceased to be a virtue and may lead to a belief that no answer is forthcoming because none can be made." The statement also outlined the status of fare changes on the Public Service Railway from the time the first charge for transfers was allowed in July, 1918, to meet increased wages for its employees and further states:

"On July 2 of this year the War Labor Board made another award which will result annually in the payment of $1,175,000 in wages. Any increase in revenue from the zone plan, as has been charged, to enrich the corporation will be needed to pay increased wages to the company's employees.

"The present zone plan is by no means regarded as fixed. It is merely a matter of experiment. If there is co-operation on the part of the public, it is believed that defects and inequalities can be corrected and a better and more logical system of charging devised than the old flat rate method. •

"This board like similar boards in other states has authority to grant emergency increases without prior property valuation. It has been evident that these companies could not maintain their credit and supply adequate service unless allowed to increase revenues. To have bankruptcy at a time of abnormal financial and industrial conditions, in our judgment would have been against the public interest."

"The emergency increases allowed are not permanent. If permitting emergency increases in rates of public utilities to meet abnormal conditions, suddenly developed, is believed to be opposed to the public interest, the law can be amended."

COMMISSION'S REMOVAL ASKED

The Montclair Board of Commissoners through its Mayor, Louis D. Dodd has asked the governor to fix dates for a hearing for the removal of the Utility Commissioners. The demand for removal of the state officials is based on neglect of duty and misconduct in office, to violation of the act concerning public utilities permitting the zone fare system and the rates of fare without hearing and notice to the municipalities affected thereby, in the fixing and determining of rates under the zone system greater than requested or expected by the Public Service Railway, and in the increasing of fares under the zone fare system in certain portions of Montclair more than 300 per cent without a hearing and without evidence that such an increase was required to make an adequate return.

In other divisions the operation of the system is improving although there is still some delay at the terminals, the company has about 100 ticket sellers on the cars during rush hours and has been able to sell a considerable number of full fare tickets. The public however as a rule is somewhat upset due to the politicians and the wide publicity given by the papers to what they will do if elected.

To improve fare collection matters at the Federal Shipbuilding Company in Kearney the company moved the zone limit to the entrance of the plant and has placed fare collectors on the ground so that the shipbuilders can pay their fares after they leave the cars and thus avoid delays.

The company has also agreed to accept "pay tickets" in part payment of fares. Heretofore the company in order to keep an accurate record of passengers has required that either cash or tickets only be accepted and that split fares would not be allowed. Officials of the company believe that they have no legal right to refuse the tickets with money.

Holyoke Fares Before Massachusetts Commission

L. D. Pellissier, president of the Holyoke (Mass.) Street Railway, appeared before the Public Service Commission of Massachusetts at Boston on Sept. 17 relative to the new schedule of rates which the company desires to put into effect. He declared that unless the schedule is approved the company is likely to lose $156,000 next year. The petition calls for the institution of two 6-cent zones in Holyoke, dividing the existing center area in two parts, with the retention of present length of zones on the outer sections. It is estimated that the company loses $50,000 a year as a result of the operation of jitneys, besides substantial sums in the abuse of transfer privileges. Transfers will be discontinued under the new tariff.

The recent wage arbitration resulted in increased wages totaling about $100,000 a year. The company estimates the gains from the proposed changes in fare at about $110,000 a year. It asks the right to charge 6 cents in each zone instead of 5-cent fare charged in the outer zones, and to charge 6 cents in each of the center zones in place of the single 7-cent cross-zone fare as at present. It was pointed out that if special workmen's tickets were provided, the company's revenue would be further decreased. The standard zone length is to be about 2 miles.

Truce in West Virginia

Roads Work With Governor While Awaiting Result of Conference Called by President Wilson

Desire to comply with the suggestion of Governor Cornwell that no applications for rate increases, pending or to be made to the Public Service Commission of West Virginia, be pressed at this time when efforts are being made to reduce the high cost of living, was expressed by representatives of all such petitioners whose petitions had matured for hearing on Sept. 9, the regular September docket day of the commission, such petitions including those of several electric railways.

The lead in this position was taken by counsel for the Montgomery Gas Company, whose case was continued on the open docket. A similar statement was made by former Governor W. A. MacCorkle for the Charleston Interurban Railroad, which has asked for authority to increase its fares from 5 cents to 7 cents. The case was presented in part, however, and was completed, then leaving it to the commission to decide upon a proper time to determine it.

PROTEST OF CITY

Following the presentation of evidence in support of the petition of the Charleston Interurban Railroad to the commission for authority to increase its passenger rates and change its fare zones, formal protest on behalf of the city of Charleston was made to the commission by City Solicitor Donald O. Blagg.

In the written protest to the commission it is specifically denied, "upon information and belief, that any alleged increased cost of operation or maintenance at this time would warrant an increase of passenger rates, and if any proposed additions or improvements would warrant that, such increase should only be permitted after such investment is made."

Three further reasons for the protest are stated as follows:

1. Practically the entire investment of the applicant was made prior to the recent advance in cost of labor and material, of which it complains.
2. During the time of such advance in costs, there has been also a very large increase in the income-producing business of the applicant, which has been handled without any commensurate increase in investment; this due to the unusual growth of population along its lines.
3. No increase should be granted by reason of unusual war conditions until a reasonable time has elapsed in which it may be ascertained what is to be the normal base of prices of all kinds in the immediate future.

Six Cents in Norfolk and Portsmouth

A 6-cent fare with a 2-cent charge for transfers will go into effect on the lines of the Virginia Railway & Power Company in Norfolk on Sept. 28 and on the company's lines in Portsmouth on Sept. 29. Effective the same date the State Corporation Commission has authorized the 6-cent fare in each of the zones on the lines of the company outside of the cities mentioned. The changes in fare in the cities really are the outcome of the appeal of the company to the State Commission for additional zones on its lines outside the city limits. Following this appeal by the company to the State, citizens' committees were organized in the cities and it was suggested to the company that an increase in fares be made general throughout the system, in lieu of additional zones as contemplated.

In this connection a plan was advanced which amounts to the remission of the payment made by the company to Norfolk for use of streets. In the case of Norfolk these charges will be $3,000 a month, while in the case of Portsmouth they will be $1,000 a month. In Portsmouth no payment for use of streets has heretofore been made. In the future the income from transfers will be paid to the city if such income is greater than the respective amounts of $3,000 and $1,000.

As the company had stated to its trainmen that their wages could be increased only if the company secured additional revenue through an advance in fares, it is now announced that on Oct. 1 the wages will be raised 5 cents an hour to 41 cents and 45 cents.

New St. Louis Fares in Effect

The increased fare schedules granted by the Public Service Commission recently to the United Railways, St. Louis, Mo., went into effect at midnight on Sept. 19 with the exception of the 8-cent cash fare, which will not be charged until the company gets a new supply of metal tokens and puts them on the market. A 7-cent cash fare will be accepted by conductors until further notice. An extraordinary demand for metal adult tickets, which sell at two for 15 cents, seven for 50 cents, and fifty for $3.50, soon exhausted 1,000,000 tokens which were placed on sale by Receiver Wells at many business houses, banks and drug stores.

By an informal ruling of the Public Service Commission, Col. A. T. Perkins, manager of the United Railways, has been authorized to reduce the fare for children from 3¾ cents to 3½ cents, selling two tickets for 7 cents. The request was made of the commission by Colonel Perkins in fairness to the public and with the view of permitting children to take advantage of reduced rates without having to buy four tickets at a time. Under the original ruling it would have been necessary to purchase children's tickets in blocks of four for 15 cents or pay a cash fare of 4 cents.

Transportation News Notes

Seven-Cent Fare at Calais, Me.—At a joint meeting of the Maine and the New Brunswick Public Utilities Commissions held at Calais, Me., on Sept. 18, the Calais Street Railway was granted the right to charge a 7-cent fare on its system, with the proviso that eight tickets be sold for 50 cents.

Seven Cents Asked in Brunswick, Ga.—The City & Suburban Railway, Brunswick, Ga., has applied to the State Railroad Commission for an increase in fare from 5 cents to 7 cents. The company previously petitioned the Council of Brunswick for an advance in fare, but, anticipating refusal of its request, turned to the commission for relief.

Company Publishes Bulletin. — As part of its campaign for educating the people of Minneapolis, Minn., who will vote upon the question of a service-at-cost franchise for the Twin City Rapid Transit Company in December, the company is publishing a weekly bulletin, *Rapid Transit News*. The first issue appeared on Sept. 8. It was extensively advertised in the company's cars.

All Pay Seven Cents. — Workmen's and children's 2½-cent street-car fares have been discontinued by the Dubuque (Ia.) Electric Company. This follows instructions of the United States Circuit Court of Appeals, reversing the ruling handed down in the United States District Court last December. The fare for all persons now on the lines of the Dubuque Electric Company will be 7 cents.

Ten-Cent Rate Suspended.—The Public Service Commission for the Second District has suspended, until October 15 inclusive, the 10-cent fare schedule of the Westchester Electric Railroad, Mt. Vernon, N. Y., originally proposed as effective on July 31, as far as it affects fares between New Rochelle and Mount Vernon. The prepared rates are under investigation by the commission as well as by the Public Service Commission, First District.

Further Transfer Restrictions.—It has been announced by Federal Judge Mayer in the District Court at New York that he will consider the question of relieving the Eighth Avenue Railroad, which was returned to its owners some months ago, and the Ninth Avenue Railroad, which is released from the control of Receiver Hedges of the New York Railways and relieved of the obligation to exchange transfers with intersecting lines.

Champaign Has a Record Day.—The Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill., experienced one of the heaviest days in its history, if not the heaviest, on a recent day known as Victory Day when the returned soldiers of Champaign County were formally welcomed. One car alone is said to have handled 2937 passengers during the day and another 2640. Not an accident was experienced.

Franchise Contest in Ohio Settled.—Officials of the Northern Ohio Traction & Light Company, Akron, Ohio, and the Commissioners of Stark County have reached an agreement on franchise terms on the portion of the line between Canton and Massillon, Ohio. The company will sell fifty tickets for $5, which is just half of the former fare, and will move its track to the center of the highway and pay its portion of the cost of repaving the road in 1920.

Safety Zones in Dallas.—Safety zones are to be established in Dallas, Tex., at the principal down-town street intersections, for patrons boarding or leaving street cars, and a city ordinance covering these features has been drafted and will be pushed through the Board of City Commissioners. The ordinance was drafted by Commissioner L. E. McGee and Lynn B. Milam, supervisor of public utilities, who recently made a study of the zone system as applied in other cities throughout the country.

Six-Cent Fare Upheld in Birmingham.—Chancellor Hugh A. Locke on Sept. 17 denied a petition for a preliminary injunction to restrain the City Commission of Birmingham, Ala., from allowing the Birmingham Railway, Light & Power Company to charge a 6-cent fare. At a hearing on Sept. 15, the Chancellor sustained demurrers to the petition so far as the Alabama Public Service Commission was concerned.

What action the complainants will take is not known. The 6-cent fare went into effect on Sept. 4 after it had been approved by the City Commission and the Public Service Commission.

Higher Rates Restrained at Montreal.—The 7-cent fare which was to have become effective on the lines of the Montreal (Que.) Tramways on Sept. 15 has been indefinitely suspended owing to the action of the city of Montreal in appealing from the order of the Montreal Tramways Commission, which sanctioned the increase. The city has served notice that it will take its case to the Public Utilities Commission of Quebec. The present 6-cent fares will continue until that body has rendered its decision. The fares which the Montreal Tramways Commission has fixed are: Four tickets for 25 cents during the working hours, or 7 cents cash fare at any time except after midnight, when the rate remains as at present, 15 cents.

Commission's Power at Issue. — The question of whether the Public Service Commission of New York has power to raise a rate of fare is again before the courts. Harriet Watson, through her attorney, William A. DeFord, has brought suit in the State Supreme Court to restrain the New York and North Shore Traction Company from charging more than 5 cents for a continuous ride. Justice Edward R. Finch issued an order requiring the traction company to show cause why it should not be enjoined. Permission to raise the fare was granted recently to the traction company by the Public Service Commission for the First District on the ground that certain legislative powers had been delegated to the commission by the Legislature. Mr. DeFord contends that the increase violates the terms of the franchise granted to the traction company by the city, which, he asserts, forbids such an increase.

Trenton Case Continued.—The petition of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for permission to add an additional fare zone to each of its five suburban branches and to impose a charge of 1 cent for all transfers issued in Trenton was heard on Sept. 16 before the Board of Public Utility Commissioners of New Jersey After Rankin Johnson, president of the railway, was examined the case was laid over until Sept. 30, at which time Mr. Johnson will be cross examined. Mr. Johnson said that his company would shortly erect fare zone signs on its suburban divisions instead of allowing the conductors to fix the zones by certain marks on trolley poles. Frank S. Katzenbach, Jr., counsel for the railway, said the suburban lines were being operated at a loss and that it was necessary to have additional revenue to make up the deficit.

Personal Mention

New Post for Oren Root

Becomes President of the Hudson & Manhattan Railroad—W. C. Fisk, Chairman of the Board

Oren Root has been elected president of the Hudson & Manhattan Railroad, New York, which operates the tube under the Hudson River, following the naming of Wilbur C. Fisk to be chairman of the board of directors. Mr. Root has been a director of the company for several years.

Mr. Root's connection with the public utility business began in 1894 shortly after his graduation from Hamilton College. In that year he became associated with the Metropolitan Street Railway, New York. His first position was with a construction gang laying tracks, after which he was appointed timekeeper. Later he acted as a trainman so as further to enlarge his knowledge of the practical problems of railroading. In the performance of all of these duties Mr. Root showed capacity for doing hard work and doing it well. After being connected with the system for about two years he was chosen assistant to the general manager. In this position he demonstrated a thorough knowledge of railway affairs and showed marked operating ability and was finally appointed assistant general manager of the company. Mr. Root became general manager of the company in 1903. At that time he was only twenty-nine years old.

In 1906 he was appointed vice-president of the company as the successor to Frank S. Gannon, resigned, but retained the office of general manager. When the road went into the hands of receivers he remained as general manager for the receivers. In 1912, when the Metropolitan Street Railway emerged from receivership, he became a director and a member of the executive committee of the company.

He resigned from active management of the New York Railways, the successor to the Metropolitan Street Railway, in 1912 to become associated with a group of bankers doing a general banking business, and who specialized in purchasing, financing and operating public utility properties. During the six years of this connection, Mr. Root was president of the Republic Railway & Light Company, which controlled a large group of railway, light and gas companies throughout Ohio and Pennsylvania, and was also chairman of the board of directors of the Central States Electric Company, which controlled electric light, gas and heating properties in Cleveland and surrounding territory. Six years later Mr. Root resigned from these companies. Mr. Root is a nephew of Elihu Root.

Obituary

Theodore P. Shonts Dead

Head of Rapid Transit and Surface Lines in New York Dies After Long Illness

Theodore P. Shonts, president of the Interborough Rapid Transit Company, New York, N. Y., and the New York Railways, died early on Sunday morning, Sept. 21. He had been ill since June 21, when he was stricken while at work in his office.

Davis & Sanford, New York.

THEODORE P. SHONTS

The two companies of which Mr. Shonts was the head control all the rapid transit lines in the Boroughs of Manhattan and the Bronx with their extensions to Brooklyn and Queens, except for the comparatively short line of the Brooklyn Rapid Transit Company in Manhattan, and also control a goodly part of the surface railways of the two boroughs.

GENIUS FOR ORGANIZATION

Mr. Shonts first applied his genius for organization to these properties in 1907 at which time he was elected as the head of the subway and elevated lines. In 1912 he was also elected president of the New York Railways, which had then just passed through receivership and foreclosure and come into control of the financial interests which dominated the rapid transit lines. To these properties Mr. Shonts brought a vast fund of knowledge of railroad affairs and of business organization garnered in a career that had carried him after his graduation from college through the professions of teaching and of law and in steam railroad and industrial work from the planning and financing of small short lines through the work of Chairman of the Panama Canal. Although he continued at the head of the canal work for only two years and although controversy later developed over the matter of ultimate credit for the Panama achievement, even partisans are forced to acknowledge that it was Mr. Shonts who set in motion and largely built up the staff and personnel which later completed that undertaking.

WARDED OFF RECEIVERSHIP

And so it has been with the Interborough Rapid Transit Company and the New York Railways. Mr. Shonts had a wonderful staff under him on both properties. While it is true that the surface lines are in the hands of a receiver it is generally admitted that under the present trying conditions the receivership was inevitable and that but for the organization built up by Mr. Shonts the receivership would probably have come long before it did. Certainly there were few if any men better fitted temperamentally or in the light of their previous experience than he for the vast task of co-ordinating the forces in charge of the great bulk of the transportation lines of the greater City of New York. As the New York *Times* said editorially, Mr. Shonts brought a giant's strength to the transit problem and he never spared the giant. Nowhere, perhaps, was this made more evident than in the long negotiating with the city over the contract under which the rapid transit lines in New York are now operated.

Mr. Shonts was born in Crawford County, Pennsylvania, in 1856. He was reared in Iowa and worked his way through Monmouth College from which he was graduated with the degree of B. A. in 1876. He started in business in a bank, but later studied law and then took up railroad construction work, eventually entering the railroad managerial field.

Mr. Shonts was buried on Sept. 23, from the Brick Presbyterian Church on Fifth Avenue. The Rev. Dr. Howard Duffield, a close friend of Mr. Shonts, officiated.

Charles M. Jacobs, the designer of the so-called McAdoo tunnels and those of the Pennsylvania Railroad under the Hudson River at New York, died in London on Sept. 7.

Hugh M. Wilson Dies

Hugh M. Wilson, from 1910 to 1916 first vice-president of the McGraw Publishing Company, publisher of the ELECTRIC RAILWAY JOURNAL and other papers, died suddenly at his home in Stockbridge, Mass., on Sept. 19. The cause was heart disease.

Before joining the McGraw staff Mr. Wilson had long been a prominent figure in the field of technical journalism, and from 1899 to 1908 was president and chief proprietor of the *Railway Age*. In 1905 the International Railway Congress met in Washington, D. C., and during the convention the *Railway Age* published a daily issue, with the papers and a report of each session printed in both French and English. It was a tremendous task, but was carried out successfully and brought great prestige to the paper and its publishers.

In 1908 Mr. Wilson sold his interest in the *Railway Age* to the publishers of the *Railroad Gazette*, and his interest in the *Electric Railway Review*, of which he was also publisher, to the McGraw Publishing Company. He then went abroad for a year. On his return he was elected vice-president of the Barney & Smith Car Company, Dayton, Ohio, but resigned from that company a year later to accept the position of first vice-president of the McGraw Publishing Company.

HUGH M. WILSON

As a publisher Mr. Wilson's work was characterized by a devotion to high ideals and an enthusiasm which he was fortunately able to impart to his associates. His retirement from the McGraw Publishing Company in 1916 followed an extended illness, during which Mr. Wilson was also injured in an automobile accident. This retarded his recovery.

Life on his farm at Stockbridge during 1917-18 proved of physical benefit to him, so much so that Mr. Wilson took an active part in the sales campaigns for the last two government loans. Early in the present year he decided to re-enter active business and became associated with White, Weld & Company, bankers, New York, with whom he was connected at the time of his death.

New Publications

An American Labor Policy

By Julius Henry Cohen. The Macmillan Company, New York, N. Y.; 110 pages

Managers of men everywhere in the electric railway industry ought to read Mr. Cohen's volume. It is a little book about a most important subject handled in a "big way."

A word about the author. He designed, and, as counsel for the employers, aided in carrying forward the institutions established by the protocol in the garment industry. He was special counsel for the Public Service Commission during the street car strike in New York City in 1916. He has made a study of industrial problems and is a lawyer of broad, general experience.

Mr. Cohen's statements of costs of the New York railway strike are at once illuminating and distressing. As for the individual contract, Mr. Cohen says it protects neither the employer nor the employee and results in industrial war sooner or later.

Mr. Cohen says that organized American capital is opposed to organized American labor because both sides are still in the stage of "military" strategy. As he sees it, both sides must be won over to the stage of industrial law. To do this their assent must be obtained to a constructive program in which both are secured. Mr. Cohen outlines a platform upon which he thinks that branch of organized labor which does not believe in the overthrow of society, but believes in the steady and orderly improvement of the conditions of labor, can join hands with organized capital. In conclusion Mr. Cohen says:

> Freedom to organize, freedom to deal collectively, security from arbitrary discharge, security against strikes, resulting from the free interchange of opinions, but when made the compact subject to the approval of the community, and after approval, enforceable by the community—these would seem to constitute the basic elements of a new democratic law and order.

Mr. Cohen frankly acknowledges, however, that in order to accomplish this we shall find it necessary to revise our legal conceptions of freedom of contract.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Fare Devices Show Good Sales

No Estimate of Fall or Winter Sales—Buying is Usually Spasmodic—Prices Up Slightly

The fare register and fare box market is firm with a slightly upward tendency. Sales of fare registers the first six months of this year are something over 30 per cent in excess of sales for the corresponding period of 1918.

One manufacturer reports that it is utterly impossible to make any estimate of sales for the coming fall and winter, as the buying season in fare registers is always spasmodic. On Sept. 1 an advance in prices was made, although it is believed that today's prices are not yet up to what they should be to cover the marked advance in costs of material and labor. Manufacturing conditions are such that this company up to the present time has been able to make exceedingly prompt deliveries. Large orders are reported from the Brooklyn Rapid Transit Company and the Chicago City Railways.

Sales of fare boxes for the first six months of 1919 show a 75 per cent increase over the corresponding period for 1918. In this market, it is reported, buying seems to be more or less periodical. The railways start their heavy buying after Aug. 1 and continue up to March, when it apparently slacks off.

On orders involving large quantities of fare boxes the deliveries are from six to ten weeks. Large orders of this line have recently been received from Omaha and Seattle, from the Connecticut Company and from the United Railways & Electric Company, Baltimore.

In regard to payment of invoices, it is learned that the railway companies are rather slow in meeting their bills, although some of them seem to take pride in meeting their obligations within the time limit.

Use of Power Saving Devices

Railways Purchasing This Equipment Over a Long Period of Months, Thus Getting the Benefit of Savings

The sales of power-saving devices have been fairly light, but are now improving, and it is estimated that the increase in sales for the coming fall and winter will be considerable. Railways are seeing the advisability of putting a check on the amount of money which the motorman spends for power. Purchases, no doubt, have been retarded by the financial condition of the railway companies, but the plan of paying for this equipment over a long period of months has met with much favor among railway men, and the majority of the business now being placed is on that basis. For example, one company bought a large number of power-saving devices on a thirty-month basis, and from present reports expects to be able to pay for the equipment long before the last payment is due out of the savings effected by their use. These terms are considerably longer than the usual ones, which are quoted at from twelve to eighteen months. As a rule the price quoted is the one made at the time of inquiry. Although sales have been light for the past six months they exceed those of the corresponding period last year.

Prices have advanced, but this was unavoidable, as large increases have been made in both the labor market and in raw material market. The latter market is plentiful, but high priced.

Up to the present time manufacturing conditions have not yet held up deliveries, but no estimate can be given of what the future may bring forth. Deliveries at the present time can be filled promptly, and as the railway companies seem to start their heavy buying in the fall, it is believed that sales of this equipment which are now pending on a number of properties throughout the electric railway field will be largely increased.

Rolling Stock

Morris County Traction Company, Morristown, N. J., is contemplating the purchase of ten to fifteen safety cars.

Aurora, Elgin & Chicago Railway, Aurora, Ill., has placed an order with the American Car Company for forty safety cars.

Texas Electric Company, Dallas, Tex., has ordered four Birney safety cars from the American Car Company for use on its city lines in Waco.

United Railways, St. Louis, Mo., is considering the purchase of a number of safety cars to replace the heavier cars now being used on outlying lines.

Glass Demands Exceed Output

Factories Swamped With Orders—Deliveries Slow—Distributers' Stock Below Normal

Conditions in the glass market continue to grow worse. The double-thick glass is coming in very slowly, causing considerable delay on account of the short stocks held in distributers warehouses. This affects the popular sizes from 24 in. x 24 in. to 36 in. x 36 in. particularly. Only a part of the glass factories are in active operation, and these are amply supplied with orders for the present and the immediate future production. The greatest demand now is for ordinary window glass, and considerable difficulty is experienced on account of factory conditions. The price of this glass has not advanced and the demand for it exceeds the output of the factories.

The sizes from 26 oz. to 39 oz., the latter being called $\frac{3}{16}$ in., are coming in even slower than the double-thick glass. Most of the stock of this type has been snapped up by buyers for the automobile industry. The 39 oz., or $\frac{3}{16}$ in., is used as a substitute for plate, and there is a great demand for it.

PRICES UP 25 PER CENT

Prices of most lines are shifting considerably and in the sizes 34 to 39 oz. the prices advanced recently about 25 per cent. The most recent advance was one of 10 per cent about a week ago, while an additional advance of 10 to 15 per cent was made about July 1, the total on this line amounting to 20 to 25 per cent in the last three months.

The discount on car window glass, single strength, first three brackets, A quality, New York, and also B quality, is 77 per cent, while on double strength car window glass, all sizes, AA quality, the discount is 79 per cent.

Business is becoming more active as the season advances. There is a noticeable increase in both orders and inquiries, although it is not possible to say at this time what percentage of the orders will be filled. Deliveries are good only on a few lines of stock held by distributers, but where orders cannot be filled from stock on hand deliveries are poor. One manufacturer is quoting eight to twelve weeks, depending upon the size and grade ordered.

Factory conditions are not promising, as the glass blowers and workers in glass are demanding 25 per cent increase in wages, effective Dec. 1, 1919.

Electric Railway Journal

PUBLISHED BY THE McGRAW-HILL CO., INC., TENTH AVENUE AT THIRTY-SIXTH STREET, NEW YORK CITY

Copyright, 1919, McGraw-Hill Co., Inc. Published weekly. Entered as second-class matter June 23, 1908, at the Post Office at New York under the act of March 3, 1879

Permission to mail this special edition in Baltimore has been accorded the publishers

Vol. 54, No. 14 Baltimore and New York October 4, 1919

Owing to the still unsettled condition of the printing trade in New York we are obliged to go to press this week with a smaller isue than usual. We ask the indulgence of our readers and hope that it will not be long before we can resume our regular service.

"Standards Year" in the Engineering Association

WITHOUT desiring in any way to hamper the incoming administration of the Engineering Association, it is appropriate at this particular juncture to suggest that the chief emphasis be laid next year upon the "selling" of the standards of the association to the industry. The word "standards" is used here as a generic term to cover recommendations as well as official standards. This would be in line with the effort which is to be made at the convention to visualize to the entire electric railway field the concrete work which has already been done. What is the use in piling up standard upon standards, if they are unknown, or, at best, to paraphrase Friend Shakespeare, "damned with slight use"? Let's all pull together now to put the standards over.

Anticipations of Benefits from Atlantic City Convention

THE program for the Atlantic City convention has been drafted to throw light on the pressing questions of the day. This is shown in the titles of the addresses and committee reports of all of the associations. In the foreground of live current topics, of course, stands the question of service-at-cost plans and methods of collecting higher fares and their effect on traffic. To these subjects the American Association has scheduled the greater part of its sessions, outside of the time given to the reports of standing committees, while the Accountants, and the Transportation & Traffic Associations devote their joint discussion on Wednesday afternoon to the collection and registration of fares. Another topic to be considered by two associations, though in separate sessions and from different points of view, is the safety car. The claim agents' experience with this car will be considered by the Claims Association, while the Transportation & Traffic Association will give all of Tuesday afternoon to a discussion of its operating features.

These meetings and the critical condition of the industry combine to make the coming Atlantic City meeting an event which will long be memorable in the history of the industry. In many respects, this is a fortunate time for a convention. Much more can be accomplished than could have been done a year ago. The responsibility of the community to assist in reaching a fair solution of the railway problem is better recognized than ever before, even if that responsibility is limited by the purely selfish motive of insuring good service. Experience with service-at-cost franchises is wider. The probability of fluctuation in the purchasing power of the dollar is better recognized. There is wider knowledge of the possibilities of the safety car. New systems of fare collection have been tried. In these and in many other ways the industry is in a better position to solve the problems with which it is faced this year than ever before. We are confident that the October convention will be most fruitful in results of benefit to electric railway companies.

What the Purchasing Agents Can Do

WE ANTICIPATE valuable results from the meeting at Atlantic City of the purchasing agents next week. It is a step which has been championed in this JOURNAL for many years. We therefore urge the purchasing agents of all member companies to attend the Atlantic City convention—if for nothing else than that it will give them a chance to get away for a few days from salesmen from whom they would like to buy but can't "just now."

Seriously, however, the purchasing agents have a real job to perform and we want to take this opportunity to make some suggestions. We should be glad, for instance, to see them do something in the direction of advancing the practice of standardization of equipment, treating it from its economic side, just as the Engineering Association takes up the matter from the engineering side. Then there is the matter of the proper stocks of material to keep on hand per mile of road or some other unit; and how most economically to distribute it. Much could be done along this line. Then there are many "inside" topics, such as the best forms of requisitions, invoices, vouchers and the like. There is enough work of this kind alone to keep such a body of purchasing agents busy for some time, and to "pay their way" in increased economies while taking up some of the larger problems of the purchasing department.

Railways Need Public Relations Experts, Not Press Agents

PRINTERS' INK is a means to an end, not an end in itself. Apparently in the past many electric railway managers have made the mistake of confusing the means and the end in this case. The distinction is very important in connection with the selection of men for so-called "publicity" work and in the assignment of duties to them. These men should not be "publicity agents," nor should they be called such. Some such title as "executive assistant in charge of public relations," or the like, looks better, sounds better and more correctly describes the duties performed.

The importance of having the right kind of men, suitably titled, in charge of the dissemination of information regarding the electric railway and of promoting friendly relations with the public by other means is coming to be appreciated. At this year's Atlantic City convention this appreciation will be intensified by the special conferences which are to be held. In connection with the subject, it should be remembered that one shortsighted act by the management or by an employee of a company will garner up more ill-will than can be dissipated in months. When the railway has the goodwill of the public it is not always aware of this fact, but when the public bears ill-will toward the utility, this fact is forced home in a thousand ways.

These are the facts which need constant reiteration: Ours is a monopoly business, and for the great mass of the public there is no recourse if practices grow up that seem to the public to be unreasonable. In nearly every other line of business the public, feeling itself unjustly dealt with, can go elsewhere for service, but not so with transportation in general. In this field it is therefore absolutely essential that the causes of just grievance be removed and the situation clearly explained. The employment of a representative broad enough and big enough to do this is essential; one who will not hesitate to go outside the organization if necessary to learn the reason for such distrust as manifests itself, and who having learned the cause will apply the remedy if one can be found. And if no remedy is available he must be able to tell the public so frankly, courteously and convincingly.

Why University Endowment Campaigns Concern Every Citizen

THE reduction in the purchasing price of the dollar, which has caused such embarrassment to electric railways, has also seriously affected the educational institutions of the country. Most of these derive the greater part of their income from endowment funds, which have a fixed rate of return. In consequence, it has been impossible for them to increase the salaries of their instruction staffs to accord with the higher cost of living, or to maintain the educational work undertaken by them at even the former efficiency. Increase in tuition fees would help but little, unless it were so large as to be practically prohibitive for all except the very wealthy, because in most colleges and technical schools only a small part of the income is derived from the fees paid by the students. This is the earson for the nationwide campaign for funds being conducted for extensive endowments by such institutions as the Massachusetts Institute of Technology, Harvard and Princeton.

There is a greater call to-day than ever before for educated young men, not only because industrial life is more complex than in the past but because of the great losses of young men during the war, particularly by the European nations. This will throw upon America very largely the task of supplying leaders not only in industry but also in professions for the generation, or half generation, whose numbers have been so greatly depleted by the war. The universities are the "factories" from which the finished product of men trained in some profession or branch of learning is turned out. For this reason campaigns to increase the opportunities for usefulness of educational institutions should be supported by every good citizen and should especially appeal to all who have benefited either from a university training themselves or through work done by graduates.

Interests of Employer and Employee Not Antagonistic

IT IS almost impossible to pick up a daily paper without reading at least a dozen articles describing strikes in progress or strikes about to begin. Great Britain, during the present week, has had to return to practically a war basis, so far as the rationing of its inhabitants is concerned, because of a nation-wide strike on its railroads. The steel strike in this country, happily now showing signs of collapse, is characteristic of the same forces at work. The publishers in New York for weeks have been unable to make any definite plans for the future because of the proposed strike of the printers on Oct. 1. A very large number of strikes have occurred on electric railways since the armistice was declared last November.

We do not intend here to discuss possible substitutions for the wage system which has been declared to make the interests of employers and employees opposed to each other. We believe that much can be done with profit-sharing systems, especially by companies where there are profits to share, which is not the case at the present time in the electric railway business. We do wish to point out here, however, that it is improper to assume that even with the wage system, which is the crudest way of all for recompensing labor, there need be any intrinsically different objective on the part of employer and employee.

Under the wage system, it is often assumed, the employee is constantly endeavoring to have his wages increased, but this is not entirely true. Practically he is limited by the wages which other workmen will accept to do the same work, and also by the ability of the employer to pay.

In the same way, the employer's chief object, so far as labor is concerned, is often considered to be to pay as low wages as possible to get his work done, but this is even farther from the truth than the assumption first mentioned about labor. What he does aim for is to produce what he has to make as cheaply as possible, but if this can be accomplished as well by paying high wages as by paying low wages, the former plan is entirely satisfactory to him.

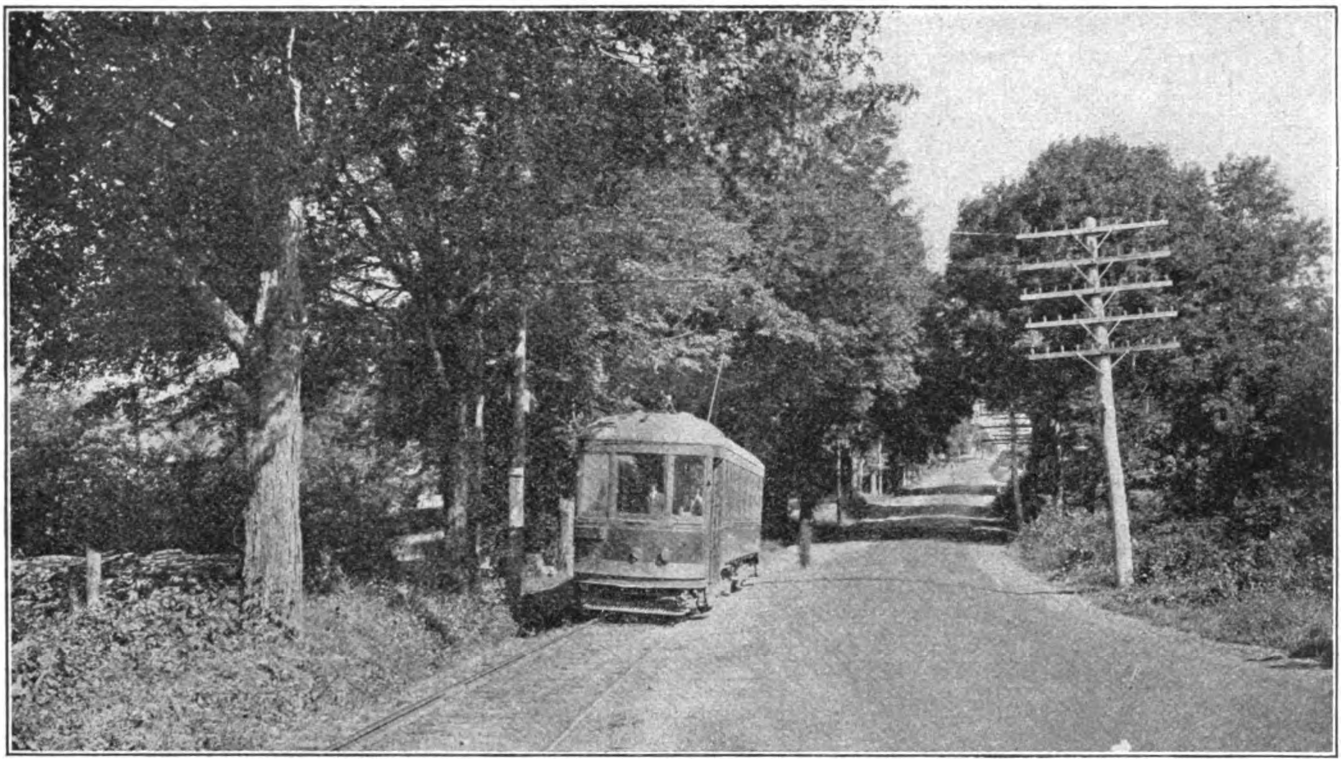
Greater production is often assumed, but incorrectly, to apply particularly to industrial plants. The principle is equally applicable, however, to transportation. If a company can increase the number of passengers carried per employee, it is increasing its output just as truly as if it were manufacturing buttons and by an improved process could turn out more buttons per man per hour.

Wages have increased tremendously in the electric railway field during the past three years, and especially during the past year. Some companies have made an effort to overcome this by increased production per man-hour. More effort should be directed along these lines. The means, of course, are various. Particularly prominent among them are the one-man car and higher schedule speeds. Both not only help to improve the financial condition of the company which practices them, but they add to the wealth of the country by reducing waste.

Much of the program of the Atlantic City convention is closely connected with these two topics. The subjects selected by the Transportation & Traffic Association for discussion relate almost entirely to them. We hope that during the coming year great progress in this direction will be made.

The Zone Plan on the Shore Line

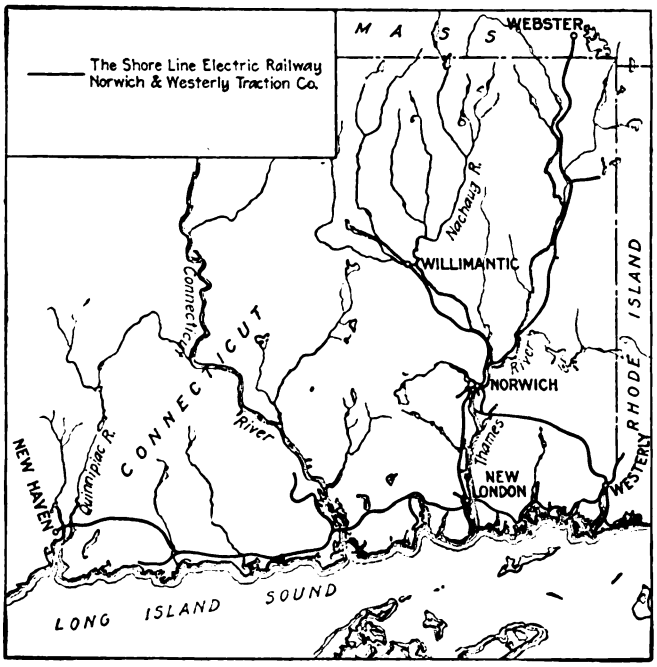
Pole Marking Plainly Designates Position of Any Point on System—Portable Cash Register Being Developed for General Use With All Fares—Zone Rate Lowered on April 1, 1919



TYPICAL SCENE ON THE SHORE LINE

FOR some years the Shore Line Electric Railway—which operates a number of city and interurban lines in eastern Connecticut, reaching over the boundary line into Massachusetts and Rhode Island at a few points—has had in operation a zone system of fare collection which has worked out very well.

The system comprises about 240 miles of track, and includes the cities of New London and Norwich with respective populations of more than 21,000 and more than 28,000. The population of Norwich is somewhat greater than this figure due to the fact that it is somewhat surrounded by the town of Norwich. The general layout of the system is shown by the accompanying map.

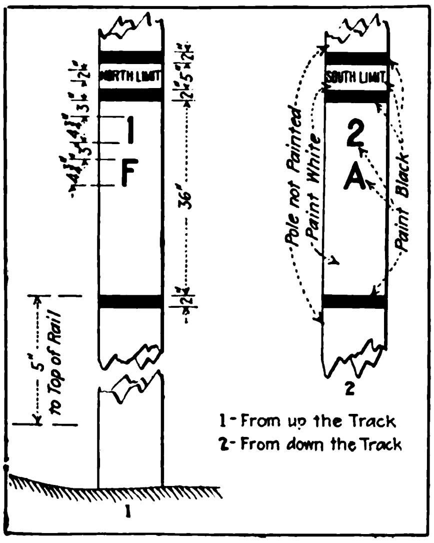

The Shore Line Electric Railway
Norwich & Westerly Traction Co.
MASS
WEBSTER
Nachaug R.
WILLIMANTIC
RHODE ISLAND
Connecticut
CONNECTICUT
River
NORWICH
River
Thames
NEW LONDON
WESTERLY
NEW HAVEN
Quinnipiac R.
LONG ISLAND SOUND

PRINCIPAL CITIES SERVED BY THE SHORE LINE, WITH THE LINES CONNECTING THEM

Before the zone plan was put into effect the fares on a system were made up of 5-cent units, which failed to produce the necessary revenue. The plan of increasing the unit fare to 6 cents was carefully considered and was approved by the board of directors, but the zone plan with a unit of 2 cents per zone, which was later increased to 3 cents, was considered preferable as a revenue producer.

The zones vary considerably in length from ⅜ mile to 2½ miles, the average being about 1⅛ miles. The boundaries of each were set with due regard to local conditions, so as to avoid inconsistency, to stimulate short-haul traffic and otherwise to utilize the inherent flexibility of the zone plan. The length was determined according to density of population and volume of business, with due regard to the convenience of the patrons in the various localities. The zone system proper begins at the boundaries of the cities of Norwich and New London, the fare in each of these being five cents.

On April 1, 1919, in



DETAILS OF ZONE BOUNDARY POLE MARKING

order to stimulate the development of traffic on its New London-Norwich interurban line, the company reduced the fare on this line from 3 cents to 2½ cents per zone, and at the same time introduced some improvements in the marking of zones and in the methods of fare collection. The zone boundaries were not materially changed from those in existence before the date mentioned, but some modifications were made to accommodate special groups of patrons. It was a source of gratification to the company management to find that the zone layout which was adopted several years earlier did not require material modification.

Since the new rate was put into effect, the riding has fallen off somewhat, due to the fact that at about the same time jitney service was started along this line. Jitney competition has been very heavy this year although heretofore it has not amounted to much. A recent operating check between Norwich and New London and at other points on the system shows that jitneys are hauling about 25 per cent of the business between the points studied.

In an article printed in the issue of this paper for Jan. 12, 1918, R. W. Perkins, president of the company, explained the plan and operation of the zone system on the Shore Line. It will not be necessary, therefore, in the present article to do more than outline the general plan as modified in the light of experience since Mr. Perkins' article was written.

The new rates of fare were calculated on a basis of 2½ cents per zone for the zone in which the passenger boards the car, the zone or zones through which he rides, and the zone in which he leaves the car. The minimum charge is five cents for a person riding in one or two zones, and a five-cent flat fare is charged for a ride strictly within the city limits of New London or Norwich.

SHORE LINE ELEC. RY. CO.
2½ ¢
TOKEN
NORWICH, CONN.

FARE TOKEN, ABOUT TWICE ACTUAL SIZE

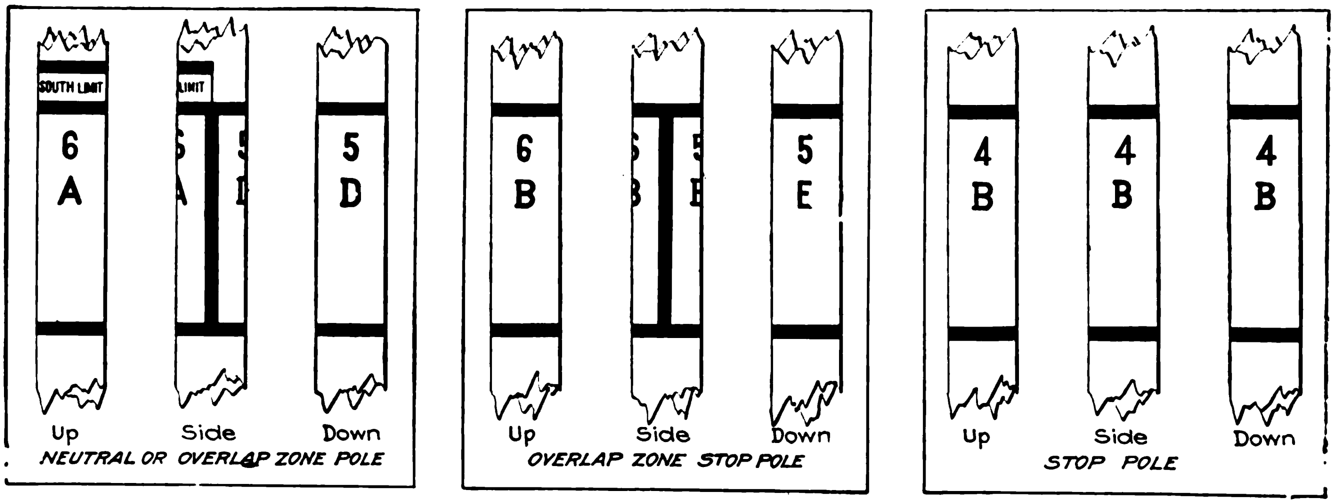
Fares are registered by means of the Rooke register up to 10 cents, the register a presen in use being adaped for nickels and 2½-cent tokens. All fares above 10 cents are for the present registered by means of the MacDonald duplex system. The tokens for use in paying fares which require the splitting of the nickel are purchased from the division offices by the conductors and are sold to passengers at two for 5 cents or one for 3 cents. They are used in making change and receiving fares to the extent of one token in each case. That is, two tokens are not accepted as the equivalent of a nickel, but the token must be used in connection with coins.

As soon as a new type of Rooke register is developed which will register through the same slot four denominations as follows: a 2½-cent token will register once, a nickel twice, a dime four times on one dial and a quarter once on a separate dial, all fares will be collected through the Rooke register.

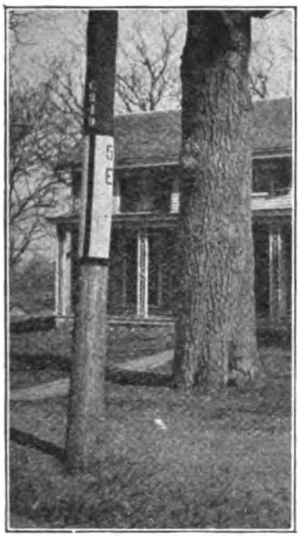
A simple form of identification check is issued to the passenger who is traveling on the interurban line, as shown in the accompanying illustration. On this the conductor punches the direction, the date and the limiting zone number to which the passenger's fare has been paid, unless he has issued the passenger's cash fare receipt described below. The identification checks are collected and destroyed by the conductor when the passenger reaches his designation and before he has left the car.

The passenger's cash fare receipts, referred to above, are for use instead of the identification check employed with passengers traveling from a point in Norwich or New London to one in the first zone outside, or vice versa, or from a point in the first zone outside of one of the cities through the city to a point in the first zone on the opposite side.

These receipts are provided with two coupons, each representing a 2½-cent fare, attached to one end of the



POLE MARKINGS USED TO IDENTIFY ZONES



A STOP POLE IN AN OVERLAP ZONE

body of the receipt, and a coupon at the opposite end used to designate the period in the day during which the receipt was issued.

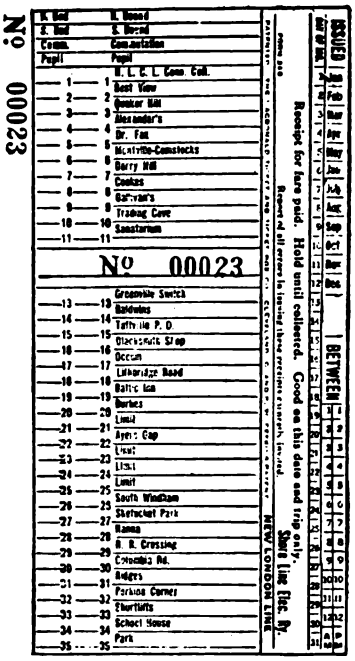
These receipts are issued for and in connection with the collection of 7½-cent or 10-cent fares through the Rooke register, and the coupon or coupons attached thereto provide means of identification through the different fare-collection zones. When the fare collected is ten cents, both coupons are allowed to remain on the receipt, and when it is 7½ cents one is detached by the conductor. This receipt acts as a transfer between the interurban and city cars. The coupons and body of the receipt are taken up at appropriate points by the city car conductor or the interurban conductor, as the case may be. For passengers desiring to transfer from city line to city line the company's standard transfer is used.

With the revision of the fare system, a new plan of numbering and lettering zones and stops was inaugurated. The purpose of this was to enable a passenger to know where on the line any stop is located. Each stop is indicated by a white band on a pole, and this pole is lettered and numbered to indicate the zone in which it is located, together with its position in that zone.

The zone boundaries are indicated by "zone poles," which are painted as follows: 5 ft. above the track level is a 2-in. horizontal black band, above which is a 36-in. white field, bounded on the top by another 2-in. black band. Above is a 5-in. white band and above this a third 2-in. black band. In the upper white band, on the south side, is the lettering, "north limit," and on the north side, "south limit," thus indicating that the pole marks the respective limits of the adjoining zones. At the top of the large white field on the pole is a number designating the zone, and below this is a letter designating the stop.

For example, one pole, which happens to be located at a city limit, is labled thus: On the north side it is marked "South limit 1 A", showing that the pole is the south limit of Zone 1 and the station stop is A. The next white, or stop, pole is marked "1 B" on three sides, those facing up and down the track and toward the track. The next white pole is "1 C," etc. On the south side of the same zone pole appears the legend, "North city limit."

In justice to patrons it has been necessary to provide for a few overlap zones. To designate the boundaries of such zones and also the position of a stop in an overlap zone, the following procedure was adopted: On all stop poles in the overlap zone, including the zone poles, black stripes 2 in. wide were painted on the side of the pole toward the track. In the large white field, on one side are the number and letter appropriate to one of the overlapping zones, and on the other side those appropriate to the other. On the zone poles, however, the upper white band extends only half way around the pole, and is lettered to indicate the limit of the zone which ends at that point. Drawings of the several standard markings and a photograph of a stop poles in a zone overlap are reproduced on this page and the one opposite.



No. 00023

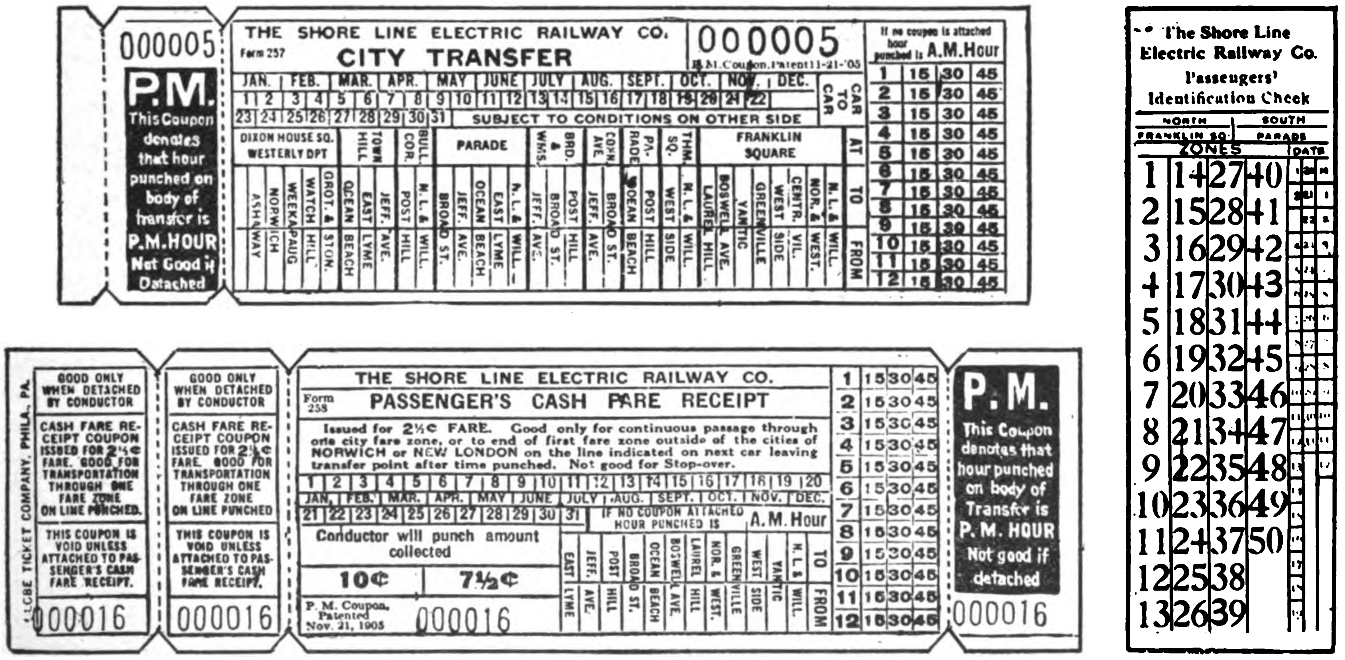
N. Bnd — N. Bound
S. Bnd — S. Bound
Comm. — Commutation
Pupil — Pupil
N. L. C. L. Conn. Coll.
1 — 1 Best View
2 — 2 Quaker Hill
3 — 3 Alexander's
4 — 4 Dr. Fax
5 — 5 McIntyre-Comstocks
6 — 6 Burry Hill
7 — 7 Cookes
8 — 8 Gallivan's
9 — 9 Trading Cove
10 — 10 Sanatarium
11 — 11

No 00023

Greeneville Switch
13 — 13 Baldwins
14 — 14 Taftville P. O.
15 — 15 Blacksmith Shop
16 — 16 Occum
17 — 17 Lathrop Road
18 — 18 Baltic Inn
19 — 19 Burkes
20 — 20 Limit
21 — 21 Ayers Gap
22 — 22 Limit
23 — 23 Limit
24 — 24 Limit
25 — 25 South Windham
26 — 26 Shetucket Park
27 — 27 Hanna
28 — 28 R. R. Crossing
29 — 29 Columbia Rd.
30 — 30 Ridges
31 — 31 Perkins Corner
32 — 32 Shortliffs
33 — 33 School House
34 — 34 Park
35 — 35

Receipt for fare paid. Hold until collected. Good on this date and trip only.
Report of all errors in issuing these receipts should be made.
Shore Line Elec. Ry.
NEW LONDON LINE
ISSUED
Jan Feb Mar Apr May Jun July Aug Sep Oct Nov Dec
BETWEEN
1 2 3 4 5 6 7 8 9 10 11 12

DUPLEX RECEIPTS USED FOR FARES ABOVE TEN CENTS



000005

P.M.

This Coupon denotes that hour punched on body of transfer is P.M. HOUR Not Good if Detached

THE SHORE LINE ELECTRIC RAILWAY CO.
Form 257
CITY TRANSFER
000005
P.M. Coupon. Patent 11-21-'05

JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
23 24 25 26 27 28 29 30 31 SUBJECT TO CONDITIONS ON OTHER SIDE

CAR TO CAR

AT	TO
DIXON HOUSE SQ. WESTERLY DPT	ASHAWAY NORWICH WEEKAPAUG WATCH HILL GROT. & STON.
TOWN HILL	OCEAN BEACH EAST LYME JEFF. AVE.
BULL. COR.	POST HILL N. L. & WILL.
PARADE	BROAD ST. JEFF. AVE. OCEAN BEACH EAST LYME N. L. & WILL.
BRD. & WMS.	JEFF. AVE. BROAD ST. POST HILL
CONN. AVE	JEFF. AVE. BROAD ST.
PA-RADE	OCEAN BEACH POST HILL
THM. SQ.	WEST SIDE N. L. & WILL.
FRANKLIN SQUARE	LAUREL HILL BOSWELL AVE. YANTIC GREENEVILLE WEST SIDE CENTR. VIL. NOR. & WEST. N. L. & WILL.

FROM

If no coupon is attached hour punched is A.M. Hour

1	15	30	45
2	15	30	45
3	15	30	45
4	15	30	45
5	15	30	45
6	15	30	45
7	15	30	45
8	15	30	45
9	15	30	45
10	15	30	45
11	15	30	45
12	15	30	45

GLOBE TICKET COMPANY, PHILA., PA.

GOOD ONLY WHEN DETACHED BY CONDUCTOR

CASH FARE RECEIPT COUPON ISSUED FOR 2½¢ FARE. GOOD FOR TRANSPORTATION THROUGH ONE FARE ZONE ON LINE PUNCHED.

THIS COUPON IS VOID UNLESS ATTACHED TO PASSENGER'S CASH FARE RECEIPT.

000016

GOOD ONLY WHEN DETACHED BY CONDUCTOR

CASH FARE RECEIPT COUPON ISSUED FOR 2½¢ FARE. GOOD FOR TRANSPORTATION THROUGH ONE FARE ZONE ON LINE PUNCHED

THIS COUPON IS VOID UNLESS ATTACHED TO PASSENGER'S CASH FARE RECEIPT.

000016

THE SHORE LINE ELECTRIC RAILWAY CO.
Form 258
PASSENGER'S CASH FARE RECEIPT

Issued for 2½¢ FARE. Good only for continuous passage through one city fare zone, or to end of first fare zone outside of the cities of NORWICH or NEW LONDON on the line indicated on next car leaving transfer point after time punched. Not good for Stop-over.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC.
21 22 23 24 25 26 27 28 29 30 31
IF NO COUPON ATTACHED HOUR PUNCHED IS A. M. Hour

Conductor will punch amount collected

10¢ | 7½¢

P. M. Coupon, Patented Nov. 21, 1905
000016

TO: EAST LYME, JEFF. AVE., POST HILL, BROAD ST., OCEAN BEACH, BOSWELL AVE., LAUREL HILL, NOR. & WEST., GREENEVILLE, WEST SIDE, YANTIC, N. L. & WILL.
FROM

1	15	30	45
2	15	30	45
3	15	30	45
4	15	30	45
5	15	30	45
6	15	30	45
7	15	30	45
8	15	30	45
9	15	30	45
10	15	30	45
11	15	30	45
12	15	30	45

P. M.

This Coupon denotes that hour punched on body of Transfer is P. M. HOUR Not good if detached

000016

The Shore Line Electric Railway Co.
Passengers' Identification Check

NORTH | SOUTH
FRANKLIN SQ. | PARADE

ZONES

1	14	27	40
2	15	28	41
3	16	29	42
4	17	30	43
5	18	31	44
6	19	32	45
7	20	33	46
8	21	34	47
9	22	35	48
10	23	36	49
11	24	37	50
12	25	38	
13	26	39	

DATE

TRANSFER AND RECEIPTS USED ON THE SHORE LINE

Electric Railways of New York State

Report of Conference of Executives on the Condition of the Industry Held at Syracuse on September 18 Under the Auspices of the "Committee of Ten," N. Y. E. R. A.

THE condition of the electric railways which operate in New York State is now considered so critical that E. A. Maher, Jr., president of the New York Electric Railway Association, called a special conference of executives at Syracuse on Sept. 18 to plan for immediate and aggressive action. The conference was called at the suggestion of the "Committee of Ten," of which Joseph K. Choate is chairman.

The general situation was covered in a carefully prepared paper by Mr. Choate which is abstracted elsewhere in this issue. He was followed by representatives of most of the important railways of the State, who explained their respective local situations. As a result of the conference a committee was appointed to draft resolutions capitalizing the information furnished by the speakers, this committee to report to another conference to be called at an early date. The committee comprises James L. Quackenbush, general attorney Interborough Rapid Transit Company, New York City, chairman; J. W. Killeen, Buffalo; H. B. Weatherwax, Albany, and H. C. Clark, New York City.

COMMISSIONS AND MUNICIPALITIES MUST CO-OPERATE

In opening the informal discussion, Mr. Quackenbush said that the practical question today is, What is going to be done? The jury in the case consists of the Legislature and the Governor. Under present conditions the several municipalities cannot handle the situation. Whatever may have been the thought of the Court of Appeals in rendering the decision withdrawing rate cases from the jurisdiction of the commissions, when contracts as to rates of fare exist between municipalities and railways, the situation now is that the commissions and the municipalities must act together. As the State is constituted, there is no provision for referendum, hence public opinion must act through the constituted representatives of the people. The State authorities lately have seemed to overlook the fact that the State has a representative government. It is essential that the legislative authorities should act, as does the judiciary, upon evidence.

Somehow the public and its representatives, said Mr. Quackenbush in substance, do not appreciate the electric railway situation. For example, the population on the lower east side in New York City could not realize that they were to be deprived of certain storage-battery lines, although they had had warning of this fact for a couple of years. Nothing, however, was done by the representatives of the public, and the railway company showed more concern about the proposed loss of service than did these representatives. The Mayor plans to install bus service in face of the very great vehicular congestion which exists.

The situation in New York is illustrated further by the fact that the Interborough is now running $8,000,000 a year behind in fixed charges, although but recently this was a profitable property. A new wage scale recently put into effect increased expenses more than $5,000,000 per year. The only answer in this case is that service on all lines must be scrimped and service on unprofitable lines discontinued.

Looking at the matter from the standpoint of public interest, disregarding the investment altogether, the pertinent quesion to-day is, What are the people and the Legislature going to do to improve matters? The people are fair, as is indicated by the willingness with which the 2-cent transfer charge has been paid by the patrons of the surface lines in New York City. This was in spite of the fact that a charge for a transfer is more liable to cause friction than any other form of fare increase. The company has actually received no complaints as to this charge. However, the newspapers and the public officials do not correctly represent the public, claiming that the people resent the increase in fare. The Governor of the State is a man well qualified to handle situations of this kind, and when the facts of the traction utility are brought to his attention forcibly, he will undoubtedly take the proper course. It is the business of the railway executives to see that he and other representatives of the people know the facts. They must see also that public representatives are not carried off their feet by pre-election pledges and that they are in a position to act on the evidence at the proper time.

Mr. Quackenbush expressed the belief that the situation is now at its worst and that a reaction is coming. "The people's best friends," he said, "are those who will make the situation clear to the public's representatives."

FACTS AND FIGURES FROM SEVERAL QUARTERS

Following Mr. Quackenbush, E. J. Dickson, vice-president International Railway, Buffalo, explained how the so-called Milburn agreement has operated to complicate the local situation. However, the Court of Appeals has decided that the Public Service Commission has jurisdiction in the Buffalo case, the case has been presented before the commission and a decision is now awaited. He said that the explanation of the recent replacing of a small surplus by a large deficit is clearly seen in the fact that since 1914 wages have advanced 81 per cent and materials 118 per cent in cost.

James F. Hamilton, vice-president New York State Railways, Rochester, said that Toronto was often referred to in discussions of fare matters, and the question is asked why Rochester needs 6 cents when Toronto has a 5-cent fare or six tickets for 25 cents. What the critics fail to realize is that, as the Toronto franchise expires in 1921, very little money has been spent on the property recently, while the city maintains the pavement. Further, there are no unprofitable lines into the suburbs. These facts, he thought, should be given publicity. Mr. Hamilton quoted data for his property among other items showing the rise in operating ratio by irregular steps from 60.7 per cent in 1914 to 77.69 per cent in 1918. Labor now costs as much as the entire operation in 1914. He traced the history of the Rochester fare situation, leading up to the Quimby decision of the Court of Appeals, and explained that as far as the people in the city are concerned, there is every reason to expect justice, but the City Council refuses to concede that the company is losing money. In Utica and Syracuse a 6-cent fare was allowed, although the commission stated that these lines were earning as much money as those in Rochester.

PUBLIC IS BECOMING MORE REASONABLE

H. B. Weatherwax, vice-president United Traction Company, Albany, said that in the capital district the public is taking a fairer view of the trolley situation, as is evidenced by the fact that the inauguration of the 7-cent fare caused very little comment, while a clamor was raised when the fare was made 6 cents. In general, Mr. Weatherwax believed that the present unhealthy condition of the industry will continue until the franchise situation is cleared up. Municipalities have on the whole been fair, but the trouble is with the divided authority. An act must be passed by the Legislature to clarify the language of the law. He favored representation of the industry at Albany, reinforcing the recommendations which he had made at the June meeting of the association. Another bill is needed for the purpose of relieving the railways of paving taxes.

The situation on the Brooklyn Rapid Transit System was explained by B. F. Williams, who said that the disintegration of this property is threatened, with consequent increases in fares. This prospect should impel the people to get back of the movement for relief. The situation is such that the company cannot now pay even taxes due the federal government, and the only solution is in getting the proof forcibly expressed to the people. The present passive attitude of the public should be changed to one of active insistence upon the provision of needed relief. The actual discontinuance of operation of certain lines in New York City has been an eye-opener to the people.

CONDITIONS IN SCHENECTADY ARE IMPROVING

J. P. Barnes, general manager Schenectady Railway, sounded a note of encouragement by telling how successful the results of the endeavor to get the co-operation of the public had been in Schenectady. He traced the history of the increase in fare to 6 cents in that city, stating that after the decision had been handed down in the Rochester case, the company withdrew its application to the commission and went before the city authorities for relief. At about the same time the employees struck for higher wages. The City Council informally took up the matter with the Federal Commission on Conciliation, with a view to permitting an increase in fare if an examiantion of the books showed that this was necessary. The report of the city's accountants showed that a 6-cent fare would not be high enough, but the Council was reluctant to grant any increase and the matter hung fire for several months. The company then went into a publicity campaign and in April, 1919, secured a waiving of the franchise restriction. The 6-cent fare was soon thereafter allowed. Mr. Barnes pointed out that in the primary elections just concluded the aldermen who voted for the increase in fares were all nominated for re-election, showing the tenor of the public mind.

H. J. Clark, treasurer Empire State Railroad Corporation, Syracuse, discussed principally the interurban situation. This corporation has about 10 per cent of its property in city streets. Some city tracks have been abandoned and a proposal is being made to give up all local service in Oswego. The principal interurban problem, in Mr. Clark's opinion, is to reduce operating expenses. Competition is very severe from the steam roads, and highways are being constantly improved. Mr. Clark agreed with other speakers as to the salutory effect of abandonments in bringing the facts home to the public.

In addition to the speakers mentioned above a number of other representatives of roads gave statistics regarding their own incomes and expenses, or spoke in general terms of the condition of their properties. Among these were: T. C. Cherry, president Syracuse & Northern Electric Railway, Syracuse; W. O. Wood, president New York & Queens County Railway, Long Island City; R. L. Rand, vice-president Richmond Light & Railroad Company, New Brighton; A. W. Loasby, president Rochester & Syracuse Railroad, Syracuse; Charles A. Brooks, local manager Poughkeepsie & Wappingers Falls Railway, Poughkeepsie; H. D. Swain, assistant treasurer Peekskill Lighting & Railroad Company, Peekskill; W. J. Harvie, general manager Auburn & Syracuse Electric Railroad, Auburn, and others.

After the adjournment of the general conference a meeting of the "Committee of Ten" was held at which it was decided to arrange for another conference to consider the recommendations of the committee mentioned earlier in this article.

A Consistent State Policy Is Needed*

BY JOSEPH K. CHOATE

Vice-President J. G. White Management Association
New York City

THE condition of the electric railways of New York State is no longer, if it ever was, the sole concern of the owners and operators of the properties. It is imperative that measures be taken by the public to provide some means whereby these utilities may continue to provide local transportation for the communities of the State.

A large part of the mileage of the State is bankrupt; more than a fifth being actually in the hands of receivers. Credit is gone; investors will not loan the funds for renewals, extensions and improvements, and the present creditors and owners are prepared to sacrifice present investment rather than "send good money after bad."

It is no longer a question of dividends, in many cases not even one of fixed charges, but rather one of securing money to pay operating expenses. Under present conditions it is impossible for the electric railways to continue to operate unless in some way they receive for their services revenue sufficient to provide for their expense.

These facts are not apparent to a large part of the public. The true picture has in many instances been obscured by the efforts of self-seeking politicians and agitators, who see in the present plight of an essential industry only an opportunity to further their own fortunes.

It is our duty both to the owners of the properties intrusted to our care, and to the public itself, to see that the roads are operated safely and efficiently. If, owing to causes which we can correct, this cannot be done, we must remove those causes or stand convicted of a breach of trust. If, on the other hand, safety and efficiency of operation are prevented by causes over which we have no control, it is our manifest duty to bring such a situation to the attention of those who are in position to supply the remedy.

---

*Abstract of address, as chairman of "Committee of Ten" of New York Electric Railway Association, to electric railway executives, Syracuse, N. Y., Sept. 18, 1919.

To-day we, the operators of these properties, are in most cases helpless to correct the conditions which are sending this service upon the rocks of destruction. We are confronted by a chaotic condition in regard to public utility regulation in New York State which is the result of badly drawn laws and of the seeming lack of constructive policy upon the part of these public officers who control our destinies. In 1907 the State, by the enactment of the public service laws, committed itself to the policy of state regulation of its local transportation systems, and apparently assumed jurisdiction over all matters of finance, rates and service. Charles E. Hughes was Governor when these laws and the 1910 amendments thereto were enacted. It was through his efforts that they were passed. He may, therefore, be presumed to speak with authority as to the intention of their framers. Justice Hughes said to a joint committee of the Legislature on March 12, 1919: "It was supposed that by the amendments of 1910 the Public Service Commission had been endowed with the requisite authority for the purpose of establishing just and reasonable rates in any contingency where that inquiry was necessary and that action required."

LEGISLATURE HAS BEEN SLOW TO ACT

The electric railway operators of the State thus had warrant for assuming that the State had erected a tribunal that would permit measures to be taken for the correction of conditions which threatened the usefulness of the utilities. Accordingly, in 1917, the committee often, acting under instructions of some thirty-five companies, presented their situation to the commissions of both districts and applied for relief. In every case decided by the commissions relief was granted. Such cases, however, were few. Before the more important cases were reached, the Court of Appeals handed down the decision in the Quimby case and declared that the Legislature had in the Public Service Commission law failed to give the commissions jurisdiction over rates named in franchises.

This was, as Justice Hughes pointed out in his argument, clearly an oversight and should have been at once corrected. Two Legislatures in succession have, however, failed to make such correction in the regulatory laws, in so far as they concern the preservation, extension and improvement of service. Moreover, the State has been left without any sufficient policy covering these utilities. This is, perhaps best illustrated by the case of the city of Buffalo and its street railways. The State refuses to assume complete authority and at the same time refuses to allow the local communities to assume such control.

It is apparent that unless conditions are so corrected as to restore the confidence of investors the result will be disintegration and final collapse of the industry, with resulting loss not only to those whose money has been honestly invested in the public service but to those to whom electric railway transportation is a necessity of daily life.

It is not the time to talk of over-capitalization, which does not enter as a factor in the condition of a corporation unable to pay its operating expenses, or fixed charges. The cases are rare indeed where the bonded indebtedness of a company does not equal the lowest valuation that may be placed upon its property. Nor is it the time to talk of punishing these corporations for alleged crimes of the past. The trouble as far as the public is concerned will not be avoided by attempting to take away from the present owners any part of their property as a penalty for what the enemies of the industry are pleased to call its past misdeeds.

The forcing of these utilities into bankruptcy accomplishes nothing in the public interest; it is against the public interest. We have but to turn to the City of New York to see what happens when a railway, denied a just return, is forced into insolvency. Abandonments are taking place, service is lessened, systems are being split apart because of defaults in rentals and the result is an increase in fares to a large number of people unfortunately situated in respect to their dwellings.

The electric railway industry is at the present time passing through a period of readjustment. Not only has the cost of operation mounted to an unprecedented height, but the full force of automobile competition is being exerted, and the functions which the electric railways were created to perform, are, to a very large extent being changed. As operators we realize that the lowest fare consistent with the demand of operating expense and reasonable return upon investment is as advantageous to the roads as to the public. But it is necessary that we be allowed the greatest latitude in devising ways and means for bringing service into proper relation with the cost and cost into relation with the service—that we be allowed to experiment with modifications of service with various systems of charges and fare collection and in many ingenious devices which have been suggested for reducing the cost of operation and consequently lessening the burden of fares imposed upon the car rider.

Electric railway men are consistently striving to meet the crisis forced upon them by the new conditions. They are entitled to public support in this endeavor. The present policy, or lack of it, imposes upon them the impossible task of meeting the vast increase in expenses with no commensurate increase in revenue.

The individuals with whom I come in contact, no matter in what walk of life, readily accede to the logical arguments of the present case. Their intelligence enables them to grasp the fact that simply because their public service is furnished by a corporation it cannot be furnished at the same rate under present as under former conditions. Properly informed this individual view will be the collective view, but it is manifestly impossible to inform so large a body of citizens as to the intricacies of such a service as is performed by electric railways. For that reason it is necessary that the duty of regulating, of assisting and fostering these utilities be lodged in some responsible body equipped with proper power to which the troubles of the companies may be taken and a readjustment made.

Proper regulation means regulation in the interest of the public whose chief demand is service, and properly so; and the State should decide upon the policy to be pursued and adhere strictly to that policy so that operators of those roads and persons whose capital is being sought for investment therein may know what they can expect and may have a tribunal from which they can receive proper adjudication of their complaints.

The Street Railway Outlook

Further Regulation for the Jitney, Coupled with Improved Service of the Railway, Recommended for Dealing with that Competition—Suggestions Also Made for Building Up Traffic in Other Ways

BY H. C. EDDY

Traffic Engineer, Board of Public Utility Commissioners,
State of New Jersey

Watchman, tell us of the night,
What its signs of promise are.

THESE sentiments expressed in the old familiar hymn seem to fit those applied directly or inferentially by many today to the electric street railway industry. Every now and then some one is heard to say that the industry is "doomed," that for urban and interurban traction purposes at least the electric motor will soon be supplanted by the gasoline motor. The optimist, however, takes an entirely different view of the situation, and with good reason. Let us see if this may not be true.

Admitting in the first place that the gasoline engine has become a formidable rival of the electric motor for traction purposes, it seems reasonable to suppose that there is a field for both, and this without serious curtailment of the service now being supplied by the latter.

Named in the order of their importance, the jitney and the privately owned and operated motor vehicle are the two principal forms in which the competitor of the trolley car has appeared to date, and the question now arises: How shall we treat these competitors?

HOW TO TREAT THE JITNEY

Let us first consider the jitney.

No industry of whatever character can justly complain of fair and proper competition. However, is the jitney, as generally operated, a competitor of this character?

The trolley lines are practically all subjected to stringent State and many of them to Federal regulation. Such regulation pertains not only to rates and speed but also to methods of operation and character and maintenance of equipment, track and overhead; also to the installation and maintenance of the paving between tracks, much of the wear of which is directly due, in many cases, to the operation of the trolley's comparatively unregulated competitor, the jitney! The enaction of State legislation subjecting the jitney to the same regulation as the trolley car and the enforcement of such legislation by the State Commissions would go far toward eliminating the unfair and unjust competition which is found in much of the jitney service of today.

Again—Who is the patron of the jitney?

A little study will convince anyone that he is the one who desires, and through the jitney usually secures, three things.

First, frequency of service; second, rapid transportation from origin to destination of journey; and, third, low rate of fare for such transportation. If he can secure these three requisites it is safe to say he would rather not be jammed in a small vehicle, standing in a stooping position because of lack of head room, jostled over rough pavements, subjected to tobacco smoke and generally poor ventilation and to many other inconveniences, to say nothing of the danger from careless operation, than ride, also jammed, if you please, in a trolley car where he can at least stand upright, which he can at least get out of without compelling half the occupants to get out before him if he happens to be in the rear, where, he can at least have breathing space and where he can have a smooth and comparatively comfortable ride, which is possible on any even fairly well maintained trolley property and under crowded rush hour conditions.

The next question which naturally arises is: How shall this individual be recovered as a patron of the trolley service? And the answer naturally is: Give him what he wants.

It is the function of the trolley company, therefore, to furnish more frequent and rapid service on lines where jitney competition exists. This may perhaps be done, in many cases, by speeding up the line with existing equipment and by operating more units, especially during the rush hour. But it is more especially the non-rush hour traveler that is lost through infrequent and slow service. This problem has been solved in no small degree by the use of the one-man safety car. A more general use of this type of equipment on the lines to which it is adapted, and they are many, will take care in large measure of the jitney competition with respect to frequency of service and running time.

As to the question of fares, a reduction of the rate for the short haul rider at least would doubtless, in many cases, result in a material increase in traffic which might easily in time be reflected in an increase in net earnings. However, each case must be considered by itself on its own merits in this matter. A proper system of zone fares combined with frequent and proper service will doubtless do more to combat the jitney competition than anything else.

OTHER THINGS WHICH CAN BE DONE

Turning now to the private automobile as a competitor.

This rival, while perhaps not quite so formidable as the jitney, is yet an exceedingly potent factor in the problem and is also the most difficult to deal with. No one denies that the private auto has come to stay, and the man who owns it will usually ride in it in preference to the trolley car. So will also one or more of his friends in many cases.

None of the remedies suggested for relief from unfair jitney competition could very well be applied to this class of competition with any very satisfactory results, in the majority of cases at least, although each if applied to the greatest practicable extent would have a tendency to reduce this class of riding, under certain conditions, and turn them to the trolley car.

But there are other remedies which may be adopted which would tend to save the industry.

The burden of paving, as applied to both new construction and maintenance, might well be lifted in a large degree. This is a relic of horsecar days when the pavements, such as they were, were subjected to the greatest wear through the operation of the service. Now more of the wear is occasioned by vehicles other than those operating on the rails. The only deterioration of pavement which may be attributed to street car operation is incident to vibration and to the settling of the pavement resulting from settled track. The former has been practically eliminated by laying blocks, or "stringers," adjacent to the rail and the latter may be eliminated through proper maintenance. Pavement which has by any chance been damaged through either of the above causes should, of course, be restored by the trolley company.

The operation of one-man safety cars, which has already been referred to, is another means whereby the future of the industry can undoubtedly be materially aided, aside from assisting in battling with the competition of jitneys. The one-man car has proved to be a success on many lines in the building up of traffic, and this, together with its comparative lightness and general economy in operation, has helped and will continue to help to an even greater degree in solving the problem.

This brings us to the question of building up traffic in general which, if it can be accomplished, especially in non-rush hours, will obviously be an advantage to the future of the industry.

How may this be accomplished?

The one-man car and possibly a reduction of fare for at least short haul passengers in some cases have already been suggested. But there are other ways of doing this, as for instance:

(1) Furnish the very best possible service which is consistent with economical operation. The average patron wants service; good, clean, dependable service, and he is usually willing to pay what it is worth if he is sure to get it. If all increases in rates requested were accompanied by a guarantee of first class service, there would be a great falling off in the present popular opposition to such increases.

(2) The good will of the public. This is the most valuable asset which any trolley company, or any other public utility for that matter, can possess. Doubtless many a jitney rider today is such solely because of his anitipathy for some reason, fancied or real, to the trolley company whose cars pass his very door.

(3) Proper rate of fare. It appears to have been recently demonstrated generally that a decided increase in the flat rate of fare does not bring in the additional revenue which is claimed to be necessary to allow many of the existing trolley companies to continue doing business. The decrease in traffic, especially of the short haul character, accompanying increased flat rates has offset in a large degree on many systems the increased revenue desired from those who continue to ride. Here again the jitney and privately owned auto have come into more popular favor, and it is here they must be reckoned with if the trolley company would retain his best friend, the short haul rider.

It would seem, therefore, that while an adjustment of fares may be necessary in order to meet the increased costs of operating and maintaining the industry such adjustment should, in the light of recent experience, be made chiefly with the view of redeeming and reaining the short haul passenger. This can perhaps best be done through a proper system of zone fares.

The application of these and other remedies which doubtless exist or will develop give promise for a profitable and lasting future for the industry which is today so indispensable to the interests of modern civilization.

The Vicious Postal Zone Law

SENATOR ARTHUR CAPPER of Kansas, who is chairman of the Senate Committee in the Department of Agriculture and a former Governor of Kansas, recently expressed his opinion of the present postal zone law. His words so clearly express certain facts which every citizen should know that they are given below:

> It has been argued that the postal zone increases apply only to the advertising sections of magazines. This is perfectly true as a statement of the mere words of the postal zone law.
>
> It is not true as a statement of facts.
>
> For a periodical or a newspaper is a unit from cover to cover. It is one unit of bulk that is never broken. The argument that the increased postage merely affects advertising is virtually the same as if it were argued that the postal zone legislation had provided that the upper half of a magazine should pay postal zone rates and the lower half flat rates. It would be a mere bookkeeping separation that would not in the least affect the postage cost to the reader, for the reader—who is the ultimate consumer—takes the magazine as it comes, and the cost of the magazine is its cost as a unit, and its postage cost to him is its entire cost as a unit, no matter how ingeniously or intricately one may subdivide the component parts.
>
> There is one other important factor, also, which I feel many sincere and ordinarily keen-minded citizens have overlooked, and that is, that the magazine and newspaper differ from every other commodity—if you wish to consider newspapers and magazines as merely commodities—in the fact that it is the only "commodity" that is sold to the consumer at less than its actual cost of manufacture!
>
> Now as to the advertising and whether it should pay a higher rate than the body of the magazine. I think I have answered half of that question when I point out that the periodical and newspaper is the only product that is sold for less than its cost of manufacture, and that this fact is made possible by the advertising. Advertising is nothing but a bulletin board—the bulletin board of our economic, wealth-producing, business life.
>
> Advertising is the one great factor in modern wealth production that enables wealth to be distributed almost instantaneously; a generation or so ago the same result could not have been accomplished without years of hand-to-hand selling and expensive, slow, personal salesmanship. You, as a thinking citizen, know what any restriction upon advertising would do to the wealth production of this nation. Congress itself saw this, and when means of war taxation were being carefully discussed and every channel was being developed, it was deliberately decided that the destructive economic effects that would follow the taxation of advertising would be too great and too dangerous to attempt.
>
> Now, then, as to the allegations of the cost of transmission of this second-class matter through the mails.
>
> The figures upon which the absurd allegations of second-class deficits are made were compiled by the Post Office Department in 1908 and 1909—eleven years ago! So unreliable were they even then that when the U. S. Postal Commission, headed by the Hon. Charles E. Hughes, investigated them two years after their compilation, they were officially discredited as being no indication of what the costs were for the various divisions of second-class matter! Moreover, the Post Office Department since that date has taken pride in stating that it has in enormous and basic ways cheapened the postal cost of second-class matter.
>
> The most unfortunate part of this postal zone legislation is that it is an insidious and dangerous attempt to set back postal history seventy years and re-establish the universally condemned principle of postal cost determining the postal rates. It abolishes the sound postal principle of equal postage to all parts of our nation. The rural free delivery—one of the most vital and important postal functions—is conducted at almost a total loss, and if this vicious and unsound cost principle is once established the demoralization of our splendid postal principles is only a matter of logic and time.

Accident Hazards on Electric Railways

At Eighth Annual Safety Congress Held at Cleveland, Ohio, Oct. 1 to 4, Two Electric Railway Section Sessions Were Held—Abstracts of Two Papers Are Given

As THIS ISSUE of the ELECTRIC RAILWAY JOURNAL goes to press the Eighth Annual Safety Congress is being held at the Hotel Statler, Cleveland, Ohio, under the auspices of the National Safety Council. It is impracticable this week to report the discussion of the six papers read before the sessions of the electric railway section, but abstracts of two papers are appended. In later issues the story of the congress will be given and attention will be directed to other papers and to reports which have some bearing on electric railway practice.

Electric Railway Hazards—Causes, Effects, and Remedies*

By R. E. McDougall

Claim Agent, New York State Railways, Rochester, N. Y.

ON ELECTRIC railways there are three main classes of accidents; accidents to employees, accidents to passengers and accidents to pedestrians and others using streets and highways.

Investigation of accidents to electric railway employees show a part caused by defective equipment or conditions over which the employee has no control, but the most of them are chargeable either to carelessness on the part of the injured employee, his co-employee or foreman, or the failure to make and enforce safety rules for safeguarding conditions.

An employees' accident record quickly demonstrates who is the careless and chance-taking man. This record is of value in making the employee more careful. A reckless employee or one willing to take chances in regard to his own safety or that of a co-worker, is dangerous on any property. In the selection of employees some thought should be given to this phase of a man's character.

Failure by an employee or his foreman to give proper care and attention to slight personal injuries often results seriously and is followed by infection and blood poisoning, and may be the cause of losing a limb and often a life. A first aid kit with disinfectants and bandages should be procured and kept easily accessible, and the foreman and men impressed with the necessity of giving minor injuries attention.

Sometimes small things lead to serious accidents. A recent distressing case of this kind was due to a faulty trolley retriever which could have been repaired in five minutes. Two men were on the top platform of a line tower truck, which was standing to allow the car to pass. The wind swung the trolley rope so that it caught in the top of the tower and threw both the men to the pavement, badly injuring them, one probably permanently.

Investigation shows that the most prominent three causes of accidents to passengers are: (a) Improper operation of car by employee; (b) run-down condition of equipment, track, etc.; (c) carelessness on the part of the injured person.

Improper operation often leads to collisions, derailments and premature starting with consequent injuries to passengers in the cars, or while they are boarding and alighting; to collisions with other vehicles at street intersections; to the striking of passengers who have alighted from cars going in the opposite direction, etc. In overcoming this trouble the big thing is to secure the co-operation of the trainmen. If a trainman is making an undesirable record, the use of an itemized record in pointing out to him the number and cost of accidents for which he has been responsible will generally be of great assistance. High-class men can be afforded to do this work properly.

A high standard of maintenance for equipment, track, loading platforms and other portions of the property with which the public comes in contact can do much in preventing accidents. For example, the elimination of holes and depressions in the pavement and especially at points where cars stop to take on and let off passengers may prevent serious accidents. Co-operation between the municipality and the company will prevent many accidents of this nature and at a comparatively small cost.

Sometimes it pays to make things "fool-proof." As an illustration, on the New York State Railways for some years prior to 1913 there were every summer from five to ten cases of broken arms because passengers on closed cars with the windows up, rested their arms on the window sills and allowed them to project between the iron bars. The bars, in some cases, were four inches apart. In 1913 and 1914, at an expense of about $4,000, the bars and screens were so fixed that it became almost impossible for a passenger to get his arm outside the car. As a result only one accident of the kind has since occurred. Again, it was not until folding steps and doors came into common use that any reduction was made in boarding and alighting accidents. These are not necessary to the transportation of passengers, but no manager could be found to say they have not reduced accident cost.

One-half the passenger accidents on cars are caused by the passenger's own carelessness or contributory negligence. They will if permitted get on or off a moving car, and in doing so will almost invariably face the wrong way. Without looking they will step from a car directly in front of a moving vehicle. Tight skirts and high heels cause more women to be thrown from cars than the operation of the cars themselves.

The accidents in which the public (not including patrons) are involved come within the following classifications: (a) Pedestrians struck by cars; (b) pedestrians falling into excavations or over defective track and materials left in street, hit by falling poles and wires, etc.; (c) occupants of vehicles in collision with cars.

Many of the individuals struck by cars are children playing in streets and their injury is due largely to thoughtlessness. They rely upon others for their safety, as do their elders also in many cases.

Motormen at times are responsible for injuries to pedestrians, but most of such accidents are chargeable to the injured party. They could be avoided generally by the use of a little judgment or common sense. The railway's problem is to impress this fact.

---

* Abstract of paper presented before the Eighth Annual Safety Congress, Cleveland, Ohio, Oct. 3, 1919.

Most accidents coming under the head of improper guarding of openings are caused by employees leaving materials and excavations improperly guarded and lighted. Fortunately, at present most municipalities have ordinances requiring proper guarding and lighting of excavations, and in the event of neglect or oversight on the part of employees their attention is soon called to it by the police.

The increase in the number of motor vehicles in the past few years has resulted in an enormous increase in automobile accidents. The most serious occur at grade crossings, which are familiar to the auto drivers, where there is every opportunity to see and know of an approaching car or train. Early this summer within a three-week period, fifteen people were killed within a radius of fifty miles of Rochester in three grade crossing accidents. Fatalities of this kind will continue as long as high-powered automobiles are permitted to be operated by irresponsible or reckless drivers.

To reduce the number of street accidents education is necessary; education that will reach employee, passenger, pedestrian and auto driver. Particular attention should be given the young child, and the school boy or girl, regarding the value of life and limb, the wastefulness of unnecessary haste and neglect. Education of men and women must be provided by the passage and strict enforcement of reasonable ordinances, and the drunken driver and persistent chance-taker must be forcibly educated by straight jail sentences.

Co-ordination of Safety Between Transportation and Equipment Departments*

By Guy K. Jeffries

General Superintendent, Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

THE first requisite for safety, where two or more departments of a transportation company each have a measure of responsibility in avoiding accidents, is harmony. No business, whether it be mercantile, manufacturing, banking or transportation, can be successfully conducted unless there is harmonious co-operation for the objective point, which must be "for the good of the business," and it will surely follow that good will come to each individual member.

Too often one department head, instead of acknowledging an error tries to blame another, with the result that complaints and "knocks," which become chronic if allowed to continue, are evidence that the organization is constructed along improper lines. Organizations have come under my observation where each department was absolutely separate, while in others all departments worked together as one compact well-oiled machine. No one will question but that the latter are greatly to be preferred. The question is, how can this better condition be made an effective reality?

I recall one case, where a chief inspector was located at a large terminal together with his repairmen, all under the equipment department. There was also a division superintendent who had no specific authority whatever over the chief inspector or his men at this same terminal. The equipment men would not obey any orders or follow any suggestions from the transportation superintendent, and as a result the two departments were at loggerheads all the time. The traveling public and the reputation of the line naturally suffered. A superintendent should have absolute authority over every department of the organization as far as his territory extends, for he is responsible to the general manager or general superintendent. It may be said that this arrangement is not essential because different department heads can report to the general manager. Experience, however, proves that heads of departments are not usually in as close touch with every-day details as the division superintendent and unless his authority extends beyond the carhouse door and similar places in other departments he is not regarded by other employees as having much more standing than a clerk or a go-between.

Constructive suggestions or criticisms, eliminating all personalities, by employees of one department of their own work or the work of other departments should be encouraged. These criticisms, however, must never be allowed to become ill-natured, to show jealousy, or to be in the form of a "knock." They should be made only to the employee's immediate superior, who in turn should refer them to the general manager to be taken up by him with the head of the department criticised. When one employee of a department criticises constructively or otherwise another employee, ill feeling is always engendered.

Probably the most effective method of promoting a feeling of friendliness and co-operation between departments is that of having periodical meetings of heads of departments and of the rank-and-file employees as well. This gives a chance for discussion of individual problems and the presentation of helpful suggestions from others. On a large property, division or section meetings have to be held but the results will be the same. The safety-first organization has such meetings, but all organizations in which co-operation is promoted should have them, whether they are called safety first or something else.

The personality of the general officers and various heads of departments has much to do with the question of a harmonious working organization. If these men cannot instill in the minds of their employees that they belong to a happy family, each one working toward a common end, there will be constant friction. An official does not have to lose his self respect, or power of effective discipline, to enjoy the good will and respect of his employees.

The fundamental principles necessary for a smooth working organization have been spoken of in a general way. However, co-ordination between transportation and equipment departments will work itself out if the fundamental basis is correct.

Last May the Ontario Safety League announced a series of cash prizes for compositions from school children in Ontario on the subject "How Children May Help Avoid Motor Accidents." The prizes, totaling $100, were donated by the Ontario Motor League. The prizes were divided into two classes: (a) Children of 12 years and under (b) children of 13 years and over. The prizes have now been awarded and the prize-winning compositions have been printed for circulation by the Safety League.

---

*Abstract of paper presented before the Eighth Annual Safety Congress, Cleveland, Ohio, Oct. 2, 1919.

The Future Fare System for Small Cities

Adoption of a Zone System Is Recommended for Cities Having a Population of Less Than 100,000 Inhabitants

BY J. A. EMERY
Ford, Bacon & Davis, New York

FARE SYSTEMS are properly based upon:

1. Cost of service.
2. Principles of merchandising.
3. Public policy.
4. Facilities for collection.

In the small city, principles of merchandising are much more important, relatively, than in large cities. This primarily makes the fare problem in the small city a question by itself.

There are probably over 250 cities in the United States with less than 100,000 population, having local street railway lines whether independent or belonging to larger systems. According to estimates of the U. S. Census Bureau, there were in 1915 only sixty-two cities having a population of over 100,000.

Therefore, as smaller cities having street car service are four times as numerous as larger ones, and as the fare problem is different in small cities from that in large ones, it should be worked out independently and without undue reference to the experience and experiments of larger cities.

The street railway merchandising problem in cities of under 100,000 is entirely different from that in larger centers of population. The ride is short and the density of traffic low. From 25 per cent to 75 per cent of the population live within walking distance of their principal daily objectives. Whereas, on a large system practically one-half of the traffic moves in the rush hours, the small city rush period is short and comparatively unimportant. Except for this short period, the service is entirely a question of reasonable headways, and therefore there is always plenty of room in the cars. The virtue of frugality is a characteristic of the residents of smaller cities to be reckoned with. The one-man car is here an absolute essential of the future.

The first qualification of the fare system is simplicity so that it will be usable with one-man cars.

Next it must be so cheap, consistent with cost of service, as to:

Keep walking to a minimum.
Induce shoppers and pleasure seekers to ride more frequently.
Limit the use of the automobile.
Induce home makers to locate beyond walking distance from the traffic centers.

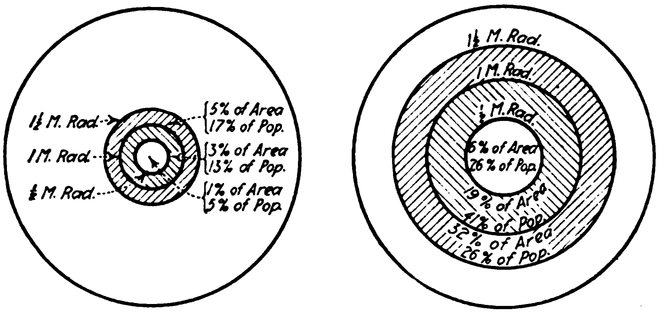
A population of 100,000 can be comfortably housed within a radius of 2 miles from the business center. It is fair to consider that practically all the population within one-half mile walk, and that practically all ride beyond 1½ miles. The business that the street railway manager in the small city must cater to especially, therefore, lies between one-half and 1½ miles of the center and largely in the first half mile of this distance.

With a flat fare system, the rider in this area is greatly overcharged. It is the area most fertile for the development of traffic because its population is densest of any outside the central walking zone of one-half mile radius. There is practically always room in the cars operated to maintain reasonable headways. Thus all considerations of cost of service, of principles of merchandising and of public policy point to a zone fare as particularly desirable in small cities.

The great importance to the small city road of the business in the zones within walking distance of the traffic center is illustrated by the diagram which compares the relative sizes of the walking zones in a large city of 5 miles radius and a small city of 2 miles radius.

In this illustration it is assumed that the city extends in all directions from the center. The population is distributed so that the density varies inversely as the square of the distance from the center. Neglecting the central one-half mile radius, 30 per cent of the population of the larger city live where the sidewalk competes with the trolley, while in the smaller city 67 per cent live in such area. If the street railway now gets two-thirds of the business in these competitive zones, then by catering to the other third the small city road has a chance to increase its traffic 22 per cent with little increase in expenses.

In a city of 2 miles radius the first zone point is naturally at one mile. To produce the full benefits of the system, the man in the next half mile should not be overcharged and thus encouraged to walk, and therefore the second zone should be one-half mile. This brings us to 1½ miles from the center which is the practical limit of walking and to the outer areas of cities of the size under consideration.



Large City, 5 Mile Radius   Small City, 2 Mile Radius

COMPARATIVE IMPORTANCE OF WALKING ZONES
Outer circle represents 100 per cent city area.
Shading shows areas where walking competition is encountered.

Is such a system practicable from the standpoint of fare collection, and would such short zones cause confusion on lines which extend beyond the limits of the community proper? The writer believes that such a system is practicable in small cities even with one-man cars. One solution would be by the use of colored tickets with prepayment inbound, and postpayment outbound. The short zones could be combined two in one, on lines extending beyond the community.

Commutation privileges are of doubtful value as revenue producers, except where they relieve overcharge in the competitive zones. The experience of the past two years has substantially proved that if the fare be increased 20 per cent, the traffic will fall off about 10 per cent, and the revenue will be increased by only about 10 per cent. Conversely, if the fare be reduced 20 per cent, the traffic will only be increased by about 10 per cent and the revenue decreased by about 10 per cent. In the competitive zone of a small city, the proportion of walkers to riders is so large that this rule should not apply therein. The regular rider is not entitled to much, if any, reduction in fare on a cost of service basis, as the diversity factor equalizes the cost of hauling the more infrequent rider.

The problem of making the most out of the street railway situation in small cities must be attacked not with a big city traffic and conditions in mind, and it must be approached with a realization that the stakes are worthy of an effort to surmount difficulties and to get out of beaten paths.

Letters to the Editors

How National Advertisers Can Help

THE BEAVER VALLEY TRACTION COMPANY
NEW BRIGHTON, PA., Sept. 23, 1919.

To the Editors:

I may be out of order, but your editorial "Publicity Campaign Needed More Than Ever Now" in the Sept. 6 issue, prompts me to this:

Why do not manufacturing companies, who do a large general business and are national advertisers, give the public service companies aid? If in their national advertising campaigns they would work in with their regular advertising, information and statistics, such a plan would be of inestimable value to the public utilities throughout the country. It would seem that the publicity directors and sales managers of these companies should be vitally interested and should do all they possibly could to save the life of a very sick patient—the electric railway. This patient, sick or dead, is bound to cause these manufacturers to lose a large portion of their income. To my mind, they should do all they possibly can to aid recovery.

W. H. BOYCE, Superintendent.

Status of Swiss Electrification

OERLIKON NEAR ZURICH, Aug. 25, 1919.

To the Editors:

Your JOURNAL contains in No. 5, Vol. 54, dated Aug. 2, 1919, page 227, a short article on the above subject, which is not quite correct in some of its details.

The Federal Railways have already electrified their two sections, Brigue-Sion and Berne-Thun. These sections are, however, not part of the Berne-Lötschberg-Simplon Railroad, but have common terminal stations with this road at Brigue and at Thun. The section Brigue-Sion can be considered as an extension of the Simplon tunnel electrification, made in order to permit the use of the same locomotives as are used in the tunnel. The new section has been electrified with three-phase current, which presumably will be changed later on to single-phase.

The other section, Berne-Thun, is using single-phase current, and takes its current from the same source as the Berne-Lötschberg-Simplon Railroad. The locomotive service is mainly taken care of by locomotives of the Lötschberg Railroad and by four electric locomotives which are to be used in the end on the Gothard line of the Federal Railways. Of these four locomotives the electrical equipment for only two of them was furnished by Brown, Boveri & Company, Baden. The remaining two locomotives, which were furnished and put in service before the others, were built by the Ateliers de Construction Oerlikon, as far as the electrical parts are concerned, while the mechanical parts were built by the Swiss Locomotive & Machine Company of Winterthur, as in the case of the other two.

It may further interest your readers to know that the Federal Railways have ordered forty-seven electric locomotives of different types for their single-phase electrifications, of which twenty-two are being built jointly by the Oerlikon Company and the Locomotive & Machine Company of Winterthur. This number is the highest that has been ordered by the Federal Railways from any manufacturer. There is yet to be placed this year an additional order for locomotives.

There should also be mentioned the Bernese Railways, which are gradually being electrified. Of the fourteen locomotives already under construction for this service, seven are being built by the Oerlikon and Winterthur works.

ATELIERS DE CONSTRUCTION OERLIKON.

Association News

ATLANTIC CITY CONVENTION, OCT. 6 TO 10

Committee on Federal Legislation

CHAIRMAN C. L. HENRY of the sub-committee on federal legislation has called a meeting to be held in Atlantic City on Tuesday, Oct. 7, to consider further proposed federal legislation as it affects electric railways. One of the important topics coming under this committee is the question of the future status of the interstate interurban electric railways which were taken over with the steam railroads by the government soon after the opening of the war.

The position of the committee on this subject is summed up in a letter sent on Sept. 23 by Chairman Henry to Senator Cummings, chairman of the Senate Committee on Interstate Commerce. An abstract of the letter follows:

Only 5 per cent of the gross earnings of all electric railways is derived from the interurban traffic, and 60 per cent of the total trackage is strictly in the cities. Interurban electric railways are dependent on local communities served for revenue earned and are affected to a greater extent than city companies by motor vehicle competition and must therefore be considered in a class by themselves. To attempt to fix general rates of fare for all common carriers would result disastrously to this industry. These roads are now under the control of the I. C. C. in all things relating to interstate business.

Wages and working conditions of electric railway employees should not be under the jurisdiction of and fixed by a body that passes on similar questions affecting steam railroad employees. To do so would be disastrous to the electric railway companies, for the ideas of such a body would be dominated by steam railroad practice.

"The Nation's Business" for September, 1919, contains a popularly written article on the electric railway situation, entitled "What's Ahead of the Trolley?" A number of quotations are given from the testimony presented before the Federal Electric Railways Commission in Washington, particularly that of General Tripp.

Recent Happenings in Great Britian

Ministry of Transport Created—Legislation Growing Out of Other Reconstruction Problems

(From Our Regular Correspondent)

The ministry of transport act, as it now is (formerly called ministry of ways and communications bill), having passed through all its stages in both Houses of Parliament, received royal assent on Aug. 15. As was intended, Sir Eric Geddes is appointed Minister of Transport. The act was not materially altered in its later stages in Parliament, though there was a good deal of dispute as to composition and method of appointment of a committee to be set up to advise the minister on questions connected with the revising of railroad rates. The public is now waiting to see what the new ministry will do. The powers granted in the act are so wide and general that sweeping changes may speedily be made. It seems probable that tramways will be less affected than railways.

SESSIONS TO RESUME THIS MONTH

The Parliamentary recess began on Aug. 19, and no more progress can be made with the electricity supply bill (which concerns tramways intimately) till after the recess ends on Oct. 22.

Lloyd George, the Prime Minister, in a speech in the House of Commons on Aug. 18 dealt at great length with the industrial and economical situation of the country. He outlined numerous proposals which the government will bring forward, and announced various changes to be carried out by administrative action. Of interest to American manufacturers was the announcement that restrictions on imports, with certain exceptions, would be removed as from Sept. 1. The exemptions do not include electric railway material. Legislation will, however, be introduced to prevent "dumping" of foreign goods in this country, the object being to protect home manufacturers against unfair competition. Other legislation will schedule a number of unstable "key" industries the products of which will be prohibited from importation except under license. The only item in the schedule connected with the electrical trades is magnetos. Legislation in these directions has long been called for by British manufacturers.

WATER POWER CONTROL PLANNED

Two other important announcements which affect traction interests were made. The government will after the recess introduce a bill for the control and development of water power. It will also set up at the Board of Trade a department of standards to promote and co-ordinate standardization generally and to establish and administer such testing institutions as may be found necessary, and authorize and so far as may be required supervise the testing work carried out by technical institutions, trade organizations, or private concerns.

Just before Parliament adjourned two government bills were introduced which if passed will produce a great effect on industry. One will introduce a statutory forty-eight-hour working week and the other will set up a commission to fix minimum rates of wages. There are numerous exceptions to the former bill and overtime in certain cases will be allowed. Both measures are the outcome of recent national industrial conference of employers and employed, and they are to be accompanied by the formation of a National Industrial Council. It is difficult to say what the effects of these revolutionary proposals will be on industry. Traction undertakings will no doubt come within the net.

In the latter part of August a new and serious situation arose in the British tramway labor field. It is not many months since a settlement was reached under which hours of work were materially shortened and the difficulties of the tramway undertakings correspondingly increased. The new trouble arose from demands addressed to the two tramway associations which represent all the undertakings in the country for an increase of wages of 12s. a week, for the merging of the war bonus into permanent wages, and for the reduction of the qualifying period for the payment of the maximum rates of wages from seven to six months. The employers refused the first two demands, but expressed willingness to negotiate on the question of qualifying period for the payment of the maximum. A conference between representatives of the parties was, however, arranged and was held on Aug. 27. At this gathering the men's representatives suggested that their demands should be referred to arbitration. It was agreed that this proposal should be submitted to conferences of the employers, both municipal and company, and that a reply should be given by Sept. 4.

On that date various conferences were held. The Municipal Tramways Association decided that if there was to be arbitration it should not be a general one, but should be by districts, in view of the different conditions in various areas. The Tramways & Light Railways Association agreed on a statement which it sent to the Transport Workers' Federation (representing the employees). In this it pointed out that the advances in wages which had already taken place, coupled with the extra cost of every commodity necessary for the running of a tramway, were such that many of the company-owned undertakings were faced with the prospect of insolvency. The company employers therefore were not in a position to entertain any proposal which involved increased expenditure. They, however, would consider arbitration provided that it was by districts. The Transport Workers' Federation retorted by resolving to send a deputation to the Minister of Labor to say that they would not accede to the principle of arbitration by districts, and the arbitration must be on a national basis or not at all.

EMPLOYERS AND EMPLOYEES CONFER

On Sept. 5 Sir Robert Horne, Minister of Labor, convened a joint conference of the employers and employed, when it was agreed on his suggestion that he should refer the claim to the Interim Court of Arbitration under the wages (temporary regulation) act. The minister intimated that the question of arrangements for the hearing, whether it should be as one national case or whether it should be by districts, was a matter within the discretion of the Court of Arbitration. This preliminary point is to be argued before the court on Sept. 15. Thus a very awkward situation has for the time being at least been tided over. It is encouraging to note that on Sept. 5 also the first meeting was held of the recently formed Joint Industrial Council for the tramway industry. This is one of those bodies which it is hoped will in the future prevent strikes by substituting conference and consultation.

Early in September Sir Eric Geddes, Minister of Transport, issued a letter to the chairman of the County Councils of London, Middlesex, Kent, Surrey, Essex and Hertford, asking for the appointment of a nominee on a special committee which he is setting up to deal with the London traffic problem so far as the limited powers of the Ministry in that direction permit. It was explained that the formation of this committee was entirely without prejudice to the recommendation of a recent Parliamentary committee that a separate traffic board should be constituted for London. That recommendation is still before the government. Some people think that instead of such a traffic board it would be better to enlarge the powers of the Ministry of Transport so that they might be able to deal with the whole street traffic problem of London. Municipal tramways do not come within the scope of the Ministry at present.

BUSES MUST PAY FOR ROAD MAINTENANCE

It is established by several private acts of Parliament that when a local authority works motor omnibuses over roads in the area of an adjoining local authority the operators have to pay the latter five-eighths of a penny per mile run for road maintenance. Companies can, however, run buses without statutory powers, and some of the English County Councils before giving consent are now stipulating for a payment of 2d. per mile run. That should about stop the business. It is only recently that local authorities have had such powers.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Completing Detroit Audit

Will Be Ready by Nov. 15 if Disagreement as to Access to Records Is Settled

The audit of the books of the Detroit (Mich.) United Railway, as far as completed by the city's auditors appointed shortly after Judge Marschner's court order of June 11 had ended the railway strike, shows a profit for the company amounting to more than $54,000 for the month of July, 1919. A report covering the period of three months was decided upon for determining the validity of the company's claim for increased fare. It will probably be completed and ready to submit to the board of arbitration about Nov. 15.

William H. Maybury, the city's representative, has tendered his resignation to the City Council. Mr. Maybury, who is also a member of the health board, gave as his reason for resigning the fact that he was connected with the construction of Detroit's Tuberculosis Sanitarium, which will be built at Northville. The other members of the three-man board, which will have authority to grant the company the right to collect the 1-cent charge for transfers in case they think the audit of the books justifies this charge, are John J. Stanley, president of the Cleveland Railway, representing the Detroit United Railway, and Frank H. Goddard, who was agreed to by the first two members named.

COMPANY AND CITY DISAGREE

It is not anticipated that Mr. Maybury's resignation will complicate matters greatly, as the report of the auditors is not complete, and the Council upon acting favorably in regard to accepting his resignation, will appoint his successor.

Certain information in the form of records has been withheld from the city's auditors by officials of the Detroit United Railway. These records are of transactions prior to July 1, 1919. The company maintains that they have no bearing on the three months' trial period. Corporation Counsel Clarence E. Wilcox maintains that it had been an absolute understanding that the auditors could have access to these records. He will insist on examining them, claiming that the city is vitally interested if the company is now using material in maintenance work which was contracted for five months ago and charging for these items on its books at prices which would have to be paid at the present time.

It is intimated that the city officials will not consent to a hearing before the board of arbitration to determine the railway's right to increased fares unless free access to all records, accounts and contracts pertaining to the period either before or after July 1 is allowed the city's auditors.

Emergency Grant at Pleasant Ridge

The City Council of Cincinnati, Ohio, will be asked to pass an emergency ordinance securing for the Cincinnati Traction Company immediate authority to operate cars on Montgomery Pike in accordance with the extension of the North Norwood line. The ordinance will repeal a former ordinance granted the Interurban Railway & Terminal Company by the villages of Kennedy Heights and Pleasant Ridge, in which the company was authorized to operate its cars on the section of the Montgomery Pike now involved in the extension.

Agreement as to the extension of the North Norwood line was made recently, but actual operation of cars over the new route could not be commenced because of the franchise held by the Interurban Company.

An ordinance will also be introduced giving the Cincinnati Traction Company the right to operate its cars over 700 ft. of track south of Montgomery Pike from Kennedy Avenue, the present terminus. Although it is not proposed to change the present terminus, it was felt that such an ordinance would be necessary so that the Cincinnati Traction Company may extend its route when occasion to do so should arise.

Boston Carmen Remain at Work

Danger of a sympathetic strike of carmen on the Boston (Mass.) Elevated Railway in the present police difficulty appears to have passed for the time being. At a mass-meeting of union employees on Sept. 20 H. B. Endicott, Boston, former chairman of the Massachusetts Committee of Public Safety and third arbitrator in many electric railway wage disputes, urged the men not to quit work. Mr. Endicott pointed out the fact that a sympathetic strike would be a threat from which nothing would be gained and that such a course would injure union labor.

About 1000 police struck, and the places of these former officers are being filled, chiefly by ex-service men. Traffic in Boston has resumed normal proportions, with the State Guard on police duty; while a large volunteer police force is assisting in the maintenance of order and direction of vehicular and pedestrain movement through the streets.

Prospective Legislation

Fate of Massachusetts Roads Depends Largely Upon Legislation During the Coming Extra Session

Whether the electric railways of Massachusetts are to remain in private hands under public regulation or control, or whether they are to be operated under a policy of public ownership will in no small degree be determined during the coming extra session of the State Legislature, called by Governor Coolidge to give "first aid" to the trolley systems. A comprehensive article outlining the problem before the Legislature and reviewing the recent history of traction lines in Massachusetts appeared on Sept. 24 in the Boston *Transcript*. Within the last two years eleven companies have abandoned service and on parts of one other system operation has ceased. It is estimated that the investment in the remaining lines totals about $200,000,000.

NINETEEN ROADS WITH DEFICITS

The 1918 deficits on nineteen roads in the State, including the Boston Elevated and Eastern Massachusetts (then the Bay State) systems, totaled more than $5,700,000. The issue this coming winter will unquestionably be sharply drawn between the electric railways and the jitneys, and if, in the mind of the public, the latter are unable to handle the traffic at all hours and under all weather conditions as well as the electric railways the permanence of electric-railway service even in many of the smaller communities of the state would seem to be assured.

The trustees of the Eastern Massachusetts company have thrown down the gauntlet to the jitneys, and in the representative case of Quincy announced their determination to abandon service on the Hough's Neck line on Oct. 1, in view of the unresponsiveness of the city authorities relative to permitting unfair competition to continue.

LOW FARE EXPERIMENTS

A wide latitude of choice regarding service and fares to be applied has been accorded the Eastern Massachusetts trustees, and the results of the low-fare experiments now being tried at Fall River, Lowell and other points, to which reference has been made previously in the ELECTRIC RAILWAY JOURNAL, will be watched with great interest.

No recent figures have been made public relative to the effect of increased fares upon some of the other larger systems, but it is known that gross revenues are showing excellent totals, in some cases at least.

Subway Dips Approved

Detroit Council Committee Goes on Record in Favor of $8,000,000 Expenditure

After agreeing upon minor changes in the original plan, the Council of Detroit, Mich., in committee of the whole, has approved the plans for subway dips in Woodward Avenue and Fort Street and has recommended the plans for adoption.

The plans as they now are provide for a loop at the Jefferson Avenue terminus of the Woodward Avenue subway instead of the portal below Woodbridge Street with a surface loop through Atwater Street and the private right-of-way as originally proposed. The substitution of the underground loop for the portal and surface loop would not add materially to the cost according to the advice of the engineers. The dip under Woodward Avenue will probably start at Adelaide Street on the north.

The extension of the Fort Street subway to First Street in order to cross Cass Avenue under ground was considered advisable since Cass Avenue is being widened to make it a north and south thoroughfare for vehicular traffic and traffic conditions will be improved still more with the electric railway crossing eliminated. The Fort Street subway is planned to dip under the Woodward Avenue subway at Cadillac Square, and terminate in an underground loop at the eastern side of the square.

The proposed subway through Adams Avenue for Crosstown lines was considered unnecessary under present conditions and was not included in the final plans. The total cost of the subways as approved is estimated at about $8,000,000.

Discussion of the rerouting of surface lines and parking regulations for the congested downtown section have been postponed to a later date. At the next meeting the question of financing the subway system and the distribution of the cost will come up for consideration.

Bus Proposal in St. Louis

A proposal to establish three motor bus lines with fifty-two buses in operation in St. Louis, Mo., has been presented to Mayor Kiel by the St. Louis Motor Bus Company, a subsidiary of the National Motor Bus Corporation, New York. The fare proposed is 10 cents. The company agrees to pay the city 3 per cent of its gross earnings.

An amendment to a bill regulating the business of taxicabs and service cars, now pending before the Board of Aldermen, will be submitted to the committee in order to include the regulating of motor bus lines. The amendment provides that any vehicle whose capacity is ten or more seated passengers shall be considered a motor bus and gives the Board of Public Service authority to grant permits to motor bus companies.

News Notes

Men in Gadsden Strike.—Traffic on the Alabama City, Gadsden & Attalla Railway, Gadsden, Ala., was suspended at midnight on Sept. 18 following calling of a strike by union employees. The men declare they will remain out until arbitration is granted.

Service-at-Cost Up in St. Paul—At the direction of the City Council of St. Paul, Minn., one of the commissioners will begin at once to get together names of men and firms familiar with electric railway matters to select therefrom an expert on valuation to prepare for consideration a cost-of-service franchise for the St. Paul City Railway, included in the system of the Twin City Rapid Transit Company.

No Strike at Pueblo.—A threatened strike in Pueblo, Col., on the lines of the Arkansas Valley Railway Light & Power Company has been averted. The employees of the company voted to accept the offer of the company for half of the proposed 25 per cent wage increase now and the other half on Nov. 10, when the city ordinance granting the company a 6-cent fare in Pueblo becomes effective. The strike was to have gone into effect on Sept. 16.

Men in Elkhart Strike.—Officials of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., refuse to grant two demands of their Elkhart men, one the reinstatement of two employees and the other the recognition of the union. The men say they will hold out for a nine-hour day and a wage of 50 cents an hour. So far the company has made no attempt to operate with non-union men. It is said that the city trainmen of South Bend may join in the strike.

French Commission Recommends Direct Current.—It is announced that the French Ministry of Public Works has received a preliminary report from the commission sent to America to study railway electrification. The report recommends that the high-tension direct current system should be adopted. In the beginning of September members of the commission on the electrification of the Belgian State Railways visited England and inspected the equipment of various electrified railways in the country.

Electrification Progressing.—Further progress in the complete electrification of the Chicago, Milwaukee & St. Paul's transcontinental railway was made in the connecting and energizing of three transmission lines between Long Lake and Snoqualmie Falls. The operation of electric trains over the road between Tacoma and Othello will be under way within the next two months, while freight trains are now being drawn over the Saddle Mounts with electric locomotives. It is expected that the freight service of the Milwaukee will be handled by electric locomotives entirely on the Atlantic division by Jan. 1.

Municipal Railway Losing.—The municipal railway on the tideflats at Tacoma, Wash., according to report, had a deficit of $2,424 from the operation of its freight business since Jan. 1, and the City Council has under consideration an offer from the Chicago-Milwaukee Railway to take the entire freight business off the city's hands. The company would pay all expenses of upkeep on the entire trackage of the lines, amounting to more than $8,000 thus far this year; it would furnish all freight equipment, and the city would devote its energies entirely to passenger handling.

Columbus Arbitrators Chosen.—The three arbitrators who will settle the dispute between the Columbus Railway, Power & Light Company, Columbus, Ohio, and its platform men have been selected. Norman McD. Crawford, vice-president and treasurer of the company, will represent its interests. J. C. Daugherty, a barber, has been selected by the employees, and the third man, selected by the other two, is S. D. Hutchins, Columbus agent of the Westinghouse Electric & Manufacturing Company. The first meeting of the board was held on Sept. 22.

No Service Yet at Muscatine.—Muscatine, Ia., is still walking. In spite of the interference of the courts to compel operation of the lines of the Clinton, Davenport & Muscatine Railway, there has been little progress in the direction of re-establishing service, which has been cut off ever since the city of Muscatine refused to grant the company a 7-cent fare following a wage increase to 60 cents an hour. As reported in last week's issue of the ELECTRIC RAILWAY JOURNAL, page 674, the system has been placed in the hands of the sheriff by court order. The sheriff has so far proved a failure as a general manager. He has applied to the court for detailed instructions, but has received no answer.

Conciliation in Clinton Dispute.—Electric railway service was resumed at Clinton, Ia., on Sept. 19 after a strike lasting a week. The men went back to work after the Clinton Street Railway had discharged them. The company reconsidered this action. The men have been drawing a 50-cent scale for more than a year. They asked that an eight-hour day replace the previous 9½-hour shift. The men, recently unionized, voted unanimously to go back to work pending a settlement of the wage and hour demands by conference, with arbitration as a last resort. The men wanted a 90-cent scale. One-man cars are operated in Clinton. Public sympathy was with the railway. It is owned in Clinton and the company has not asked any increase over the 5-cent fare which is charged. The company stated it is breaking even.

Financial and Corporate

Asks Receiver for Interurban

The appointment of a receiver for the Union Traction Company of Indiana, Anderson, Ind., has been asked by John F. Anderson, Philadelphia, Pa., a bondholder of the company.

The complainant alleges that the company failed to pay the principal of the bonds when it fell due on July 1, 1919, and that the Equitable Trust Company, New York, trustee for the bondholders, had failed to act.

The bond issue which fell due on July 1, 1919, amounted to $4,623,000. Before it became due the company asked the Public Service Commission for consent to an extension of the bonds for three years, the interest for the extended period to be 6 per cent, instead of the previous 5 per cent.

The commission approved the extension and the matter was then taken up with the bondholders. This plan has been satisfactorily agreed to by 90 per cent of the bondholders and the work of obtaining further consents is still under way. The company holds that under the mortgage a majority may extend the bonds and the minority will be bound to abide by the rule of the majority. Of all the bondholders of the company, only one has opposed the extension of the bonds.

Chicago Results Promising

The Chicago (Ill.) Surface Lines appear to be making a satisfactory showing under a 7-cent fare. This outlook is indicated in the first monthly report made to the Illinois Public Utilities Commission by President L. A. Busby. In brief, the figures show an increase in passenger receipts of 24.45 per cent and a decrease in traffic of little more than 10 per cent.

The report sets forth the increase in earnings as $864,000, as compared with an increase in operating expenses of $467,000, making the residue receipts show an increase of $397,000. The net return to the company for the month, after allowing 55 per cent to the city, showed an increase of $217,547 over August, 1918.

It is explained, however, that the month of August was not a fair standard to judge by. First of all, the strike held up the renewal of service until Aug. 2 and the increased wages did not become effective until Aug. 6. The strike of track workers lasted until Aug. 11, when they also returned after an increase of 17 cents an hour. The increase in fare did not go into effect until Aug. 8. Cost of operation will be further augmented by rewriting more than 200 time-tables. Fifteen of the new schedules have already been completed and put into effect. One of these time-tables carried five additional cars, twenty-one additional crews and ninety-seven extra service hours—an increase of 20 per cent. The usual allowance for renewals—8 per cent—was cut to 6.09 per cent during August at the request of the commission.

Revenue passengers, compared with August, 1918, showed a decrease of 1.81, due to non-operation on Aug. 1. The period from Feb. 1 to July 28—the last day before the strike—showed an increase in passenger receipts of 13 per cent over the same period in 1918. The average fare per passenger was 3.9 cents.

Total wages paid in August amounted to $1,961,034, as against $1,536,060 for August, 1918. It is explained in the report to the commission that cost of operation will be further increased to the extent of about $300,000 a month by additional allowances for track maintenance, carhouse and shop maintenance, increased expenditures for overhauling cars, damages and similar items, as well as bonus and overtime expenses which will follow the reduction of time-tables to the eight-hour basis as required by the new agreement with the trainmen.

Financial News Notes

Seattle Sells Railway Bonds.—Bonds in the sum of $790,000 have been sold by the City Council of Seattle, Wash., to be used for municipal street railway extensions and improvements. The bonds were voted on May 21, 1919. Of the issue, $500,000 has already been appropriated by the Council.

Wants to Abandon Service.—The Sacramento (Cal.) Northern Railroad, claiming that it is operating its West Sacramento service at a heavy loss, has asked the Railroad Commission for authority to discontinue the service it is giving between Eighth and J. Streets, Sacramento, and Headquarters station, West Sacramento, Yolo County.

Certificate Proposed Before Commission.—The issue of $2,300,000 of receiver's notes to be used in paying what remains of a loan the United Railways, St Louis, Mo., obtained from the War Finance Corporation, is now before the Missouri Public Service Commission for approval. The issue has been approved by the Federal Court in St. Louis

Swansea-Seekonk Line May Be Saved.—Interests represented by A. H. Barney, Swansea, Mass., have made an offer for the property of the Swansea & Seekonk Street Railway of Massachusetts, which has been tied up since the employees struck about two months ago. Recently the directors voted permanently to discontinue the operation of the road. Mr. Barney stated last week that he had offered to take over the road, pay its debts and give a bond to operate it for two years.

Railway Lines Only in Receivership.—G. A. Estabrook, treasurer of the Chattanooga Railway & Light Company, Chattanooga, Tenn., denies the recently published statement to the effect that the receivership of the Chattanooga railway lines had been extended to include the light and power department. The Chattanooga Railway & Light Company is operating the light and power lines and the receivers who were appointed to operate the railway lines have nothing whatever to do with the operation of the light and power business. The railway bondholders are making serious attempts to have this action taken, but up to the present it has not been done.

New Interborough Directors.—At the annual meeting of the stockholders of the Interborough Rapid Transit Company, New York, N. Y., G. M. P. Murphy and Mortimer N. Buckner were elected members of the board of directors, succeeding A. D. Juilliard, deceased, and Daniel G. Reid, resigned. Mr. Murphy represents the protective committee for the Interborough-Metropolitan 4½ per cent bonds and Mr. Buckner the Interborough Consolidated stockholders' protective committee. The vacancy on the board created by the death of Theodore P. Shonts, president of the company, was not filled at the meeting, owing to the requirement of the by-laws that ten days notice must be given the stockholders before a new director may be elected.

Purchase Payments Being Made.—William Trautmann, receiver of the Southern Traction Company of Illinois, has announced that $75,000 of the $400,000, bid for the railway by H. D. Mepham, St. Louis, Mo., has been paid. A payment of $45,000 was made on Sept. 10 and $30,000 had been paid prior to the public sales, held on July 10. The amount still due must be paid before Oct. 10, according to terms fixed at the sale by P. P. Schaeffer, master in chancery of the Eastern Illinois, Federal District, the auctioneer. The Southern Traction Company was promoted by Mr. Mepham, but he lost control when bankruptcy proceedings were started. Now that he has regained possession, he intends operating the line as originally planned, extending its tracks to Cairo, Ill. He recently inspected the property to ascertain how far it would be available to fit in with his plans for developing the line. Tracks are laid between East St. Louis and Belleville.

Traffic and Transportation

Fare Increases Blocked

New York Supreme Court Prohibits Granting of Increase in Manhattan & Queens Traction Case

In a decision handed down on Sept. 26 by Justice Finch of the State Supreme Court it was held in effect that the Public Service Commission of New York had no power to grant higher rates in the face of existing franchise provisions.

The decision had specific reference to the application of the receivers of the Manhattan & Queens Traction Corporation, New York City, for permission to increase fares. Justice Finch set aside the order of Public Service Commissioner Lewis Nixon of the First District for a hearing in the case and issued a writ of prohibition restraining him from taking any further action in the matter.

Supreme Court Justice Wagner had previously ordered Commissioner Nixon to show cause why a writ of prohibition should not be issued. Commissioner Nixon will carry the case to the Court of Appeals with a view to obtaining an authoritative definition of his powers.

OTHER INCREASES STAYED

Mr. Nixon has frequently said he desired to have the question of the right of the Public Service Commission to advance fares cleared up, and that he would be willing to assist in any way possible a final adjudication of the subject. An immediate effect of the decision will be to stop further applications to the commission by railroads for concessions.

In his brief William P. Burr, representing the city of New York, referred to the privilege given to the surface railroads to charge 2 cents for transfers, and said that because of this act and Mr. Nixon's attitude a repetition of "this illegal action was threatened and feared." The decision of Justice Finch calls attention to the contention of Corporation Counsel Burr that the contract between the city and the company fixed a 5-cent fare with the provision that any increase in the fare should result in the forfeiture of the franchise.

Justice Finch held that the granting of stays was impracticable as a means of preventing fare increases. On this point he said:

> If the decision of the commissioner should be in favor of an increase in fare, the nature of the controversy is such that it would be extremely difficult, if not almost impossible, to obtain a stay pending appeal, and if it should finally be determined that the commissioner had no jurisdiction to increase the fare, those who had paid such increased fare might find it impracticable to recover the increase.

Justice Finch referred to the decision of the Court of Appeals in Quimby *vs.* the Public Service Commission and in other cases, declaring that the commission had no authority to increase fares. The decision says that the alternative granted should only prevent action permitting an increase of fare, and should not prevent any action over which the commission has jurisdiction.

RAILWAYS' CONTENTION OVERRULED

Replying to the contention of counsel for the receiver of the New York Railways that the procedure was improper, because if the city later gave its consent to a modification of the company's charter which would permit the commission to increase the fare, a decision restraining the commission from acting in the case would be unfair, the court said:

> Leaving out of consideration the fact that the city is here strenuously objecting to any modification of the contract as to the rate of fare, a complete answer is that it has already been decided that where there exists a contract such as exists in the case at bar, the Legislature has not delegated to the Public Service Commission jurisdiction to increase fares.

Omaha Continues Skip Stops

The State Railway Commission of Nebraska has authorized the Omaha & Council Bluffs Street Railway, Omaha, to continue indefinitely the "skip-stop" system of service, following a temporary order issued on Oct. 8, 1918, for six months.

Before the expiration of the six-months' period, the railway filed an application for authority to continue the skip-stop plan, contending that it afforded "greater public convenience, as well as pronounced economy of operation over the old system."

In its finding and order the commission held that:

> The public advantages appear to be quicker transit, greater regularity of service, a more comfortable movement of cars, less dangers to passengers getting on and off cars, and less dangers to pedestrians and vehicles on streets, and also less blocking of other traffic.

The commission found that, based on the experience from Oct. 8, 1918, to April 8, 1919, there is a saving of approximately $60,000 a year in cost of coal and operating expenses, in addition to a saving of repairs and replacements, by reason of the skip-stop plan. The finding reads:

> The plan commends itself as a conservative measure of first importance in these days of advancing rates. It also appears to be in the direction of progress. Slow and uncomfortable travel in these days is a nuisance, and the people are willing to forego some convenience if necessary to the abatement of the greater evil.

The skip-stop system in Omaha has resulted in the reduction of stops from 1,856 to 1,246. The company has adopted a standard form of sign which indicates the stopping places. These signs read "Car Stop," and are of black letters on yellow background, painted on poles.

Buses Replace Electric Cars

Operate on Routes of Four New York Electric Lines Abandoned by Court Order

Four electric lines operating throughout the lower east side of Manhattan Island, New York City, suspended operation on Sept. 20 by order of Federal Judge Mayer. Judge Mayer's order was referred to in a recent issue of the ELECTRIC RAILWAY JOURNAL. The abandoned roads were storage-battery routes and formed part of the system of the New York Railways. They are the Madison Street, the Sixth Avenue Ferry, the Avenue C and the Spring and Delancey Street lines.

BUS SERVICE PROVIDED

The lines traversed a densely populated district. The cutting off of the service deprived thousands of persons of railway communication. Soon after it became known that the railway lines were to suspend, steps were taken to provide service with motor buses. The Board of Estimate, on Sept. 18, issued a permit to the Stewart Motor Corporation to operate sixty buses over the storage-battery routes. The permit will expire on Dec. 30, 1919, and is revocable on ten days' notice. The fare is 5 cents.

Thirty buses were placed in operation on Sept. 21. They are in the nature of an emergency service, furnished by independent operators, the holder of the original grant having failed at the last moment to exercise the rights awarded to him. It is said that the emergency cars now in use represent an investment of only $250,000. The greatest distance any of them will run for a 5-cent fare is about 2½ miles. The buses are in the sole charge of the chauffeurs. There are no conductors. Passengers pay as they enter.

1,000,000 PASSENGERS A MONTH

Figures prepared by men interested in the new service show that if the buses carry 1,000,000 passengers a month, the number carried by the car lines, each bus will earn $800 a month.

Lewis Nixon, Public Service Commissioner for the First District, announced that he would recognize the permit issued by the Board of Estimate. Mr. Nixon was incensed at a statement made by Mayor Hylan that the commissioner might interfere with the operation of the bus lines. In replying to the Mayor, he said in part:

> You knew beyond doubt that I publicly stated that no interference would be exerted by me and, further, that I would take every possible short cut to aid you in your experiment. I should be very reluctant to interfere with any official in the exercise of what he considers his duty under the law.
>
> This commission will do all it can to perform its lawful duties in the matter. Of course, your substitute service does not cover the convenience of existing transfers, but any relief that you can supply will aid in reducing the burden so suddenly placed upon the public which uses these lines.
>
> Your attention is called to Section 53 of the public service commission law, as I must assume that you wish to conform with such legal steps as are required.

Six Cent Fare for Providence

Commission Orders Plan "B" for Lines of Rhode Island Company—Present Zones to Be Retained

Six-cent fares with a charge of 2 cents for transfers were authorized for the lines of the Rhode Island Company, Providence, R. I., in an order handed down by the State Public Utilities Commission on Sept. 23. The commission set Sept. 28 as the date on which the higher fares should become effective. This is an increase of 1 cent in the unit fares and of 1 cent in the charge for transfers. The existing zones, 2 miles in length, in the initial or central zone, and 1¾ miles in the outlying zones, are to remain under the new tariff. The increased rates are expected to yield $672,300 in gross income during the coming year.

The city of Cranston and the towns of Warwick, West Warwick, and Johnston, through their solicitors, have announced that they will appeal from the decision of the commission and carry the fight to the Rhode Island Supreme Court. Under the law, an appeal from the decision of the Utilities Commission operates as a stay of its order, and will prevent the Rhode Island Company from putting the new rates in effect, unless the Supreme Court otherwise directs. In the two previous fare increase orders of the Utilities Board, the Supreme Court has ordered that the appeals should not operate as a stay, and the rates were allowed to become operative pending a full hearing upon the merits of the appeal.

WILL WAIVE FRANCHISE TAXES

The Utilities Board, by its order, has adopted Plan B, so called, favored by the receivers of the Rhode Island Company and the Providence City Council. The commission's decision was influenced by the fact that the Providence City Council agreed to waive its franchise tax against the trolley company amounting this year to approximately $138,000, and for the year 1920, to $150,500. The commission favors Plan B, it says, as the best of the four plans suggested to meet the requirements of the company in its present emergency, until a proper consideration is given by the State and municipal authorities to some suitable plan for reorganization of the properties.

The new rates are to remain effective during the life of the receivership of the company, or until otherwise ordered by the Public Utilities Commission, or until changed by the Legislature. The commission, in its findings, emphasizes the fact that it retains full power to revise and change the fares at any time when in its opinion the conditions warrant.

The total operating revenue for the year 1920 is, under the new rate, estimated at $8,022,320. The operating expense and reserve for displacements, charged against this income is $7,129,000. The amount of taxes for the same period is fixed at $765,000, making a total for operating expenses and taxes of $7,894,000. This leaves a net operating revenue, less taxes, of $128,320. This does not take into account the annual saving of $300,000, which the company's expert, James A. Emery, said could be made by a proper rerouting of cars.

COMPANY'S EXPERT SUSTAINED

The commission sustains the testimony of the company's expert, James A. Emery, that the amounts he recommended to be set aside and expended under the replacement reserve fund of $959,750 in 1919 and $1,125,200 in 1920, are substantially correct and should be immediately expended upon the property in order to keep it in reasonable operating condition.

The commission finds that wage increases totaling $2,213,900 annually, are primarily responsible for the company's predicament. The company voluntarily granted increases in May and June of this year amounting to $300,000. On July 19 the War Labor Board ordered another increase in wages amounting to $1,250,000. In August, the receivers entered into an agreement with the men to end the 19-day strike, which added another wage increase of $663,900.

As illustrative of the effect of the increased cost of operation the commission points out that the cost of operation per car-mile increased from 26.07 cents in 1917, to 36.05 cents in the first six months of the present year. This cost in 1920 is estimated at 40.9 cents. The cost of operating a car per hour jumped from $2.29 in 1917, to $3.30 during the first six months of the current year and for 1920 the cost per car per hour is estimated at $3.69. The proportionate increase for operating 18-hour cars is even larger. In 1917 it cost $15.045 per car for eighteen hours, and for the first six months of this year it cost $21,680. The estimated cost of 18-hour cars in 1920 is given as $24,240.

The commission's order says in part:

Of each nickel received in revenue for the year 1919 there will have been paid for mere operating expenses (including only $47,000, expended in the year for renewals and replacements), 4.29 cents, leaving 0.71 of a cent, from which 0.495 of a cent must go for taxes, leaving 0.215 of a cent, to which a non-operating income of 0.085 of a cent (now in default), must be added, leaving a total income of 0.3 of a cent available for return on capital.

The fixed charges for which the company was liable prior to receivership required 1.1 cents, consequently the estimated results of operation for the year 1919 show that the company, if it paid its obligations, would have to add .8 of a cent to each nickel received in gross revenue, or a total of $1,078,045, to its total gross revenue of $6,737,418, and would have forfeited any return upon its own capital investment. At the same time an utterly inadequate expenditure would have been made for renewals and replacements, and the property would have depreciated, to the extent of the difference between the actual and the proper expenditure for this purpose. A slightly worse condition would result for the calendar year 1920, with a deficit of $1,155,000.

The fact of receivership in no way affects the duty of the commission in this case. The company is entitled annually to sufficient operating revenue so far as the same can be secured through the application of reasonable rates to pay: (1) Operating expenses, including a reasonable allowance to offset the wearing out of the property due to a year's use of the property in its present condition; (2) taxes; (3) a fair return upon the fair value of the property used and useful for the public service. The receivers have not petitioned for revenues sufficient to cover the latter item, although it is clear that they are bound by the decree of the court to pay whatever sum is fixed by the master and approved by the court as a reasonable monthly compensation for the use and occupation of the properties formerly leased.

The commission is further inclined to favor plan "B" because of the indication of the intention by the city of Providence to relieve the company during the period of receivership from the payment of the franchise tax of 5 per centum of the gross earnings within that city, and to co-operate with the receivers in arriving at a proper solution of the trolley problem. Plans "C" and "D" seem to the commission to be inadequate to produce the revenue essential to a continuance of operation and safe and suitable service.

These properties were managed and controlled from Oct. 17, 1914, to Jan. 30, 1919, by a body of trustees, citizens of Providence, of the highest standing. Since Jan. 30, 1919, the properties have been managed and controlled by a receiver or receivers appointed by the Superior Court of this State. For nearly five years, therefore, these properties have been managed and controlled by public agencies. A careful examination by the special commission and by this commission assisted by expert engineering advice indicates that the properties have been as well managed as their financial resources would permit and that their difficulties are fundamental and similar to the fundamental difficulties confronting practically every trolley system in the country.

Transportation News Notes

Another Fare Increase.—The Lowell & Fitchburg Street Railway, Ayer, Mass., has filed with the State Public Service Commission notice of an increase in its single passenger fare from 5 cents to 7 cents, effective Oct. 15.

Seven Cents Cash in Baltimore.—Six and a half cents is the basic rate for fares on the lines of the United Railways & Electric Company, Baltimore, Md., beginning on Oct. 1, with no changes from the rates formerly in effect for children. Four tickets are sold for 26 cents, but the passenger who does not buy tickets will pay 7 cents. This is the decision of the Public Service Commission.

Voters Reject Six-Cent Fare for Des Moines.—The city of Des Moines Ia., has refused to grant the Des Moines City Railway a 6-cent fare. The proposition of a 1-cent increase was submitted to the voters at a special election on Sept. 22, but was turned down by a large majority. The company had asked the higher fare so as to meet the demands of employees for higher pay. The company's predicament is referred to elsewhere in this issue.

Personal Mention

Mr. Bailey in Kansas

Kansas City Railways Appoints Assistant General Manager to Supervise Its Kansas Interests Exclusively

R. W. Bailey, for the last eleven years general superintendent of the Illinois Traction System property at Peoria, Ill., has been appointed assistant general manager for the Kansas properties of the Kansas City (Mo.) Railways. He assumes his new duties, under F. G. Buffe, general manager for the company, on Oct. 1, 1919.

Mr. Bailey was born at Webster Grove, St. Louis County, Mo., on Aug. 22, 1877. After graduating from the St. Louis County public and high schools, he attended Brown University, Providence, R. I., for one year. He began his business life in the testing department of the Missouri Edison Company, and was with this company until 1897.

R. W. BAILEY

In 1897, he went with the Fuller & Tritle Construction Company as superintendent of construction, erecting electric light plants, municipal water-works and pumping stations; and in charge of electric railway construction. He was with this company until the opening of the Spanish-American war, when he enlisted in the Third United States Engineers.

After completing his army service, Mr. Bailey again took up his work with the Fuller & Tritle Construction Company, as superintendent of construction. In 1901 he went to the East St. Louis & Suburban Railway to take the position of electrical superintendent in charge of building and operating high-tension lines, substations and electric light construction.

Mr. Bailey was next appointed receiver for the St. Louis, St. Charles & Western Railway. This was in 1904. After disposal of that property under foreclosure in 1905 he returned to the East St. Louis & Suburban Railway as superintendent of the Alton, Granite & St. Louis Traction Company and this company's Granite City, Madison, Venice and Alton City properties.

In 1907 Mr. Bailey became general superintendent of the property of the Illinois Traction System at Peoria, remaining in that capacity until called to Kansas City.

Kansas City, Mo., is the dominating city in point of population served by the Kansas City Railways, providing heretofore about 75 per cent of the traffic income. Kansas citizens, however, are proud of their city, and are aggressive in securing recognition of its industrial, commercial and social advantages. Mr. Buffe's purpose in appointing Mr. Bailey is, therefore, to put in Kansas City, Kan., an assistant general manager for the Kansas properties, with authority to handle local matters, and reporting directly to him. Kansas City, Kan., has within its borders by far the largest part of the great industrial plants for which "Greater Kansas City" assumes credit. Mr. Bailey is to study the problems of service in Kansas City, Kan., as a resident of the city and assist the local authorities in reaching conclusions as to adequate care for their interests.

Nathan Wood has been named as auditor of the Alabama Power Company, Anniston, Ala.

H. S. Swan was recently appointed treasurer of the Alabama Power Company, Anniston, Ala.

Walter M. Hood has been appointed secretary of the Alabama Power Company, Anniston, Ala., succeeding Wiley Alford.

Frank Steinhardt, president of the Havana Electric Railway, Light & Power Company, Havana, Cuba, has been elected a director of the Loft Candy Company, New York.

T. M. Cox has been appointed receiver for the Galesburg & Western Railway, a part of the system of Rock Island Southern Railway. Mr. Cox is a business man of Galesburg.

Percey L. Radcliffe, formerly night superintendent of the city lines of the Detroit (Mich.) United Railways, has been appointed supervisor of fare collection and has assumed his new duties. He was succeeded as night superintendent by Malcolm McIntyre.

James A. Duffy, formerly superintendent of equipment of the Hasleton car shops of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has resigned to enter business in Cleveland. He had been with the company for a number of years, and until recently was master mechanic.

Percy J. Brune has been appointed engineer of way and structures of the Havana Electric Railway, Light & Power Company, Havana, Cuba. Mr. Brune was formerly with the Cuban Central Railroad as chief engineer.

Mr. Butler Promoted

Succeeds Bruce Cameron as Superintendent of Transportation of the United Railways

Henry O. Butler has been appointed superintendent of transportation of the United Railways, St. Louis, Mo., as the successor to Bruce Cameron, resigned. Announcement of Mr. Butler's promotion was made recently by Col. A. T. Perkins, general manager of the company.

Mr. Butler was assistant superintendent of transportation at the time of Mr. Cameron's resignation from the company last June and for the last three months has been performing the duties of superintendent.

H. O. BUTLER

Mr. Butler has been connected with the company for the last thirty years. He was born at Hogansburg, N. Y., in 1868, and entered the company's service when he was twenty years old as a gripman on the Olive Street line. He rose from gripman through the grades of conductor, foreman, supervisor and division superintendent.

He was promoted to the position of assistant superintendent of transportation in January, 1918. Mr. Butler's ability as a transportation manager is recognized by the employees as well as by the officials of the United Railways.

Wilbur C. Fisk has resigned as president of the Hudson & Manhattan Railroad, New York, N. Y., to become chairman of the board. He will devote his attention largely to the affairs of Harvey Fisk & Sons, of which firm he is a partner. He is succeeded in the presidency by Oren Root, whose appointment was announced in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 27.

Market Slightly Influenced by Steel Trouble

Cast-Iron Wheels Unaffected—Good Deliveries on Cars and Rails—Steel Wheels and Axles Production Slightly Reduced

The present steel trouble is having little effect on railway supplies. In the car-manufacturing line, business is suffering more from a shortage of orders than from any possible results of the strike. With the exception of possibly one or two car-manufacturing plants, little or no trouble has been experienced. Should any serious trouble develop, it would probably cause less inconvenience now than at other times, as it is known that most car builders' plants are not running up to production. In addition, the immediate effects of the strike on railway-car manufactures would not be felt for at least several months. One Middle Western plant, which is concerned more with steam railway than with electric railway business, is affected by the strike at the present time, but it is believed that a settlement is near.

Rail Mills Slack

In the rail market one of the largest mills reports that it can handle more business than it can possibly obtain at this time, and that excellent deliveries can be made on standard sizes and sections on orders as low as 250 tons. In this plant no trouble had been experienced up to Monday of this week when from 5 to 20 per cent of its workers went out. The volume of rail business handled by this company has for some time been at a low ebb. Another large mill reports that it is accepting orders on all standard and special sections, but that not enough orders to keep production at a maximum are being received at the present time. Good deliveries can be made in these products.

A third plant in the western New York region is having some labor trouble but the delay will be mostly on fabricated steel, such as bridge and building steel, plates and shapes, and on pressed sections for the automobile trade. Future orders on rails will not be affected, officials state, as there is not enough business on the books.

Prices Are Steady

The volume of work going through the mills eight months ago was considerable, but this consisted of uncompleted orders, some of which had been on the books two years or more. The railways have received a great amount of steel in the early part of this year, but this is only a small per centage of what is needed in the field. There has been practically no change in the prices on rails and no appreciable change is looked for before the end of the year. There is a possibility, however, of higher prices for first quarter 1920 deliveries, although it has frequently been reported that steel executives will make every effort to prevent increases as far as possible.

There is a small demand for cars, wheels and axles. The requirements on this line are usually heaviest toward the first of the year and during the spring. The manufacturers expect to be able to take care of all requirements by that time. There is a scarcity of work at the present time, and especially on new orders. It is generally felt that this condition will exist until peace is signed, after which a firmer tone of confidence will be apparent. Unless the labor leaders are able to enlist the sympathy of the railway unions and prevent shipments, which at this time looks unlikely, no trouble in making deliveries on wheels of the cast-iron variety is anticipated. Plants manufacturing steel axles are well supplied with raw material, and no shortage is looked for from the standpoint of the railway buyer although deliveries on both steel wheels and steel axles may be held up if the strike should prove to be a long-drawn-out affair. It is believed that if good order prevails for the next week, most of the plants will be working at a fairly good rate by that time.

Good Demand for Jacks

Sales Show Favorable Increases—Deliveries Fair, With Advance in Prices Expected

The market in jacks is quite active. Sales in the electric-railway field for the first six months of this year show a very favorable increase over the corresponding period last year. In other fields, especially the automobile, telephone and telegraph, still greater increases have been made.

Prospects Good

It is hardly possible to estimate what the conditions will be during the coming fall and winter, but everything points to a continuation, or even an increase, in buying. Prices have not advanced recently, but it is probable that there will be an increase before the first of the year. There is every reason to believe that the price will then become stable, with no further increases.

Raw material is and has been extremely hard to get, and this condition apparently will continue for some time. The labor situation is serious, not so much because of the scarcity of labor or due to high wages, but because of the irresponsibility of labor that is everywhere manifest. There seems to be a general "don't care" attitude, which results in less production and higher cost.

The policy of at least one manufacturer is to turn out a definite number of each type of jack per month, based upon the average demand and the plant capacity. In some instances stocks of certain types might become exhausted early, while at the end of the month there might be a surplus of another type. In the latter case, immediate delivery might be possible, depending upon the size of the order, while in the former case thirty days would probably be the maximum time necessary for the manufacturer to make delivery on any normal order.

Des Moines Labor Matter Thrown Open

The city of Des Moines, Ia., has refused to grant the Des Moines City Railway an increased fare. At a special election held on Sept. 22, by a majority of 1266 out of a vote of 6600 the voters refused to accept the proposed increase of 1 cent which was to be used in granting the employees an increased wage.

The election was the result of a compromise which ended the eight-day strike of the railway employees late in August. By the terms of the proposed change in the franchise the additional cent would have gone into a special fund to be used exclusively for the increased wage and it was for a specified and limited time, but the voters refused to endorse it. Trouble between various union organizations is said to be at the bottom of considerable opposition on the part of some unions and the business interests of the city did not make an active campaign for the increased fare other than to use advertising.

It is impossible to tell just what turn the Des Moines situation will take. The union men have called a meeting and Judge Wade, of the Federal Court, was expected in Des Moines on Wednesday, Oct. 1, to take a hand in the affairs.

Plans for Warren Avenue Extension, Detroit

The City Council of Detroit, Mich., has adopted a resolution authorizing the Corporation Counsel to draw up a day-to-day agreement with the Detroit (Mich.) United Railway providing for the construction of an extension of the Warren Avenue line. Although, as pointed out by the Corporation Counsel, this new line will be an extension of the Pingree line, the franchise for which provides that the company pave between the tracks, the city will in this case do the paving between tracks. E. J. Burdick, assistant general manager for the railway, emphasized the fact that it was against the policy of the company to add to the existing 3-cent lines.

Work is being rapidly rushed to completion on the new Twelfth Street extension. Excavation on Twelfth Street is under way and the steel and other necessary materials for the construction for the new line are on hand. The new tracks will be an extension of the Trumbull line, and cars of that line will operate over the new extension, Oakman Boulevard and Metzer Avenue tracks to Woodward Avenue opposite the Ford plant.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54 Baltimore and New York, Saturday, October 11, 1919 *Number* 15

This is a delayed number of this paper and is issued on Nov. 8.

Notice About Binding

THE Daily Report Number, dated Oct. 11 and issued two weeks ago, was No. 15 of Vol. 54 and was a supplement to this number which is No. 15-A. The paging adopted in the report number was from 1 to 132, while that of this number is consecutive with Oct. 4. The report number should be included by those who bind their copies in the volume for the latter half of 1919, and the publishers recommend that it be inserted at the end of the volume, although those who prefer to do so may include it between No. 14 and No. 15-A. Due provision will be made in the index of this volume for the convention report supplement.

We Are Resuming Publication

OWING to printing troubles in New York, we are printing this issue in an outside city, and will continue to use outside facilities, where they can be obtained, until printing conditions in New York return to normal. Our issue of Oct. 4, made up in page form before that date but not printed, was mailed to our subscribers a few days ago. We hope soon to follow the present issue with that of Oct. 18 and Oct. 25, and soon thereafter to be back to our regular dates of publication.

This issue contains a somewhat smaller number of pages than normal, and owing to the adverse conditions under which we are getting out the paper, we may ask the indulgence of our readers for the next few issues in regard to the number of reading pages which we publish. Nevertheless, with the Report Number, published with 132 pages within a week of the close of the convention and sent to all subscribers, we believe that the aggregate number of reading pages for the present volume will not be materially if any less than that in Vol. 53 or Vol. 52.

Prevention Is Better Than Cure in Claims Work

ONE outstanding impression of the Atlantic City Convention of the Claims Association is that the men in this field are more than ever impressed with their responsibility for keeping interest in accident prevention alive and in helping to co-ordinate the efforts of all who for humanitarian and utilitarian motives want to see accidents reduced in number and severity. The convention "headed up," so to speak, in the appointment of a committee to endeavor to carry out certain suggestions of President R. E. McDougall. He made these with a view to applying the lessons which have been learned in Rochester and elsewhere in developing successful methods of accident prevention. The discussion showed that by co-operation with the National Safety Council, of which most of the leading electric railways now are members, it is possible for any city to have a successful and continuous campaign for saving life and limb.

Closely connected with the general subject of public safety is the effect on accidents of the use of one-man cars. There has been a certain amount of propaganda on the part of those opposed to the use of these cars, intended to impress the authorities and the public with the danger which results from their use. At the same time the enthusiasts on the other side have claimed that the one-man car is safer than its older rival, the two-man car and have crystallized their belief in the term "safety-car." The facts adduced at the meeting, the results of actual experience covering a period ample for comparative purposes, show conclusively that the safety car is in fact a safe car. Advocacy of the use of these cars by claims departments is, therefore, perfectly consistent with any general scheme for accident reduction.

The work of the claim agent takes on new dignity as he becomes a leader in such an important civic movement as a public safety campaign. In this work he ranks with the leaders in industry, city government and business generally. If such work does not put "pep" into a man, it is time that he stepped aside and made room for some one equal to the opportunity.

Labor's Contribution to the Solution of the Railway Problem

LABOR was heard at Washington during the last week of the Federal Commission hearings. It had appeared, according to its own statement, to offer its assistance in the solution of the problem, because that solution was of more vital interest to labor than to any other party. Its "help" was summed up in three recommendations which it insisted the commission should indorse, if it were not to be guilty of becoming "derelict in performing its public duty." These were:

1. Unconditional surrender to collective bargaining and the closed shop.
2. An actual eight-hour day with one day off in seven.
3. A wage that will produce on the basis of (2) a minimum annual income of $2,000.

The combination of (2) and (3) will make necessary a minimum wage of about 80 cents an hour, and this is to be the base pay for all employees, organized or unorganized, stenographers and clerks, the janitor, the scrubwomen, car cleaners and all. And from this base the wages are to be adjusted upward upon the same classification as now exists between the employees.

This statement was made by labor's counsel, but he hastened to say and to reiterate frequently thereafter, that labor was not asking the commission to recommend any specific rate of wage but merely to recognize the principles of the three points of labor's constructive program. Let us see how labor has helped toward solving the difficulties of the street railways:

According to the 1917 census figures, the gross receipts of all electric railway companies from railway operation that year was $650,149,806. The total number of employees was 294,826, inclusive of officers, managers, superintendents, etc. The 1912 census showed the number of officers, managers and superintendents to be 5.5 per cent of the total. If this percentage still prevailed in 1917, the total number of employees exclusive of officers, managers and superintendents, may be estimated as 278,610. Assuming an increase in gross of 10 per cent since 1917, which is a very liberal allowance in the light of the actual returns, the present-day gross would be about $715,165,000. If the 1917 number of employees were to receive the minimum income of $2,000, with no allowance for scaling up from this sum for the more skilled employees, then wages would consume $557,220,000 or 78 per cent of the gross receipts, leaving 22 per cent to meet the salaries of the officers, managers and superintendents and all other operating expenses, taxes, fixed charges, depreciation, return to stockholders, etc. That is labor's constructive plan for rendering assistance.

Labor presented its case most ably and thoroughly. Only one slight detail was omitted—how to carry out its recommendations; how to make $1 of earnings pay for $2 of expenses. An unimportant detail to be sure, from labor's point of view, yet unfortunately one which the laws of economics compel the railway managements to recognize. We feel certain that railway men have no particular antipathy to high wages if these can be earned along with other expenses, and certainly they are not desirous of having a return to the average income of $872.50 per employee which prevailed in 1917. But they do want light on how any such program as labor presented at Washington can possibly carry a hope of consummation. Such a wage scale simply cannot be earned. It is not in the industry, no matter what fare is charged.

Improvements Possible in Fare Collection Methods

THE joint meeting of the Accountants and the Transportation & Traffic Associations during the recent Atlantic City Convention was one of the most enthusiastic of the week and was indicative of the interest taken in the subject of fare collection. Another notable feature of the meeting was that it was the first in the history of either association in which the presiding officer invited all the manufacturers of fare-collection devices to participate in the discussion. The result of this procedure amply justifies its wisdom, for the frank discussion of the difficulties involved in the solution of the fare-collection problem, and of the necessity for a certain amount of stability in ideas to permit the invention and development of the mechanical devices required, will surely prove very helpful.

Those who discussed the report brought out the lack of unanimity of opinion among the railway men and manufacturers, also, as to what should be considered the best method of collection and registration of fares, irrespective of the system of basing rates. The committee, in its report, is definitely committed to the registration of all flat fares in a mechanical registering device, located at a fixed point in the car, prior to the time the coins reach the hands of the conductor. The argument is that such a plan not only provides the best protection to the company's treasury but that it also lightens the conductor's duty in that it enables him to remain at a fixed point in the car and requires him to look after the fares of the passengers only as they are boarding or leaving the car, as the case may be.

If railway men during the last few years had given as much thought to the rates of fare and to the proper mechanical collection and registration devices needed for lightening the conductor's work and for protecting the company as has been given to the standardization of rolling stock equipment, shop materials, track supplies, etc., there is no doubt that to-day practically all fares, whether based on the flat rate or the distance basis, could be collected and registered by mechanical registering devices. Such devices would foster two things: the adoption of a greater number of safety cars, as it would leave the operator in a position to give better and quicker service, and the creation of a better relationship between the company and the conductor, for a considerable amount of bookkeeping would be eliminated on the part of the latter.

Railway managers must consider fare collection as the all-important matter when fare rates are changed, for such fares as are established must be so collected that the company can be assured of getting all the money paid for the service rendered. To this end the transportation men are urged to join first with the accountants in their own companies and determine upon a fixed program of just what statistical information must be obtained relating to the traffic handled. At the same time every effort should be made to eliminate all work done by the conductor in the way of filling out reports that are seldom if ever used thereafter. This ought to be a relatively simple task, for nothing can be considered essential except that which is used properly and accurately to check up the conductor after the completion of his day's work. Such information as car-hours, car rules, half-trip readings of registers, transfers issued and collected, etc., are all irrelevant to a daily settlement with the conductor, and to ask him to do such things in the regular course of his work simply means an unnecessary effort.

Car-mile and car-hour statistics of regular runs, when desired, can be readily obtained from the posted schedules. The conductor should be requested to make note only of any deviations. Traffic statistics by half trips as usually kept by conductors do no one any material good, for the accounting department keeps only the sum total for the run. Half-trip traffic figures do not aid the schedule maker in building runs as he cannot tell from these figures whether the load travels the whole length of the line or only a part. Checkers are usually employed to obtain such figures as are essential to schedule making. Only thus is it possible to get the information as to how many seats should pass a given point properly to handle the traffic offered. If checkers are not employed, conductors could be asked at intervals to fill out special forms so as to determine the amount of traffic on their cars at certain fixed points en route. This information could be cumulated and plotted for the use of the schedule men.

During the ensuing year it is hoped that the accountants and transportation members will carry on together the work so admirably started during the past year by the Transportation Association alone and that a constructive report will be presented to the 1920 convention covering in detail the one best way of carrying out the principles evolved by the committee.

Benefits of a Consolidated System Not Always Appreciated

IT IS UNFORTUNATE that too many of the blessings which people enjoy are taken for granted by their recipients. They appear to think that the favorable circumstances under which they live are not an evolution of time but a condition which has existed since the beginning of human history, like sunlight and air. In consequence, if any change is made in the existing favorable status because the conditions which brought it about no longer permit its continuance, those who have benefited from this status without any exertion on their own part to maintain it, act as though they had been deprived of some right. A case in point is a consolidated electric railway property, which has to be broken up into its constituent parts because the property can no longer earn an adequate revenue when conducted as a unit.

The period of consolidation of all the railway properties in a city, begun early in the history of electric traction, has been so thorough that very few communities have more than one property. The unified property in each city thus produced has not only put in service convenient routes but it has extended in all directions and greatly reduced the average cost of city transportation. In fact, in most cities it has been so customary to think and refer to the electric railway system in any city as a "natural monopoly" that it is very difficult for the public to think of it as being made up of a number of detached properties which might have to be operated independently. Yet this was the original condition, and the through routes and the through fares which have since been instituted became possible only because the rates charged, when they were established, were adequate to pay the necessary expenses of the service.

But a time has come in most cities when it is no longer possible to give so long a ride for the same fare, and if the fare is not increased the eggs have to be unscrambled and the individual lines go back to their original owners. This, for the companies, means uneconomical operation, because the many savings which come from unified operation are not available, and for the public it means short rides, frequent changes of cars, and very much higher rates of fare for a ride of any considerable length.

Such a condition has been brought about to a considerable extent in New York and to a greater extent in Brooklyn, and it will come in other cities if no satisfactory settlement of the fare question is reached. Former operating companies which have not been active for years except to distribute as dividends rentals received from a holding company are being revived, operating staffs are being organized, and the conditions of the early eighties, so far as corporate organizations are concerned, are being renewed. The condition is somewhat akin to the experience of Rip Van Winkle after his sleep of twenty years, but reversed. The inhabitants of Brooklyn, for example, in this present year are being put back, so far as routes are concerned, to the conditions of 1889, or earlier.

Of course, during this time the arteries of travel have changed tremendously. New centers of shopping, travel distribution, etc., have been developed. The effect of the change thus described consequently is that one important section of a city is often shut off from direct communication with another important section, except through one or more changes of cars with an additional fare to be paid each time, besides the inconvenience of change. To refer to the previous simile, the result is like an attempt to use Rip Van Winkle's old flintlock to do the work of a modern fowling piece, but those who withhold from the companies the right to charge a reasonable fare for transportation are the only ones to blame.

Another Large Company Adopts the Zone Plan

ON NOV. 2 the Connecticut Company, operating nearly one-half the track mileage in Connecticut, will put into operation a zoning plan which differs in a number of respects from those now in use. In this State the law is such that a railway company can modify its service and rates of fare without application to the Public Utilities Commission for advance permission, but the commission is obliged to review the schedules, on application from the public, and in due course to take such action as the facts seem to justify. It is impracticable, therefore, to determine just what the reaction from the public will be until after the plan has had a reasonable trial. Indications are, however, that the sentiment will show a more reasonable frame of mind than existed when the flat fare was raised from 5 to 6 cents. Of course, the public is not expected to be wildly enthusiastic over an increase in fare and a reduction in privileges, but experience in other lines has taught everyone that prices must be adjusted to fit the depreciated purchasing value of money, and in these days an air of resignation usually accompanies any announcement of a reasonable increase in the cost of some necessities.

The Connecticut Company plans to retain as its minimum or basic rate the present 6-cent fare, giving as much service as possible for this fare. In applying this principle the company has decided to give free transfers within the zone or zones covered by a given fare. The purpose of this is to give a very considerable number of patrons the privilege of riding without increased cost, although to do this some difficult problems are imposed upon the company. It seems the fair thing to do, however, in the interest of good service, and undoubtedly will go far in eliminating resentment on the part of short-haul riders in having the possible length of their rides curtailed.

The Connecticut Company's plan is based on elaborate traffic studies extending over many months and is the result of an analysis of results obtained eleswhere. Many of the details used in the Public Service zone system will be employed, with modifications considered by the officers of the Connecticut Company to be desirable. For example, fare boxes will be used instead of cash registers for the receipt of the money, zone indicators will not be used on the front platform, the transfer privilege will be added, etc.

In view of the fact that the Connecticut Company itself set the date when the new plan is to be inaugurated, that it had a free hand in laying out the schedules and zone boundaries, that it has utilized as fully as possible the New England habit of "talking things over" in order to prepare the people for the new scheme, that the motormen are already in the habit of making simple records due to the energy-economy plan which has been in use for some time, and that there are other circumstances tending to favor the success of the plan, it is the belief of those most intimately in touch with the matter that, in spite of some temporary slowing of schedules, the public will find the zone plan workable and reasonable.

London's Tubes and Buses—I

Some Particulars of Bus Service—Why Unequal Distances Are Given for the Same Fares—Marvelous Flexibility of Bus Operation to Meet Fluctuations of and Create Traffic

BY WALTER JACKSON

AT THE OPENING of the war, the associated bus companies of London had a total of 2906 buses in operation. Owing to the withdrawal of buses for war service, the difficulty of repair and the impossibility of replacements and additions, the number in operation had sunk to about 1800 at the time of the armistice. Even by March, 1919, there were in operation only 1880 buses out of a park of 1970. It is obvious that the service on many routes had to be cut down, and in some cases cut out entirely. Hence the decreases in travel shown in later statistics are readily accounted for, and as these decreases were far below the enforced reductions in service the individual buses were actually crowded as never before.

VIEW OF THE STRAND, LONDON

The standard London bus of double-deck type seats sixteen inside and eighteen above in the open. Those buses which have cross-seats (arranged two on one side and one on the opposite side) on the lower deck, too, seat fifteen below and seventeen outside. Single-deck buses used on some outlying lines seat sixteen to twenty. The latest and largest bus, just inaugurated, seats forty-six. Standees are never carried on the upper deck. Ordinarily not more than five passengers are permitted to stand inside, but it was necessary to exceed this limit during the bus shortage. In discussing service standards, J. P. Thomas, general superintendent, said the management had no desire to see overcrowded buses, for overcrowding means poorer fare collection and injury of the bus's popularity for pick-up riding. It is self-evident that people who have but a half-mile or even less to travel will not get into long queues to stand up in a crowded vehicle.

In view of the comparatively small capacity of the bus, one would expect that disadvantage to be set off by higher schedule speed. This is not so to any appreciable extent in comparison with the much larger street cars operating over wide streets and which, necessarily, must make more stops. For the greater part of London generally the schedule speed of the buses is 8½ m. p. h., while police regulations even in the outer districts limit their speed to 12 m. p. h. Their maximum free running speed may be placed at 16 m. p. h. The average tramcar schedule speed in the London district ranges from 8.5 to 9 m. p. h. for cars carrying seventy-eight seated passengers. It would seem then that the wonderful bus development of London is due chiefly to the fact that the bus has so large a territory in which street railways cannot be operated at all because of narrow thoroughfares. Even in many suburban districts the fondness for crescent-shaped streets, dead-end lanes and the like produces unusual difficulties for street railway construction.

At the beginning of the war the London General Omnibus Company was about to install a comprehensive system of "bus stop" and "fare stage" signs, of the type shown in the accompanying halftone, and it is hoped to take this matter up again at an early day. While drivers are supposed to stop almost anywhere on signal, they exercised a quality something less attractive than discretion during the war and armistice periods! In fact, the only stops that were to be relied upon were the fare stages.

Except for a few lines, mainly in the East End, which start between 4 and 5 a. m., the traffic-carrying period of the bus is between 7 a. m. and 11 to 12 p. m. All regular routes or service are designated by a number, those with a number and letter being slight variations such as shorter distance between terminals, a branch-off, etc. Thus services "2" and "2A" are exactly alike for the greater part of the parent service "2."

HOW FARES ARE GRADUATED

The bus system is fortunate in having no special rate tickets of any kind, whether for children, season riders or workmen. The rate is graduated according to distance but it is by no means rigid in application. The leading principle is to get the greatest possible number of riders at an over-all profit even when, in theory, some of the riders are carried at a loss. In pre-war days, for example, when the problem was to create travel rather than to keep it within bounds, it was not uncommon to charge a lower rate in the outer districts than in the congested sections where the saturation point had been attained. This appears most unorthodox if we reason on a purely mathematical basis, but it proved to be good business policy nevertheless.

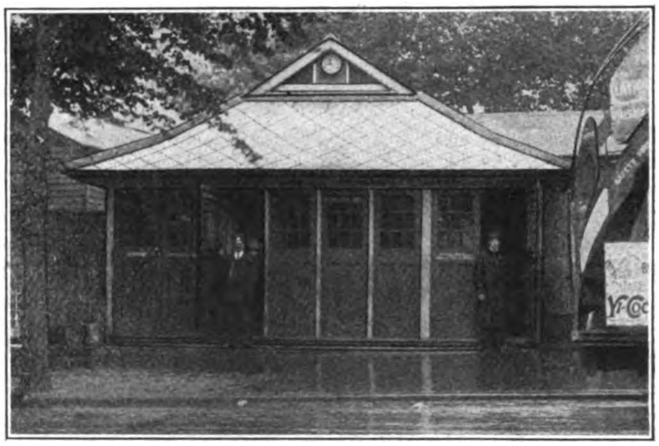
To illustrate: There were a number of routes on which traffic fell off quite sharply within the last mile or so. As it would not do to reduce the base service beyond certain headways, the company decided to see what would happen if an exceptionally low rate of fare was applied to the last section. First a count was made of the people who were

BUS "STOP" SIGN WITH COMPARTMENT FOR ROUTE NUMBER SLIDES

then riding at say a penny per mile, whereupon it was decided whether or no more revenue might come by cutting the fare to a half-penny! In many instances, the results were most gratifying, increases in traffic being so great that the revenue on the last stage was doubled. To put it another way, the company was prepared to forget the "readiness-to-serve" charge if the same equipment would secure enough extra travel to make up for it. What it was after—and obtained—was the greatest possible revenue per bus rather than the greatest possible revenue per passenger.

With the coming of war prices, the half penny, both as a base fare and as a part of intermediate fares, had to go; but the riding habit had been created and it has stuck wherever the company could continue to furnish carrying facilities.

On the whole, the fare increases have been quite moderate as indicated by the circumstance that the average fare per passenger has risen only from 1.33d. during the first seven months of 1914 to 1.69d. during the first ten months of 1918. Typical examples of distances for given rates of fare follow:

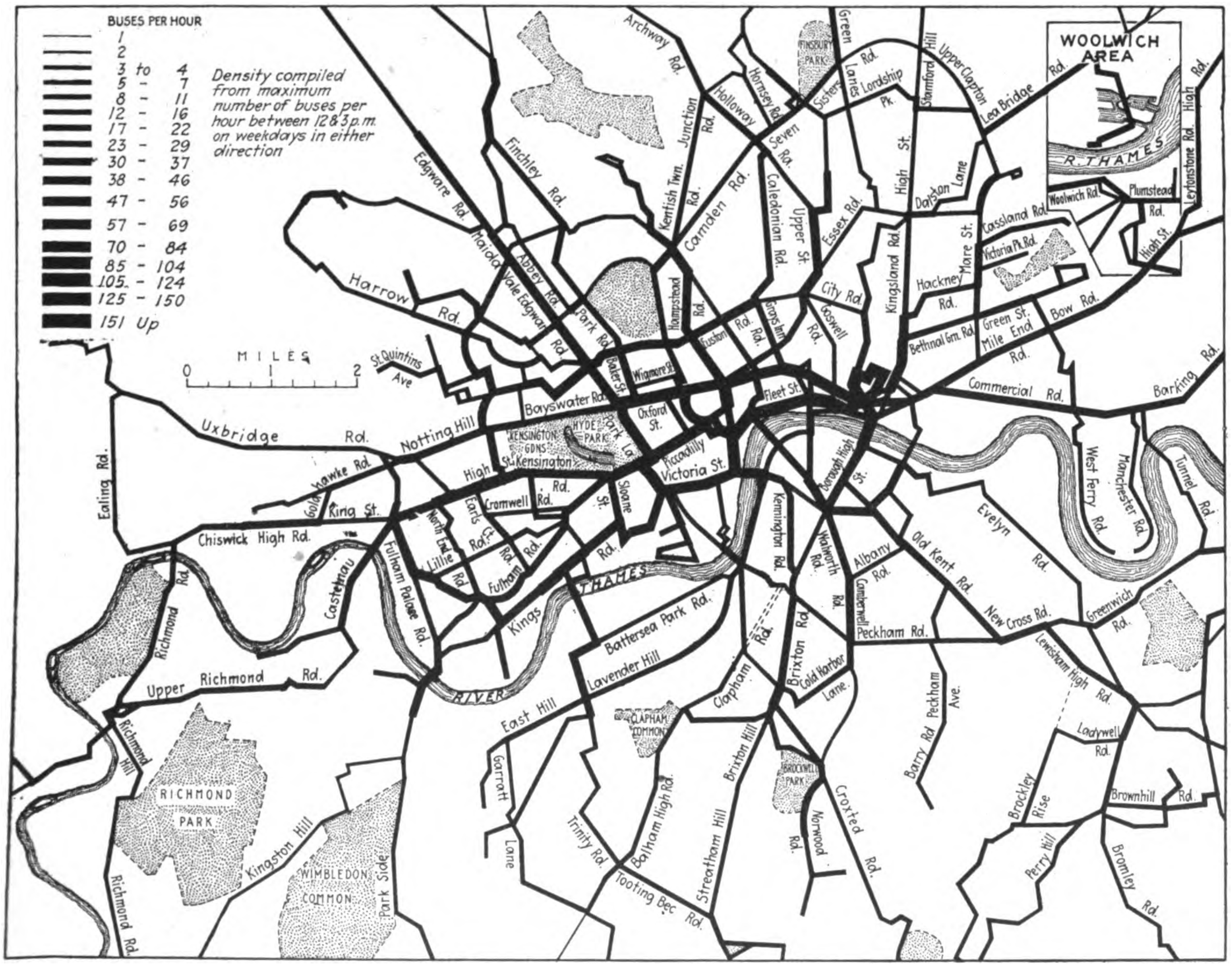


BUS WAITING ROOM, WITH CLOCK, CRYSTAL PALACE

TABLE I.—VARIATIONS IN STAGE LENGTHS FOR GIVEN FARES

ROUTE 25, VICTORIA AND SEVEN KINGS

1.44 miles for 1d.
2.86 miles for 2d.
4.54 miles for 3d.
6.09 miles for 4d.
7.56 miles for 5d.
9.01 miles for 6d.
10.49 miles for 7d.
12.03 miles for 8d.
13.78 miles for 9d.


BUSES PER HOUR
1
2
3 to 4
5 - 7
8 - 11
12 - 16
17 - 22
23 - 29
30 - 37
38 - 46
47 - 56
57 - 69
70 - 84
85 - 104
105 - 124
125 - 150
151 Up
Density compiled from maximum number of buses per hour between 12 & 3 p.m. on weekdays in either direction
MILES
0
1
2
WOOLWICH AREA
R. THAMES
Woolwich Rd.
Plumstead Rd.
High St.
Leytonstone Rd.
High Rd.
Archway Rd.
Finsbury Park
Green Lanes
Sisters Rd.
Lordship Pk.
Stamford Hill
Upper Clapton Rd.
Lea Bridge Rd.
Hornsey Rd.
Holloway Rd.
Seven Sisters Rd.
Kentish Twn. Junction Rd.
Camden Rd.
Caledonian Rd.
Upper St.
Essex Rd.
High St.
Dalston Lane
Kingsland Rd.
Mare St.
Cassland Rd.
Victoria Pk. Rd.
Hackney Rd.
Bethnal Grn. Rd.
Green St. Mile End Rd.
Bow Rd.
Barking Rd.
Commercial Rd.
City Rd.
Goswell Rd.
Grays Inn Rd.
Euston Rd.
Hampstead Rd.
Edgware Rd.
Finchley Rd.
Maida Vale Edgware Rd.
Abbey Rd.
Park Rd.
Baker St.
Wigmore St.
Harrow Rd.
St. Quintins Ave.
Bayswater Rd.
Oxford St.
Fleet St.
Hyde Park
Kensington Gdns.
Park La.
Piccadilly
Victoria St.
Borough High St.
Uxbridge Rd.
Notting Hill
High St. Kensington
Goldhawke Rd.
King St.
Ealing Rd.
Chiswick High Rd.
Cromwell Rd.
North End Rd.
Earls Ct. Rd.
Lillie Rd.
Fulham Rd.
Sloane St.
Kings Rd.
Fulham Palace Rd.
Castelnau
Richmond Rd.
THAMES
RIVER
Battersea Park Rd.
Lavender Hill
Kennington Rd.
Walworth Rd.
Albany Rd.
Camberwell Rd.
Old Kent Rd.
Evelyn St.
West Ferry Rd.
Manchester Rd.
Tunnel Rd.
New Cross Rd.
Greenwich Rd.
Peckham Rd.
Brixton Rd.
Cold Harbor Lane
Clapham Rd.
Upper Richmond Rd.
East Hill
Clapham Common
Peckham Rye
Barry Rd.
Lewisham High Rd.
Ladywell Rd.
Brownhill Rd.
Brockley Rise
Perry Hill
Bromley Rd.
Richmond Hill
Richmond Park
Kingston Hill
Wimbledon Common
Park Side
Richmond Rd.
Garratt Lane
Trinity Rd.
Balham High Rd.
Tooting Bec Rd.
Streatham Hill
Brixton Hill
Brockwell Park
Norwood Rd.
Croxted Rd.

MAP SHOWING SERVICE DENSITY IN BUSES PER HOUR

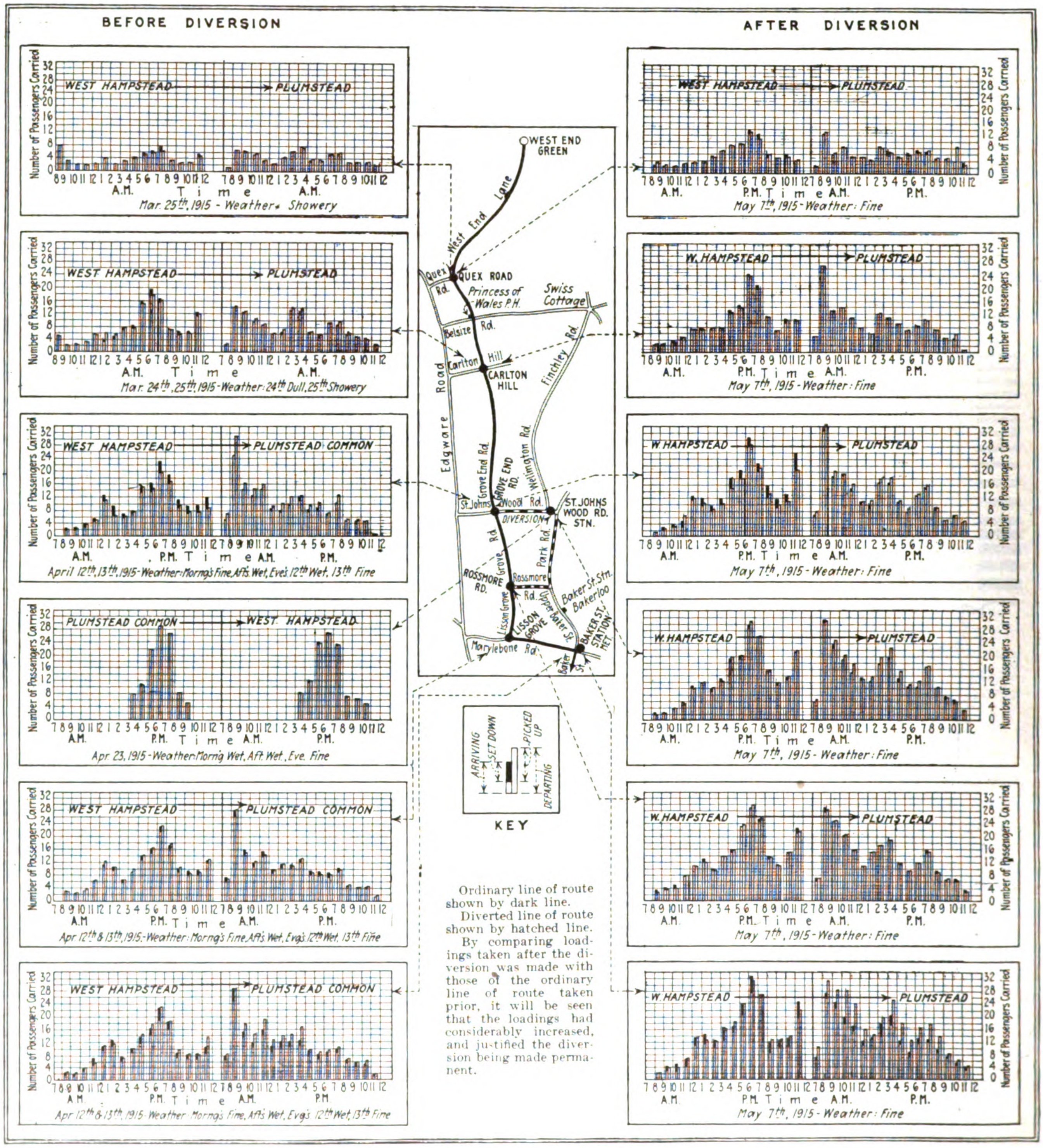
ROUTE 107A, DORKING AND CLAPHAM COMMON
(With Considerable Pleasure Traffic)

1.77 miles for 1d.	11.56 miles for 10d.
2.39 miles for 2d.	12.75 miles for 11d.
3.47 miles for 3d.	13.95 miles for 1s.
4.62 miles for 4d.	15.17 miles for 1s. 1d.
5.78 miles for 5d.	16.41 miles for 1s. 2d.
6.96 miles for 6d.	17.43 miles for 1s. 3d.
8.12 miles for 7d.	18.70 miles for 1s. 4d.
9.27 miles for 8d.	20.05 miles for 1s. 5d.
10.42 miles for 9d.	20.79 miles for 1s. 6d.

From the foregoing tables it can be determined that the penny ride on Route 25 varies in length from 1.42 to 1.75 miles and on Route 107A from 0.74 to 1.62 miles. These variations indicate that not only do the stage lengths of different routes vary but also the stage lengths on the same route, depending upon the availability of other modes of transit, upon the location of traffic-gathering points, upon the need for building up better loads over certain sections, etc. The average penny stage on Route 25 is 1.53 miles and on Route 107A, 1.16 miles.

MORE THAN HALF OF BUS PASSENGERS RIDE LESS THAN 1½ MILES

In discussions on the graduated fare, the assertion has often been made that the large proportion of minimum fare riders was not a true indication of a highly developed riding habit but that it was due to the concentration of population within a comparatively narrow belt. Be that as it may for some communities, such an assertion will hardly be made of so spread out a city like London.



Ordinary line of route shown by dark line.

Diverted line of route shown by hatched line.

By comparing loadings taken after the diversion was made with those of the ordinary line of route taken prior, it will be seen that the loadings had considerably increased, and justified the diversion being made permanent.

DIVERTING A BUS ROUTE TO GET MAXIMUM TRAFFIC

Therefore, in examining the traffic statistics of London, and particularly of the trams and buses, we conclude that the high ratio of short riders must be ascribed to the combination of frequent service and "pay-for-what-you-get" fares.

As proof take the combined traffic statistics of the associated bus operators—namely, the London General Omnibus Company and the interests of Tilling, Associated, Metropolitan Electric Tramways, Gearless, British Automobile Traction and the South Metropolitan Tramways. These figures, as presented in Table II, show that in 1918 the penny passengers were 60.3 per cent of the total traffic, and that in pre-war days the half-penny and penny riders constituted fully 68.8 per cent of the traffic. Most of these patrons ride a mile or less, say for a run through a few blocks of the business district, for a trip to some local shopping center or for a mere ½ or even ¼ mile in making connection with the tube lines. The 2 or 3 per cent maximum haul passengers are largely pleasure riders. The writer knows from personal observation that in fine weather many women like to go shopping all the way via bus despite the fact that a transfer to the tubes would save them some time. However, speaking broadly it may be said that when the ride exceeds say 1½ miles in length and 2d. in cost, the tendency is to use the faster means of transportation—a tendency that has been built up into a habit by many years of intensive advertising of the best way to use "T. O. T."—tube, omnibus, tram.

To give a more detailed idea of the classification of passengers according to rates of fare, Table III on page 712 has been prepared, covering this information for the four different kinds of bus routes described in the following paragraphs:

TABLE II.—LONDON GENERAL OMNIBUS COMPANY

Local and "Common Fund Through" Passengers by Fares, 1914 to July (Pre-War Period), 1915, 1916, 1917, 1918 to October

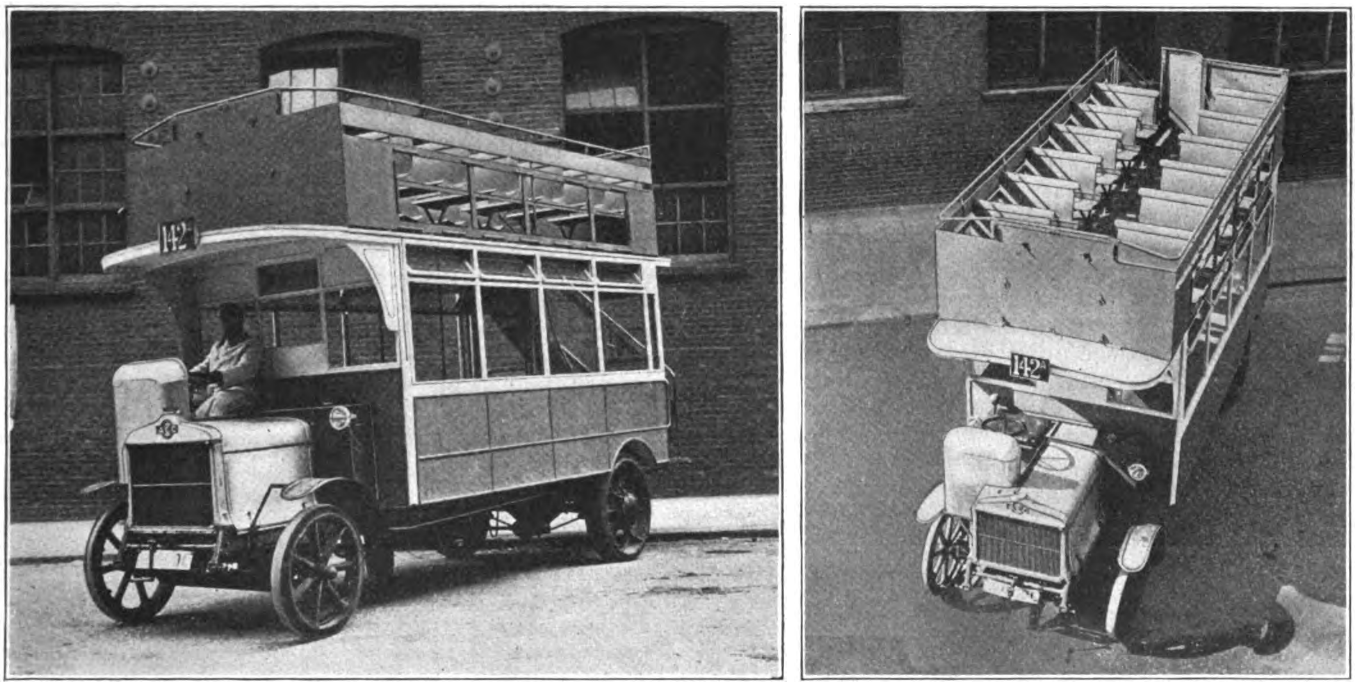
Fare	1914 to July	1915	1916	1917	1918
½d	55,956,882	82,505,318	85,646,184	39,512,229	....
1d	249,501,269	359,627,739	368,157,646	357,537,406	392,258,011
1½d	41,576,965	62,523,043	65,034,248	41,968,732	3,647,849
2d	54,495,081	81,734,579	85,000,099	97,562,469	149,779,222
2½d	13,039,628	19,495,010	20,216,636	10,463,037	79,113
3d	15,326,147	22,943,054	24,479,758	36,376,657	58,603,762
3½d	3,995,397	6,467,976	6,912,865	3,639,441	....
4d	5,675,902	9,024,786	9,619,716	13,561,499	23,657,346
over 4d	4,625,937	7,290,603	8,092,519	12,112,924	21,275,464
Total	444,192,708	651,612,103	678,159,671	612,734,394	649,300,767

Average Fare Per Passenger

1914 to July	1915	1916	1917	1918
1.33	1.35	1.36	1.49	1.70

Passengers in Percentages

	½d	1d	1½d	2d	2½d	3d	3½d	4d	over 4d
1914 to July	12.6	56.2	9.4	12.3	2.9	3.4	.9	1.3	1.0
1915	12.7	55.2	9.6	12.5	3.0	3.5	1.0	1.3	1.2
1916	12.7	54.7	9.6	12.6	3.0	3.6	1.0	1.4	1.4
1917	6.4	58.5	6.8	15.9	1.7	5.9	.6	2.2	2.0
1918	..	60.3	.6	23.0	..	9.3	..	3.6	3.2



LATEST BUS, SEATING FORTY-SIX PASSENGERS, AND BIRDSEYE VIEW OF OUTSIDE SEATING ARRANGEMENT

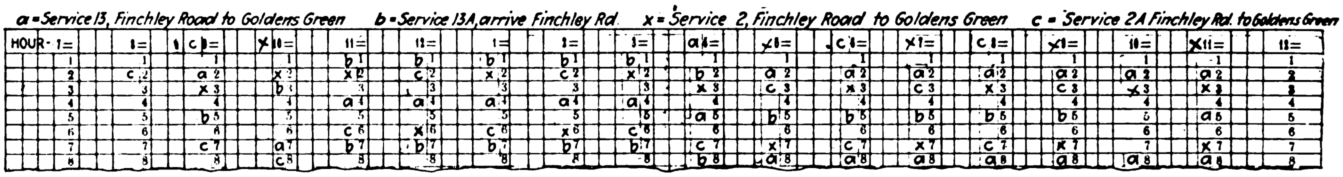
Route 2 is a residential and shopping line now running fourteen buses as against thirty-six in pre-war days, and its headway is now eight minutes instead of four so far as terminus to terminus is concerned. However, through the overlapping of Route 2A, the greater part of the route still gets four-minute headways. On the 1 mile between Golder's Green and Platt's Lane, Route 2 is supplemented by Routes 2A, 13 and 28, which gives a bus service on practically one minute headway. As if this was not enough, a tramcar may be obtained within the first ¾ mile along the same highway, Finchley Road. Obviously, this section of the suburb of Hampstead is no place for walkers. Route 2 is 7¼ miles long for the complete run between Golder's Green station of the Hampstead tube and Ebury Bridge. Traffic on this route dropped from 719,980 in June, 1914, to 608,772 in June, 1918, largely because of war cuts in service.

Route 25, Victoria-Seven Kings, 13.75 miles long, runs through a densely populated section in the East End for one-half its length and through a shopping district in the West End. The Victoria terminus is a great railroad station. This line has eighty buses for a three-minute service, enough dropping out during the lighter hours to give a four-minute interval. Traffic on this route to and from the Continental battlefields has remained fairly steady, nor were the schedules changed appreciably, because of its exceptional importance.

Route 40, Elephant & Castle—Upton Park serves a district of working people and has tramway competition. Long riders are very few, particularly as the maximum tramway fare is 4d. This line is 8 miles long. Cuts in service and increases in fare have made exceptionally heavy inroads on this route, the traffic having dropped from 942,850 in June, 1914, to 347,716 in June, 1918. The headway has recently been restored from fifteen to twelve minutes.

Route 142, Kilburn Park—Watford, 14 miles long, secures excellent shortride travel at the Kilburn Park end which is a local shopping center, while the unusually large proportion, 11.7 per cent, of riders who pay more than 6d. for a journey indicates that it is also a popular service for joy rides. In winter the terminus-to-terminus headway on this route is twenty minutes; in summer, the interval is shortened as the demand for outdoor recreation riding increases.

In connection with the matter of service to the public, it may be stated that even where the intervals between buses are short for the greater part of the day, the company has put up a number of waiting rooms. These are usually of glazed and tile construction. Some of them are divided into waiting rooms for passengers and messrooms for employees. The waiting room at Crystal Palace, including clock, is illustrated on page 709.


a = Service 13, Finchley Road to Goldens Green
b = Service 13A, arrive Finchley Rd
x = Service 2, Finchley Road to Goldens Green
c = Service 2A Finchley Rd. to Goldens Green
HOUR

PORTION OF RECORD MADE BY CHECKERS TO DETECT DEGREE OF CLASHING ON INTERWORKING SERVICES

TAKING ADVANTAGE OF BUS FLEXIBILITY IN MAKING SERVICE CHANGES

Doubtless the most fascinating traffic problem in the world is that of the London General Omnibus Company, first, because the traffic currents of London shift more than those of any other great city, and, second, because the bus carriers of that traffic can be so readily moved from one channel to another.

In operating a street railway, the adaptation of service to traffic must always be hampered by the consideration that a very heavy investment has already been made in the permanent way and the distribution system. To take up a route and put it down somewhere else is quite unthinkable. It is true that the direction of city growth is often influenced by the construction of transit routes, but we must not overlook the fact that the selection of these routes must in turn be based largely upon the existence of some natural advantage of location or terrain. If, therefore, new transit routes cannot readily be laid down to harmonize with the natural expansion of a live community, the city is actually confined in a transportation straitjacket. The bonds may be loosened here or there but there is no real freedom. That freedom is obtainable only in a transportation system which can shift its facilities about, in much the same manner as a general shifts his divisions, regiments and battalions to the places where the pressure of battle is greatest.

Of course, the freedom the bus offers does not mean that it is cheaper than the street railway. Even the bus in London would be hard put to it if it had to meet the same burdens. But wherever the public is willing to pay a higher price for a higher kind of service, the street railway man should not hesitate to incorporate the bus as his legion of shock troops or strategic reserve. Certainly, there is much to learn from the practice of a company which has co-ordinated so wonderfully the varying purposes of rapid transit, bus and tramway lines.

As an example of the study in density of service carried on continuously by the London General Omnibus Company the map on page 709 of service density in buses per hour will be found of interest. The general idea of this map has been applied a number of times to street railway traffic studies, but the bus company goes much further in this direction. It prepares scores, even hundreds, of neighborhood maps in connection with its studies of traffic flow; and these are carefully analyzed with the view of either adding or subtracting service. Such density studies are more complicated than similar street railway studies because of the inter-working or interweaving of the different routes. For example, a given bus route may wind in and out over a dozen highways if that particular course corresponds to the movement needs of various portions of the public. As the result of this inter-working, it may be found that the piling up of different services over one section of a street is unduly high in comparison with an adjacent section which may be of more traffice value; or the resultant jam may be such as to demand new by-passes for part of the traffic. A neighborhood map is shown on page 710 with the bus loading studies that led to the diversion of an important bus route to take in St. John's Wood Road Station.

TABLE III.—LONDON GENERAL OMNIBUS COMPANY SERVICES 2, 25, 40, 142

Tickets Issued at Rates of Fares

Route 2.—Golders Green & Ebury Bridge

June	½d	1d	1½d	2d	2½d	3d	3½d	4d	5d	6d	Over	Total
1914	75,317	352,519	41,871	137,333	11,070	67,662	1,930	32,278	...	...	...	719,980
Per cent of total	10.5	49.0	5.8	19.1	1.5	9.3	.3	4.5	...	...	...	100
1918	...	311,790	...	159,462	...	70,650	...	36,429	16,100	14,341	...	608,772
Per cent of total	...	51.2	...	26.2	...	11.6	...	6.0	2.6	2.4	...	100

Route 25.—Victoria & Seven Kings

June	½d	1d	1½d	2d	2½d	3d	3½d	4d	5d	6d	Over	Total
1914	363,949	1,226,065	174,628	394,694	72,469	86,036	25,154	40,207	9,371	4.401	...	2,396,974
Per cent of total	15.2	51.2	7.3	16.4	3.0	3.6	1.0	1.7	.4	.2	...	100
1918	...	1,293,495	...	589,044	...	217,951	...	89,841	29,267	18,160	7,844	2,245,602
Per cent of total	...	57.6	...	26.2	...	9.7	...	4.0	1.3	.8	.4	100

Route 40.—Elephant & Castle & Upton Park

June	½d	1d	1½d	2d	2½d	3d	3½d	4d	5d	6d	Over	Total
1914	270,833	386,271	121,888	95,106	30,127	21,201	9,837	6,925	662	...	...	942,850
Per cent of total	28.7	41.0	12.9	10.1	3.2	2.3	1.0	.7	.1	...	...	100
1918	...	220,989	...	89,243	...	28,097	...	8,210	1,177	...	...	347,716
Per cent of total	...	63.5	...	25.7	...	8.1	...	2.4	.3	...	...	100

Route 142.—Kilburn Park & Watford

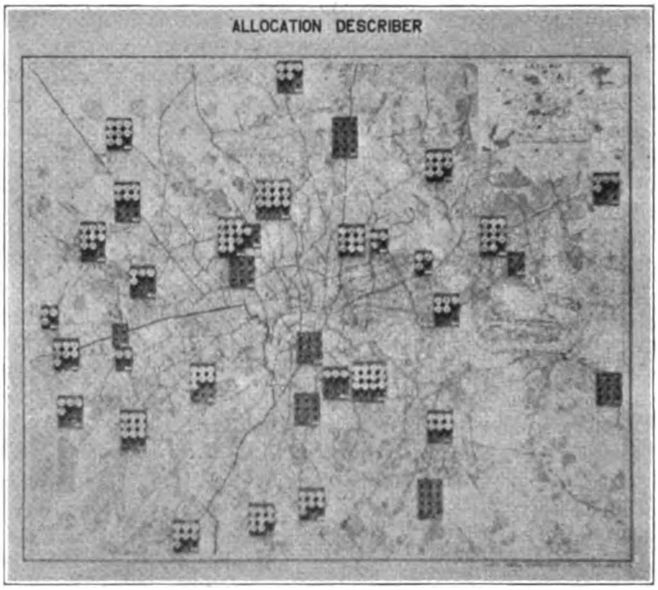
June	½d	1d	1½d	2d	2½d	3d	3½d	4d	5d	6d	Over	Total
1914	7,470	99,490	3,183	30,962	3,975	20,464	3,592	11,243	9,747	10,704	26,551	227,381
Per cent of total	3.3	43.8	1.4	13.6	1.7	9.0	1.6	4.9	4.3	4.7	11.7	100
1918	...	106,906	...	53,406	...	29,245	...	13,488	12,428	9,387	41,746	266,606
Per cent of total	...	40.1	...	20.0	...	10.9	...	5.1	4.7	3.5	15.7	100

Nor are these maps made only in accordance with the ideas of the traffic department. Every attention is given to suggestions from patrons that direct service be instituted between such and such places. Sometimes these suggestions are backed up by well-reasoned arguments; other times, they have no better excuse than thoughtless selfishness or fancy. For all that, a large number of these suggestions from the public have led to the making of special maps and studies of where people come from and go to, following which the company has revised its routings and headways accordingly.

It may be stated here that one of the most prolific sources of bus service alteration comes from analysis of the short-haul travel to and from the underground stations. In London as elsewhere the long-haul rider on the rapid transit lines may have a fairly long walk between the station and his home. If he finds a bus beckoning him to get aboard for a copper, he rides. Need it be added that this kind of travel would not exist without an attractive short-haul fare?

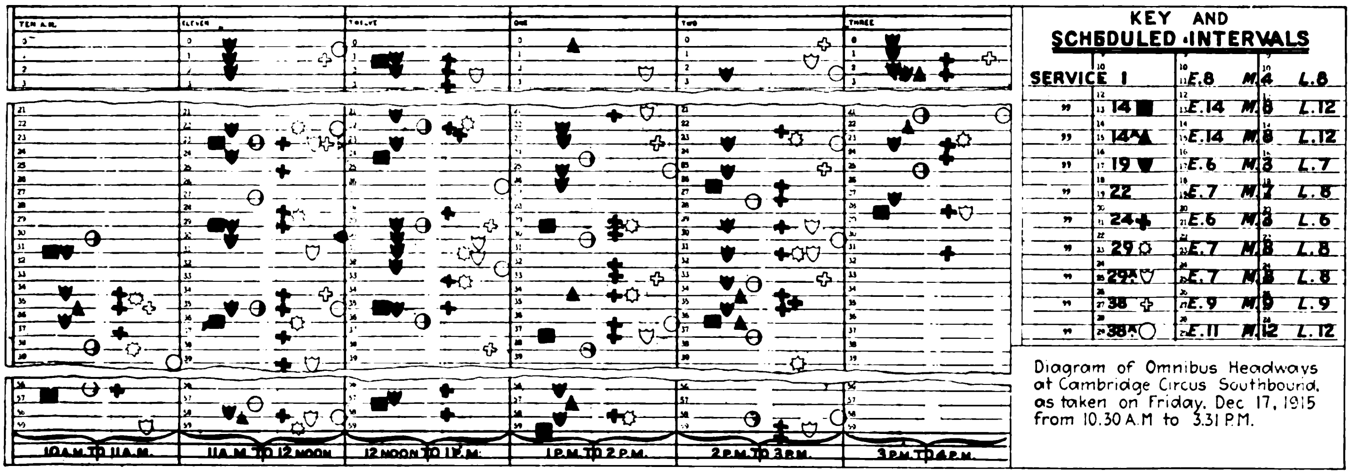
At this time, with the easing of the equipment situation, the company is inaugurating a series of short-route buses which will differ from the longer-route buses in that the prospective patron will know that these buses will take him in the same general direction instead of turning off to the right or left. The first route of this kind is the east-west service, 3½ miles long running from Victoria Station to Liverpool Street and the Bank of England via Victoria Street, Whitehall, Strand, Fleet Street, Cannon Street and Liverpool Street, all of which form practically a continuous thoroughfare. This straightaway routing popularizes short-haul travel still further by giving the short rider a vehicle that will not be filled by those whose destinations are off of the beaten track.

Because of the complex inter-working of the bus routes, it is vital to arrange that the headways of individual routes do not conflict on the overlapping sections. The accident account has proved that it is undesirable to try to have two buses in the same place at the same time! To avoid such conflicts as much as practicable, headway checks are made at all places where the overlapping services do not fit in with the desired smoothness. For example, as shown in the accompanying partially-reproduced form, observers stationed at a common passing point check off with a cross-mark the passing time of each bus in a given direction. In this instance, an observer at Finchley Road station set down the passing times of buses on Services 13, 13A 2 and 2A, using an ink of different color for each of the four routes. (The crosses of different colors in the chart have been replaced with letters.) On transmittal to the traffic department's headquarters, these records are transferred to a headway record sheet which is divided into hours and minutes as shown on another accompanying chart. The buses of each route are indicated by individual symbols which are set down on the sheet with a rubber stamp. With this record completed, as shown, it is easy to note the irregularity in bus intervals on different routes and to observe to what extent this irregularity caused clashing in the arrival times of buses of different services.



ALLOCATION DESCRIBER FOR ALLOCATING BUSES TO THE DIFFERENT GARAGES FROM DAY TO DAY AND HOUR TO HOUR

While the graduated fare system in practice on the bus system shows automatically the classification of riders according to their possible maximum length of ride for fare paid, it does not show the on-and-off characteristics with the desired degree of accuracy. To obtain this class of traffic data, the company sends out observers to selected points along a highway served by one or more bus routes to make a count of the number of arriving, set down and departing passengers for each bus of each route. In its transcribed, completed form as already shown in the route diversion map, this "Bus Loading Diagram" presents a statement of the number of buses that stopped every hour, of the average load that these buses carried when they arrived, of the average number of patrons that they set down and of the average number that they carried off after taking on new riders. From studies like this, the company obtains an exact picture of the variations in traffic along any desired thoroughfare. Such studies must be made separately for workdays and holidays; also for different weather conditions, because a rainy day tends to divert



OMNIBUS HEADWAY DIAGRAM, DERIVED FROM CHECKS, WITH STAMPED SYMBOLS TO SHOW SYNCHRONOUS ARRIVAL OF DIFFERENT ROUTE BUSES AT ONE PLACE AND IRREGULARITY OF BUS INTERVALS traffic to the underground lines while fine weather naturally causes fluctuations in the contrary direction.

The studies of bus loading also include, at times, a check of the time of passenger interchange. This period is considerably longer than on American street cars, as indicated by the fact that 7222 pick-ups and 16,665 set-downs showed an average of 1.77 seconds per passenger. This compares unfavorably with the record of one second or less per passenger on American prepayment cars obtained with the straight 5-cent fare. However, the absence of prepayment on the bus is more than set off by the very small platform of the bus and by the occupancy of most of the platform space by the stairway and the conductor. Only one person can board at a time and, contrary to the results with the reservoir platform of a street car, the rate of interchange increases as the crowd increases because of the slowing up due to the fact that the first entrants stop to look around for seats.

On the new forty-six-seat bus which is shortly to be placed on London streets by the London General Omnibus Company the rear platform is so arranged that passengers can alight and enter at the same time, thus considerably lessening the time occupied at stopping points.

From the foregoing account of but a portion of the traffic department's activities, it is apparent that the comparison with military practice made earlier in this chapter is amply justified. Still more striking proof of this is afforded by the system of bus allocation. It is not the time-table department but the allocation officer who decides how many buses shall be furnished to each garage and in what directions these buses shall navigate. The allocation officer assigns so and so many buses to each station in accordance with his conclusions from the traffic data, while it is the function of the time-table department to make the best possible use of the buses thus made available for given routes. As an example of the extraordinary things which can be done, it may be mentioned that sometimes say five buses run eastward from one garage and ten run westward from the garage at the opposite end of the route; that routes which have an equal number of buses in each direction one day may have a ratio of 2:3 the following day (as on holidays); that bus routes of excellent worth in winter are surpassed for a few summer months by others that are of little importance at other times, etc. The general day to day view of these fluctuations can be seen at its best only on the great map in the office of the allocation officer—a map that shows the location of every garage and of the range of action of every fleet of buses on the system. Through the courtesy of the company, an outside set-up of this "Allocation Describer" was made to secure the halftone on page 713 which shows the location of the garages and plug-ins corresponding to the number of buses being shifted about, all superimposed upon a map of London.

NOTE: The second article will describe time-table practices, fare, auditing, handling of employees, safety first work, etc.

Many Subscribers Express Support

THE announcement made on Oct. 4 by ELECTRIC RAILWAY JOURNAL and sent to all subscribers in circular letter form, that publication would be suspended in an effort to curb the tendency toward radicalism on the part of the striking printers, has evoked numerous letters from subscribers in all parts of the country. These letters without exception express their sympathy and support of the stand which the publishers have taken. Extracts from some of them follow:

New York City. "While I will be sorry to miss the ELECTRIC RAILWAY JOURNAL, I sincerely hope that you and the associated publishers will hold out against the printers until the radicals are brought to their senses."

Waco, Tex. ". . . . I am in hearty accord with your policy and consider that each of us can afford to make the necessary sacrifices in order to curb the revolutionary tendency that is rampant in America today."

New York City. ". . . . I hope you, and the other technical journals affected by the strike, will appreciate that the entire sentiment of the public is with you."

Baltimore, Md. "Your circular letter of Oct. 4 to your subscribers hardly calls for a reply, but we wish to let you know that you have our extreme sympathy, and I am sure that the street railway fraternity will be glad to be patient with you and to wish you the greatest success in holding out against unreasonable demands."

Washington, D. C. "The JOURNAL will be greatly missed during its 'vacation,' but the reasons therefor will not be forgotten."

Omaha, Neb. "Take all the time you need to settle your troubles and settle them right. We will be patient no matter how long it takes you."

Boston, Mass. "I think you are to be encouraged in the position you have taken, and I wish to extend to you my sympathy and best wishes for the settlement of this matter in a manner which may be to the interests of the public at large."

Port Huron, Mich. "We not only commend you for your action, but you have our sympathies in your endeavor to curb radicalism."

Lewiston, Me. "We regret very much not to have the JOURNAL, particularly at this time immediately after the Atlantic City convention. However, we would rather suffer this deprivation than to have you submit to the outrageous and arbitrary demands of the printers as they have been detailed in the daily press."

Los Angeles, Cal. "More power to your elbow!"

League City, Tex. "Have worked all my life, but I say, better suspend publication for a year than grant any concessions to the Bolsheviki who threaten the very foundation of the nation."

Denver, Col. "There is no question concerning the duty of American industry under the present tendencies, and I wish to assure you that you have my heartiest support."

Portland, Ore. "Your decision is commendable, and for the benefit of all Americans, I hope you succeed in your undertaking. I am in full sympathy with you."

Framingham, Mass. "Hope you win out and get going soon, as it must be a lot worse for you than for us, as we know we will get the news later when you do get the 'controller' working again."

Detroit, Mich. "I sincerely hope and expect you to win the printers strike even, to paraphrase General Grant, 'if it takes all winter.'"

Minneapolis, Minn. ". . . . would say that I am perfectly satisfied to have you continue on this bulletin basis as long as necessary. . . . . I admire your stand and wish you success in carrying it through to its ultimate conclusion."

Denver, Col. "At the present time it is up to all right-thinking people to support those who take the stand that your organization has done, and to put up with inconveniences to combat this sinister influence that seems to be wading through the country."

Ottawa, Ont. "I trust that the publishers will maintain a united front and overcome the impossible conditions imposed by the men responsible for the present situation. Your subscribers will give you their hearty moral support and wish you every success in your fight for right and reason."

Indianapolis, Ind. "You will unquestionably find that practically all of your subscribers will be only too glad to suffer any temporary inconvenience that may be necessary for the sake of having the strike carried through to a satisfactory conclusion."

Wilkes-Barre, Pa. "We feel that you have assumed the proper course, and while we regret not receiving the publication, we are willing to do without it as long as in your judgment it is necessary to maintain the integrity of your position."

Similar letters have come in from almost every state in the Union, and they have been very reassuring to the publishers of this paper in the stand they have taken. This is the first time that ELECTRIC RAILWAY JOURNAL has ever been suspended on account of a strike, or in fact for any other reason since its foundation, twenty-seven years ago.

New Jersey Zone Fares in Doubt

Board of Commissioners Wants Principle Upheld but Rates Changed to Give Five-Cent Fare in Two Zones and One Cent for Each Zone Thereafter—Company Files Request for Permission to Return to Flat Fare

THE system of zone fares established on Sept. 14, 1919, by the Public Service Railway provided except in three minor instances a fare of 3 cents for the initial zone on any car and 2 cents thereafter for each zone or fraction thereof traveled. In the three exceptions the fare was 5 cents for the first zone. A full description of the system was given in the ELECTRIC RAILWAY JOURNAL for Sept. 27, 1919, page 637.

On Friday, Oct. 23, as the result of hearings held at the request of the city of Camden for the purpose of abrogating this zone system, the Board of Public Utility Commissioners submitted recommendations suggesting that the zone system still be maintained but the rates be changed to 5 cents for the first two zones ridden and 1 cent per zone thereafter, with an additional charge of 1 cent for a transfer to a connecting car. The railway had five days in which to file an acceptance. Commissioner Gaul, who did not favor the zone system, held out for a return to the flat rate of 7 cents with a 1-cent charge for a transfer, claiming that the delays in fare collection under any zone system would drive more passengers away than could be attracted by the most equitable system.

An abstract of the report and recommendations of the board reviewing the recent hearings, which were started soon after the zone system became effective, concluding with the minority report of Commissioner Gaul, follows:

ABSTRACT OF COMMISSION'S DECISION

The zone system, the commission stated, was inaugurated for the purpose of testing its feasibility of operation so that the results could be used in evidence in the pending fare proceedings. Soon after it was put into operation the city of Camden protested, at a hearing on Sept. 29, as to its operation in the city and its environments, claiming that much confusion attended the beginning of its operation and that it seriously affected the business interests of the city. The result was that a general boycott against the company was instituted in the hope of forcing a return to a flat 5-cent fare. This boycott still continues.

On Oct. 8 and before the board had reached any conclusion as to modifications necessary, the president of the railway company appeared before the board and stated the receipts from passenger revenue were $12,000 per day less than under the pre-existing schedule and that $4,500 of this loss was due to the conditions existing in Camden and vicinity. He requested permission of the commissioners to abandon the zone plan and return to the flat fare of 7 cents with a charge of 1 cent for a transfer.

Hearings on this application opened on Oct. 16 at which many representatives of the municipalities appeared and expressed their views, both as to the continuation of the zone system and the return to the pre-existing flat-fare system. Many municipalities urged the board to fix a flat fare of 5 cents.

It was evident at the hearing that there was a lack of unanimity of opinion as to the proper fare to be charged, and upon the suggestion of a representative from one of the municipalities a conference was held on Monday, Oct. 20, at President McCarter's office. This conference proved to be a deadlock, for no agreement could be reached. It was so reported to the commissioners at the continuation of the hearing on Oct. 21, where the desires of the municipalities were further presented.

No one disputed that the zone system had not had a fair trial. A fair trial of the plan was expected to indicate to what extent the confusion and delays incident to its installation could be avoided and what changes in zone limits should be made. Reasonable co-operation between the public and company was necessary and was expected.

The opposition which was inevitable from the long-haul riders, the confusion and delays due to the temporary equipment, the utterances of candidates for political offices as well as platform declarations of political parties, produced a misunderstanding of the principle of regulating charges in accordance with distance traveled. The company reported, notwithstanding, that after a month's operation the zone system was showing an improvement not only financially but from a traffic standpoint and requested that it be continued for a while longer.

As a result of its investigations the board was convinced that there was a more general appreciation of the equity of the zone system than superficial observation would indicate, but that the charges for long hauls were too high and that these charges would be paid only where there was no other means of transportation.

The proposal to abrogate the zone plan in favor of the 7-cent flat fare was with few exceptions unfavorably received. The board was urged to restore the 5-cent fare by many, in the evident sincerity that if this was done the riding habit would be increased to such an extent that the revenues would equal those accruing under the former 7-cent fare. The commission found upon investigation, however, that such conclusions were erroneous.

The commission held that the public must recognize that the company could not under existing conditions remain solvent and afford the service to which the public was entitled before the war and that it should be apparent that rentals, fixed charges, increased cost of labor and materials could not be met on a 5-cent fare except by impairment of service. The board said it would not be justified in ordering the company to return to such a fare under existing conditions as such a return would result in the company's bankruptcy, except should it be proved that the rentals and fixed charges were in excess of what would be justified by the value of the properties used. Until the valuations proceedings, which are now in progress, are completed this could not be ascertained. In the interim any rate of fare fixed by the board insufficient to meet such rentals and fixed charges and to provide a proper return on the investment would be contrary to the decisions of the courts.

The contention of the public for lower fares without regard to the effect upon the company, under which the properties are now operated, the commission stated, was without merit.

FLAT FARE INEQUITABLE

In its report of July 30, 1919, the board announced that it believed flat fares were uneconomical and inequitable and from experience since obtained it is firmly convinced that it was more desirable to work out the principle of charging, which will more equitably relate the cost of service to the length of haul.

It would be almost fatal to the principle which the board is seeking to work out to abandon the plan at this time before it has had a fair trial, and it therefore seemed to the board desirable to continue the plan with modifications seeking to meet the objections of the riders and at the same time encourage resumption of long-haul travel, thus affording the company revenues from which it was deprived under the existing charges.

The principal objection seemed to be directed at the rates rather than at the plan itself, and the board believed that the objections to the fares which accrue to the long-haul riders under the prevailing plan have much merit, particularly where the aggregate fare exceeds the commutation rates charged on competing steam railroads. This can only result in the abandonment of the lines where other transportation facilities exist. A readjustment of the fares under the plan is possible.

Calculations were made to determine under existing conditions the results if a flat fare of 7 cents were charged and it was found that the same revenue would accrue under the following rates:

Five cents for the first two zones under the plan and 1 cent for each zone thereafter with an additional charge of 1 cent for a transfer.

This schedule the Commissioner's believed would largely meet the wishes of many, in that it permits a fair ride within the limits of most municipalities for 5 cents and also reduces the charges for the long-haul riders sufficiently in many cases to bring the rates below the commutation ticket charges on competing steam roads.

In making this report the commissioners believed the application of Camden for the abrogation of the zone system to be disposed of as it was not the intention in this report to deal with all the details which affect traffic conditions in that city.

While there has been dissatisfaction with the zone system now in effect, there has been no general boycott in other parts of the state as in Camden. It is the board's opinion that this boycott is due largely to a mistaken idea that the board can order a 5-cent fare because of the existence of ordinances enacted some years ago, which were accepted by companies that now form a part of the Public Service Railway system.

The board believes that the people of Camden upon reflection will appreciate that the Commissioners cannot direct the company to charge a certain rate, because the riding public emphatically declare they will not use the lines unless that rate is fixed, or that they will inconvenience themselves and even pay more by using other forms of transportation.

THE BOARD'S RECOMMENDATIONS

The following is a full statement of the Board's recommendations:

"The board therefore refuses the application of the company to abrogate the zone plan and to permit the company to return to a flat fare of 7 cents with a charge of 1 cent for a transfer.

"The board recommends the continuation of the zone system with a modification of the schedule of fares thereunder, providing for a charge of 5 cents for the first two zones and 1 cent a zone thereafter with 1 cent for each transfer.

"The permission of the company to collect the charges and tariffs above indicated shall be imposed and exacted by the company and be collected only in the event that prior to Oct. 28, the Public Service Railway shall file with this board its acceptance in writing of the same conditions as were set forth in the report of this board in the matter of the application of the Public Service Railway for a further increase in rates of fare, dated July 30, 1919.

"The board will retain jurisdiction of the proceeding in which these rates are permitted to be filed as therein provided, for the purpose of modifying or abrogating the same and if the conditions change and as the results of operation warrant."

GAUL FOR SEVEN-CENT FARE

Commissioner Gaul in his minority report stated he believed the zone system impracticable. Although a believer in the justice of the zone system of fares, the present trial convinced him that unless some radical change can be made in the method of fare collection, the delay caused by fare collection under any zone system will drive more passengers away than the most equitable system will attract. Continuing he said:

"The public wants service and is willing to pay for it. Frequency and rapidity are the essentials of good service and the number of riders will increase in proportion to the increase in speed. Therefore, I believe that any system of zone fares will slow up traffic. I favor, until a valuation of the property can be made, a return to the pre-existing flat-rate system, which the Supreme Court has held to be a just and reasonable fare."

REPLY OF COMPANY IN FULL

The company's reply to this recommendation was filed with the commission on Oct. 28 and was a plea for a return to a 7-cent fare. The reply in full follows:

"Public Service Railway has carefully considered the majority report of the Board of Public Utility Commissioners, dated Oct. 23, 1919, in the matter of the application of the Public Service Railway for approval of increase in rates and has studied the effect of accepting the recommendation of the board in all its aspects in the hope that it could see its way clear to accept it.

"The company calls attention to the following state of facts, some of which are newly developed:

"1. The zone plan of imposing and collecting fares is extremely unpopular with the public and is generally considered by the public to be a failure. This is evidenced by the storm of opposition that it has met with from public officials, newspaper criticisms, disinclination on the part of the public to ride, increase in the number of jitneys operating in opposition thereto, and a demand for its discontinuance by the State Federation of Labor and both of the leading political parties in convention assembled.

"2. The said zone plan is regarded as a failure and as impracticable and unworkable by the employees of the company, as appears by a communication received by the president of the company, dated Oct. 25, 1919—a copy of which is hereto subjoined:

"Whereas, your employees, members of the Amalgamated Association of Street and Electric Railway Employees of America, through their joint conference board, representatives of the different local Nos. 819, 820, 821, 822, 823, 824, 825, 862 and 880 of the said association, on July 1, 1919, entered into an agreement with the Public Service Railway & Railroad, which in Clause 25 contained the following, namely:

"Section 25. The employees, members of the association, will, during the aforesaid period, devote their best endeavors to the performance of their respective duties in the service of the company, and will co-operate in every practical manner with the management of the company in the efficient operation of the system, including such details as may be connected with the operation of a zoning system, if the same shall be approved by the Board of Public Utility Commissions; therefore,

"We, the joint conference board take this opportunity to state that our members (the motormen and conductors, operating this system) have faithfully fulfilled the promise therein

ESTIMATE OF PUBLIC SERVICE RAILWAY OF RECEIPTS UNDER TWO PLANS

For Year Ending Nov. 1, 1920

	With 7-cent flat fare and 1 cent for transfer	Under zone plan with 5 cents for first two zones and 1 cent for each additional zone with 1 cent for transfer
Passenger revenue	$24,000,000	$21,500,000
Other operating revenues	570,600	570,600
Total operating revenues	$24,570,600	$22,070,600
Maintenance and operating expenses (exclusive of depreciation)	$16,800,000	$17,600,000
Taxes	2,163,305	1,984,055
Total operating expenses and taxes (exclusive of depreciation)	$18,963,305	$19,584,055
Operating income before depreciation	$ 5,607,295	$ 2,486,545
Depreciation	800,000	800,000
Operating income	$ 4,807,295	$ 1,685,545
Other operating income	10,000	10,000
Non-operating income	182,000	182,000
Gross income	$ 4,999,295	$ 1,878,545
Car-miles	$57,000,000	$57,000,000
Carhours	6,000,000	6,600,000

It thus appears that the 7-cent flat fare, with a penny for a transfer, will produce $2,500,000 more gross revenue than the rate recommended by the board, and approximately $3,100,000 more net revenue than the rate recommended by the board; and it further appears that the revenue provided by the 7-cent fare, with one cent for a transfer, is not in excess of the amount required by the company to pay its operating expenses, taxes and fixed charges, and to set up the amount heretofore prescribed by the board annually for depreciation.

made, and have given this system a thorough and complete trial.

"Joint conference board fully expected that the almost unanimous public condemnation of this system would lead to its abolition at the hands of the Board of Public Utility Commissioners, and therefore eliminate the necessity of any action on our part, however,

"The Board of Public Utility Commissioners have seen fit to extend the operation of this system, with even further complicated operation, and in justice to our membership, we can no longer remain silent, but do hereby express our opposition and condemnation of this method of operation on the following good, practical and undeniable grounds:

"Motormen have for years been taught by the company that their entire attention should be given to the safe operation of their car, and consequently the safety of the passengers and the public in general.

"Under this system the minds of the motormen are distracted from the principal and vital duty, by virtue of their being compelled to issue zone checks, and change indicators and checks in accordance with zone car is in, and the continuous remembrance of the same. With the coming of winter, the issuing of zone tickets by motormen will be practically impossible.

"That this is dangerous in the extreme is proved by the unprecedented number of car collisions and other front end accidents, which have occurred during the past month.

"These have resulted in loss of life and limb, considerable damage to property, and the discharge of a number of our members.

"The collection of fares to be practical and just, should be confined to the conductor, who is responsible, and not under dual control, and subject to mistakes by the motorman.

"Under this method the collection of fares is confusing and irritating to the public, and results in a general and decided slowing up of service.

"The joint conference board has no desire or intention to enter any controversy on the fare question, but take their attitude from a practical and operating standpoint.

"We urgently request the Public Service Railway Company to abandon the present method of operation as soon as possible, so that normal service can be restored, accidents decreased and the men given a chance to work with a greater degree of safety, confidence and justice than is now possible under the present complicated and objectionable system."

As experience with the zone system has proceeded, it has become clear to the operating officials of the company that the slowing down of the system, solely by reason thereof, is a serious matter—approximately 10 per cent. This entails serious inconvenience to the public and involves the operation of a larger number of car-hours to accomplish the same result.

"4. The zone plan of operation not only involved a slowing down of the service, but of necessity a substantial increased operating expense to take care of the increase in the larger number of car-hours of operation made necessary by it. It is estimated by the operating officials of the company that this increased item of cost alone will amount to $600,000 per year. In addition thereto, it has been demonstrated in experience that the increased checking and accounting caused by the complications of the zone system, over and above the flat fare system hitherto in effect, will cost the company $200,000 per year. The annual expense of operating the zone system, therefore, to produce a given amount of gross revenue, would exceed the operating expenses under the flat fare system by at least $800,000 per year.

"5. The company has made as carefully an estimate as possible of the revenue that would be derived and the operating results obtained for the year ending November 1, 1920, under the 7-cent flat fare, with the cent transfer, and under the zone plan recommended by the commission of 5 cents for the first two zones and 1 cent for each additional zone, with 1 cent for a transfer. The estimate of the results to be obtained under the 7-cent fare, with a penny for a transfer, are based solely upon experience gained under this rate while it was in force. The estimate of the rate proposed by the board is the deliberate judgment of the company's operating officials in the light of present-day experiences. Whatever deviation, if any, there might be from these figures, due to present unsettled conditions, would, in the judgment of the company, apply to both propositions.

"6. The present zone rate should no longer be continued in force, because it meets with the approval of nobody and is entailing upon the company a loss of more than one-fourth of its anticipated revenue.

"The company stands ready to substantiate under oath, through its operating officials, the statements herein contained, if it should seem wise to the board to take proofs in reference thereto.

"The company is of the opinion, for the foregoing reasons, that the whole zone system project is a practical failure, at least as applied to this property, and should be immediately abandoned and that the company should at this time return to a flat fare of 7 cents with a penny for a transfer. The company, therefore, is unable to accept the recommendation of the board and renews its application to return to the flat fare of 7 cents with a penny for a transfer, which rate has already been approved by the Court of Errors and Appeals of the State of New Jersey. The company expressly states, however, that this rate under present operating conditions, will only keep the company going, will not yield it any return upon its capital stock investment and is not the rate to which the company is entitled."

COMMISSIONERS REFUSE FLAT FARE

The Board of Public Utility Commissioners on Oct. 30 denied for the second time the application of the company for a flat 7-cent fare on all its lines. The board leaves the next move in the fare controversy to the company, suggesting as it did before that the zone fare system be continued under the rates previously suggested by the board—5 cents for the first two zones, a cent for each additional zone and a cent for a transfer.

It is stated that if the company refuses again to accept the board's recommendation, the present rate of fare—3 cents for the first zone-mile and 2 cents for each zone thereafter—will remain in effect until the board fixes a permanent rate.

R. E. McDOUGALL
President

Claims Men Discuss Accident Prevention

At the Atlantic City Convention the Claims Association Adopted a Resolution to Further the Public Safety Movement and Discuss Accident with References to the One-Man Car—S. B. Hare Was Elected President

S. B. HARE
President-Elect

SUPPLEMENTING the digest, printed in the special report issue of this paper, dated Oct. 11 and mailed from Baltimore, Md., of the proceedings of the convention of the American Electric Railway Claims Association held at Atlantic City, N. J., Oct. 6 to 9, it is now possible to print abstracts of the papers which were presented, with further notes on the discussion.

At all of the sessions R. E. McDougall, claim agent New York State Railways, Rochester, N. Y., president of the association, occupied the chair and acting-secretary J. S. Kubu, appointed to fill out the unexpired term of Miss Carrie M. Swartz, ably assisted the chairman.

Monday's Session

On Monday afternoon President McDougall fittingly opened the convention by referring to the life and work of B. B. Davis, who had been the association's secretary from its organization until his death in November, 1917. A resolution by way of tribute to the memory of Mr. Davis was passed, its substance being as follow:

> **Benjamin B. Davis was born in Albany, N. Y., on December 31, 1849. He removed at the age of nineteen to Baltimore, Md., where he engaged in business with his uncle. Subsequently he was connected with the Philadelphia Rapid Transit Company, leaving its employ to enter the secret service of the federal government. In 1895 he became claim adjuster for the Columbus Railway, Power and Light Company, continuing until he died on November 21, 1917.**
>
> **At the time of the organization of the Claims Association in 1904 Mr. Davis was elected its secretary and treasurer, which offices he held until the time of his death. During this period his genial disposition and wholesome companionship won for him the respect and esteem of his associates. Prompt in business, thorough and efficient in the performance of his duties, his high ideals and manly principles won for him an undying attachment from his fellow men.**

Mr. McDougall then read his presidential address, the substance of which was given in the report issue, page 83. Following this a paper on "A Claim Agent's Experience with One-Man Cars," by Alves Dixon, claim agent El Paso (Tex.) Electric Railway, was read by E. C. Carpenter in the author's absence. An abstract of this, together with one of a communication sent by H. G. Winsor and read by L. S. Hoffman, appears elsewhere in this issue.

In the informal discussion of the subject William Tichenor, Indianapolis, Ind., told of the experience of his company with safety cars in Terre Haute, where the cars are very popular. He said: "The people like them; and if the people like them, I am for them; anything to get the people on good terms with the company." E. F. Schneider, Cleveland, Ohio, said that in Elyria one-man cars have been in operation for two years without a single platform accident. While the experience of the company in this field has been limited, it has had good success with the cars from the accident standpoint.

Following the discussion on one-man cars, Mr. Tichenor proposed certain changes in the standard classification of accidents and, after discussion showing that the members appreciated the importance of the subject, a motion was passed referring the matter to the joint committee of the Accountants' and Claims Associations on standard classification of accidents and accident accounts. Mr. Tichenor's motion was printed in the earlier report.

Tuesday's Session

At the session held on Tuesday afternoon L. J. Tynan, attorney Public Service Railway, Newark, N. J., read a paper on "The Advisability of Fixed Schedules for Injuries to Persons Other than Employees." In prefacing his paper, Mr. Tynan said that his conviction was that when a corporation or person has, either through negligence or willfulness, caused an injury, full compensation for that injury should be made; further, that the classification of injuries according to their mere physical characteristics and the fixing of a price thereon that shall pay for the damage can never meet the requirements of making good the injury to the person hurt. An abstract of his paper appears elsewhere.

Mr. Tynan's paper was scheduled for discussion opened by E. P. Walsh, St. Louis, Mo. Mr. Walsh was unable to be present, but he wrote stating that the position taken by Mr. Tynan is the only logical one and he agreed heartily with Mr. Tynan in his conclusions. The discussion was then opened by C. G. Rice, Pittsburgh, Pa.

Mr. Rice began by urging that something should be done to call the attention of the higher officers in the railway companies to the work of the claims men, in order that the latter might more nearly approach the position of respectability and dignity to which they are entitled but seldom reach. He also gave the results of an investigation which emphasized the seriousness of the matter of settlement for accident costs. A canvass of a large number of cities indicated that nearly 5 per cent of the total gross revenue goes for this purpose, and he pointed out that if the directors and other officials in the company would give proper attention to these sources of loss, it would be easier for the claims men to solve some of their problems. His idea was that the cost of accidents can be reduced by reducing their number, and by having passengers pay for insurance, just as they do when traveling on steam roads or when checking baggage.

Mr. Rice did not take the same position as Mr. Tynan, for he said that if workmen's compensation is fair, then why should not the same prices to the public be fair? His thought, however, was that there ought to be some kind of limitation to the liability for damage by accident to persons other than employees, as it is manifestly unfair on a 5-cent contract to have the possibility of collection of a verdict of, say, $75,000, in cases where the liability is disputed. John J. Reynolds, Boston, Mass., supported Mr. Rice, stating that fully ten years ago, Russell A. Sears, general attorney of Boston Elevated Railway, considered this subject from the standpoint of lessening damage cost. For himself Mr. Reynolds said that from discussion of the subject with the leading casualty managers and attorneys in Boston he knows that they consider the principle of reducing cost of accidents under a compensation scheme to be sound. If it can ever be applied, it will effectually abolish the "ambulance chaser."

In closing the discussion Mr. Tynan called attention to the fact that in the matter of damages the pedestrian and the passenger are in entirely different classes. It might be possible, he thought, for the state to allow a transportation company to limit the damages recoverable by passengers through the negligence of a motorman or conductor or other servant of the company; but even the state could not permit us to limit the amount recoverable by passengers because of the negligence of the company as a company. For example, if a car is derailed because of defective rail that is a company matter, but if a car hits another car and a passenger is thrown to the floor the accident in this case is due to the negligence of the motorman.

Wednesday's Session

Mr. McDougall opened the meeting on Wednesday afternoon by reading his paper on "Organization for Public Accident-Prevention Campaigns." This and the discussion on the paper by C. B. Procter, Memphis, Tenn., are abstracted elsewhere. The paper elicited a vigorous discussion. In response to a question as to the cost of the Rochester campaign, Mr. McDougall said that at the start the sum of $400 was raised by contributions. When the general campaign was undertaken in 1918 a fund of several thousand dollars was raised, the National Safety Council sending Julian H. Harvey to act as secretary. The city money was spent simply for hall rent, moving pictures, publicity, etc. For the next six months' expenses, the sum of $6,000 was raised by contributions from the Chamber of Commerce, the utilities and other business concerns. Beginning with May, 1919, the sum of $1,000 per month has been contributed from the city "war chest," which after the termination of the war was continued as a community chest to take care of all hospital, charitable and general welfare enterprises of the city.

Another question brought out the statement that among railway employees the company co-operated in the campaign by having appropriate addresses delivered before the men, by holding meetings of the inspectors where precautions as to danger points, questions as to the reasons for accidents, etc., were considered.

Following Mr. McDougall, H. O. Allison, New Brighton, Pa., told of the wonderful results of publicity in reducing accident claims in the Beaver Valley. Special advertising regarding accident claims was fruitful and the company settles its claims with practically no lawsuits. He said that in his opinion the secrecy which surrounds accident settlements has a tendency to exaggerate the ideas that people have regarding possible collections from the companies. Mr. Allison said that it is his practice, as safety engineer of his company, to get suggestions after every accident as to how a repetition can be prevented. He had found that, supplementing the bulletin service of the National Safety Council, it is very effective to use bulletins regarding accidents that have occurred to men on the company's lines.

Mr. Rice said that any safety movement must be systematic and persistent; that "the brass band method is not worth a cent." It does not matter how people are brought to think of their own safety as long as this is done. Referring to the Rochester campaign, Mr. Rice said that a much larger one was put on in St. Louis under the direction of the Safety Council with even more far-reaching results. The work has also been inaugurated in western Pennsylvania with a section of the National Safety Council which is doing splendid work. The funds for this work will be raised through the finance committee, the intention being first to raise $15,000. The Pittsburgh Chamber of Commerce, the County of Allegheny, the City of Pittsburgh Council and other agencies will contribute.

Mr. McDougall then read a letter from Charles Hardy of St. Louis, telling of the result of accident-prevention work in that city. Last year at the time of the National Safety Congress in the city a safety week was "staged," with a material reduction in the fatal and other accidents. On motion it was also decided to incorporate in the minutes a copy of the paper presented by C. M. Talbot before the National Safety Congress on the subject: "The St. Louis Plan of Public Safety." The same action was taken with respect to an article quoted by Mr. Rice in his informal remarks; and to a paper written by J. J. Reynolds for the meeting of the association proposed for 1918 but not held, on the subject: "Advantages Derived from Definite Principles and Policies in Claims Work."

The meeting then adjourned to the Hippodrome, where A. J. Van Brunt, Newark, N. J., showed a moving picture film entitled "Comrades of Success," which had been prepared for the Public Service Railway.

Thursday's Session

The first item on the program Thursday afternoon was the statement by President McDougall as to the use which the membership is making of the Hooper-Holmes Index Bureau. It appears that during three years past nearly 11,000 inquiries have been sent to the bureau by members of the association, and the bureau has been able to report back on nearly 2,000. Mr. McDougall pointed out that the association is paying $500 a year for this service and the members ought to make use of it.

E. C. Carpenter, chief claim agent Northern Ohio Traction & Light Company, Akron, Ohio, then read his paper on "Speed and Its Relation to Accidents." This, together with a written discussion prepared and read by H. K. Bennett, Boston, Mass., is abstracted elsewhere. In support of the contention made in his paper, Mr. Carpenter quoted recent experience in Akron where, after motormen had been found to be exceeding the proper maximum speed of their cars a series of arrests and fines resulted in a decrease in accidents by 40 per cent. George Carson, New York City, while agreeing with operators who contend that high speed should be used when it can be used safely, supported Mr. Carpenter in regard to the dangers of overspeeding.

At this point President Pardee of the American Association came in and complimented the Claims Association on the work that it had been doing. Mr. Bennett then presented a resolution to the effect that the incoming executive committee be requested to appoint a standing committee on accident prevention to co-operate with other national bodies interested in the same work. This was passed. In response to a question Mr. Van Brunt explained the working of a company section.

The next business was the election of officers for the ensuing year, which resulted as follows: President Samuel B. Hare, Altoona, Pa.; first vice-president John J. Reynolds, Boston, Mass.; second vice-president C. G. Rice, Pittsburgh, Pa.; third vice-president, Wallace Muir, Lexington, Ky.; secretary-treasurer John S. Kubu, Utica, N. Y.

Mr. Hare then took the chair and received a motion, which was passed, to the effect that the executive committee be instructed to redraft the plans and purposes of the organization along broader and more constructive lines, and to report the result at the next convention. Messrs. Rice, Carpenter and McDougall were appointed as a committee to take up this matter and report at the mid-winter meeting of the executive committee.

President Rice then proceeded with the appointment of committees. He stated that the executive committee will comprise H. D. Briggs, chairman, E. L. Lindemuth, C. B. Procter and H. G. Winsor. Among the general committees was the new committee on accident prevention, composed of Messrs. McDougall, Rice, Weh, Drown and Bennett.

A Claim Agent's Experience with One-Man Cars*

By Alves Dixon

Claim Agent El Paso (Tex.) Electric Railway

REALIZING that there is no more important subject confronting the street railway claim agents of the country than accident prevention, and with a full appreciation of the responsibility of presenting my experience and opinions to this association, I have carefully analyzed my records and will, so far as I am able, discuss one-man car operation with absolute impartiality. I make this explanation in the beginning for the reason that I am afraid that I might let my bias in their favor influence my opinion and cause me to make statements not altogether in keeping with the facts. To avoid this, I have classified all accidents occurring on our lines during the time we have had the one-man car in operation, and will present them to you with such comment as may be necessary to the proper understanding of them.

At the outset I was confronted with the proposition that comparisons between one-man and two-man cars on a mileage or "passengers-hauled" basis are misleading, for the reason that the one-man cars are run on thickly congested lines where the probability of accident is many times greater than it is on the lines serving outlying sections in which the heavy, double-truck cars are still being used. Despite this fact the figures are decidedly in favor of the one-man cars, and collisions with automobiles are not nearly so destructive. The light weight of the one-man cars, and the ease and promptness with which they can be slowed down are large factors in their favor in congested districts.

Step accidents, in so far as they apply to cars in motion, have been practically eliminated, and the formerly frequent accident arising because passengers left the cars while the conductor was flagging at a railroad crossing is a thing of the past. A prominent union official, in a recent attack on the one-man car, drew a horrible picture of the danger of collisions at railroad crossings, with the passengers penned up "like rats in a trap." Could anything be more absurd? In an experience of more than twelve years, I have never known of a passenger on our lines killed or even seriously injured in collisions with steam trains, except in several cases where they jumped from the car. If it is safe for a man in an automobile to cross a railroad without stopping, certainly there should be no question as to safety when a motorman stops his car and looks in both directions before crossing. We believe that the undivided responsibility which exists with the one-man car will practically eliminate collisions between street cars and trains. In connection with past accidents at railroad crossings I cannot recall an instance in which there was not a dispute between the motorman and the conductor as to whether or not the latter had given the signal to proceed. During one and one-half years of operation of the one-man cars, we have had but one collision or, rather, "close call" of collision with a train. That was due to the "loss of his bearings" by a new man who ran into the side of a freight train on a dark night. Possibly if the car had been of the two-man type the conductor might have come forward and told the motorman to stop for the crossing, but this is hardly probable.

It's an old saying in our business that "accidents occur when they are least expected." This, of course, is obvious; if they were expected, necessary means to avoid them would be taken. Accidents on "big days" are rare, generally speaking, because every man is on the alert, expects trouble and avoids it. With the one-man car, the operator has no chance to become sluggish; he is always keyed up. He cannot put the responsibility on the man on the other end of the car, and no arguments are possible. His responsibility keeps him busy; his undivided attention is necessary to the successful operation of his car. With his mind on his work the probability of accident is greatly reduced.

The data for our property are given in the accompanying table. Derailments, accidents near cars, and accidents to employees except while operating cars, have been omitted and only those attributable to actual operation are included.

ACCIDENT DATA, EL PASO ELECTRIC RAILWAY

First Four Months of Second Year (April 1 to August 1, 1919), Compared with First Year (April 1, 1918, to April 1, 1919), Showing Both One-Man and Two-Man Car Operation

Total mileage one-man cars April 1, 1918, to April 1, 1919	1,065,922
Total mileage one-man cars April 1, 1919, to Aug. 1, 1919	428,147
Total mileage two-man cars April 1, 1919, to April 1, 1919	1,362,992
Total mileage two-man cars April 1, 1919, to Aug. 1, 1919	274,020

Accidents Per 10,000 Car-Miles

	One-Man		Two-Man	
	First Year	First Four Months, Second Year	First Year	First Four Months Second Year
Collisions with pedestrians	0.13	0.07	0.09	0.34
Collisions at railroad crossings	0.01	...	0.01	...
Collisions between cars of company	0.26	0.09	0.41	0.45
Collisions with automobiles	1.57	1.42	1.17	1.46
Collisions with other vehicles	0.26	0.21	0.18	0.33
Collisions with animals	0.01	...	0.08	0.11
Equipment	0.02	0.07	0.04	0.07
Boarding cars	0.13	0.11	0.33	0.49
Injuries on cars	0.27	0.34	0.51	0.56
Alighting from cars	0.13	0.18	0.46	0.73
Falling from cars	...	...	...	...
Stealing rides	0.01	...	0.02	...
Doors, gates, guard rails	...	0.16	...	0.19
Ejectments and disturbances	0.08	0.09	0.08	0.21
Miscellaneous	0.20	0.21	0.35	0.86
Totals	3.03	2.95	3.95	5.30

The outstanding feature of this comparison is that while the two-man car shows a considerable increase in total accidents per 10,000 car-miles, the one-man car shows a slight decrease. During the first four months of the second year of one-man-car operation there was a decrease in one-man-car collisions with automobiles and an increase in the two-man car automobile collisions. The constant increase in the number of automobiles from month to month and the heavy automobile pleasure riding during the summer months necessarily increased the accident hazard for this four-month period compared with an entire year, and the two-man car having already been developed to its capacity was unable to show any improvement. The one-man cars, notwithstanding the increased probability of accident, continued to gain in efficiency.

During both periods covered the one-man car shows a smaller number of collisions with automobiles per 10,000 car-miles, and this although it operates a much greater proportion of its mileage through the congested business districts than does the two-man type, with consequently greater collision hazard. During both periods practically all collisions with animals were with the two-man cars, indicating that they make more mileage in the outlying districts where the "animal" hazard is far greater and where the "automobile" hazard is consequently less. Even in the item of "ejectments and disturbances" the one-man car makes the better showing, probably because the operator is too busy to engage in argument with his passengers.

In my opinion the one-man car is not an absolute panacea for the accident evil. It has wonderful possibilities which even yet have not been thoroughly developed, but its operation requires serious study. Like a musical instrument, it cannot do it best work until it is thoroughly understood and its capabilities mastered.

---

* Abstract of paper read at meeting of American Electric Railway Claims Association, Atlantic City, N. J., Oct. 6, 1919.

Written Discussion on Mr. Dixon's Paper

By H. G. Winsor
Claim Agent, Tacoma Railway & Power Company
Tacoma, Wash.

THE statistics presented by Mr. Dixon show that he has studied the subject very carefully with a full realization of the importance which such a radical change in the operation of equipment has in connection with accident costs. While I do not agree with him in some of his views, it may be that our experience has been so limited and that there are so many phases to be considered, that full and frequent discussion and data covering a period of years will be necessary before we can judge as to the advantages and disadvantages of the one-man car from a claims-cost standpoint.

The success of the one-man car seems to be demonstrated and its utility in providing satisfactory service for short-haul business is generally accepted by the public as an improvement over former conditions. Consequently we can safely anticipate a general adoption of this type of equipment, whatever the results may be so far as the accident hazard is concerned, for we must consider that our total claims expense is such a small percentage of the total costs involved that it can be considered only as subordinate.

It is our business, then, not to approve or condemn the equipment but to search out the defects which increase accident costs, and to endeavor to correct such as we find without impairing the economy of operation.

Mr. Dixon gives his opinion that comparisons between one-man and two-man cars on a mileage or passengers-hauled basis are misleading and not comprehensive. I cannot agree with this view because the unit of hazard in accident costs is the individual passenger regardless of whether he is carried on a one-man or a two-man car. A car carrying a capacity load of 100 paying passengers safely to their destinations is certainly entitled to more credit than one carrying one-half that number.

Our company has been operating one-man cars for practically the same period as that covered by Mr. Dixon's statistics and with approximately the same general results. However, we do not feel safe in assuming that comparative figures under the conditions of the past two years are reliable enough to warrant a conclusion as to the real merits of the new type of car, for the following reasons: First, a large percentage of our most reliable and experienced men were selected to operate one-man cars, leaving the men of less experience for assignment to the older type of equipment on which their duties are not so exacting or complicated. Second, a comparison between results obtained in 1918, when a large number of our best men were in the army, and 1919, during which we have been rapidly returning to normal conditions, would likely be misleading.

If each member company operating a considerable number of one-man cars would submit to the association during the next two years statistics similar to those given in Mr. Dixon's paper, with the possible addition of costs per 1000 passengers carried, we could make some valuable deductions and profit materially by the information received. Such a course would undoubtedly disclose the danger points and enable our companies to take whatever action is deemed necessary.

Undoubtedly we all agree with Mr. Dixon when he states that the undivided responsibility in one-man car operation is beneficial, provided that the mental and physical capabilities of the operator are in all cases equal to service requirements. It is obvious that an efficient operation of any vehicle under present traffic conditions should demand the service of an intelligent person, that care should be exercised in the selection of operators and that strict obedience to traffic rules should be insisted on.

In the operation of the one-man car we have found a rather serious condition in an increase of boarding and alighting accidents which apparently failed to develop until after our safety cars have been in service for some time. While the door mechanism is supposed to prohibit the opening until after a car comes to a full stop as well as the starting of the car before doors are closed, the history of the "auto-motoneer" has been repeated, and it now seems to be a pleasure for operators to defeat the purpose for which Mr. Birney gave us the electrically-controlled door. Consequently, one of the most expensive types of accident has increased rather than diminished. I have been advised that some companies, to guard against this trouble, have required operators to finish collecting fares in all cases before starting cars. This, however, congests traffic on busy streets where cars run on headway of say one minute or less, although it may possibly help to some extent so far as boarding accidents are concerned.

A particularly dangerous condition in one-man car operation is in "wye-ing" at points where traffic is to any extent congested. The danger incident to this condition can be avoided only through the exercise of the greatest caution by the operator.

A point which in the final analysis may have considerable effect on accident costs is the difficulty experienced by operators in serious injury cases where immediate attention must be given the injured party; of course this duty must be performed first with the result that few if any witnesses are secured.

As Mr. Dixon states: "the one-man car has wonderful possibilities"; speaking generally, its success is assured. We must study its advantages and profit by them; discover its disadvantages and if possible correct them. Co-operation in working out these problems will bring the desired results quickly and effectively.

A Fixed Schedule for Injured Persons Other Than Employees *

By L. J. Tynan
Public Service Railway, Newark, N. J.

IN MOST STATES there are compensations for injuries under fixed schedules in workmen's compensation acts, and doubtless the thought has arisen that the principle, so far as concerns a schedule, might be applied to our relations to the general public. But the circumstances and conditions that surround our relations with our employees are so different from those that surround our relations with the public that one case is no guide or precedent for the other. In my opinion a fixed-schedule plan applied to the general public would be impracticable and unfair, and would conflict with the federal Constitution.

The schedules contained in workmen's compensation laws are based, in most states, upon implied contractual relations existing between the employer and the employee. If the law provided simply that the employer should pay certain moneys to an injured servant, regardless of whether or not the employer was to blame for the injury, I am confident that such a taking of the employer's property would be unjustified under the constitutions of most of the states. In New York, after one workmen's compensation act was declared void, the people adopted a constitutional amendment providing in effect that the constitutional protection afforded to private property should not control the relation of master and servant in accident cases. The New York Legislature was therefore enabled to enact a workmen's compensation law without resorting to the expedient of an implied contract between the parties to bring the law within the constitution.

---

* Abstract of paper read at meeting of American Electric Railway Claims Association, Atlantic City, N. J., Oct. 7, 1919.

In workmen's compensation, in the absence of a constitutional amendment permitting such statutes, and in the absence of an implied contract such as has been resorted to in New Jersey, there are two points of conflict with those provisions of our federal and state constitutions which aim at the protection of private property. First, the employer is compelled to pay, whether he is to blame or not. Second, the schedule of compensation compels the employer to pay a fixed sum for an injury, regardless of whether or not the injury is worth that amount; and the same schedule compels the workman to accept that fixed amount, even when the damage is worth more. I have no quarrel with workmen's compensation laws; they have done, and are doing great good, and they denote substantial social progress. I merely point out the elements underlying the fixed schedules of compensation in those laws to demonstrate that they in no way form a precedent for fixed schedules in dealing with the public. We cannot make a contract, expressed or implied, with each member of the public that we will pay for an injury whether we caused it or not, even though we limited the agreement to injuries received on our respective properties.

There is a federal employer's liability act relating to inter-state commerce, which contains no schedule. The injured man must prove negligence, but the statute provides that the common-law defenses, such as for example as the fellow-servant defense, cannot be raised. The injured man is given an open road if he can prove negligence on the part of the employer, and the question of the amount of damages is left to the jury. There would doubtless be constitutional difficulties in the way of the fixing of a definite schedule by Congress. There would be no justification in, and no reason for, a fixed schedule under the federal law unless the law also adopted the plan of compelling payment for injury whether blame existed or not.

One of the possibilities which industry has to face is that workmen's compensation laws may some day do away with the schedule, and give the injured employee such compensation as a jury shall fix. This should be a great burden on industry. We are able to get along under the present workmen's compensation laws because, while we probably pay twice as often as we would if our payments were limited to cases in which we were to blame, each time we pay only about half what the damages amount to, and thus we secure an average that does not greatly exceed the old system.

In cases of injuries suffered by the general public we shall necessarily continue to pay only when we are to blame, and when the injured person has not been guilty of contributory negligence. It follows as a matter of course that when the injured person does recover damages from us, he is entitled to recover full compensation for the injury he has suffered. Compensation for damages has so many intricacies that an attempt to make a fixed schedule is out of the question. The tip of a finger might be of vast importance to a musician, but might be of relatively little worth to the iceman. These are matters for a jury.†

Working, as we all are, under a federal constitution which forbids deprivation of property without due process of law, any legislature which attempted to fix the amount of money which would be allowed to an individual for a given injury would be enacting an unconstitutional statute. It is true that in a number of states damages recoverable for death are limited by statute. The reason that such a limitation can be made in death cases, whereas it could not be made in other cases, is that at common law no damages could be recovered for the death of a human being. As a result damages for wrongful death are allowed only by virtue of statutes, and it follows that the legislature enacting a statute allowing actions for damages for death, can make such conditions in those statutes as it pleases, for damages for wrongful death are not among the things which, under our federal constitution, can be classified as property. However, none of these states, so far as I know, fixes an amount to be paid for a death; they fix merely the maximum, leaving the amount to the jury.

Another fact to be borne in mind is that juries often compromise verdicts, and this has a bearing on the question of fixed schedules. Of course, a jury strictly speaking has two functions; to determine whether the defendant is to blame and, if he is to blame without any contributory negligence or other such defense to relieve from the consequences of that blame, to take up the subject of damages. In actual practice jurors blend their two duties; comparative negligence enters into their consideration. Considering what juries are and what evidence, as it is heard in the courts from day to day, is we must consider compromise verdicts as an actuality.

A fixed schedule would have a peculiar bearing on the subject of settlements. If the injured person was in a position where he would get, as a fixed and statutory fact, $5,000 or nothing, so that the only question open to debate with him was whether or not we were negligent, and whether or not his negligence contributed to the result, we should have a hard time to convince him that he should give us a release for $1,000 instead of $5,000. Furthermore, new legal questions might arise, for no settlement would carry with it full payment for an injury. A compromise would be on the question of liability alone. If we should pay anything, we should pay all; and we would have to be careful that the payment and release did not raise an inference of liability that might result in the release subsequently being attacked for not having sufficient consideration to support it.

Workmen's compensation cases, owing to their fixed schedules and the fact that compromises are not allowed, present an unusually difficult problem to the legal department. In accident cases involving the public, the opinion of the legal department often is inconclusive. A settlement up to say 50 per cent of actual damage may be advised, with the further advice that if the case cannot be settled for that then it should be allowed to go to trial. In workmen's compensation cases that sort of position cannot be taken as the amount is fixed. There is nothing to settle. Under the New Jersey statute no release by the claimant for less than the amount due him is of any avail as a defense. We pay in full, or we do not pay at all. If a fixed schedule was arrived at for the purpose of dealing with the public, settlements for less than the schedule, as compromises of questions of liability, would presumably be countenanced instead of being forbidden as they are by workmen's compensation statutes.

In conclusion, I am convinced that fixed schedules for settling damage cases with the public would result in injustice, and would be contrary to the provisions of the federal constitution.

---

† At this point Mr. Tynan gave a number of citations to show the basis of compensation for injuries.- EDS.

Speed and Its Relation to Accidents *

BY E. C. CARPENTER

Chief Claim Agent Northern Ohio Traction & Light Company, Akron, Ohio

IN CONSIDERING the matter of schedule speeds, from the accident-hazard standpoint, it is convenient to divide cities into four classes, namely: Those with 500.000 or more population, having surface and elevated lines and subways; those with populations between 250,000 and 500.000. having surface lines and subways; those between 50,000 and 250,000 population, having surface lines with congested districts, and those having less than 50.000 population, having surface lines with the usual conditions of operation in a small city. Interurban operation, with single and multiple-unit cars, must be studied with relation to

---

* Abstract of paper read at meeting of American Electric Railway Claims Association, Atlantic City, N. J., Oct. 8, 1919.

conditions on city streets, on country highways and on private right-of-way.

In determining speed schedules certain elements must be kept in mind, as follows: (1) Speed limits set by city ordinances; (2) the demands of the public; (3) competitition; (4) length of line; (5) number, type and headway of cars on regular schedules and during rush hours; (6) average number of stops; (7) physical condition of cars, track and grade; (8) width of streets; (9) congestion caused by other vehicles and pedestrians; (10) extra hazardous points in business, school and residential districts, and (11) the human element, including employees, passengers and public.

It is a well-recognized fact that the traveling public measures the distance between given points by the time necessary to travel between them. The result is that many are inclined to take chances on speeds that are not always consistent with safety. Every city has congested districts and danger zones, in which the hazards from the operation of surface lines, particularly, require attention in fixing speed schedules.

The human element must not be overlooked in considering this question. Whenever the running time is shortened and speed increased to a point where it keeps the trainmen wrought up to a high nervous tension, the tendency will be for them to run their schedules regardless of consequences. They are apt to take undue chances by starting cars before passengers are safely on or off, by running too close to cars ahead, by depending too much upon the gong or whistle to clear the track of vehicles instead of having the cars under control. Before any high-speed schedule is fixed for city transit lines, all data applying to local conditions should be secured and thoroughly digested.

Our conclusion is that accidents will increase or decrease largely in proportion as the scheduled speed is changed from normal, particularly on city lines. The careful operating official will give due consideration to these and other matters bearing directly and indirectly upon his schedules before "putting on too much speed."

Written Discussion on Mr. Carpenter's Paper

By H. K. Bennett

General Claim Agent, Eastern Massachusetts Street Railway, Boston, Mass.

SPEED is the predominant factor which enters into almost every line of action which mankind pursues. To outstrip the other fellow, to think ahead and act accordingly, is what makes the development of speed in business an ever-changing game. As a race we are never satisfied with our achievements, but are constantly reaching out to advance a step further, to accumulate just a bit more, to arrive just ahead in order that our present ambitions may be gratified.

In our particular line of business we must recognize the fact that people desire to be transported to their destinations as quickly as possible and they leave the question to those who operate the railways, satisfied if they arrive on schedule time, disgruntled if they are late. Yet, when an accident occurs the passengers forget their desire to arrive at their destination quickly, and sometimes say that the motorman was running too fast. Now "running fast" and "running dangerously fast" are widely distinct. There are times and places where speed can be used without danger of detrimental results, such as on open stretches not crossed by intersecting streets or roadways or on interurban lines on private right-of-way. There is danger, in my mind, in a schedule which calls for speed, because in the desire to keep up to the mark motormen sometimes use speed in the wrong places, causing accidents which would have been avoided had a little more judgment been used.

The street railway of today is confronted with jitney competition and undoubtedly it is the speed with which these vehicles cover the ground that appeals to those who are content to sacrifice safety for speed. In my judgment we should not be competitors as to speed, but rather as to safety. We cannot sacrifice safety for speed, for if we do we lose sight of the fundamental principle which is the foundation of our organization—"safety first." We cannot afford to lend ourselves to any new departure that puts safety in the background.

As we must have speed on our electric railways, there are factors which enter which must be taken into consideration. In the very able paper presented by Mr. Carpenter, the elements which must be given recognition in making up speed schedules are carefully considered. While I heartily indorse his ideas I wish to reiterate that the tracks must be in the best possible condition, that the cars must be of such a type as to stand the increased strain placed upon them and that the mechanical operating devices of the cars must be in such a condition as successfully to care for the unusual load which they must carry.

Recognizing speed as one of the elements with which we must contend, it is hoped that those who have to do with making up schedules will not lose sight of the underlying principle of safety. With the ever-changing personnel of train crews, and the varied temperaments of men and their varying ability to do the right thing at the right time, the problem of safeguarding both the public and the company's interest is a serious one.

Organization for Public Accident-Prevention Campaigns *

By R. E. McDougall

Claim Agent New York State Railways, Rochester, N. Y.

THIS paper is not intended as a brief in favor of any particular plan for an organized public accident-prevention campaign, but is merely the story of a campaign along such lines that has been carried on in Rochester for the past two years. In 1912 there was appointed by the Chamber of Commerce a safety committee of ten members comprising executives and representatives of manufacturing and public utility companies, to plan for reducing accidents, particularly in the industrial plants. This committee did good work, but after it joined hands with the National Safety Council in 1914, organized the "Rochester Safety Council" and undertook an intensive campaign in the industrial plants and schools, much interest was displayed by employees and employers and a good deal of enthusiasm was aroused.

Early in 1918 a public accident-prevention campaign was decided on and an organization was provided. At present this comprises a president, a vice-president, a secretary and an executive committee of twenty-six members. This committee is selected from among the city officials, schools (both public and parochial), utilities, manufacturing, professional, insurance and mercantile establishments of the city. The only paid employees of the committee are the secretary, a stenographer and the publicity agent.

Meetings of the executive committee are held every month at the call of the president. These are usually luncheon meetings, at which matters pertaining to the work of the council are discussed or some special report of one or more of the sub-committees is presented.

In addition to the executive committee there are subcommittees on program, finance, membership, publicity, statistics, education, industrial safety and public safety. The last-named has twenty-one members and the others

---

* Abstract of paper read at meeting of American Electric Railway Claims Association, Atlantic City, N. J., Oct. 8, 1919.

ELECTRIC RAILWAY ACCIDENTS IN ROCHESTER, N. Y.

	Entire Year		First Seven Months	
	1917	1918	1918	1919
Collisions with vehicles	2,249	1,639	948	811
Collisions with pedestrians	210	155	97	62
Collisions with cars	530	294	192	68
Derailments	583	334	182	174
Employees injured	291	316	189	125
Alighting from car	698	521	302	305
Boarding car	719	502	265	301
Falling from car	13	9	7	4
Injured on car	435	394	240	276
Controller trouble	265	153	98	46
Electric shock	11	6	1	4
Miscellaneous accidents	404	379	174	266
Incidents and other	1,634	2,283	455	741
Total	8,042	6,985	3,150	3,183

from three to five each. Meetings of the sub-committees are held monthly or more frequently if necessary.

The personnel of the public safety committee includes representatives from the following city departments and organizations: Bureau of public safety, police department, judicial department, automobile club, public schools, parochial schools, Boy Scouts, State labor bureau, street railway, department of public works, amusement houses, coroner's office, fire department, etc.

The public safety committee has at present nine subdivisions as follows: Sub-committees on parking, on traffic law and regulations, on publicity for pedestrians and motor vehicle drivers, on playgrounds, on police, on schools, on Boy Scouts and on street cars, and a vigilance committee.

The members of the last-named sub-committee, appointed recently, report to the chief of police the names of drivers of vehicles who deliberately violate ordinances, such as those relating to cutting corners, passing street cars which are taking on and letting off passengers, speeding, etc. They send to the "chief" the license number of the automobile or the name of the owner of vehicle, together with the date and place of the incident and a short memorandum regarding it. This information is treated as confidential by the "chief," but he sends for the offender and warns him. If reported the second time the offender is arrested and taken before the police judge.

The secretary of the council attends to the details of the work of the various committees and sub-committees, acts as secretary of all committees, keeps a record of work finished and stimulates the committees to keep up their work. He also follows up safety suggestions that have been submitted, personally investigates conditions reported to him to be dangerous and does what he can individually to have unsatisfactory conditions improved. He arranges for safety rallies, and often addresses them. The publicity agent's duties are to prepare newspaper articles and get them into print, to look after advertising, etc. The membership of the Rochester Safety Council is now 110 firms and corporations employing from 48,000 to 50,000 persons.

A record of the accidental deaths for the years 1917 and 1918, taken from the coroners' records, shows that in the year 1918 he investigated 140 death cases due to accident as against 166 in 1917, a reduction of 16 per cent. The records for the first six months of 1919 compared with the same period of 1918 show fifty-three accidental deaths in 1919 and sixty-five in 1918, a reduction of 18.5 per cent for six months.

The work done by the police department, particularly among the school children, deserves special mention. The "chief" had a large number of slides prepared showing dangerous practices that result in accidents in the streets and homes. A police captain and several of the officers visited the schools during the first six months of the campaign, showed the slides and talked to the children regarding safety and accident prevention. The number of accidents to children was reduced in 1918 and we attribute it to the work done by the police and the teachers. The police also gave special attention to dangerous corners and to conditions generally about the city that might cause accident, and they have done everything possible to see that the traffic laws and ordinances have been observed.

The best kind of co-operation has also been received from the police court, the newspapers, "movie" theaters, the automobile association, school authorities and teachers, and the Boy Scout organization.

The results of the Rochester campaign are reflected in the electric railway data given in the accompanying table. While it is not claimed that the improvement indicated is due entirely to the accident-prevention work, it is true that the results show what can be done by organized effort. On the electric railway property we have reduced our mileage and we have been able to secure a better class of employees than we had in 1917.

It is not necessary that the Rochester plan be adopted elsewhere to insure good results in safety campaigns, but it is necessary that each community awake to the cost in life, limb and suffering in its midst every year and learn how to prevent it. For years past railway claims men have carried on accident-prevention campaigns, but with indifferent success. This may be attributed to the fact that prevention was a side issue with them. In order to get results, public accident prevention has got to be divorced from railway operation. In our work we had the assistance of the National Safety Council, and the plan of campaign was submitted, and many of the details worked out, by Messrs. Cameron and Price of that organization. The organization appears now to be a permanent basis.

Written Discussion on Mr. McDougall's Paper

By C. B. Proctor

Claim Agent Memphis (Tenn.) Street Railway

MR. McDOUGALL'S paper furnishes an excellent plan for the organization of a successful public accident-prevention campaign, but few of us are so fortunate as to be located in cities where the conditions are as favorable as are those in Rochester for a really extensive campaign. The average city has a chamber of commerce. That body always has a safety committee; but how often does this committee ever accomplish anything? It generally meets a few times when first appointed, does a lot of talking and passes some resolutions; then goes to sleep for the remainder of the term. In the average city there is no systematic concentrated effort made to reduce accidents. The industries, the public service corporations and the police department work along independent lines.

I shall take up briefly what the street railway can do toward changing this state of affairs; what assistance it can render towards creating public sentiment favorable to an accident-prevention campaign.

First the street railway must reduce its own accident to a minimum and bring its own organization to a high state of efficiency. We must remedy our own deficiencies before we can ask help from the public. Safety organizations among the company's employees will be of wonderful assistance in doing this. Through membership in the National Safety Council, valuable assistance can be had. The railway can, through its safety committee, effectively reach reckless chauffeurs and drivers, calling their attention to specific cases of negligence. The schools and the Boy Scouts will be found always ready to co-operate with the company's safety committee, if they are given a workable plan by which the idea of safety and self-preservation can be taught.

Street railways should, therefore, concentrate upon developing their own safety organizations, persist in maintaining them, do everything possible to sustain the interest of employees in accident prevention. While all this is being done and as a reduction in number and severity of accidents results, then in order to arouse public interest in similar work the railway should publish from time to time information as to what it is accomplishing and advertise why all should enlist in a movement to prevent accidents and the destruction of property resulting from carelessness.

In the average city practically everyone is mildly in favor of accident prevention, but it is difficult to find a man or organization sufficiently enthusiastic on the subject to devote to it the necessary time, thought, and money to produce results. The street railway should be more interested than others in accident prevention, and is better fitted to start a movement for a publicity campaign than any individual or other organization. By systematic effort on its part, with the assistance of the National Safety Council, a campaign similar to the one outlined by Mr. McDougall can be conducted in practically every city in this country. The benefits to be derived are so obvious that they need no discussion.

City Representatives Organize

Association Is Formed at Atlantic City to Comprise City Representatives of Electric Railways—Robert P. Woods of Kansas City Elected President—New President Discusses Individual Situations and Offers Suggestions for Improvement

THE latest electric railway association formed was organized at Atlantic City during convention week, Oct. 6-10, with the name of American Association of City Representatives of Electric Railways. A number of these representatives were in attendance at the convention of the American Electric Railway Association, and after an informal gathering at the Traymore Hotel it was decided that it would be helpful to have an organization. The new association will be entirely independent of the American Electric Railway Association, as it doubtless should be. Its purpose is to provide a better working arrangement among those who are carrying on the work of city supervision either over privately-owned street railways under the service-at-cost plan or municipally-owned roads. This seems to be developing into a new profession and its problems take a slight slant from that of electric railway executives.

The following officers were selected:

President: Robert P. Woods, city member, Board of Control, Kansas City, Mo.

First vice-president: Thomas Murphine, superintendent of public utilities, Seattle, Wash.

Second vice-president: M. M. O'Shaughnessy, director of Municipal Railway, San Francisco, Cal.

Secretary: W. C. Culkins, director of street railroads, Cincinnati, Ohio.

The two other members of the executive committee will be named later. As there will be no dues, no treasurer will be necessary.

A copy of the constitution and by-laws follows:

CONSTITUTION

1. *Name.*—The name of the organization shall be The American Association of City Representatives of Electric Railways.

2. *Objects.*—The purposes of the association are twofold: First, the promotion of co-operation, and the interchange of information and experience among the members. Second, the improvement of electric railway transportation service and facilities, and of the relations of the public to its transportation systems and to its city representatives.

3. *Members.*—The membership of this association shall consist of those individuals who are officially designated to represent the public in cities having direct representation in the control, management or operation of their electric railway. Applications for membership shall be addressed to the secretary. All applications shall be referred to the executive committee, a two-thirds vote of the members of the executive committee being necessary to election.

4. *Amendments.*—This constitution may be amended by a two-thirds vote of the members present at a regular meeting, provided that the proposed amendment shall have been approved by two-thirds of the executive committee, and provided that a copy shall have been sent to each of the members at least thirty days prior to the date of the meeting at which the proposed amendment is to be acted upon.

BY-LAWS

1. *Officers and Executive Committee.*—The officers shall consist of a president, first vice-president, second vice-president, secretary and two others, who shall constitute the executive committee.

(a) The executive committee shall have the entire charge and management of the affairs of the association. The officers of the executive committee shall be elected by ballot at each annual meeting of the association, and shall hold office until their successors shall be elected; they shall hold meetings at the call of the president, and, upon his absence, at the call of the vice-presidents in their order. In case of resignation, or death of any of the officers or members of the executive committee, the vacancy may be filled for the remainder of the term by the executive committee.

(b) The officers and executive committee members shall be elected at the annual meeting of the association by votes of members present at the session. Members not present may forward their votes by letter to the secretary, and such votes shall be cast by the secretary. A majority of votes cast shall be necessary to an election.

(c) At a suitable time before the annual meeting, the president shall appoint a committee of five to act as a nominating committee to nominate the officers and executive committee for the following year. When such nominations have been made, the secretary shall mail to each member, not less than two weeks before the annual meeting, a copy of such nominations. Additional nominations may be made by members, but all must be made for an entire ticket and presented to the secretary in writing, signed by not less than six members, not less than three days before the annual meeting. The secretary shall, at the annual meeting, present such additional tickets in nominations.

2. *President.*—The president shall preside at all meetings, if present, or in his absence one of the vice-presidents in order, if present, shall preside at all meetings of the association, and of the executive committee.

3. *Secretary.*—The duties of the secretary shall be those usual to such an office in similar organizations.

4. *Executive Committee.*—The executive committee shall hold a regular meeting before each regular annual meeting of the association and shall hold such special meetings as may be necessary. Such special meetings may be called by the president, or any three members of the executive committee. A

vote of the executive committee may be taken by mail when deemed necessary by the president.

5. *Meetings.*—Regular annual meetings of the association shall convene at the time and place to be approved by the executive committee.

A paper read by Mr. Woods at the meetings follows:

City Representation in Electric Railways

BY ROBERT P. WOODS

Newly-Elected President American Association of Representatives of Electric Railways

IN THE resettlement franchises granted to the electric railways in a number of cities of late years, the tendency has been to give to the city or state more or less direct control in the management and operation of the system and an opportunity as well to purchase the property.

The kind, character and extent of this control varies considerably in the different grants. Some have stressed rehabilitation and extensions, others the character of the service and ultimate city ownership of the property. Several have accented service at cost, and in these is shown wide latitude in the inclusion of the elements of that cost.

Direct city representation in electric railways of a substantial character began in February, 1907, with the Chicago Surface Lines. Since then and in order of their adoption are the grants in the cities of Cleveland, February, 1909; Kansas City, Mo., July, 1914; Des Moines, January, 1916; Dallas, September, 1917; Montreal, January, 1918; Boston (Elevated), July, 1918; Youngstown, Ohio, January, 1919; and Boston (Bay State), February, 1919. In addition, the city of San Francisco began its operation of municipal lines on December 28, 1912, and the city of Seattle took over the ownership and operation of the local street railway system on March 31, 1919.

There are other cities now going through the process of revamping their street railway franchises, and they naturally are considering the pertinent factors embraced in the settlements made in the cities mentioned. None of the resettlement grants was entirely satisfactory to both parties when made, but each was the best obtainable under the circumstances. As time elapsed the conditions of the country have undergone such radical economic changes that there is scarcely an existing resettlement railway franchise today but what there are strong and reasonable demands for modifications of vital elements in it. For several years attempts have been made to change the Chicago grant, and a new one was agreed upon between the traction company and the Common Council, but when put to a referendum on Nov. 5, 1918, it was defeated.

In Cleveland modifications have been under discussion, with the city desiring greater control over the property and the company wanting additional returns. As a sort of round-up of the matter, both parties, a few months ago, agreed to an extension of the existing franchise for fifteen years. The company, however, is still seeking its additional returns.

The terms of the Kansas City grant have, temporarily at least, been modified by the State Public Service Commission, whose authority has been confirmed by the State Supreme Court. The change consists of permitting the company to charge an 8-cent rate of fare instead of the 5-cent rate specified in the franchise. Owing to the poor financial condition of the company and its necessary companion, insufficient service, the Chamber of Commerce appointed a committee of 100 which is making an exhaustive investigation of the matter, and it may recommend modifications of the franchise.

Everything is not lovely in Des Moines, for the company is asking the court to revoke the franchise. Nor can the Boston grants be considered harmoniously self-sustaining, when the Common Council is on record for a decided change.

The Dallas situation is also complicated in that the franchise specified a fixed fare, and it has not produced sufficient revenue to meet expenses.

It might appear from what has been stated that all of these franchises are mistakes, but such is not the case. Each has bad specks on it, but there really is a lot of good in the worst of them, and just a little bad in the best of them. The addition of more good elements and the elimination of the objectionable ones would help the situation. The panacea for present troubles will not be meteoric but rather will come gradually, because the remedy lies in the co-operation of the different interests involved. Knowledge and its application are the tools with which to secure it.

WHAT SHOULD BE DONE

Nothwithstanding the fact that conditions ought to be bettered, so that the company may receive the expense of operation and proper returns, yet the public demands proper service now and at no increase in rates, and when rates are raised they decrease their patronage. Do they decrease their patronage when prices are raised on commodities other than street railway transportation? No, decidedly not. Other business is growing by leaps and bounds, regardless of increased cost, even that of steam railroad transportation. Why should this situation exist? The true answer would be a difficult one, but I venture a guess that it exists because a fault on the part of street railways has existed that has not been explained away. It is not primarily the making of the present operators. It may have been true or false of their predecessors, it runs far back, but note this: It is the duty of the individuals of today who have to do with the running of street railways, temporarily at least to set aside the truism that they be justly compensated, and zealously and honestly analyze the question "why the public opposes them"; then proceed by co-operation tooth and nail, to correct the fault, and the proper financial returns will be secured.

The interferences with car service in various cities during the war and during the last year especially have shown clearly the vital relation of city transportation service to the very stability of business and public life, and those cities wherein the public has direct representation in the personnel of the street railway system should have a better understanding of its present condition because of that relationship. This representation is usually delegated to an individual, or as in larger companies to a board of trustees. As never before these agents of the public are becoming a more important medium in obtaining good transportation for the people.

The number of cities wherein control of the management of the local street railway service is directed in whole or in part by the city or state is increasing.

The duties and responsibilities of those acting for municipalities are also increasing, and it would appear that greater success would attend their work if there were co-operation and exchange of ideas among them.

There are about a dozen street railway properties in this country that are operating under franchises wherein the public has a direct representation, and by forming an association these representatives would not only derive mutual benefits of inestimable value but would be able through such an association to obtain better service for the communities they represent.

The real purposes of such an association would be the promotion of co-operation and the interchange of information and experience among its members, and to the improvement of electric railway transportation service and facilities, and of the relations of the public to its transportation systems and to its city representatives.

Concurrent efforts and labors of practically all street car companies during the industrial turmoil and peculiar conditions following the war, in their various conferences with themselves, public committees and boards, shows wisdom and has given them greater strength.

As the companies have found that in union there is strength, so the representatives will find that in co-operation there is knowledge, which would not otherwise be obtainable.

I believe that every street railway franchise of today will be changed in some substantial part, within a comparatively short time, and those persons representing the public should be possessed of pertinent information, concerning the worthy and unworthy provisions in their own and other franchises, for use when needed. This can best be obtained from those in intimate contact, with direct responsibilities, in the actual operation of a franchise over a period of time.

Letters to the Editors

More Passengers Better Than Too-High Fares

LONDON COUNTY COUNCIL TRAMWAYS
LONDON, ENGLAND, Sept. 27, 1919.

To the Editors:

Mr. Madgen's article in your issue of August 30 expounds a sound theory backed up by lucid argument. It appears, however, only to deal with one method of placing British, or for that matter American, tramways on an adequate commercial footing. Fortunately there is another side to the story.

In analyzing the expenses of British tramways Mr. Madgen divides them into two parts, standing charges and running costs, and arrives at the cost per passenger under each item, but there is such a wide variation between the results on the various tramways that an average is really of little value in attempting to assess a minimum rate of fare. In the case of municipal tramways the proportion of standing charges to the whole is much greater than that of company-owned tramways, owing to the fact that the former have to pay off their capital as well as to pay interest on the outstanding debt. Although that is a point which does not affect the principle of charging the passenger such minimum fare as will cover the cost of readiness to serve, it has a considerable bearing on the amount of such minimum.

The crux of the matter is the number of passengers carried. On Mr. Madgen's figures a passenger must pay at the rate of 1.32d. per mile for 1 mile in order to cover expenses, but the result of that in most towns would so reduce the number of passengers that the cost would rise again and call for a new basis. The proper way to improve revenue is to reduce the cost of carrying each passenger by carrying more of them, and the greatest possibility in large towns is to increase the number of short-distance passengers. Further increases in fare will not attract more passengers, but good service and low fares will do so and may yet prove the salvation of the electric tramway.

Mr. Madgen states that very low fares for short distances discourage families from moving outward. It is difficult to accept this statement, although it may be readily agreed that very high fares for long distances discourage families from moving outward. After all, if the family lives a long distance from the business center, there are only one or two breadwinners who travel the whole distance every day. The rest will probably make short journeys for shopping or pleasure, and the rate of fare will decide whether the journeys are made on foot or by car. Therefore, high initial fares are not necessarily calculated to bring about a desirable state of affairs.

So far as can be gathered, practically all tramway authorities in Great Britain and America have been busy during the past few years in either raising fares or attempting to do so. The result is far from being universally successful. The restrictions on material for permanent way and rolling stock are disappearing, and labor, if dear, is plentiful, so that there is little excuse for not improving services and making the experiment of offering attractive fares as a means of reducing the cost per passenger.

With regard to a decimal coinage, the adoption of a 5-mill coin would be a distinct advantage to tramway proprietors, but an equivalent increase in the length of a penny stage should be given, the gain being derived from those who are willing to pay for less than is offered to them.

THEODORE E. THOMAS.

Buses Carry Large Proportion of London Traffic

OUTER TEMPLE, 222, STRAND
LONDON, W.C., ENGLAND, Sept. 26, 1919.

To the Editors:

In the ELECTRIC RAILWAY JOURNAL of July 5, in an article on "The Zone Fare in Practice" by Walter Jackson, reference is made to a paper read by J. B. Hamilton in 1912 on "Urban Passenger Transport." In that paper Mr. Hamilton did not do justice to the facts, as I conclusively showed in the discussion of his paper. Mr. Jackson unwittingly does Mr. Hamilton a displeasure in quoting him in the paragraph referring to "Mr. Worby Beaumont's alternative" inasmuch as that paragraph shows how completely wrong Mr. Hamilton was in 1912 concerning motor omnibuses.

Seven years have passed since he gave publicity to those remarks, and these years have not only proved that I was right in my estimates of the place that was being taken by the motor omnibuses in urban passenger transport, but that the whole tramway world recognizes this now, for there is not a town of any size in Great Britain that is not now extensively using motor omnibuses, while some are ordering them on a larger scale than ever. My work for some years from 1906 as responsible advisor to the Commissioners of Police of the Metropolis is recognized by all those concerned in motor omnibus design and working, as having led to the production of the most satisfactory urban service fleet in the world. A proof of this is found in the statistics of the numbers of passengers carried.

These show that in 1914, just before the war, when 2705 London General omnibuses each carried 283,062 passengers and the fleet carried at the rate of 765,682,640 passengers per year.

In the same period the London County Council Tramways carried only between 325,000 and 350,000 passengers per seventy-eight-seat car, compared with the thirty-four-seat omnibus. For the year 1918 the returns are 682,000,000 passengers by motor omnibus, and for the whole of the tramways of the several authorities and companies and the London County Council put together 992,000,000. Of the 353 miles of tramways of the Metropolitan area, the London County Council operates 150 miles with 1662 electric cars and 158 trailers, and many of the tramcars weigh 15 tons as against the motor bus 3 tons 12 cwt.

The number of motor omnibuses in use before the war was 2906, while in May last it was only 1165 and about 100 lorries, fitted for the emergency of the great population influx, with seats and cover.

The actual bus-mileage run last year was 73,152,709 miles.

These are among the facts, to which I might appeal to show that whatever may have been the assumed requirements for Leeds in 1912, the correct anticipation of suburban passenger transport was that of

W. WORBY BEAUMONT,
M. Inst. C. E.

[NOTE: In connection with the foregoing comparison of passengers carried on thirty-four-seat buses and seventy-eight-seat cars, London tramway operators have made the point that they are at present practically shut out from the choicest traffic areas of London. This fact is also noted in the articles by Mr. Jackson on the London County Council and West Ham Tramways, published in recent issues of this paper.—EDS.]

Association News

Subjects for Investigation by Transportation & Traffic Association Committees

THE executive committee of the Transportation & Traffic Association held its first meeting at Atlantic City on Friday, Oct. 10, 1919, and received the report of the committee on subjects. The subjects selected and assigned to the committees for investigation and report to the 1920 convention are:

Committee on a code of traffic principles—To prepare a detailed draft of a code of traffic principles.

Joint committee with the Accountants' Association on collection and registration of fares—To give special attention to the collection of zone fares, transfers and base fare, on both one- and two-man cars.

Committee on joint use of tracks and terminals—To draft a basic contract covering this class of service.

Committee on freight and express haulage—(a) To prepare a brief summary of express traffic on typical lines to illustrate the importance and growth of the business. This brief to be published in *Aera.* (b) To make an analysis of facilities required to give adequate service. (c) To make an analysis of the cost of handling express matter to serve as a basis for rates; this last to be worked out jointly with the Accountants' Association.

Committee on schedules—(a) To make an analysis of schedules to show the relation of dead time to live time and the effect of an eight-hour day. (b) To show effect of increasing schedule speeds on platform expense, on investment and on traffic. (c) To outline a proper supervisory organization with comparative data from the larger systems. (d) To outline methods of making traffic checks which can serve as a basis for schedule making.

Committee on merchandising transportation—To outline various methods of making service more attractive together with plans that can be used to increase the off-peak riding.

Engineers Make Committee Assignments

THE following tentative list of committee assignments for the Engineering Association has been reported by the committee on subjects, but it may be modified somewhat by the executive committee.

Committee on buildings and structures—Facilities for prepayment and post-payment fare collection at terminals. Investigate use of lag screws instead of bolts in timber-deck structures.

Committee on bureau of standards safety code—Continue work of committee.

Committee on equipment—Revision of standards for brakeshoes and brakeshoe heads. Continue study of standardization of motor parts. Report on helical gears. Investigate feasibility of adopting standard cars. Co-operate with committee on way matters on sections for curved rail heads.

Committee on power generation—Recommended forms of contracts for the purchase of power, (a) normal, (b) emergency. Powdered coal, oil, gas and special fuels for use in electric railway power plants. Appoint member on national committee on standardization of method for determining the cost of power when this subject becomes active.

Committee on power distribution—Continue revision of specifications of overhead line material. Revise specifications for crossings of power lines with railroads, as part of a joint committee with other engineering associations. Specifications for catenary line construction. Revision of specification for standard stranding of cables. Specifications for standard thread for pins and insulators.

Committee on way matters—Complete standard specifications for track spirals. Standard sections for curved rail heads (in co-operation with committee on equipment). Study of progress made in rail joints. Revise specifications for plain, bolted special work.

Toledo Section Pushes On

A REPORT from Secretary J. P. Merkle of the Toledo Section states that the membership is now 1428 made up as follows: Railway, 876; electric light, 472; district heating, 31; gas, 22; associates, 27. The work is well organized for the fall, but Chairman Melvin Sommerville has big plans ahead. Among the activities are a bowling league with ten teams meeting weekly, a basket ball league with four teams which hold weekly meetings, a glee club meeting weekly, monthly dances, welfare work of a far-reaching character with special attention to individual needy cases, educational work, an orchestra which functions on every possible occasion. Monthly or bi-monthly entertainments are given of a rather elaborate character and plans are under way to hold such entertainments at Sylvania as well as Toledo for the benefit of the Toledo & Western men. The four sub-sections meet monthly in successive weeks. The railway sub-section will be headed this year by F. M. Sommerville.

Center-Entrance, Single-Truck Surface Passenger Car

THE Municipal Railway of San Francisco has invited bids for a sample single-truck, center-entrance car of a type which it is proposed to use on the lines of this company. The car is to be 29 ft. in length and 8 ft. 6 in. wide. Entrances are provided on both sides and access is gained by three steps. The floor level of the car is uniform throughout.

The city will select the truck, electrical equipment and air brakes and make arrangments for their purchase. Two 50-hp. motors are specified for use with 26-in. wheels. The car will have a seating capacity of thirty-two passengers. Provision is to be made at each end of the car so that the motorman may leave it through a small door, below which strap steps will be mounted.

The building of but one car is contemplated at this time, to permit of trying out the design in actual service before additional cars are purchased. Changes may be made during the course of construction or after the car has been tried out, following which not less than nineteen additional cars will be ordered.

Recent Happenings in Great Britain

Labor Apparently Checked—New Ministry of Transport Established—Omnibuses Chief Topic Before Municipal Railway Men

(From Our Regular Correspondent)

In the closing days of September all other matters in Great Britain were thrown into the shade by a general railway strike which threatened to paralyze the country. It was soon apparent, however, that the government arrangements for food supplies and distribution were so good that there was no danger of famine, but industries of all sorts were slowed down and threatened to come to a standstill. This is the first general railway strike to take place in Britain. The nearest approach to it was the strike in 1911 which though widespread was far from universal and it was of very short duration.

REVIEW OF DISPUTE

The question in dispute may be indicated briefly. Negotiations have been going on for some months between the government and the executives of the National Union of Railwaymen and the Society of Locomotive Engineers and Firemen as to fixing standard rates of wages. The drivers', firemen's and cleaners' cases were settled some time ago, the skilled men getting better proportionate terms than the cleaners. Then the National Union of Railwaymen wanted the same proportionate terms for all their members as those given to the drivers and firemen.

The government, distinguishing between skilled and unskilled men, resisted and offered conditions which the men said would mean a reduction of pay to some of the lower grades. The government pointed out that in the very worst case, men who before the war got only 18s. a week would be guaranteed to have £2, while if any reduction on the additional war bonuses of 9s. took place it would not occur till after six months and only then (by agreement or arbitration) if the cost of living showed material reduction.

The National Union of Railwaymen executive abruptly broke off the negotiations and without balloting their members called a strike on Sept. 26. The drivers' and firemen's union struck "in sympathy" and the whole London city system was stopped.

GOVERNMENT TAKES FIRM STAND

The government declared that was war on the community and announced it would fight it to the bitter end. The great road motor transport organization which had been prepared to meet emergencies was at once mobilized, and in a day or two it was clear that the plot to starve the nation and the government into submission had failed. Limited railway services, manned partly by volunteers and partly by men abandoning the strike, began and improved every day. Electric railways like others were stopped, but tramways and omnibuses were not affected. The strain on the two latter services was enormous and in London many people had to walk long distances to and from business.

The Transport Workers' Federation and other trade unions, recognizing that the railwaymen's attempt to paralyze the country had failed, instead of coming out on strike in sympathy, formed a body of about a dozen representatives to act as mediators. Conferences went on and after two or three failures a settlement was reached on Oct. 5, under which the strikers returned to work on the following day. Negotiations as to standard rates of pay are to be resumed and are to be completed before Dec. 31. Meanwhile wages are to be stabilized at present levels until Sept. 30 next year, instead of until March 31 next as the government originally proposed.

This is the only concession of any consequence. No adult railwayman is to receive less than 51s a week so long as the cost of living is not less than 110 per cent above pre-war level. This is 2s. a week more than originally offered. Both sides profess to be satisfied, but it is freely said that the men could have got the same terms without striking. The trade unions and the "direct action" men have got a nasty jar, and the country has suffered enormous loss. The general national strike notion has had a heavy set-back.

STRIKE APPARENTLY TIMED

Whether by accident or design the railway strike was timed to begin just when the new Ministry of Transport was about to commence its work. It is some little time since the act constituting the Ministry was passed, but it was not till Sept. 24 that Orders in Council were issued under which the powers of the Board of Trade in regard to railways, tramways, etc., were transferred to the Ministry of Transport. On the following day the Railway Executive Committee (consisting of railway company managers who for the Board of Trade controlled the railways during the war and since) tendered their resignation. Sir Eric Geddes, Minister of Transport, in reply asked the committee to continue its services for a short time longer. He also said that it was inevitable that there should be some change in the position of the committee. He looked forward, however, to the creation of an organization which would enable the committee to give to the new Ministry much of the invaluable assistance which it had rendered to the Board of Trade during the past five years.

The arbitration over the claim by British tramway workers for an advance in wages of 12s. a week, referred to previously in these notes, was concluded so far as the hearings were concerned on Oct. 4. It was arranged that parties should be heard at London, Bristol, Manchester and Glasgow. The municipalities owning tramways and the tramway companies argued that it was not possible to give the increase unless fares were greatly raised or unless a levy to meet the deficiency were made on the rates. In some cases it was contended that it was not possible to raise fares further, and in others it was pointed out that the tramways were already on the rates and that the latter stood excessively high.

The arbitrators' award was issued on Oct. 8, and it gave an additional war bonus of 4s. per week to employees of eighteen years of age and over, and 2s. per week to those under eighteen. The condition produced is serious. The secretary of the Municipal Tramways Association estimates that the additional cost to municipal undertakings alone will be about £700,000 a year.

The annual conference of the Municipal Tramways Association, which was held in Dundee from Sept. 17 to 19, attained to something of the proportions which it had before the war, and was highly successful. As was perhaps to be expected under present circumstances, engineering subjects were rather in the background, attention being chiefly devoted to matters of finance, labor, operation, and so forth.

In his presidential address T. B. Goodyer, general manager of Croydon Corporation Tramways, made a general survey of the present situation and the tramway industry. In the course of his remarks he hopefully anticipated that tramway necessities would be even better looked after by the Ministry of Transport than they had been by the Board of Trade. He also welcomed the formation of the Joint Industrial Council for the tramway industry.

Mr. Kelly, convener of Glasgow Corporation Tramways Committee, in a paper called "Where Do We Stand," made a number of suggestions on a variety of topics. A most interesting and practical paper, and one which should be of value to American electric railwaymen as well as to their colleagues here, was that presented by A. R. Fearnley, general manager of Sheffield Corporation Tramways, on "Motor Omnibus Services." The municipality of Sheffield has for several years worked motor omnibuses as auxiliaries and extensions of the tramway system, and the fruits of the experience were given by Mr. Fearnley.

There are no statutory maxima for omnibus fares in this country, and Sheffield Corporation has claimed absolute freedom to charge such fares on omnibuses as it thinks fit. It was with that important fact in view that Mr. Fearnley arrived at the following conclusions: The motor omnibus is (1) an excellent vehicle for acting as a feeder and in connecting up tramway routes and services; (2) an unusable vehicle for satisfactorily dealing with heavy town traffic; (3) quite inadequate for dealing with peak loads; (4) financially impossible for workmen's traffic at reduced fares; and (5) in regard to average speed maintained throughout the day has no advantage over the electric railway. He concluded that the motor omnibus is not going to supersede the electric railway, but that it can serve a most useful purpose, (1) for connecting up tramway routes for cross-town traffic; (2) for relieving congested tramway routes by diverting part of the traffic along other routes; (3) for connecting up villages and rural districts with tramways and railways, and thereby providing such districts with regular and direct transport facilities.

OPINIONS OF MANAGERS

The following among other opinions were in the course of the discussion expressed by managers of important tramway undertakings. J. B. Hamilton, Leeds, said his belief was as strong as ever that electric traction remained unrivalled. Alfred Baker, Birmingham, speaking from experience, said that the omnibuses were improving in reliability, but he saw no reason to despair of tramways yet. J. M. McElroy, Manchester, said that it would be a physical impossibility for omnibuses to cope with the great tide of morning and evening peak-load tramway traffic in the city of London.

At the annual business meeting of the Association, Sir John Courtis, chairman of Cardiff Corporation Tramways Committee, was elected president, and W. Holford, general manager of Salford Corporation Tramways, was elected vice-president for the ensuing year.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Denver Settlement Defeated

Failure of Traction Issues at Special Election Apparently Complicates Matters Again

On the face of the unofficial returns at the election in Denver, Col., on Oct. 22, both the service-at-cost plan and the so-called elastic 6-cent fare measures in the interest of the Denver Tramway appear to have been lost. The vote on the service-at-cost proposal was close. That count stood 10,505 for the plan and 10,740 against it. In other words, a bare majority, of an insignificant minority of the whole vote, voted down the main proposition for a settlement. Close to 100,000 persons were entitled to vote. It is generally estimated that out of seventy-odd thousand that should have voted, barely 11,000 voters said on their ballots that they did not want the service-at-cost plan. On the elastic 6-cent fare proposal the count was 4,577 for the plan and 10,884 against it.

SITUATION COMPLICATED

In consequence of this outcome the situation in Denver has again become very threatening. It will be remembered that last summer the Council passed a temporary ordinance restraining the 6-cent fare for ninety days. This time expires on Oct. 29. It had been hoped that the fare question would be settled by the special election. Accepting the election returns on their face, there would seem to be no way out except to go back to 5 cents.

The tramway has all along announced that if the fare drops, it must cut the wages of its employees. The employees have announced that if their wages are cut they will strike immediately. A wage cut would reduce the men to 34 cents an hour from the present scale of 48 cents.

The company, through F. W. Hild, general manager, said that the tramway would not make any statement until after the official count had been finished. The Mayor also said that he could not discuss the matter until the defeat of both proposals had been declared officially. Unless some solution can be speedily arrived at a strike would seem to be inevitable.

CASE REVIEWED

The election just decided is merely a phase of the upheaval which followed the decision last July by the Supreme Court of Colorado reaffirming that court's former decision holding that in home rule cities the Public Utilities Commission was without jurisdiction. The 6-cent fare ordinance in Denver was accordingly repealed and the tramway announced reductions in service and a return to the 1917 wage scale. The city retaliated by authorizing jitneys to operate and the trainmen went on strike. Charges followed by the city in which collusion was alleged between the company and the men. The situation was reviewed at length in the ELECTRIC RAILWAY JOURNAL for July 12, page 95, and July 19, page 131.

On Oct. 23 City Auditor F. D. Stackhouse came forward with a plan for the settlement of the fare problem. This plan provides for the enactment of an ordinance by the City Council, providing for a continuation of the temporary 6-cent fare ordinance, which was enacted last July as a compromise measure to end the strike of the trainmen. He also suggests the appointment of a committee of seven which, through auditors, shall watch the earnings of the tramway and distribute excess earnings obtained by a 6-cent over a 5-cent fare between the company and its men.

The ordinance as agreed upon by the city authorities and the tramway fixing and adjusting fares as submitted to the electors at the special election provided:

1. That from the date the ordinance becomes effective, the company shall be entitled to receive 6 cents for a single passage on any of the company's lines within the city and county of Denver, provided that children under six years of age when accompained by a paying passenger shall be carried free of charge, and children over six years of age and under twelve years of age, at half fare.

2. The company shall at all times transfer its passengers from one to another of its lines for a continuous passage without any charges, provided the company shall not be required to transfer passengers to adjacent lines.

3. Whenever the wage schedule shall be increased or decreased by the company, the fares to be charged may be increased or decreased to take care of such increase or decrease in wages.

4. A board of control of three members, one appointed by the Mayor, another by the City Council, and a third by the board of directors, shall be appointed for a term of four years. The appointments to be made within ten days after this ordinance becomes effective.

Whenever this company shall increase or decrease the present schedule of wages it shall advise the Board of Control, who shall investigate and act thereon within ten days and authorize or order an increase or decrease in fares to be charged by the company to correspond to the increase or decrease in wages.

The records and accounts of the company, concerning its wages and fare receipts, shall be open to inspection at all times by the Board of Control, and the company shall furnish the board with any and all information which the company has relating to wages or increase or decrease in fares. If increase or decreases in fares are authorized or ordered by the Board of Control, they shall be at such rates as will produce an amount not more than said wage increase and not less than the wage decrease; and successive increases or decreases in fare in the discretion of the board may be authorized or ordered by the board as the facts and conditions warrant; provided always, that the board shall not authorize any increase in fares in excess of that necessary to take care of increases in wages in Denver based upon the average of the hourly schedule paid to railway men in St. Louis, Omaha, Kansas City, Minneapolis and St. Paul.

Fare increases authorized or decreases ordered by the Board of Control shall be put into effect not later than ten days after the date of such authority or order.

Louisville Strike Over

The strike of the employees of the Louisville (Ky.) Railway remains only as a matter of local history. Despite political, city and other interference, business interests stuck with the company, criticising the Mayor for his attitude toward the company and generally adopting resolutions condemning the closed shop. The company prevented the closed shop idea from becoming effective, and although it had lots of trouble, and many cars were damaged, it is now giving full service on all lines, with more than 1,200 new men in its employ.

All strike breakers are gone and police protection is no longer necessary. The present force is considered very efficient. Various unions have recently lifted the ban against union men riding on cars. Pickets have been withdrawn by the union. The strike was declared on Aug. 18. The ban against union men riding on the cars was lifted during the week of Oct. 20.

Franchise Plan at Detroit

Service-at-Cost for Detroit United Urged by Street Railway Commissioners—Extensions Outlined

On Oct. 22 the Board of Street Railway Commissioners of Detroit, Mich., submitted a report on the present condition of transportation facilities in that city to the Mayor and Common Council. Barclay Parsons & Klapp acted as consulting engineers for the commissioners.

SERVICE-AT-COST RECOMMENDED

Briefly, the report recommends that the city enter into a service-at-cost franchise with the Detroit United Railway, and that future construction be on the basis that the city build the proposed downtown subway and all future rapid transit lines, while the company will build the surface lines and supply all equipment.

The report includes a recommendation that during the next two years the company buy 300 motor cars and 260 trailers and build the necessary power houses and substations for the operation of these cars and 92.88 miles of track.

The subway proposed would relieve the traffic congestion on Woodward Avenue. There would be a short section on Fort Street. The proposed surface extensions would be crosstown lines. They were grouped as three classes; namely, (a) necessary for immediate construction, 71.43 miles; (b) next in importance, 21.45 miles; (c) recommended for construction as traffic develops, 64.66 miles.

PAST REPORTS REVIEWED

The report reviews the plans considered in the past to settle the franchise situation, including various votes on municipal ownership. It points out that the three-fifths vote necessary in Detroit to carry through any detailed plan is a handicap to the settlement of the railway problem and to other municipal problems as well, and if this provision has to remain an appropriation should be made for publicity to insure an accurate presentation of the facts to the voters.

In conclusion the report recommends a service-at-cost plan for the Detroit United Railway on a basis somewhat similar to that in Cleveland. It says that if this receives the approval of the city the commissioners will enter into negotiations with the company to work out the details of such a plan.

RECOMMENDATIONS ON EXPENDITURE

A summary of the recommendations as to expenditures, the city to build the subways mentioned and the company to do the rest of the construction and purchase the equipment, follows:

Subways on Woodward Avenue and Fort Street	$8,500,000
Surface line extensions	6,926,650
300 motor cars at $10,000	3,000,000
260 trail cars at $5,000	1,300,000
Carhouses, substations, connections, and electrical feeders	1,200,000
Total	$20,926,650

Conference on New York Affairs

Railway Representatives and Public Service Commissioner Confer—Plan Presented for Discussion—Mayor Refuses to Attend

Public Service Commissioner Lewis Nixon, of the First District, has issued a general invitation to the Mayor, Comptroller and other city authorities, and to the traction interests, to meet with the commission in a general conference to map out, if possible a method by which the transportation systems in New York City can be saved from complete disintegration. Commissioner Nixon pointed out in his letter that the people of the city were face to face with vast losses, and in addition with a lowering of the standard of service, the physical deterioration of the property and equipment, and demoralization of organization. For temporary concessions extended to the companies, he pointed great and lasting benefits could be secured to the city.

What the situation needed, according to Commissioner Nixon, was constructive and business-like handling, such as that which might have been forthcoming several months ago, and would have avoided the present crisis and saved to the traveling public the system of free transfers then prevailing.

Mayor Hylan and other city officials declined to attend the fare conference. The Mayor gave out a letter to the press attacking the commissioner for "worrying about increased fares for the traction corporations instead of paying attention to the overcrowding of passengers on the transit lines." This thrust brought forth a hot rejoinder from Mr. Nixon, who declared that he was "personally capable of regulating the city's traffic and of using the maximum of safe service in rush hours." Mr. Nixon said: "As to the propriety of my taking the initiative, I am the judge, not you."

The railway officials on Oct. 3 accepted the invitation to the fare conference. Forty officials attended. Mr. Nixon introduced the subject by reading a long statement containing comments on the situation and suggestions for concessions which he thought might meet the demands of the city administration and lead to modification of franchises and contracts which would bring about higher fares.

It was decided to hold a second conference on Oct. 15. Mr. Nixon's plan is as follows:

> The consolidation of all systems into one corporation with unified control. This suggestion has been made before, and a way to accomplish it has been studied by at least one of the receivers.
>
> A uniform fare except in isolated sections, such as Staten Island.
>
> Abolition of holding companies, such as the Brooklyn Rapid Transit and the Interborough Consolidated.
>
> Perpetual franchises to be replaced by terminable or indeterminate franchises.
>
> The institution by the city of an inquiry to determine the value of each of the railroad properties.
>
> The termination of all leases such as those held by the New York Railways and of all underlying contracts.
>
> The city to have the option of acquiring the railroad properties within a fixed time at agreed valuations. It is suggested that the purchase price be paid out of earnings.
>
> The establishment of a flexible fare, automatically adjusted to meet the cost of service, which must cover interest on money invested.
>
> A reserve fund to meet variation in costs and the sale of tickets at less than 5 cents to those buying in quantity. The occasional passenger would thus pay more than the regular one.
>
> The city to be represented on all boards.

Mr. Nixon explained that the suggestions were tentative and were offered as a basis for discussion. He said that when the various contracts were made the 5-cent fare was fixed because that was then the best known plan for controlling rates, and that, while comprehensive plans for control of the railroads had since been worked out, the rate restriction stands. Therefore, he argued, if the city surrendered this right the companies must yield something of equal value—for example, their perpetual street rights.

Then Mr. Nixon proposed two committees, one on unification and the other on differentials and guaranteed payments. He suggested that these committees consist of Transit Commissioner John H. Delaney, the Comptroller, a representative of each of the companies, and a representative of the city's franchise committee. If the Board of Estimate declines to name a representative Mr. Nixon suggested that the public should be represented by a man selected by the Chamber of Commerce, the Board of Trade and Transportation, and the Merchants' Association.

After Mr. Nixon had read his statement suggesting that all of the lines be placed under one management and making other suggestions as a solution of the problem, he said:

> I have no power. The power will vest in the Transit Construction Commissioner who sits here. If there is ever a redraft of these contracts application must be made to him.

Commissioner Nixon held a second conference with the traction officials on Oct. 15, at which plans for the financial relief of the companies were discussed. Mr. Nixon plans to take each company's needs under consideration in turn. At present he is considering the situation as it affects the New York Railways. He held a conference with the officials of the company on Oct. 20.

Federal Judge Mayer on Oct. 6 ordered Francis G. Caffey, United States District Attorney, to prepare papers accusing Charles L. Craig, Comptroller of New York City, of contempt of court. The action followed the reading of a letter from Comptroller Craig by Public Service Commissioner Nixon at the meeting of traction officials in Mr. Nixon's office.

Buses were operated over the Manhattan Bridge beginning Oct. 4, replacing the Brooklyn & North River Railroad cars. Up to Oct. 4, Grover Whalen, commissioner of plants and structures, had not applied to Mr. Nixon for a certificate of convenience and necessity permitting bus operation. Operation of the cars ceased at midnight Oct. 4. The bus line runs from the Flatbush Avenue extension at Fulton Street, Brooklyn, across the Manhattan Bridge, through Canal Street to Vestry Street, to Greenwich Street, to the Desbrosses Street Ferry. The route is covered in about twenty minutes, or ten minutes less than it took the traction cars.

Washington Wages Adjusted

Employees of the Washington Railway & Electric Company, Washington, D. C., agreed on Oct. 23 to accept the increase of 3 cents an hour which the management of the company offered them in answer to a recent demand of the employees for a substantial increase in their wage scale and recognition of the union by the company. The 3-cent increase raises the present scale of 43, 46 and 48 cents an hour to 46, 49 and 51 cents an hour for the three classes of men operating cars.

The agreement reached between the employers and the men operating cars was that an increase of 3 cents an hour should be accepted, said increase to be retroactive to Oct. 1, and the company to make payments up to date on that basis not later than Nov. 5.

The employees who are members of the Amalgamated Association accept the increase in the wage scale as an evidence of recognition of their union by the employing company.

Ten-Day Strike

Oakland Men Break Agreement—Service Resumed Pending Negotiations or Arbitration of Dispute

A strike of 1500 carmen of the San Francisco-Oakland Terminal Railways, Oakland, Cal., which had completely tied up service for ten days, ended on October 11, when the men voted to return to work pending settlement of the points at issue. Normal service was resumed on October 12.

The State Railroad Commission and federal concilaters brought the company and the men together by representing to them the public's rights to service. The agreement provided for immediate return of the men at their old ratings, a conference between the company and union officials to discuss all demands, and the submission to arbitration of all points which cannot be readily settled between both sides.

The men went out on October 1, although the company had agreed to submit to a board for settlement all the demands made by the men in their communication addressed to the company on August 30.

The demands of the men were most extraordinary. They requested a wage increase alone ranging from 56 to 94 per cent. Other demands were for an eight-hour day and radical changes in other working conditions. The new wages would mean $6 for an eight-hour day on the so-called traction division and $7 a day for an eight-hour day on the so-called railway division. The company promptly pointed out that these demands would increase its payrolls $1,613,000 a year, thus practically doubling them. In effect the demands, if granted, would require the public to pay 8 cents for a city ride, 20 cents for a ride across the bay and $5 for a commutation ticket. The company advanced as susceptible of proof the statement that it was actually $78,888 worse off on August 31 than it was on the same date in 1918 for the corresponding period, notwithstanding the car riders paid an additional cent in fare.

On October 6 the representatives of the union assured a committee acting in the interest of a settlement that if the committee could secure written assurance from the directors of the railway that all men would be restored to their former positions and rating and that contract relations would be restored as before the strike, with all claims submitted to arbitration immediately, they would recommend to their associates that the proposition be accepted and that the men return to work at once.

The company's reply was a flat refusal of these conditions. It declared that it had not been justified in its belief that the men would at least observe the oath they had taken to accept arbitration before going on strike. The company did, however, suggest that the men be advised to return to work in reliance upon "that sense of fairness which the company has always shown them and with the assurance that any request for a conference with them or their representatives will in the future, as in the past, be immediately granted."

Bay State Program Outlined

Statement of the Company's Policy and What It Is Hoped to Accomplish Under Its Contract for 100 One-Man Cars

After nearly four months of experience under the public control act, during which the Bay State Street Railway, Boston, Mass., has been thoroughly reorganized and made much more efficient, there appears to be a widespread and constantly growing feeling among the people throughout the system that the public trustees are indeed public servants.

Since Fall River, Lowell and Taunton furnished the most concrete proof of this feeling by refusing to permit unfair competition by jitneys, the public trustees felt that these cities were entitled to first consideration in fare reduction experiments and the following plans are now in operation:

> Fall River—Three dollar monthly ticket, fifty rides, good for one person, with transfer privilege to any part of city zone. Rate of single fare, 6 cents. Effective Sept. 15.
>
> Lowell—One dollar monthly ticket, sixteen rides, good for one person in central city zone with transfer privilege between Boston & Maine Railroad Station and center of city. Rate of single fare, 6½ cents. Effective Sept. 25.
>
> Taunton—One dollar ticket, fourteen rides, good for more than one person and not limited to use within one month, with transfer privilege except on certain lines. Rate of single fare, 7 1-7 cents. Effective Sept. 20.

JITNEY COMPETITION OPPOSED

In no city have the public trustees pleaded for the elimination of the jitneys out of sympathy for the trolley cars. Their argument has always been that street railways and the jitneys cannot both live in the same community because of the numerous unfair burdens imposed by law upon street railways, from which jitneys are allowed to escape.

They have repeatedly pointed out that in case of accident street car riders are protected against financial loss resulting from injuries while jitney patrons are not;

That street railways pay heavy taxes to the state and city which jitneys do not;

That street railways are safe, sanitary and are operated on regular schedules while jitneys are not;

That street railways spend thousands of dollars plowing snow from the streets and opening pathways for traffic in the winter, while jitneys do not;

That street railways are under state regulation and held to strict account for conditions of operation, while jitneys are, in most instances, under the loosest kind of local control and run how, where and when they please, regardless of public comfort and convenience.

The public trustees say they are confident that under the home-rule plan, which provides that each one of the twelve operating districts shall have its fare determined by its own receipts and expenses, the hostile feelings of the past will be removed and close, friendly relations will be established between them and the public.

That they are confronted by the task of removing causes of public grievances of long standing in years gone by, the public trustees say they are well aware. The only request they make of the public is to keep in touch with their work.

Already they have reduced the overhead expenses of the Bay State System thousands of dollars by the consolidation of several offices. At the suggestion of many city and town officials they have awarded a contract for 100 one-man safety cars which they hope to have in operation within a month, and they have also voted to buy 100 more one-man cars which will be ready by March 1.

By abrogating their lease of the offices at 245 State Street and removing to 1 Beacon Street they will save $11,000 a year rental.

By reducing the office force in Boston they will save $100,000 annually, and by discontinuing non-paying lines they have reduced the burden on paying communities thousands of dollars annually.

They are staunch advocates of local operation of cars with practically unlimited powers to district managers. They are going to make many experiments in fares and intend to give each district the lowest possible rate consistent with satisfactory service.

No Injunction for Minneapolis Mayor

The injunction sought by Mayor J. E. Meyers, of Minneapolis, Minn., to prevent submission of the cost-of-service franchise for the Twin City Rapid Transit Company to the citizens of that city at a special election on Dec. 9, was denied in a decision filed by District Judge J. W. Molyneaux on Oct. 9. Assuming that the case will be taken to the higher courts, Judge Molyneaux does not go into detail on the question of the issues involved. His opinion holds:

> That the Mayor has not the veto power, as claimed;
>
> That the ordinance does not purport to grant a perpetual franchise, as claimed, but does grant a franchise for the term of twenty-five years, commencing on Jan. 1, 1920, with the privilege to the city to purchase as prescribed by the enabling act both during the term of twenty-five years and after the expiration thereof;
>
> That the Council was acting within its power in granting a franchise to the company holding the existing franchise, making the new franchise, if ratified, commence on Jan. 1, 1920, and canceling the old franchise at the time the new franchise goes into effect;
>
> That the ordinance complies with the enabling act in reference to submitting the adoption of the proposed franchise to the vote of the people, and the ordinance does provide for such submission to the vote of the people according to the terms of the enabling act;
>
> That the power to regulate is not contracted away;
>
> That the price which the city would pay in case of condemnation is not fixed in the proposed franchise; that the proposed franchise only purports to fix the price in case the property is purchased by the city under the contractual ordinance.

Mr. Hedley Announces Policy

Frank Hedley, elected president of the Interborough Rapid Transit Company, New York, N. Y., to succeed the late Theodore P. Shonts, issued a statement on Oct. 21 in which he declared his intention to do everything in his power "to the end that the people of New York City shall have the safest, the most convenient, and the most efficient rapid transit in the world."

Mr. Hedley said:

> In becoming president and general manager of the Interborough Rapid Transit Company, my policy will be very simple. It will be:
>
> 1. To do everything I know how to do to the end that the people of New York City shall have the safest, the most convenient, and the most efficient rapid transit in the world. We carry practically a million and a half people to their business every morning and then carry them home at night. To do this safely and without delay constitutes, as I see it, a public trust of the highest order.
>
> 2. To imbue the personnel of this company with a feeling of enthusiasm in their work and with a sense of their responsibility to the public for a loyal and efficient performance of their duties.
>
> Satisfactory service to the public can only be attained through loyal and efficient effort on the part of all employees of the company, and the employees themselves can be greatly aided through public co-operation with them.
>
> Helpful criticism of our service will always be welcomed whether from employees or from the public, and I want to express the hope that I will receive the co-operation of everybody concerned in seeing to it that for the people of New York City it continues to be possible to maintain and operate the safest and best possible rapid transit service.

Mr. Hedley announced that he had decided on a policy of full publicity, and that he would hold conferences with newspaper men on Wednesday of each week. In the first of the conferences held under this new policy, he said:

> We have no secrets in so far as the true condition of the road is concerned. The road is owned by the city and by private interest in almost equal parts, and I see no reason why the city and its representatives should not be entitled to as much information as are the private interests.

Improved Service Proposed for Philadelphia

The Philadelphia (Pa.) Rapid Transit Company has submitted to the Philadelphia City Council drafts of four ordinances containing measures projected for the improvement of the company's service, and the draft of a fifth incorporating a form of lease for the Frankford elevated railroad, now under construction.

In the lease submitted, the company assumes that the Frankford elevated can be completed by July 1, 1920, and proposes to begin operation of the line July 4 of that year. The most important of the other four ordinances deals with the proposition recently advanced by Thomas E Mitten, president of the Philadelphia Rapid Transit Company, at a hearing before the State Public Service Commission, that in return for an abolition of 3-cent exchange transfers, the city remit the annual payment of $785,000 now made to it by the rapid transit company under the terms of the agreement of 1907

Another of the ordinances would impose regulations on traffic upon streets occupied by car tracks. Its principal provision is that all streets over which a single line of street cars is operated in the district embraced by the Delaware and Schuylkill rivers and Oregon and Erie avenues shall be one-way thoroughfares for all vehicular traffic.

The fourth ordinance is to authorize the relocation of the car tracks encircling the City Hall from the middle of the streets to a position adjacent to the curb line surrounding the building, while the fifth seeks authority for the construction of turning loops at the Pelham car barn to enable the company to operate green cars on the Germantown and Chestnut Hill route.

A general explanation of these measures and their purposes was given in a communication addressed by Mr. Mitten to the members of the Select and Common Councils. This communication, a copy of which was delivered to every councilman, said in part:

> Philadelphia street cars carried 550,000,000 people in 1912, at which time the inadequacy of the transit facilities was recognized, and in 1913 a plan for a system of subway and elevated lines was developed. None of the new lines then planned is available to assist in carrying the traffic of 1919, which bids fair to exceed 850,000,000 passengers.
>
> The approaching Christmas holiday season will bring the heaviest transportation requirement the city has ever known, and unless the greatest possible use is made of existing facilities a most uncomfortable condition of overcrowded cars will be upon us.
>
> We now ask your help and co-operation in making effective certain changes and improvements as herein set forth.

Mr. Mitten then proceeded to outline his solution of the traffic problem. The Councils have taken the matter under consideration.

Strike on Indiana Road Ended

A strike of employees of the Chicago, South Bend & Northern Indiana Traction Co., South Bend, Ind., caused by the discharge of two men, has been ended as a result of a conference between a citizens' committee, Mayor Foster, officers of the company and ten of the strikers. The men have agreed to resume work under the old conditions and the company has consented to re-employ all except the two discharged men. The latter withdrew from the union to relieve their fellows of the embarrassment of standing out in their behalf.

News Notes

Easton Lines Tied Up.—The lines of the Northampton Traction Company, Easton, Pa., and its associated companies were tied up on October 14 as the result of a strike of motormen and conductors to enforce demands for increased wages.

Service Resumed on Berkshire Road.—Service was resumed on the lines of the Berkshire Street Railway, Pittsfield, Mass., on October 1 after an interruption which had lasted seven weeks. An agreement with the men led to the reopening of the road.

Service Resumed at Muscatine.—A vote of the City Council of Muscatine, Ia., granting of a 7-cent fare to the Clinton, Davenport & Muscatine Railroad, controlled by the Tri-City Railway & Light Company, Davenport, Ia., has been followed by the resumption of service in Muscatine after an interruption lasting seventy-nine days. The trainmen signed an agreement for a maximum wage scale of 52 cents an hour, as compared with the maximum scale of 60 cents for the Rock Island, Ill., trainmen of the Tri-City Railway following their recent strike. The Muscatine men had been idle since Aug. 1, when the Rock Island trainmen struck.

Higher Pay for Kansas City Men.—The Kansas City (Mo.) Railways on October 15 put into effect a new scale of wages involving an increase of 5 cents an hour except for three-year men, whose increase is 6 cents. The ultimate wages are 50 cents an hour, becoming effective at the end of the second year. The minimum wage for extra trainmen has been $93 a month; it is now $105 a month, based on a thirty-day month. One-man car operators receive 5 cents above the scale, and mail car operators 4 cents above the scale. Students have been getting $1.50 a day; they now get $2. All employees received increases on July 1.

Olean Strike Settled.—The Western New York & Pennsylvania Traction Company, Olean, N. Y., came to an agreement with its striking trainmen effective on Oct. 18 after service had been suspended for sixty-seven days. The new contract carries about the same privileges and conditions as prevailed previous to the organization of the men. It permits collective bargaining through a committee representing the employees and made up of employees of the company only. By Oct. 23 most of the old men had returned to their former positions. Those that still remained out at that time had until Oct. 25 to report for duty, after which time they could return only as new employees.

Financial and Corporate

Doing Better With Ten Cents

Statement of Public Trustees of Boston Elevated Railway For the Quarter Ended Sept. 30

In presenting their report for the quarter ended Sept. 30, the trustees of the Boston (Mass.) Elevated Railway state that receipts under the 10-cent fare which went into effect on July 10 increased steadily until in the closing days of September they were sufficient to meet all expenses. This improvement has been sustained during the past three weeks and warrants the belief that the railway is now self-supporting.

The financial exhibit of the company shows that during the quarter the actual deficit from operation was $928,694. The deficit in July was $599,198; that in August $227,029; and in September the actual operating loss was $12,942. The statement for that month, however, includes also an item of $89,524, which represents an adjustment on account of track work and taxes.

The item of $450,000 appearing at the end of the exhibit represents a deficit that really belongs to the preceding year. It grew out of the retroactive character of the arbitration award made in July, which increased wages of employees for the months of May and June.

It is to be noted that the 10-cent fare did not go into effect until July 10; that an unusually large amount of track work for the entire year necessarily has to be performed in this season; that the four days of strike entailed a very heavy loss of revenue; and that with the installation of the higher fare there was an immediate loss in patronage, which has since been gradually returning.

TRUSTEES CONFIDENT

The trustees are confident that during the next three months, in which expenditures for track work are ordinarily small, a large part of the deficit incurred during the last quarter will be eliminated, and that unless some extraordinary and unforeseen event should occur, the year closing June 30 would show no outstanding deficit to be assessed upon tax-payers. Any change in the wording of the statute in relation to the procedure in the matter of deficits which may be necessary to secure this can be seasonably made.

The public control act calls for an automatic increase in fare at the end of every quarter during which there has been a loss from operation even though the fare in force at the end of the quarter is meeting expenses, and there is no reason to believe that under a continuance of that fare a deficit will again occur.

When in July the trustees inaugurated the 10-cent fare, and, as required by the statute, established grades above and below that fare, they were confident that although receipts would fail at first to meet expenses, they would prove sufficient to meet them before or soon after the end of the quarter. The next grade above the 10-cent fare therefore was established through a charge of 1 cent for transfers at certain points where the use of transfers would be light, this change being deemed a sufficient compliance with the law.

Now that operation has reached a sound business basis in which expenses, including suitable provision for obsolescence, depreciation and maintenance, are being met by revenue, the problem left for consideration is that of fare. The trustees ask: "Ought there not to be made possible as soon as may be a reduction in the flat 10-cent fare?"

In concluding their statement, which is dated Oct. 23, the trustees say:

> There are disadvantages which distinguish the service here that are not remediable. But there are other disadvantages which are remediable. Capital imperatively needed is not available. Its lack and the other burdens like that of subway rentals, which in the opinion of the trustees constitute a discrimination against the car rider, ought not to be left outstanding so as to prevent in the near future a material reduction from the 10-cent fare. This situation is now under study by the Street Railway Commission, which is soon to make its report to the Legislature.

Cleveland Dividend Arbitration

The hearing of the Cleveland (Ohio) Railway's request for an increase in dividends from 6 per cent to 7 per cent has proceeded in a casual way before a board of arbitration for some time. A number of witnesses were examined in an effort to ascertain whether an increase is necessary.

Milo R. Maltbie, New York, stated that if it became necessary for the company to raise a large sum of money for improvements and extensions, the rate of dividend should be advanced. He thought, however, that it was unwise to make extensive improvements at this time. For this reason he was of the opinion that the present rate should be continued. He was a witness for the city. It is possible that the arbitrators will render a decision before long.

Chicago Reproduction Figures Presented

On Oct. 6 the Chicago (Ill.) Surface Lines submitted before the Public Service Commission of Illinois several volumes of figures showing the reproduction value of the properties, exclusive of land, as being $193,370,612 as of Jan. 31, 1919. These figures do not make any allowance for depreciation, the companies contending that the amount of money in the renewal fund are sufficient to keep the properties at 100 per cent of operating efficiency.

The valuation was made jointly by A. L. Drumm & Company and Stone & Webster. Among the larger items included in the schedules are $60,527,984 for tracks; $45,802,852 for rolling stock; $17,635,003 for paving; $15,519,430 for electrical distribution system; and $14,795,085 for buildings. Later the attorneys for the Chicago Surface Lines announced that there was no intention to claim the right to a return on more than the ordinance values, approximately $158,000,000.

Besides the representatives of the firms which made the valuation, other witnesses, including M. E. Cooley and George Weston, testified in support of the companies' claims. At one of the hearings President L. A. Busby urged that the renewal fund requirement be restored to 8 per cent of the present gross earnings rather than 8 per cent or the earnings on a 5-cent fare basis as directed by the commission. The city objected and this point was not decided.

San Francisco Readjustment Plan Modified

New Company Will Have $47,973,000 of Securities as Compared with $82,411,600 Now Out

The two committees representing the holders of the 4 per cent bonds of the United Railroads, San Francisco, Cal., have agreed to further changes in the plan for the readjustment of the finances of the company. The present company has securities to the amount of $82,411,600 outstanding while the successor company, the Market Street Railway, will have $47,973,000 of securities outstanding.

The original plan for readjusting the finances was dated Sept. 22, 1916, and was amended on April 26, 1917. It is explained now that the former amended plan, which was approved by the owners of $22,514,000 out of a total of $23,500,000 of bonds, has become impossible of being carried out owing to the great loss of earnings and the increase of expense of operation of the railroads which occurred in the fall of 1917, and many other conditions and circumstances beyond control.

The holders of the $23,500,000 of United Railroads 4's will receive $3,525,000 of Market Street Railway bonds, $11,750,000 of prior preferred stock, $1,175,000 of preferred stock, $2,350,000 of second preferred stock and $4,700,000 of common stock. Thus for each $1,000 bond the holder will receive $150 in Market Street bonds, $500 in prior preferred stock, $50 in preferred stock, $100 in second preferred stock and $200 in common.

Following the United Railroads 4's there are $46,613,600 of junior securities. These consist of $1,925,000 of 7 per cent notes, $740,000 of 6 per cent notes, $1,000,000 of 5 per cent notes, $5,000,000 of preferred stock, $20,000,000 of second preferred stock and $17,948,600 of common stock, largely owned by the California Railway & Power Company. For these securities there will be exchanged a total of $12,175,000 of securities, consisting of $3,825,000 of preferred stock, $2,350,000 of second preferred stock and $6,000,000 of common stock.

The capitalization of the present United Railroads and of the Market Street Railway as successor company after reorganization will be as follows:

	Present United Railroads	Market St. Rwy. After Reorganization
Underlying bonds	$5,200,000	....
Market Street Railway bonds (exclusively of $5,200,000 pledged)	7,098,000	$10,623,000
New Notes (secured by $5,200,000 Market Street Railway bonds and Sutter Street, Sutro Railroad and San Mateo properties....	....	5,200,000
United Railroads 4 per cent bonds	23,500,000	....
7 per cent, 6 per cent and 5 per cent notes.........	3,665,000	....
First preferred stock (and accrued dividends)	5,000,000	....
Prior preference stock......	....	11,750,000
Preferred stock	....	5,000,000
Second preferred stock (and present accrued dividends)	20,000,000	4,700,000
Common stock	17,948,600	10,700,000
Total	$82,411,600	$47,973,000

Under the new proposed plan the fixed charges of the Market Street Railway will be as follows:

Interest on Market Street Railway bonds now issued, $7,098,000 at 5 per cent.	$354,900
Interest on Market Street Railway bonds to be issued, $3,525,000 at 5 per cent.	176,250
Sinking fund requirements of Market Street Railway bonds...............	160,000
Interest on new $5,200,000 notes at 6 per cent.........................	312,000
Sinking fund requirements of new notes.	160,000
	$1,163,150

The carrying out of the plan requires the consent of the present holders of the underlying bonds to the exchange of their securities for new securities and cash. E. H. Rollins & Sons are now soliciting these bondholders and report that the owners of more than 65 per cent of all the underlying bonds have agreed to the exchange and that they are confident the entire exchange will shortly be arranged.

The $5,250,000 of 6 per cent notes together with $520,000 in cash will be exchanged for or used to acquire the following matured underlying bonds to a like aggregate amount, namely, $1,800,000 of the Market Street Cable Railway, $2,000,000 of the Omnibus Cable Company, $400,000 of Ferries & Cliff House Railway and $1,000,000 of Sutter Street Railway. All these bonds have matured. In two of the instances suits for foreclosure have been begun. The committee believes that it would be ruinous to the interests of the bondholders of the United Railroads if the proceedings for the foreclosure of all the mortgages should be conducted upon a hostile basis.

Notes Sold at Home

$3,600,000 of Milwaukee Notes Sold at a Large Saving Principally by Means of Advertising

Several references have been made in this paper to the sale locally by the Milwaukee Electric Railway & Light Company of its recent issue of $3,600,000 five-year, 7 per cent notes. The completion of the sale permits a statement now of the way the plan was carried out and the results secured.

Sales through newspaper advertising by the company were supplemented by a small field sales force working during the early part of the campaign; by circulars mailed to investors already interested in the company and by an initial sale of $400,000 of the notes, negotiated by the management, to one of the Milwaukee banks. These supplementary sales methods, themselves all greatly facilitated by the home newspaper advertising campaign, are credited with selling approximately $750,000 of the issue, leaving a balance of $2,850,000 whose sale is attributable only to newspaper advertising.

The actual selling costs by this method were: Newspaper advertising, $51,525; office expenses, sales commissions, etc., $22,246; with a total of $73,771.

The company had two purposes in selling the securities in the way it did. First, and most important, the company desired to enlist the co-operative interest of home investors in the business. Secondarily, the company desired, if possible, to sell the issue at less than the usual cost of marketing such issues through underwriting syndicates.

The first purpose was achieved to this extent: The notes were sold to 5,458 buyers, of whom 3,690 are resident of Milwaukee, 1,608 residents of other Wisconsin cities and towns—most of them in the Greater Milwaukee district served by the company, and 160 residents of other states. Of the 5,458 buyers, 1,394 are women.

The second purpose was also achieved. At the time the issue was put on the market—December, 1918—the best price that a banking syndicate would probably have felt justified in offering for them would have been 95, or at most 96 per cent of par, leaving the syndicate a margin of 4 or 5 per cent for selling expenses and profit. The actual cost of selling direct, through home newspaper advertising, was $73,771. This represents a saving to the company of $70,228, as compared with a syndicate offer of 96, or of $106,228 as compared with a syndicate offer of 95.

The issue was advertised in fifty-six Wisconsin cities, including Milwaukee. It was sold in 232 cities and towns of Wisconsin, and in eighty-one cities of other states. Preliminary advertising of the issue began Dec. 12, 1918. The notes were placed on sale Dec. 18. The issue was sold in nine months of elapsed time, covering 230 business days, at an average daily rate of $9,696.

Receiver Defaults Interest Payment

Andrew E. Kalbach, receiver of the Second Avenue Railroad, New York, N. Y., has reported to the Supreme Court that about $94,000 interest due on $3,140,000 of receiver's certificates is in default because of insufficient funds. Justice McAvoy stated that "the default of receiver's certificates in interest is the last indication of the inability of the road to earn enough to support a modest capitalization and the present wage scale and material costs." Further the court said: "The report shows a deplorable state of affairs. Stock worthless, bonds, principal and interest defaulted, judgments of tort creditors unpaid, taxes of city and state accumulating, without prospect of liquidation. The receiver must operate the road so long as any means exists or whatever of value is left to its franchise may be lost through the non-user." Justice McAvoy said that the receiver's certificates would lose their priority as a lien if tort judgment were paid out of the funds in the receivers' hands when the interest due on the certificates had been defaulted. He decided, therefore, that the receiver had no funds with which to pay the tort claim.

Chattanooga Lines Running Behind

The receivers of the railway lines of the Chattanooga Railway & Light Company, Chattanooga, Tenn., report $10,400 net earned in September, but call the attention of the court to the fact that expenditures as reported to the court do not cover items for taxes or interest on any indebtedness and do not take into consideration any amount for the services of the receivers or their counsel. No amount is set aside for depreciation of the property, according to the report. The sum expended covers only the cost of operating the property, they state.

Attention of the court is called to an item of $16,818, for maintenance of ways and structures, and an item of $9,781, for maintenance of equipment. The sums set out in connection with these two items aggregate $26,599, which amounts to 34 per cent of the gross receipts for operating the railway department of the defendant company.

The receivers also mention the increased expenses of upkeep of the property. They state that they thought it wise to do necessary repair work and make expenditures as set out before bad weather sets in.

The receivers have taken possession of the Ridgedale and Seventh Street sub-stations and equipment, they state, and are making an appraisal of the property with a view to arriving at a fair and reasonable rent to be charged for the property's use and occupancy by the Chattanooga Railway & Light Company. They request permission to make a separate report on this matter.

Pittsburgh Increase Helpful

Company Doing Better Under Recent Increase, But Figures Indicate Need for Nine-cent Fare

The 7½-cent fare has increased the revenues of the Pittsburgh (Pa.) Railways at a rate that will amount to $2,400,000 a year, J. A. Mead, auditor for the receivers, testified at the hearing during the week ended Sept. 27 of the city's protest against the new fare before the Public Service Commission, sitting in Pittsburgh.

Included in Mr. Mead's testimony was a table of the effects on receipts of four different fares charged by the Pittsburgh Railways since Jan. 1, 1917. They afford an interesting view of the change in the attitude of the public toward the nickel.

Under the old 5-cent fare, in 1917, daily receipts were $36,132. When a 5½-cent fare was instituted on Jan. 22 of that year, receipts fell to $35,662 daily, a decrease of $470. On June 20, 1918, the fare was raised to 5 cents and 7 cents, according to the area in which paid. This increase brought daily receipts up to $41,442, a gain of $5,780. The present 7½-cent rate went into effect on Aug. 1 and in the fourteen days from that time until the two-week strike, average daily receipts were $47,960, another gain of $6,518.

Thus since 1917, it will be seen, the daily revenues of this company have increased $11,828. No increase in fare was made between 1914 and 1919, so that during a five-year period in which average costs in the Pittsburgh district soared 80 per cent, the electric railway managed to swell its revenues only a little more than 30 per cent.

To increase its income this much, it was necessary to raise fares more than 50 per cent, for although the present ticket rate is 7½ cents the cash fare is 10 cents.

PRESENT FARES INADEQUATE

The 7½-cent fare has increased revenues more than was generally expected, but it has proved inadequate, according to Mr. Mead's figures. The company will face a deficit of $947,000 at the end of 1920, at the present rate. His estimates provide for payment of $3,500,000 in fixed charges, many of which have been defaulted in the past year.

It is upon this fixed charge item that company and city authorities split. City engineers on the physical valuation board which recently completed its work place the value of the company's property at $48,000,000. Representatives of the company on the board place the valuation at $70,000,000.

The city maintained at the hearing that the present fare is sufficient to return 7 per cent on the $48,000,000 its engineers hold that the properties are worth, and allow more for depreciation and maintenance than the company has done before.

Witnesses for the company, however, contend that the need for a 9-cent fare is indicated by their figures. Both sides agree that the War Labor Board award of a 6-cent increase in wages means an addition of four-tenths of a cent to the fare.

Separate Operation in Brooklyn

The lines of the Brooklyn (N. Y.) City Railroad have been separated from the other lines of the Brooklyn Rapid Transit Company under an order made on Sept. 29 by Federal Judge Julius M. Mayer.

Under the ruling of the court twenty-six surface lines have been returned to their owners, the Brooklyn City Railroad, which leased the lines to the Brooklyn Heights Railroad, the surface operating company of the Brooklyn Rapid Transit System.

Judge Mayer made his ruling after Carl M. Owen, attorney for Lindley M. Garrison, the receiver of the company, had told the court that the Brooklyn Rapid Transit System could not raise the $300,000 rental for the lease of the lines from the Brooklyn City Railroad and that the Brooklyn Rapid Transit Company was in a quandary how to proceed.

Philadelphia Net Declines

The income account statement of the Philadelphia (Pa.) Rapid Transit Company as released to the press on Oct. 20 is as follows:

September	1919	1918
Operating revenue	$3,030,930	$2,679,001
Operation and taxes....	2,055,298	1,686,461
OPERATING INCOME	$975,632	$992,539
Non-operating income ..	42,005	49,886
GROSS INCOME	$1,017,638	$1,042,425
Fixed charges	812,279	804,804
NET INCOME	$205,358	$237,621
Nine Months Ended Sept. 30	1919	1918
Operating revenue	$25,995,430	$23,123,556
Operating and taxes....	17,888,629	15,089,049
OPERATING INCOME	$8,106,801	$8,034,507
Non-operating income ..	396,095	470,277
GROSS INCOME	$8,502,896	$8,504,785
Fixed charges	7,295,944	7,211,062
NET INCOME	$1,206,952	$1,293,722

Results in Chicago in September

A recent report submitted to the Public Service Commission of Illinois showed for the Chicago Surface Lines the following earnings and expenses for the month of September over a period of years:

	Gross Receipts	Operating Expenses	Net
1919....	$4,190,527	$3,053,265	$1,119,672
1918....	2,941,251	2,286,222	620,442
1917....	2,916,967	1,902,834	961,531
1916....	2,885,825	1,800,628	1,035,902

Revenue passengers for September, 1919, increased 2½ per cent over September, 1918.

The Chicago Elevated Railways also submitted a report showing that revenues under an 8-cent fare have increased on a basis of $2,800,000 a year, while the recent wage schedule is expected to cost $2,500,000 annually. Six months of operation on a 6-cent fare gave the elevated lines $600,000 more revenue, but during the same period expenses were increased about $1,150,000.

Since Aug. 8 the 7-cent fares have been in force on the Chicago Surface Lines and 8-cent fares on the Chicago Elevated Railways.

Foreclosure Sale and Abandonment

A force of laborers was put to work on Oct. 25 taking up the rails of the Pascagoula Street Railway & Power Company, thus terminating railway service between Pascagoula and Moss Point. The property of the Pascagoula Street Railway & Power Company was sold under foreclosure in September to E. J. Ford, and he recently sold the same to A. Patterson and associates. The water, light and ice plants will be remodeled and operated, but the railway will be abolished, the rolling stock, etc., being sold.

Financial News Notes

Shore Line Abandons Branch.—The Shore Line Electric Railway, Norwich, Conn., has discontinued service between New Haven and Saybrook.

New York City Company Quits.—The Brooklyn & North River Railroad, operating between the borough of Brooklyn and the borough of Manhattan over the Manhattan Bridge, New York, ceased operations at midnight on Oct. 4. The city is running buses over the routes of the abandoned lines.

Foreclosure Suit Commenced.—The Guaranty Trust Company, New York, N. Y., has brought foreclosure suit as trustee under a mortgage made to secure an issue of bonds of the Broadway & Seventh Avenue Railroad, part of the New York (N. Y.) Railways system. Job E. Hedges, receiver for the New York Railways, is named as defendant.

Wants Money for Interest Payment.—Transit Construction Commissioner Delaney, of New York City, asks an $8,000,000 appropriation to pay the interest on the city's $180,000,000 investment in rapid transit lines. A total of $250,000,000 will be invested by 1921. The first estimate of $163,000,000 made in 1913 is increased by $87,000,000 because of higher costs. The contribution of the Interborough Rapid Transit Company to the cost of the dual subway system will be $86,680,000 by the close of 1920, and the Brooklyn Rapid Transit Company's share will be $113,850,000.

Would Abandon Goshen Service.—A hearing on the petition of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., to discontinue its Goshen City service was set for Oct. 22 by a member of the Indiana Public Service Commission. City service has been in effect in Goshen about twenty years. The company declares that the expenses exceed receipts. Authority is sought to tear up the tracks and remove the equipment of the Lincoln Avenue-Eighth Street line. The City Council a year ago refused to permit the company to discontinue its Goshen service and threatened then that if the city service were abandoned the operation of interurban cars within the city would not be permitted. The company then appealed to the Public Service Commission.

Foreclosure Suit Against Interurban.—The Guaranty Trust Company, New York, N. Y., trustee, has brought foreclosure proceedings against the Kansas City-Western Railway in the Federal Court at Topeka, Kan., following the default in September of interest on first mortgage bonds. A plan of reorganization of the Kansas City-Western Railway is said to have been approved by practically all of the bondholders. Under this plan the bonded indebtedness will be reduced and a substantial sum provided for improvements. Officers of the company take the position that under present conditions, hope for profits is out of the question, and that the best interests of the bondholders demand that as quickly as possible the company be placed on a basis where it will be giving the kind of service that will bring in profits.

Traffic and Transportation

Seven Cents in Washington

Commission Grants Increase to All Three Companies—Four Tickets to Cost Twenty-Five Cents

The Public Utilities Commission of the District of Columbia on Oct. 18 issued an order authorizing the Washington Railway & Electric Company, the Capital Traction Company, and the Washington-Virginia Railway to raise cash fares on their lines from 5 cents to 7 cents. The order provides for the sale of four tickets for 25 cents, making the ticket rate 6¼ cents. The order further provides for the issuance of free transfers between the lines of the same company. A 2-cent charge will be made for inter-company transfers, as under the present arrangement. The higher fare became effective on Nov. 1.

The ruling came as the culmination of repeated attempts to solve the electric railway difficulties in the national capital. The Washington Railway & Electric Company asked the commission for a 7-cent fare, declaring that it could not pay dividends on its investments unless this increase was granted. The Capital Traction Company and the Washington-Virginia Railway, however, asked for no increase, and the additional fare will enable these two companies to increase their earnings even beyond those of last year.

The commission based its conclusion as to the amount of the increase to be granted on its contention that the company is entitled to earn a 6 per cent return on its investment. At the hearings recently the company introduced expert testimony tending to show that under present conditions at least 8 per cent return should be allowed. The commission refused to accept this view.

The commission admits in its order that it believes the service could be improved by rerouting of cars on some lines. It states that this question will be taken up separately in the near future.

The commission states that it has not yet completed the valuation of the railway properties. It points out that the valuation cases, covering the properties of the companies, so far as the submission of evidence and argument is concerned, were completed in April, 1919. The commission is not yet prepared to issue formally its findings in the manner contemplated by all. Basing its findings upon the data already in its hands, however, it puts a tentative value on the property of the Washington companies for electric railway purposes of approximately $14,175,000. The net capital expenditures since July 1, 1914, up to and including April 30, 1919, as shown by the books of the three companies, amount to $744,427.36.

The commission finds that the introduction of the zoning system as proposed by William F. Ham, president of the Washington Railway & Electric Company, would be inadvisable at this time. It states that it has given careful consideration to the general question of the zone system, as well as to the particular one submitted in the present case. While appreciating the general benefit to be derived from such a system, the commission concludes that from a purely civic or community standpoint, there is great objection to upsetting the practice established by Congress and in force for many years, and under which the numerous suburban sections of the district have been developed.

The local union of the Amalgamated Association of Street & Electric Railway Employees, composed of the carmen of the Washington Railway & Electric Company, is expected to insist on the wage increase of 3 cents an hour recently promised by Mr. Ham.

Baltimore Charges Seven Cents

Maryland Commission Grants Rate Increase—Four Tickets Are Now Sold for Twenty-Six Cents

The United Railways & Electric Company, Baltimore, Md., began charging 7-cent cash fare on Oct. 1 under authority granted by the State Public Service Commission. The company was ordered to sell tokens at the rate of four for 26 cents, thus making the ticket rate 6½ cents per adult fare. There was no change in the fare for children, this remains at 4 cents. There also was no change in the rate for commutation tickets. The commission's order was referred to briefly in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 4.

The installation of the increased fare caused little trouble, as the company had made careful preparations for the change. Every effort was made to provide the riders with the opportunity to take advantage of the 6½-cent fare. Conductors were supplied with quantities of the metal tokens and nearly 150 selling agencies have been established throughout the city and suburbs, in stores, banks, and other business places, where they are handled by the proprietors without compensation for the convenience of the public. On the first day of the higher rate a large proportion of fares was paid with the metal token, showing that the public was thoroughly alive to the advantage to be gained through buying in quantities rather than paying the 7-cent straight fare.

On account of a limited supply of tokens some restriction had to be placed upon the number sold to each purchaser, both by conductors and at the sales agencies. Conductors were instructed to sell only four tokens to each purchaser.

The Public Service Commission refused to extend the city zone on the car lines to the present city limits. After making a careful study of the proposition it decided that such an extension of one fare to the new city limits would mean a loss in revenue of approximately $1,176,000 a year, which would be within $200,000 of the amount which it was estimated would be yielded by the new fare, and would require the addition of another half cent, or a straight 7-cent fare.

The commission's order pointed out that, if there had been no increase in the rate from 5 cents to 6 cents, the company would have sustained a deficit of $2,108,269 for the year, or $808,142 short of being able to pay the interest on its bonds and notes, which, it was stated, showed the reasonableness of the increase and the utter unreasonableness of the demand for a return to the 5-cent fare.

Detroit United Enjoined

Barred from Charging Two-Cent Rate on Its Interurban Lines—Appeals to Supreme Court

The Detroit (Mich.) United Railway and its subsidiaries were restrained from charging increased rates of fare on their interurban lines by a temporary injunction issued by Judge Howard Weist of the Ingham County Circuit Court on Oct. 6. The action was taken upon petition of A. J. Grosbeck, Attorney General of Michigan, who held that the Detroit United lines were excluded from the provisions of the law recently passed by the State Legislature authorizing increases for lines whose gross earnings do not exceed $8,000 per mile.

LEGISLATIVE INTENT

The act allows such roads, that is, those earning less than $8,000 per mile, to charge rates of 2½ cents per mile on their interurban lines. The legislators apparently intended to bar the Detroit United from collecting the higher fares by inserting the proviso regarding revenue. The act, which is poorly drawn, contains many ambiguous clauses. The company claimed that its earnings were less than the stipulated amount and that it was consequently entitled to charge rates in accordance with the terms of the new law.

It, therefore, put a schedule of rates into effect on Aug. 14 by which interurban fares were raised to 2 cents a mile. The increase was referred to at length in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 16, page 360.

Judge Weist in his opinion upheld the validity of the act, but denied that it applied to the Detroit United Railway. He ruled that the company's earnings exceeded $8,000 per mile.

He also held that the State Legislature's power to abrogate franchises was not lost by delegating power to local municipal authorities to fix rates in franchise rights granted to street or interurban railways, but that this power may be exercised at any time by the Legislature.

The company filed a petition for permission to charge the increased fares pending a Supreme Court decision, the petition also stating the company's intention to appeal from the Ingham Circuit Court ruling. It offered to furnish a bond for the return of the excess fares collected during the time which must elapse before a final decision in the rate litigation could be reached, the refunds to be made in case the injunction was sustained by a Supreme Court action. This petition was denied by Judge Weist. Attorneys for the Detroit United stated that the return to the former rates would reduce the company's revenue $1,000 a day.

APPEAL MADE TO HIGHER COURT

The Michigan Supreme Court refused to dissolve the injunction pending argument of the main case as to whether or not the company should be entitled to the higher fares. Appeal to the higher court was made after Judge Weist had decreed that the temporary injunction should be made permanent.

In conjunction with the company's appeal to dissolve the permanent injunction, company attorneys again made a plea for permission to continue charging the increased fares and to issue rebate slips to passengers, to be redeemed in case the present injunction were sustained by the higher court. This plea also was denied. It was agreed that the appeal from Judge Weist's decision should be heard as expeditiously as possible.

Brooklyn Surface Lines Segregated

Brooklyn Rapid Transit System Returns Brooklyn City Railroad to Owners—Fares Up, Transfers Abolished

Judge Julius M. Mayer in the United States District Court on Oct. 17 signed an order directing the Brooklyn (N. Y.) Rapid Transit Company to return to their owners the lines of the Brooklyn City Railroad. Judge Mayer acted because Lindley M. Garrison, receiver for the Brooklyn Rapid Transit Company, was unable to meet rental payments which were due. The financial aspects of the case are discussed elsewhere in this issue of the Electric Railway Journal.

The return of the leased lines means the virtual break-up of the surface lines of the B. R. T. system. Twenty-six lines were leased by the B. R. T. from the Brooklyn City Railroad. These routes, which traverse the most populous sections of Brooklyn, made up approximately 75 per cent of the B. R. T. surface system. Under the lease they were operated as a unit, along with the lines of other B. R. T. subsidiaries. The uniform fare on all of the lines was 5 cents, with free or 2-cent transfers.

Many Transfers Abolished

The most significant effect of the break-up is the abolition of many transfer points and the installation of higher fares. A number of the lines were built in sections under separate franchises, each franchise providing for a 5-cent fare. The Brooklyn City Railroad is free to collect a nickel fare for a ride in each of these zones. In several instances the company is legally entitled to collect an aggregate charge of 20 cents or more for a ride on a single line. As a matter of fact, 10 cents is the maximum charge now made in any case.

Independent operation of the lines began on Oct. 19. H. Hobart Porter, general manager of the Brooklyn City Railroad, had previously announced comprehensive changes in routing. The principal changes in the rate of fare and in the routing of cars are as follows:

> A 10-cent fare replaces a 5-cent fare on nine lines.
>
> Twenty changes in routes are made by the Brooklyn City Railroad and eleven by the Brooklyn Rapid Transit Company.
>
> Service on three lines of the Brooklyn City Railroad is discontinued.
>
> Transfer points numbering 450 between the lines of the B. R. T. and the Brooklyn City Railroad are abolished entirely.
>
> Transfers between the lines of the Brooklyn City Railroad are abolished entirely except at fifteen points where they are made obligatory by franchise provisions.

The last change means that passengers transferring from one line of the Brooklyn City Railroad to another must pay a second 5-cent fare instead of a 2-cent transfer charge. The number of points thus affected is approximately 150. Thus the total number of transfer points abolished as a result of Judge Mayer's order is in the neighborhood of 600.

The beginning of independent operation resulted in considerable confusion. Many riders were unfamiliar with the changes in routing. Others objected to paying 10 cents instead of a nickel and walked to zone limits. Still others insisted that they be given transfers. In such cases conductors issued transfers for 2 cents each, but when these were presented on cars of the other company they were not honored. Officials of the company expressed themselves as well satisfied with the initial results of independent operation.

Public Service Commissioner Lewis Nixon of the First District issued a statement on Oct. 20 in which he charged Mayor Hylan with responsibility for the B. R. T. break-up, because he refused to consent to an increase in fare of a few cents to tide the company over its present difficulties. William M. Calder, United States Senator from New York, also issued a statement arraigning the Mayor for bringing about the disintegration of the Brooklyn surface lines.

Mayor Hylan was equally outspoken in his criticism of the arrangement whereby fares were raised, as he contended, in violation of law. He directed Grover Whalen, commissioner of plant and structures, to take steps looking to the establishment of municipal bus lines to run in competition with the two-fare routes.

Under Commissioner Whalen's direction four such bus lines began operation on Oct. 27. On the first day of business the buses carried large numbers of persons, especially during the rush hours. The fare is 5 cents.

Officials of the Brooklyn City Railroad intimated that an injunction would be sought to bar the bus competition. Inspectors for the company checked up the number of passengers carried by the buses.

No Rehearing on St. Louis Fares

Commission Denies City's Motion—Governor Gardner Opposes Move to Restrict Power of Commission

The Public Service Commission of Missouri has denied the motion of the city of St. Louis for a rehearing of its recent order permitting the United Railways of St. Louis to charge an 8-cent cash fare and a 7-cent token fare. The case will be taken to the Circuit Court in St. Louis, according to Associate City Counselor Hamilton, and thence, if necessary, to the Missouri Supreme Court and the United States Supreme Court. A petition has already been filed in the Circuit Court asking for a writ of certiorari.

Opponents of the increased fare have received another setback in the shape of Governor Gardner's refusal to call a special session of the Legislature to consider a bill restricting the Public Service Commission's authority to cities with less than 50,000 population and giving each city the right to regulate local public service corporations. Governor Gardner announced that he had given no thought to the subject of the special session and would not consider calling one.

One of the effects of the increased fares on the county lines has been to stimulate greatly passenger traffic on suburban trains running into St. Louis from Maplewood, Meramac and other towns. The fare on the steam roads is from 2 cents to 9 cents lower than on the electric lines and several coaches have had to be added to each train in order to take care of the enlarged business. Electric railway officials admit a noticeable falling off in traffic on the county lines, but feel that as soon as tokens come into general use, the number of passengers will return to normal, since the electric lines give frequent service and the steam roads are not able to run more than one train an hour except at the rush hours.

The necessity of paying car fares with a nickel and two pennies has caused a considerable slow-up in schedules. On the longer runs cars are coming in from five to ten minutes late. This will be eliminated when the new supply of tokens is obtained.

Fare Decision Stands

New York State Court of Appeals Denies Motion for Readjustment in Quinby Case

The New York State Court of Appeals on Oct. 21 denied a motion for a reargument of the Quinby fare case, in which it decided, in April, 1918, that the Public Service Commissions lack power to raise a rate of fare fixed by franchise agreement. The court's refusal to reopen the case was in effect a reaffirmation of its previous decision. This decision was analyzed at length in the issue of the Electric Railway Journal for April 13, 1918, pages 696-7.

The New York State Railways, Rochester, the company directly affected by the court's decision in 1918, filed a motion for a rehearing some time ago. The attempt to have the case reopened was backed by the public service commissioners of both the first and second districts. Commissioner Nixon of the first district filed with the court a brief in which he expressed the view that the commission is empowered to regulate fares as delegated by the Legislature in section 141 of the State Railroad law, despite provisions which may be inserted in franchise grants by municipal or other local authorities. James L. Quackenbush, attorney for the Interborough Rapid Transit Company, New York, and the New York Railways, also filed briefs asking the court to reopen the case.

In refusing to entertain the motions the court said:

> This case was decided eighteen months ago by holding that the Public Service Commission has not been given power, on the application of the railroad to regulate and increase rates of fare on the street railroads when such rates were fixed as conditions to the consent of the local authorities to the operation of the roads.

The court's action is seen as an important factor in determining the status of fare cases not only in Rochester but also in New York and other cities where franchise provisions impose a maximum rate. Representatives of the Public Service Commissions and of the traction companies, as well as city officials, have expressed themselves as satisfied with the outcome of the case. In commenting on the situation Terrence Farley, counsel for the Public Service Commission for the First district, contended that the court's stand refuted the claim of the New York municipal authorities that the commission must keep its hands off all contracts between railroad and municipalities. He said in part:

> The Public Service Commission does not look upon the opinion of the Court of Appeals as a defeat. We intend to fight and we believe we ultimately will establish that the commission and not the city is the proper authority to regulate fares.

Judge Ledyard P. Hale, counsel for the second district public service commission, after studying the decision, said that in his opinion the decision only affects rates of fare in Rochester. He said the decision in the International Railway case several months ago, in which the court held that the legislature had power to permit fare increases, was directly in conflict with the decision in Rochester fare case.

More Court Intervention

Justice Finch Enjoins Commissioner Nixon in Queens Fare Case—North Shore Increase up for Review

Supreme Court Justice Finch on Oct. 4, issued an injunction restraining Commissioner Nixon and the receivers for the New York & Queens Traction Corporation from taking any action in the matter of an increased rate of fare. Justice Finch had previously issued a writ of prohibition in the case.

The decision also virtually restrains the receivers of that corporation, William R. Begg and Arthur C. Hume, from increasing fares, for it affirms the assertion of the corporation counsel to the effect that the contract of the city with the South Shore Traction Company, the Manhattan & Queens Traction Corporations predecessor in interest, contained a provision that 5-cent fares only should be charged, and set forth that, in case of any violation of this provision "the contract may be forfeited at the option of the city."

The corporation counsel acted after learning that the receivers had filed an application with the Public Service Commissioner for a rehearing on the matter of the corporation's application for the right to increase its fares. He secured an alternative writ, requiring the commissioner and receivers to set forth why an injunction should not be granted, or to submit to the operation of a permanent injunction forthwith. This writ carried with it a temporary restraining order which held matters in *status quo* pending the hearing before Justice Finch and his determination. The court said:

> The city gave certain rights and privileges to the South Shore Traction Company. In return, among other things, it required that the fare for one passenger upon said railroad was not to exceed 5 cents, and it was set forth as a franchise provision that in case of any violation of this requirement the contract might be forfeited at the option of the city.

Justice Finch then reviewed the statements of the receivers with regard to the need of an 8-cent fare beyond a certain point in Queens, and made mention of the contention of the Public Service Commission that no injunction was necessary. With regard to this assertion Justice Finch sets forth:

> The commissioner fails, however, to deny the all-important allegation that he does claim jurisdiction to increase the fare. This is important in view of the conceded fact that he assumed jurisdiction and granted an increase of fare in the case of the application of the New York & North Shore Traction Company.

Commissioner Nixon set forth that he intended to recommend to the Board of Estimate & Apportionment, if it should appear that action was necessary, that it grant such relief as in its judgment the railroad corporation seemed entitled to. As to that point Justice Finch held that an injunction could not issue.

TO REVIEW NORTH SHORE CASE

A writ of certiorari, obtained by Corporation Counsel Burr from Justice Gavegan of the Supreme Court, calling for a review of the order of Commissioner Nixon permitting the New York & North Shore Traction Company to establish the zone fare system, was served on Oct. 27 on Mr. Nixon. The writ directs him to file an answer within twenty days.

Mr. Burr said the matter would be presented directly to the Appellate Division and that a decision would be obtained as speedily as possible. His application to the court stated that Mr. Nixon had no authority to grant the order; that in doing so he violated the rules of law to the prejudice of the people, and that he acted without sufficient proof and on insufficient facts.

The order authorizing the company to establish four zones, in which from 6 cents to 11 cents could be charged for a continuous ride, was signed by Mr. Nixon on Aug. 28 and the extra charge has been in force ever since. No comment was made by the commission on the fact that the franchises of the company limited the fare to 5 cents.

Commission Overruled

Illinois Judge Reverses Order Which Granted a Seven-Cent Fare on the Chicago Surface Lines

Judge J. E. Smith, of the Sangamon County Court at Springfield, Ill., on Oct. 2 handed down an order reversing the ruling of the State Public Utilities Commission permitting the Chicago Surface Lines to charge 7-cent fares. The court's action was based on the ground that the commission had refused to allow the city's attorneys time to submit evidence as to valuation of the railway property.

The company on Aug. 8 last raised fares from 5 cents to 7 cents under authority granted by the commission after a short hearing. At the same time fares on the Chicago Elevated Lines were raised to 8 cents. The latter company is not affected by Judge Smith's ruling.

President L. A. Busby, of the Surface Lines, at once announced that he would take an appeal to the State Supreme Court. The city authorities opposed the motion for an appeal, declaring that they would insist that the rate of fare be fixed at 5 cents until a proper showing was made before the commission. Arguments on the question of valuation were begun before the commission in Chicago on Oct. 3. Judge Smith on Aug. 3 allowed the appeal to the higher court.

The Public Utilities Commission has refused to act on the court's order, and the fare will consequently remain at 7 cents pending the appeal to the Supreme Court. This will require at least two months. The city of Chicago has demanded that the company refund the amount collected from passengers in excess of 5 cents.

The Surface Lines management contends that an important victory has been won in the ruling of Judge Smith that the contract with the city, calling for a 5-cent fare, is not binding as against the authority of the State Commission to allow reasonable rates. The opinion says in part:

> The court recognizes that valuations, income and expenses are proper and necessary to be considered in determining the just and reasonable rates to be charged, and it seems that before this evidence was produced the order changing rates was premature. A 5-cent fare has been in force. It is a matter of common knowledge that many have contended that there should be a 3-cent fare. The condition is not met by finding there is an increase in wages or expenses. What is there that demands a 5-cent or a 7-cent fare? A valuation upon which dividends are to be paid is essential before the necessity of an increase in fares can be determined.

The court thereupon entered an order that the ruling of the commission be reversed and the cause remanded with directions to the commission to admit evidence as to valuations of the properties, the amount of expenditures, and to enter proper findings and order thereon.

Mr. Busby declared that the evidence before the commission showed that the increase in wages and other expenses amounted to more than the entire sum received during the preceding year by the companies for interest and fixed charges. This meant, he said, that, on the basis of a 5-cent fare, the companies could not pay operating charges and could not continue to meet the present wage scale.

Transportation News Notes

Eight Cents in Manchester.—Eight-Cent cash fares went into effect on the lines of the Manchester (N. H.) Street Railway on Sept. 22. Tickets are now sold in books of ten for 75 cents. Books of forty tickets cost $3.

Ten-Cent Fare Again Suspended.—The Public Service Commission of Massachusetts has again suspended the proposed 10-cent fare of the Middlesex & Boston Street Railway, Newtonville, Mass. The commission is considering the introduction of the zone system on the company's lines.

Ten-Cent Fares for West Virginia Line.—The Public Service Commission of West Virginia has authorized the West Virginia Traction & Electric Company, Wheeling, to charge a 10-cent fare between Wheeling and Elm Grove. Books of twenty-five tickets will be sold for $2, making the ticket rate 8 cents.

Seven-Cent Fares in Wilmington.—The Wilmington & Philadelphia Traction Company, Wilmington, Del., has been authorized by the city Board of Public Utility Commissioners to charge 7-cent fares on its Wilmington local lines. The company in its application asked for 8-cent fares. The higher fares have already gone into effect, four tickets being sold for 25 cents. The fare was formerly 6 cents. The company must submit to the board within three months a statement of the exact physical valuation of the property, under penalty of revocation of the board's order granting the increase.

Interchange of Transfers Stopped.—Commissioner Nixon has granted the application of the New York City Interborough Railway, a part of the Third Avenue surface system, and the Interborough Rapid Transit Company, for permission to discontinue the joint traffic arrangement which has existed between the two companies upon the basis of an 8-cent fare. Under this arrangement inter-company transfers were given at seven points in upper Manhattan and the Bronx. The companies stated in their application that an 8-cent fare divided equally between the two was insufficient and that each passenger so carried was carried at a loss.

Jitneys Barred in Dallas, Tex.—The case of the State of Texas against the City Commissioners of Dallas, wherein the constitutionality of the ordinance enacted by the city of Dallas regulating the jitneys out of existence was attacked, has been dismissed in the District Court of Travis County. The state had obtained a temporary injunction restraining the city of Dallas from enforcing the jitney ordinance which prohibited the jitneys from operating on or upon certain downtown business streets in the city of Dallas. When the State Supreme Court decided what was regarded as a companion case adversely to the jitney men, it was decided to dismiss the case in the Travis County District Court. This dismissal ends all Dallas jitney litigation.

Personal Mention

Mr. Hedley Made President

Operator of Proved Ability Has Been Made Chief of New York Rapid Transit System

Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, New York, N. Y., has been elected president to succeed the late Theodore P. Shonts. He will continue to perform the duties of general manager.

Mr. Hedley is very well known in the electric railway and steam railroad circles in the East. He is a former president of the New York Electric Railway Association and of the New York Railroad Club, and has been a regular attendant at the conventions of the American Electric Railway Association since he foresook the steam railroad operating field.

FRANK HEDLEY

The history of the Hedley family is probably without parallel in railroad development. It includes men of four generations, all of whom have made important contributions to the railroad art. William Hedley, the pioneer and great, great uncle of the new president of the Interborough Rapid Transit Company, built "Puffing Billy," the first successful railroad locomotive in the world to run on smooth rails. Barnabas Hedley, a nephew to William Hedley, was the first superintendent of the New Castle & North Shields Railroad. His son, James, the father of Frank Hedley, also took an active part in the development of steam railroading in England. James Hedley was superintendent of the York & North Midland Railway, opened several new railroad lines in England and frequently acted as locomotive driver for Queen Victoria and other members of the royal family.

Frank Hedley, the subject of this sketch, was born at Maidstone, Kent, England, in 1864. He received a common school education and learned the trade of machinist at Maidstone. He came to this country in 1882 and the first two years was a machinist in the Jersey City shops of the Erie Railroad, following which he was employed in the same capacity in the New York Central & Hudson River Railroad shops for a few months. He next became a machinist with the Manhattan Elevated Railway, New York, and in 1885 was made assistant general foreman in the locomotive department of the company.

In 1889 he was appointed master mechanic of the Kings County Elevated Railroad, Brooklyn, resigning in 1893 to become general superintendent of motive power and rolling stock for the South Side Elevated Railroad, Chicago. A few months later he was appointed general superintendent of the Lake Street Elevated Railroad, which was the first elevated railway to adopt electricity as motive power.

Less than two years after going to Chicago he was appointed consulting engineer by the late Charles T. Yerkes in addition to the duties of the other offices, and retained this position throughout the construction of the Northwestern Elevated and the Chicago Union Loop. He organized the operating forces of these three elevated systems and had charge of the operation of the lines as general superintendent.

In January, 1903, Mr. Hedley was appointed general superintendent of the Interborough Rapid Transit Company and the following year became general manager. On July 1, 1908, he was elected vice-president and general manager of the company, being responsible for the operation of all the elevated and subway lines in the boroughs of Manhattan and the Bronx and the subway extension to Brooklyn.

When the surface lines of the old Metropolitan Street Railway, New York, passed through receivership and foreclosure to the New York Railways and to financial interests identified with the Interborough Rapid Transit Company, Mr. Hedley was elected vice-president and general manager of the company in addition to his duties with the Interborough Company.

Stephen Crute, who for the last two years has been general manager of the Danbury & Bethel Street Railway, Danbury, Conn., has resigned to take an executive position with the National Acceptance Corporation, Boston, Mass.

R. A. Leussler, who has been assistant general manager of the Omaha & Council Bluffs Street Railway, Omaha, Neb., since 1906, has been appointed general manager of the company, following the resignation of W. A. Smith, as noted elsewhere in this issue of the ELECTRIC RAILWAY JOURNAL.

John H. Pardee, president of the American Electric Railway Association, has started on a trip to Manila, P. I., for the purpose of visiting the Manila Electric Railway & Light Company and other interests of the J. G. White Management Corporation. He will be absent from the home office in New York for at least three months.

W. A. Smith, first vice-president and general manager of the Omaha & Council Bluffs Street Railway, Omaha, Neb., has resigned from the general managership, retaining the vice-presidency. He will be in charge of the affairs of the company until a successor shall have been elected to succeed the late Frank T. Hamilton. Mr. Smith has been general manager of local traction company since the days of horse cars.

Charles E. Elmquist has resigned as solicitor of the National Association of Railway & Utilities Commissioners. He will return to St. Paul, Minn., where he will resume the practice of law as a member of the firm of Clapp & Macartney.

Mr. Sullivan at Tacoma

Leaves Mahoning & Shenango System to Become General Manager There for Stone & Webster Properties

Richard T. Sullivan, general manager of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has resigned to accept a position with Stone & Webster as general manager of their properties at Tacoma, Wash. Mr. Sullivan succeeds Louis H. Bean, resigned. The system of which Mr. Sullivan will be in charge comprises the Puget Sound Electric Railway, the Tacoma Railway & Power Company, the Pacific Traction Company, and the Tacoma district of the Puget Sound Traction, Light & Power Company.

R. T. SULLIVAN

Mr. Sullivan became connected with the Mahoning & Shenango Railway & Light Company in 1916, and was appointed general manager the following year. He was born in Newton, Mass., where he attended public school. He later attended the Massachusetts Institute of Technology and Harvard University, receiving the degree of electrical engineer from the latter institution in 1906. He subsequently became connected with the Stone & Webster Management Association.

In 1908 he was appointed general superintendent of the city and interurban railways of the Houston (Tex.) Electric Company, retaining that position for eight years. During that time he was engaged in several investigations for Stone & Webster which involved extended trips to the principal cities of the North and East as well as to the Pacific Coast. He resigned from his position at Houston to join the Mahoning & Shenango system as manager of railways.

Leroy O. Gordon, has resigned as general manager of the Jackson Light & Traction Company, Jackson, Miss. Mr. Gordon will join the engineering department of the American Public Utilities Company, Grand Rapids, Mich. He was appointed general manager of the Jackson Light & Traction Company in 1916. Mr. Gordon entered the employ of the General Electric Company in 1902, remaining with the company for ten years. He resigned in 1912 to take the position of general manager of the Valparaiso (Ind.) Lighting Company.

Herbert D. Flagg, formerly a captain of Coast Artillery, has been appointed chief engineer for the Public Service Commission of the State of Washington, succeeding D. F. McCurrach, resigned.

Frederick T. Royce has relinquished his position as general manager of the Brooklyn (N. Y.) Rapid Transit Company. Mr. Royce will act hereafter in an advisory capacity to Receiver Lindley M. Garrison on questions of finance and administration.

William S. Menden, assistant general manager of the Brooklyn (N. Y.) Rapid Transit Company, has been appointed general manager of the company by Lindley M. Garrison, receiver. Mr. Menden was formerly assistant to Timothy S. Williams, president of the company.

Edward Dana, who became acting general manager of the Boston (Mass.) Elevated Railway following the resignation of C. D. Emmons, now president of the United Railways & Electric Company, Baltimore, Md., has been appointed general manager of the company at Boston. Mr. Dana was the subject of a biographical sketch in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 16, 1919, page 364.

Charles H. Jones, who succeeds E. J. Blair as electrical engineer of the Elevated Railways of Chicago, has spent practically all of his time, since completing his course at the Armour Institute of Technology in 1909, with his present employer. He started in as a storage-battery maintainer, and worked up to substation operator, line foreman, general foreman of electrical construction, assistant electrical engineer and finally to acting electrical engineer during Mr. Blair's term in the army. On returning to the Elevated Railways, Mr. Blair was appointed organization engineer and Mr. Jones became electrical engineer of the company.

M. G. Stratton, general manager of the Shore Line Electric Railway, Norwich, Conn., has resigned. Mr. Stratton joined the company two years ago after being connected with the firm of Sanderson & Porter, New York engineers, since 1913. Before his association with Sanderson & Porter he was general manager of the Northumberland County Gas & Electric Company, Sudbury, Pa., for two years. He was graduated from Cornell University with the degree of Electrical Engineer in 1891. For the next two years he was connected with the New York Edison Company and for the following four years he acted as superintendent of the Lawrence (Mass.) Gas Company. He has been connected at one time or another in various capacities with several other public utility companies in the East.

Colonel T. H. Dillon, formerly of the Engineers Corps, U. S. Army, has been appointed professor of electrical engineering of the Massachusetts Institute of Technology, where he will make a specialty of instruction in the problems of electric railways, including the electrification of steam railroads, and in the problems of power transmission. Colonel Dillon is a graduate of West Point in 1904 and has served in the Engineers Corps in Cuba, the Philippines, in Panama, and in this country. In 1918 he went to France as colonel of the 37th Engineers, a notable electrical and mechanical engineering regiment, and in France was deputy chief engineer of the First Army of the A. E. F. during the St. Mihiel, Aisne-Marne, and Argonne-Meuse campaigns.

Mr. Seely, General Manager

Goes to Youngstown to Direct Mahoning & Shenango System, Succeeding Richard T. Sullivan

Garrett T. Seely, assistant general manager of the Metropolitan West Side Elevated Railway and the Northwestern Elevated Railroad, Chicago, Ill., has been appointed vice-president and general manager of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. Mr. Seely succeeds Richard T. Sullivan as general manager of the Mahoning & Shenango system.

Mr. Seely was born in 1876 at Oswego, Ohio. Following his graduation from the University of Illinois in 1899 he was employed for a time by the Atchison, Topeka & Santa Fe Railroad. In 1900 and 1901 he was engaged in engineering work on track elevation in Chicago. For the next seven years he served as engineer of maintenance of the South Side Elevated Railroad, Chicago.

G. T. SEELY

He remained with the company for several years, becoming assistant general manager and later vice-president and general manager. He resigned in 1911 to become assistant general manager of the consolidated system of Chicago elevated railways. He is a vice-president of the Transportation & Traffic Association of the American Electric Railway Association and a member of the Western Society of Engineers.

Colonel Blair Returns to Chicago

E. J. Blair who served during the war first as captain and finally as lieutenant-colonel in the Engineer Corps, has returned to the Chicago (Ill.) Elevated Railways and has the title of "Organization Engineer." In his present position, his task is to develop and carry out a systematic analysis of the company's operations in all departments, and to go into every detail of the expenditure of money. It is expected that he will apply the experience gained in army life to elevated railway affairs, with a view to bringing about economies and increasing efficiency. The department of which Mr. Blair is the head is a new one.

Before going into the United States Army Mr. Blair was electrical engineer for the Elevated Railways and up to that time had been with the company since his graduation from Cornell University in 1905. Before the consolidation of the several elevated companies in 1911 he was employed in various capacities by the Metropolitan West Side Elevated Railway, for the last two years of its separate existence, being its electrical engineer. Before the war he was very active in the work of the American Electric Railway Engineering Association. He served on technical committees of the association, and also was particularly helpful to the local company section in Chicago. He early saw in the company section an opportunity to interest the employees in each other and in the company problems, and of making them a part of the industry as a whole.

Obituary

George W. Elkins, Philadelphia capitalist, died at the Philadelphia Country Club on Oct. 23 after an attack of apoplexy. Mr. Elkins, who was sixty-one years of age, had been in poor health for some time. Among the corporations in which he was financially interested were the Philadelphia Rapid Transit Company, the Union Traction Company, Philadelphia, and the Metropolitan Street Railway, New York City.

James N. Wallace, banker, died suddenly of heart disease on Oct. 10 at his home in Nyack, N. Y. Mr. Wallace, who was president of the Central Union Trust Company, New York City, was identified with a number of electric railway companies, being a member of the board of directors of the New York Municipal Railroad Corporation, the Brooklyn Rapid Transit Company and the Brooklyn Heights Railroad.

Eugene Chamberlain, at one time superintendent of equipment of the Brooklyn (N. Y.) Rapid Transit Company, died at his home in Mount Vernon, N. Y., on Oct. 2. Mr. Chamberlain, who was seventy years of age, retired recently from the position of manager of the equipment repair pool of the New York Central Lines. Most of his life was devoted to steam railroad work, except for a period prior to 1904 during which Mr. Chamberlain was connected with the electric Railway system in Brooklyn.

William T. Goundie, who at one time was vice-president and general manager of the Kings County Elevated Railroad, Brooklyn, N. Y., died on Oct. 28 at the age of seventy-two years. Mr. Goundie was born at Bethlehem, Pa. He studied railroading, and in 1884 became superintendent of the Manhattan Elevated Railway, New York. He was made vice-president and general manager of the Kings County Elevated Railroad in 1888, and operated the first elevated train that ran through Brooklyn. When the road was absorbed by the Brooklyn Rapid Transit Company he retired.

John A. Lahrmer, superintendent of the Columbus, Delaware & Marion Electric Company, died at his home in Columbus, Ohio, on Oct. 9. He was born in Jackson County, Ohio, forty-seven years ago. At the age of twenty he secured a position as conductor on the city line at Columbus, and a few years later was employed as an inspector on the Ohio Electric Railway. From this position he went to the Columbus, Delaware & Marion Railway, the predecessor of the Columbus, Marion & Delaware Electric Company, as superintendent. Mr. Lahrmer had been ill for about two years.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Door and Step Control Market Active

Good Sales Result from Remodeling of Cars in Many Localities—Manufacturing Conditions Satisfactory

A large percentage of the work now being done in company repair shops is in the remodeling of cars to have safety car features. While in many places the amount of work is in actually installing door and step control, still considerable is being done in preparing cars for installation and in planning and estimating on cars to be equipped.

The business is being conducted on an extensive scale and a number of large orders for equipment have been received from several central Atlantic cities where large numbers of cars are being remodeled. In the South and Southwest a great deal of this work is being carried on and the aggregate of cars being changed over is considerable.

Deliveries on door engines and step control equipment are being made promptly. Great faith is being shown in the one-man safety car by the continued approval of these equipments by railway managers.

Prices are being held down as conservatively as they possibly can be. Although there have been advances in the past, they were less in proportion than the advances in the price of raw materials. This was made possible only through economies instituted in the manufacturing plants. One large manufacturer who has been making prompt deliveries on large quantities advises that no increase in price has been made in the past six months and that for the present at least no increase in price is contemplated.

Good Heater Orders Placed Recently

Manufacturers' Space Taken up For Some Time to Come on Present Orders

Business in the heater line is good and manufacturers are having their hands full to get out orders now going through their shops. It is known that business has been better during the past two months than at any time during the present year. This is on account of a number of large orders which have been placed recently and which will be sufficient to keep the manufacturers space filled for some months to come. The volume of business in repair part stocks has also increased but is still below normal. Deliveries are fair, however, with three to four weeks' time being required on orders of considerable size. On large orders for complete heating units and on thermostats, one company advises that it is keeping up with car builders' requirements.

Some good business has been looked forward to in safety car heater equipments and a number of safety car orders are now being placed. One of the most important sales made recently is for 3,000 truss-plank heaters for the 300 safety cars which are to be built by the J. G. Brill Company. These cars are for stock purposes and will be standard throughout. One-half of the cars will be equipped with eight heaters per car while the remainder will have twelve heaters per car.

Another order of considerable size is one which has just been placed by the Eastern Massachusetts Street Railway, for 2,400 heaters and 200 thermostats to be used on the 200 safety cars recently ordered by that company. Another order for heaters is to equip the thirty one-man cars recently placed by the Virginia Railway & Power Company. In addition to these sales the New York Municipal Railway will very shortly place orders for heaters for the 200 subway cars now under construction. The requirements are for thirty heaters per car or a total of 6,000 heaters.

Labor conditions, although not entirely satisfactory, are considered fair. Manufacturers generally find it difficult to keep good help, but this is true at the present time in nearly every industry. One company which has had a strike in its plant for several weeks has settled its difficulties amicably.

It is believed that with good orders on the books and with prospects of considerable amount of business being placed within the next few months, the heater business is considered to be in a very satisfactory condition. On requirements now going through manufacturers' plants, one company has advised that it is ahead of the schedule on heaters for the 200 safety cars being built by the J. G. Brill Company for the Brooklyn Rapid Transit System.

New Engineering Firm

Harry Barker and Robert C. Wheeler have opened an office as consulting engineers at 170 Broadway, New York City. Special attention will be given to public utility engineering, including valuations, rates, operation and management; to hydraulics; to power development and utilization; water supply and purification; sewerage and sewage disposal; municipal problems, including city transportation and civic improvements; development of new processes, and reports for investors. Mr. Barker for several years was an editor of *Engineering News* and *Engineering News-Record*. He is also the author of the treatise "Public Utility Rates," published in 1917 by the McGraw-Hill Book Company. During the war he was assistant engineer depot officer at the New York port of embarkation, and an engineer of camp maintenance and utility operation in the cantonment and construction divisions. Recently he has been associated with the Engineers' Valuation Board for the Pittsburgh Railways. Mr. Wheeler has for ten years specialized as an engineer in the design, construction and operation of water supply and purification plants, sewers and sewage disposal works. His earlier work was in railroad construction. During the war he served as Assistant Port Utilities Officer at Newport News, Va., and in June, 1919, was appointed chief of the water supply section of the construction division of the army.

Malleable Iron Users Face Difficulties

Line Material Manufacturers Greatly Hampered by Uncertain Delivery Situation—Labor Shortage Serious and Growing Worse

The malleable situation is serious. The industry is facing a labor shortage in the foundries with a result that deliveries are being held up. Line material manufacturers have long since split up their requirements among a number of different foundries but conditions in one place are not much better than in another and hence there is a considerable amount of work continually being held up, due practically entirely to the unprecedented labor shortage which confronts the manufacturers.

The best estimate received on malleables for orders of precedence which are now going through the shops is two months, although a considerable amount of business is being quoted on longer deliveries.

Malleables for trolley fittings and line material are coming through in from six to eight weeks, according to one manufacturer, but there is no telling what the conditions will be a month from now. Although deliveries are now generally said to be two to three months, it must not be forgotten that there have been times when deliveries were far worse than that at the present time. For instance, in the early part of 1917 and even later, deliveries were quoted at from five to eight months. One large malleable manufacturer advises that its plant capacity is booked ahead for months and that it will be unable for a long time to take care of some of its present orders.

Much is heard of malleable capacity idle. In connection with the insistent demand, the American Malleable Casting Association reports that this condition has been anticipated and that ample facilities have been provided for both the present and future expansion of the industry. At the present time, however, the shortage of unskilled labor will not permit this great capacity being used.

The result is that fully 200,000 tons of malleable capacity is today idle but would be immediately available if the necessary labor could be secured. Improvement in this direction is not looked forward to with any great hope until the activities of other industries are curtailed or until there is a flow of immigration sufficient to build up a supply of labor available for foundry work. This means, therefore, a large percentage of capacity idle continuously in every plant regardless of heavy unfilled orders that may be on hand.

One cause for delay in production schedules is the unprecedented demand of the automobile trade for malleables. The volume of this business is so great that it is everywhere crowding out other lines, and shop space in foundries which was formerly devoted to railway or allied lines, are now turning out castings for the automobile industries. Under the circumstances, therefore, the deliveries which are quoted above do not seem unreasonable.

Rolling Stock

Havana (Cuba) Central Railroad is building fifty cars in it shops.

Danbury & Bethel Street Railway, Danbury, Conn., has ordered two safety cars.

Harrisburg (Pa.) Railway has recently ordered five safety cars from the J. G. Brill Company.

J. G. Brill Company, Philadelphia, Pa., expects to start shortly on 300 safety cars which it will build for stock purposes.

Austin (Tex.) Street Railway has placed an order with the National Safety Car & Equipment Company for three safety cars.

Nashua (N. H.) Street Railway will shortly receive four of the eight one-man cars recently purchased from the Wason Manufacturing Company.

Bombay (India) Electric Tramway Company is reported to have purchased 150 railway trucks from the J. G. Brill Company, Philadelphia, Pa.

Rio Janeiro (Brazil) Tramways is building fifty cars in its shops and has placed orders for equipment and accessories with the J. G. Brill Company.

Montgomery Light & Traction Company, Montgomery, Ala., through its receiver, Ray Rushton, has been authorized by the court to expend $55,000 for the purchase of ten new cars.

Eastern Massachusetts Street Railway, Boston, Mass., noted in the Aug. 2 issue of the ELECTRIC RAILWAY JOURNAL as having placed an order for 100 safety cars with the J. G. Brill Company, has ordered an additional 100 cars from the same company. The details of the 200 cars now on order is as follows:

Number of cars	200
Date of order	100—Aug. 21, 1919; 100—Sept. 23, 1919
Dates of delivery	100 cars Nov. 10-Dec. 20, 1919; 100 cars Dec. 20-Jan. 20, 1920
Builder	J. G. Brill Co.
Type	Birney Safety
Capacity	32
Weight	Approx. 16,500 lb.
Length over all	28 ft. ½ in.
Truck wheelbase	8 ft. 0 in.
Width over all	8 ft. 0 in.
Height	12 ft. 0 in.
Body	Steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	West. DH10
Axles	Refinished—Old
Car signal system	Consolidated
Trolley bases	100 Cars G. E.; 100 Cars West.
Trolley wheels or shoes	Wheels
Trucks	Rebuilt trucks to be used
Ventilators	Brill exhaust
Conduits and junction boxes	100 cars G. E.; 100 Cars West.
Control	K-10
Couplers	Drawbars
Fixtures	Curtain Supply
Curtain material	Pantasote
Designation signs	Hunter
Door operating mechanism	Safety Car Devices Co.
Fare boxes	Johnson
Fenders	H. B. Lifeguard
Gears and pinions	100 cars G. E.; 100 cars Nuttall
Hand brakes	Brill
Heater equipment	Consolidated
Headlights	Crouse-Hinds incandescent
Journal boxes	Peckham Standard
Lightning arresters	100 cars G. E.; 100 cars West.
Motors	100 cars—2 West. 508; 100 cars—2 G. E. 264
Motors	Outside hung
Varnish	Old Dutch system
Registers	International
Sanders	Ohio Brass Co.—pneumatic
Sash fixtures	Edwards
Seats	16 Brill cross
Seating material	Rattan finish
Slack adjuster	None
Step treads	Ferralun
Trolley retrievers	Wilson retrievers
Wheels	26 in. steel

Trade Notes

Ward Leonard Electric Company, Mount Vernon, N. Y., is building a two-story addition to its factory.

American Transformer Company, Newark, N. J., has prepared plans for alterations and improvements in its plant, estimated to cost $5,700.

United Electric Construction Company, Ltd., New York, contracting electrical engineers, has opened a Cleveland office in the Hippodrome Annex.

Page & Hill Company, Minneapolis, Minn., has recently purchased at 15-ton Browning locomotive crane to facilitate the more rapid handling of poles.

J. H. Parker & Son, Inc., porcelain manufacturers, have opened a New York office at 50 Church Street, with J. W. Tompkins as manager. The Trenton office has been discontinued.

E. B. Badger & Sons Company, Boston, manufacturer of spray washers, cooling towers, etc., has opened an office in Chicago with Harry E. Wheeler as manager.

American Insulation Company, Roberts and Stokley Streets, Philadelphia, will represent the Philip Carey Company, in the Philadelphia district in all Carey lines.

Diesel Engine Company, St. Louis, Mo., announces that it has opened an Eastern sales office at No. 60 Broadway, New York, in charge of George D. Pogue, Eastern sales agent, and Stanley Wright assistant.

Schutte & Koerting Company, New York, N. Y., announces that H. W. Philbrook, formerly with the General Electric Company of Schenectady, N. Y., has been appointed district manager of its New York office, 50 Church Street.

Curtain Supply Company, Chicago, Ill., announces that T. W. Holt, its new assistant general manager, has been elected a director and secretary of the company in place of William S. Estell, resigned. Mr. Holt formerly was with the Pressed Steel Car Company, having charge of its munitions work during the war.

Roller-Smith Company, New York, N. Y., announces the appointment of the Alfred Collyer Company, 83 Craig Street West, Montreal, Canada, as its agent for the Dominion of Canada and Newfoundland. It will handle products of instruments and circuit breakers. The latter company has a branch office at 183 George Street, Toronto.

James S. Hearons has become affiliated with the Gustin-Bacon Manufacturing Company, Kansas City, Mo., as railroad representative. Since his return from France in July, where he held a commission as captain in the 49th Railway Engineers, Mr. Hearons has been with the Garlock Packing Company, St. Louis, with which he was connected prior to his entering the service.

Dugald C. Jackson and **Edward L. Moreland,** consulting engineers, announce that after their absence in France in the Engineers Corps, U. S. A., they have now resumed their practice at 387 Washington Street, Boston, Mass., which was formerly conducted in association with William B. Jackson, now retired, under the firm name of D. C. & Wm. B. Jackson. Arthur L. Nelson has become associated with the firm for the purpose of giving particular attention to the design and the supervision of construction of power plants and transmission systems.

Templeton, Kenly & Company, Ltd., Chicago, Ill., announces that H. W. Ross, formerly a major in the Motor Transport Corps and member of the General Purchasing Board in charge of engineering and purchasing in France, has been elected vice-president of the company and will take charge of the general sales management of Simplex jacks. Before returning to this country, Major Ross closed out the government's immense accumulation of motor cars and equipment as officer in charge of sales of this type of equipment with the United States Liquidation Committee.

Columbia Machine Works & Malleable Iron Company, Brooklyn, N. Y., announces the appointment of J. L Whittaker as its New England representative with headquarters in Boston. Mr. Whittaker will look after this territory in place of the late W. R. Kerschner, formerly vice-president of the company. Ernest Keller, formerly with the Westinghouse Electric & Manufacturing Company, will handle Pennsylvania, District of Columbia, Maryland, Virginia, West Virginia and a part of New York State. S. A. Redding will represent the company in Brazil.

Ernest Keller has resigned from Westinghouse Electric & Manufacturing Company to become sales representative for the Columbia Machine Works & Malleable Iron Company. Mr. Keller has been connected with the former company for the past ten years and received his early training in the electric railway field in the shops of the Brooklyn Rapid Transit Company. He entered the employ of this latter company in May, 1897, as stock clerk, and was advanced rapidly through the mechanical department as wireman's helper, road inspector, wireman, controller man, assistant foreman, and finally foreman of the eastern division inspection shop, which maintains the elevated equipment for that division.

New Advertising Literature

Electric Service Supplies Company, Philadelphia, Pa.: Booklet on floodlighting projectors.

Wilson Welder & Metals Company, New York, N. Y.: Booklet about the repairs made by its electric welders.

Engineer Company, New York, N. Y.: Bulletin on the construction and application of Turner baffle walls for boilers.

Lux Manufacturing Company, 123 East Kinney Street, Newark, N. J.: Booklet containing prices, engineering data and general information about Lux lamps.

Curtain Supply Company, Chicago, Ill.: Illustrated circular on the ring curtain fixture, showing the principles involved and the types which are manufactured.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Publication No. 1572-A about its protective relays and their use on alternating-current systems.

American Steam Conveyor Corporation, Chicago and New York: Mailing folder entitled "A Pertinent Ash Pile Question." explaining the advantages of its steam ash conveyor.

Condit Electrical Manufacturing Company, South Boston, Mass.: Bulletin No. 413-2 descriptive of type E-3 oil switches and circuit breakers. This publication supersedes Bulletin No. 413.

Electric Railway Journal

This is a delayed number of this paper and is issued on Nov. 15, 1919.

Volume 54 New York, Saturday, October 18, 1919 *Number* 16

Safety Car Standardization Has Several Aspects

THIS paper has so persistently and emphatically advocated standardization of railway equipment that there can be no doubt as to the position of its editors on this important subject. Recently, the safety car, embodying as it does the most decided step ever taken toward standardization, has been the cause of some rather sharp conflict between manufacturers and purchasers. The latter have been inclined to make too great moment of some minor changes in the fittings or finishings of the car interior and sometimes of more vital car parts. The former have been very insistent that the car should be bought " as is " without an alteration in specifications, just as one purchases an automobile or motor truck.

In general, the advantages which are to be derived from taking a car " off the shelf," so to speak, far and away offset the small advantage, real or imaginary, that the local railway company may derive from some slight changes to conform to present practices in its shop, or to keep from adding anything new to the storeroom supply. However, there are two other aspects to this problem of rigid adherence to a standard product which should be mentioned.

The first is that there should be no stifling of sound development or improvement of the safety car or any of its equipment. There has been manifest a tendency to discourage if not kill any suggested changes, even before they receive due consideration, simply because they were changes. Nevertheless, the fact cannot be overlooked that some very worthy changes in body framing and truck and motor design have been brought out, and are now concurred in by the manufacturers, as the result of the study and experience of railway engineers. It would be folly to say that the present car is the ultimate of perfection and that no further improvement can be conceived. So, it seems to us that the manufacturers cannot expect the present car to be continuously accepted without question or suggestion, but rather that they must expect to have ever before them possibilities of improvement which they must not condemn but must consider and dispose of according to the merit of each individual case, taking all factors into consideration. But, in general, it may be said that the argument of changes to meet local conditions should be almost completely banished.

There is also a merchandising consideration which perhaps does warrant deviation from the standard. If, for example, a railway management has sound reason to believe that cushioned, more comfortable seats will encourage even more riding than the attraction of frequent fast service, then that is a justification to substitute something better for the slat seat of the standard. On such proposals the manufacturer should simply make two bids, one on the standard and one on the car as desired by the purchaser. The latter can then determine whether the differential between the two is justified.

The second aspect referred to has to do with the products of different manufacturers. Competition is very desirable, and the industry will always be anxious to have several manufacturers of safety cars. This brings up the necessity for the purchaser to make certain that the principal parts, at least, of his safety cars, as made by different manufacturers on different contracts, shall be interchangeable. That is to say, it should be possible to set the car body of one manufacturer on the truck of the other, and of course to interchange wheels, axles, bearings, gears, motors, etc., on the trucks of the different manufacturers.

With this in mind, it would seem that the various manufacturers would serve the industry better and get closer to a car so standardized as to require the least number of deviations from the standard, if they would among themselves agree upon the fundamental dimensions making such interchange of parts possible. An alternative which would accomplish this same end would be the adoption by the American Electric Railway Engineering Association of a safety car standard for the industry. The difficulties of bringing this about are perhaps greater and the process slower than for the manufacturers to accomplish the same object. But the safety car, being a new thing, should lend itself well to standardization by the association along the lines mentioned, and this work should be done before the complications have increased unduly. Surely, if the engineers cannot agree upon a standard for this new car, there is little hope of material progress with older types of equipment.

Where Standardization Is In Danger of Falling Down

AMONG those who heard the reports and discussion at the convention meetings of the Engineering Association this year the impression prevails that standardization is a more important consideration now than ever before. In his opening address President Phillips stated that the most frequent criticism heard of the Engineering Association is that the standards adopted by it are not generally used and that a lack of interest is manifest in regard to them. The revision of the method of adopting association standards as planned is a step forward toward overcoming this trouble, and the campaign of publicity launched by the standards committee will do much to remove any cause for criticism.

The attitude adopted in the past by some railway officials toward association standards seems to have been in favor of their adoption where the standards conform to the particular types used in local service. But where this is not the case they are not used because their adoption would mean that the number of maintenance parts to be kept in stock would have to be increased. This in fact appears to be the principal obstacle to their wider use. All recognize their advantages when once applied, but the necessary changes to inaugurate the plan involve some inconvenience so the standards are rejected. Obviously, standardization cannot be effected as long as this attitude prevails. Some inconvenience must be experienced to secure the greater gain.

During the period of material scarcity, railways were fortunate to get anything they could to keep their cars in operation. As a result we now find all sorts of combinations. Different types of motors are operating under the same car and several types of car fittings and fixtures are found applied to it. There is a big field for standardization work as soon as financial conditions can be adjusted sufficiently to permit the railways to enter into the work in the manner desired. The result of war-time experience seems to be a broadening of the views of operating engineers regarding the supposed advantages of their particular hobbies. They have found by the enforced use of other parts that much that they previously considered essential in reality caused waste of money and good material and was directly detrimental to economical operation.

The Engineering Association now has up for solution this urgent problem of securing the wider adoption of the standards. The tendency towards unified construction among manufacturers and consistent practice among the railways should be encouraged. Members should inform themselves of all previous efforts and practices adopted and support their association actively in its efforts to the above end.

Obstacles Encountered in Establishing the Zone System in New Jersey

THE plea of the Public Service Railway to abandon its zone-fare system and return to the flat-fare system will be read with regret by many electric railway managers. Most of them, we believe, have appreciated the important nature of the Public Service Railway experiment. From a traffic standpoint they have realized the many advantages of a zone fare, and they have hoped that a workable method could be developed for collecting and accounting for zone fares and at the same time retain the conductor on the rear platform when passing through congested centers. Certain of the features of the New Jersey system seemed complicated, but it was generally felt that the advantages of having the conductor on the rear platform outweighed to a great extent the advantages in the actual collection of fares afforded by the European system of zone-fare collection. In consequence, it was hoped that the Public Service plan or some adaptation of it would prove satisfactory.

It is possible that certain features of the plan, as adopted, would have been fatal to it in any event. However that may be, and we shall discuss these technical features later, we believe that the many obstacles which the system encountered, entirely apart from the plan itself, were sufficient to account for its downfall.

In the first place the plan was launched in the middle of a bitter political campaign, which up to that time had been conducted without issues appealing to the popular imagination. No increase in rates is popular, and as the zone system avowedly increased the average fare and as it affected practically the entire state, it was seized upon by the rival political candidates as a medium for selfish advantage. In consequence, a tremendous amount of abuse entirely unwarranted was heaped upon the Board of Public Utility Commissioners, the railway company, its officials, and indeed upon everyone who had been connected in any way with this attempt to solve an important operating problem. Naturally these attacks greatly prejudiced public opinion.

Again, although the new system was inaugurated only after months of hearings and a most thorough consideration of the entire problem, the people of New Jersey generally speaking, were poorly informed concerning the radical changes involved and the equity of any zone-fare system to the patrons of a railway. It is true that the company ran a series of advertisements in the daily papers and carried posters and placed leaflets in the cars describing the new plan. A moving picture film was prepared showing exactly how the new system of fare collection would operate and what the trainmen and passengers would do. This film was shown several times in some ninety moving picture theatres before the new system became effective and also during the first week of operation. Yet in spite of all this publicity, a large part of the people of the state were practically unacquainted with the new system when it actually became effective especially with the reason why it was, in principle, the fairest method of charging for car journeys.

Public ignorance was most pronounced in the so-called Southern Division, comprising the lines in and around Camden. The people of Camden read Philadelphia newspapers, which carried practically no details of the progress of the investigation by the commission of the merits of the proposed plan, and of the day-to-day testimony developed from March to July, concerning the present financial needs of the railway company and the way in which they could be met most equitably. Moreover, as the Newark *Evening News*—the largest and most influential newspaper in the state—remarked, the stories which did appear in the Philadelphia papers from time to time were remarkable for their inaccurate statements and incomplete presentation of the facts. In consequence, the announcement by the commission of the zone system of fares came as a thunder-clap to the people of Camden and its neighboring suburbs.

The situation in the Southern Division was perhaps further complicated by a simultaneous publicity campaign launched by the Philadelphia Rapid Transit Company concerning its achievement in maintaining the 5-cent fare on its lines. Neither the Rapid Transit Company nor the newspapers pointed out that the operating conditions in Philadelphia and Camden, two neighboring cities, were most widely dissimilar; that the tributary population and density of traffic were almost five times as great on the Philadelphia system as on the Public Service Railway and that the cost of service per passenger carried was therefore very much greater in New Jersey than in Philadelphia. The people in Camden took Mr. Mitten's propaganda as applying literally to their system. Public discontent was fanned into a flame of open revolt by the shipyard workers, due largely to the fact that instead of discharging these men at the entrance as formerly, the cars carried them to a post-payment area about 700 ft. beyond, thus delaying their arrival at the works. Later, prepayment was substituted on this particular line, but a boycott had been begun throughout the district in favor of the former 5-cent fare. Such a return was also urged by the Mayor, who claimed that the Public Utility Commissioners had power to make distinctive rates for different communities.

On the Northern Division, comprising the greater part of the state and of the company's mileage, the system operated with reasonable smoothness, though, as explained in the statement of the company, it was slow. Another objection which the company mentioned in its plea to the commission was that the system was unpopular with the employees. The motormen considered that the work required of them in issuing entrance checks distracted their attention from the operation of the car while the conductors naturally were not pleased at being obliged to collect fares under an unpopular plan, as they became the recipients of a great deal of abuse from passengers who were dissatisfied with the higher fares. President McCarter therefore asked for permission to return to the old plan of flat fares.

We hope that this does not mean the end of the zone system in New Jersey, even if it should seem wise temporarily to suspend it. After somewhat more time is taken to work out the best rate of fares and method of collection, with the experience of the last five weeks as a basis, better results should be secured. The company stated at a hearing last summer that a 7-cent flat fare would not be sufficient and that the fare, if a flat fare was charged, would have to be 9 cents. But this would encourage the jitneys more, we fear, than even the existing zone fare.

As to the lessons of the past month, the advisability of a 3-cent minimum for a single zone seems doubtful, as evidence seemed to show that a 5-cent minimum good for a ride of two zones or less would be as acceptable to the public. The chief advantage of the 3-cent fare, from an operating standpoint seems to be that it allows a ride through two zones on two cars to be made for 6 cents. In other words with a 3-cent minimum, transfers can be eliminated without requiring a 10-cent fare for the ride mentioned. The importance of this advantage of dispensing with transfers, however, is open to debate.

The uniform charge of 2 cents per zone after the first zone proved also somewhat high—not high perhaps compared with the local fares on the adjoining steam railroads but high compared with jitney fares and steam railroad sixty-ride monthly commutation tickets and much higher than the former trolley fare. Probably some adjustment in this class of fare for through rides could be made to advantage.

Finally in the method of collection the experience of the Public Service Railway shows that some improvement could also be made. What the permanent apparatus planned would have done was of course not determined, but the apparatus and methods temporarily employed were undoubtedly slow. Here is a chance for the inventor and designer of fare collecting equipment as well as for the committee on fare collection, and we hope that all will endeavor to see whether something cannot be designed to work on the prepayment plan.

The Age of Rails and Its Relation to Tracks and Cars

IN MANY WAYS the age in which we are living may be called the age of rails. Mankind owes much of its progress to the genius who first conceived the idea of increasing the facility of moving heavy loads by some means other than that of a wagon upon a dirt road. The development of this country from a collection of isolated states separated by vast rivers, miles of prairie land and high mountain ranges into one big union closely knit together has been due more to the use of rails than to any other agency. The Union Pacific Railroad may be said to have recreated the nation, when it united East with West.

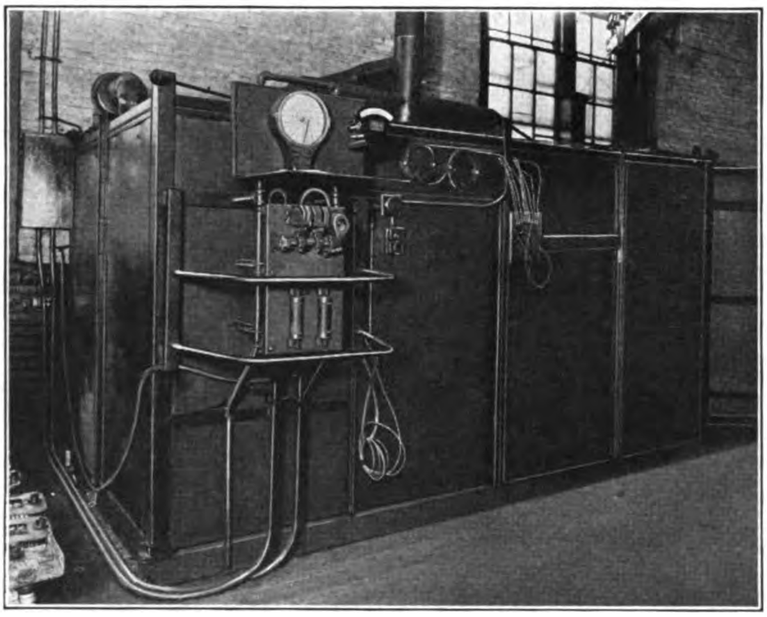
Along similar lines, large cities would still be collections of hamlets were it not for the swift communication furnished by the street railways and rapid transit railroads. The war just closed could hardly have been prosecuted so swiftly and successfully had it not been for the transport of materials, troops and big guns by means of rails which ran almost right up to the first-line trenches. As the ancient Romans built their famous roads for the easy and rapid movement of their impedimenta so today we build military railroads for exactly the same purpose. Thus rails are seen to be one of the greatest aids to progress either in peace or war.

We have been led to the expression of these thoughts by the undercurrent of opinion which seems to take the view that the automobile and the gasoline engine will soon supplant either the rails of the electric street railways or the electric motors used for the propulsion of cars upon the rails.

Those who were fortunate enough to hear the address of N. W. Storer on the latter subject at the recent Atlantic City Convention were convinced that there are no well-grounded fears that the gasoline engine will replace the electric motor for car propulsion in the passenger transportation field. Likewise, anyone who will carefully analyze the conditions under which automobile buses are operated in large cities, will find no good reason to fear the immediate abandonment of the rail. It still remains as the best means of supporting large, rapidly-moving masses with the least wear and tear upon both roadways and equipment. The rail will stay with us for a long time to come, and the problem confronting us is not related to its abandonment. On the contrary, we must study its greatest possible use with respect to track design in its relation to the light-weight car.

Brooklyn Installs Electrically Heated Oven

An Electrically-Heated Forced Ventilated Oven With Thermostatic Control Provides Increased Facilities for Baking and Drying Electrical Car Equipment



VIEW OF SIDE OF THE OVEN SHOWING CONTROL APPARATUS AND RECORDING THERMOMETER

THE Brooklyn Rapid Transit Company has had a steam-heated oven at its Fifty-second Street surface repair shop for a number of years. This has been used for baking and drying all classes of electrical equipment repaired at that shop. A description of this oven with its various applications was given in the ELECTRIC RAILWAY JOURNAL for March 15, 1913. Due to the large increase in car equipment which this road has purchased during the past few years, its facilities have proved inadequate, so that it was necessary to install an additional oven. In making this installation the company has availed itself of the many advantages ascribed to electrically-heated ovens, such as economy of operation, reliability of service, increased production, safety and ease of operation, cleanliness and reduced fire hazard.

CONSTRUCTION OF THE OVEN

This new oven is of the kiln-type, and it is 13 ft. long by 7 ft. high by 7 ft. wide outside, with a capacity for accommodating eighteen armatures at one time. It consists of an insulated room, into which the electrical equipment to be baked is placed by hand and suspended or hung up in place on suitable angle-iron racks. The walls are constructed of two thin sheet-metal linings with powdered insulation between them, thus practically constituting one sheet metal box within another with insulation in the intervening space. The floor of the oven is similarly constructed and sets up above the shop floor a distance of 6 in. The intervening air space is screened in at the front end with a punched sheet metal guard to prevent the accumulation of dirt and refuse.

An angle-iron framework inside the oven provides a substantial support for armatures in the process of drying and baking, and also provides hanging support for field coils, armature coils, insulating cloth, and other material used in the repair of railway equipment, so that they can be conveniently baked and dried.

An air-operated hoist is provided at the front of the oven for picking up heavy pieces of electrical equipment. An accompanying illustration shows an armature being placed in the oven by means of this hoist. A yoke is arranged at the bottom of the hoist with notched teeth at each end. Supporting caps with rods attached are placed over the ends of the armature shaft to be lifted and rods with projections at the sides fit into the various notches so as to provide a very flexible arrangement that will fit any size of armature to be handled.

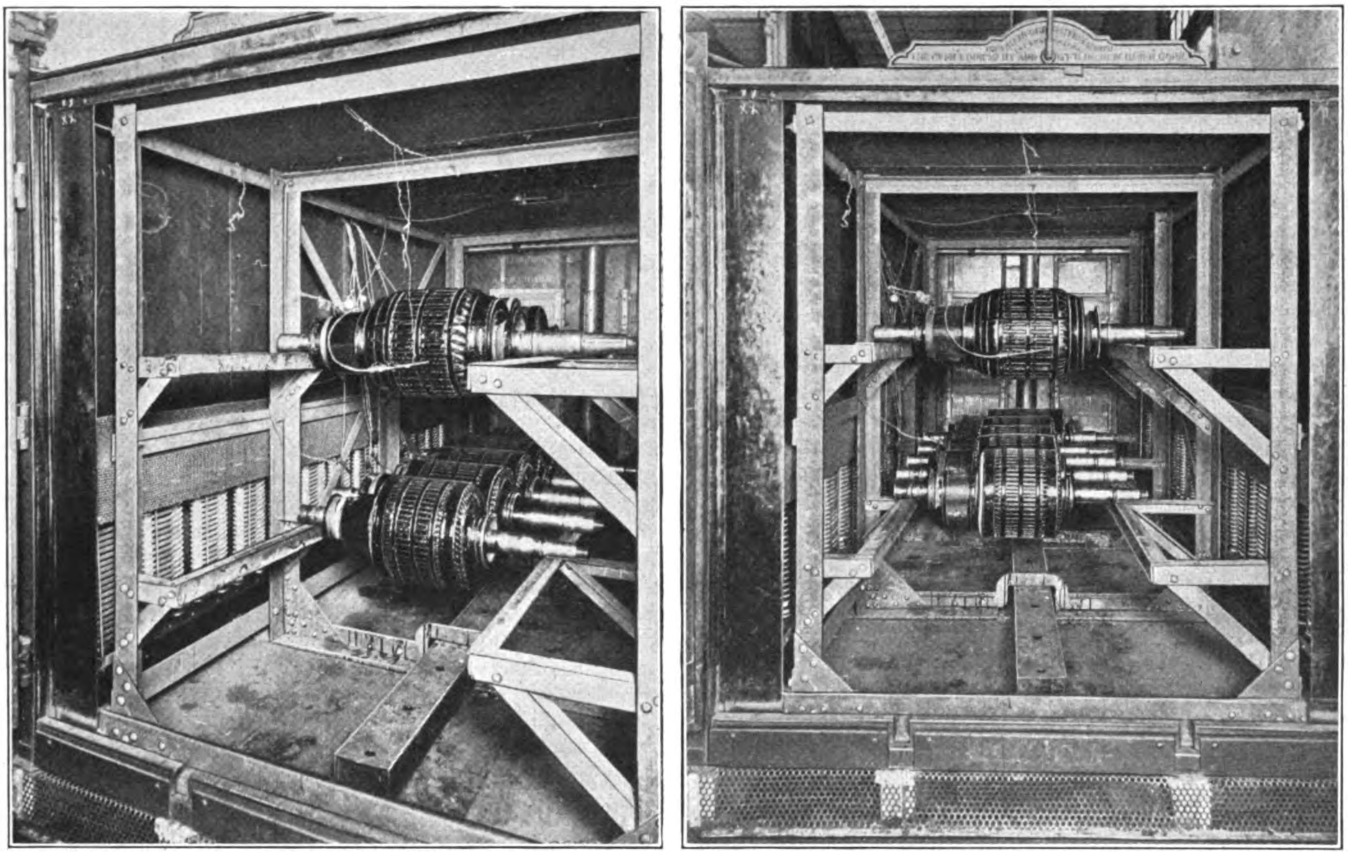
The electric heating equipment for the oven consists of thirty Westinghouse type-C oven heaters installed along the side walls near the bottom of the oven. A protecting wire screen has been installed over the top of the heaters to prevent accidental contact by workmen or contact of any of the material placed in the oven through its falling off from its support. This protecting wire screen is attached directly to the out-turned flanged end-plates of the heaters and extends down over the heating element a short distance and also up along the side walls, thus completely inclosing the electrical connections.

The heating element of the Westinghouse oven heaters consists of a resistor ribbon wound on a number of fire-clay bushings assembled on two steel tie rods between two pressed steel end plates. The ends of the ribbon are secured to four steel terminals which are clamped to the steel tie rods; the rods, therefore, becoming the terminals for the heaters. These rods are insulated from the end frame where they pass through the ends and are threaded for bolting on the connectors. Special connectors are furnished to meet any requirements. Cold-rolled-steel busbars are recommended and may be mounted directly above the heater on insulators bolted directly to the end frame. Connectors are secured to busbars by steel clamps.

The thirty heaters used in the B. R. T. oven are connected in six circuits of five heaters each. Each heater has a continuous capacity of 2½ kw. at 120 volts. The current taken by each circuit of five heaters is 20 amp. At present only twenty heaters are in use in four circuits, as it was found that this number was sufficient to heat the oven quickly and provide convenient regulation of the temperature.

The control equipment, installed on the outside of the oven near one end, consists of the Westinghouse standard type-F magnet switch with protecting fuses for closing and opening the circuits through the heaters. Automatic temperature control is provided by a suitable relay in conjunction with a thermostat, by means of which the temperature within the oven is kept between 235 deg. and 245 deg. Fahr. (112 deg. to 118 deg. Cent.). In the operation of this temperature control all of the heaters are cut in and out at the same time. No heaters are left in circuit while the temperature is dropping to the lower limit.

In order to provide a record of the temperature in the oven during a particular baking operation, a Bristol recording thermometer has been installed. A dial record for one operation is shown in an accompanying illustration. A record number is placed on each dial together with the dates of the baking so that a record of the temperature condition which existed in the oven at the time the work was done is obtained, and a possible clue is afforded to determine the cause for any trouble which may develop later in service. The record on page 748 shows that material was placed in the oven between 11 and 11.15 a. m. and that the oven was again opened at 1.45 p. m. when additional material was inserted. After that time the baking process continued until 7.15 the following morning, when a new record was installed on the temperature indicator. The material in the oven, however, was not removed at that time, and a record of the temperature in the oven after this time will be found on the succeeding record.



INTERIOR VIEWS OF OVEN SHOWING ARRANGEMENT OF HEATERS AND ARMATURES IN PLACE READY FOR BAKING

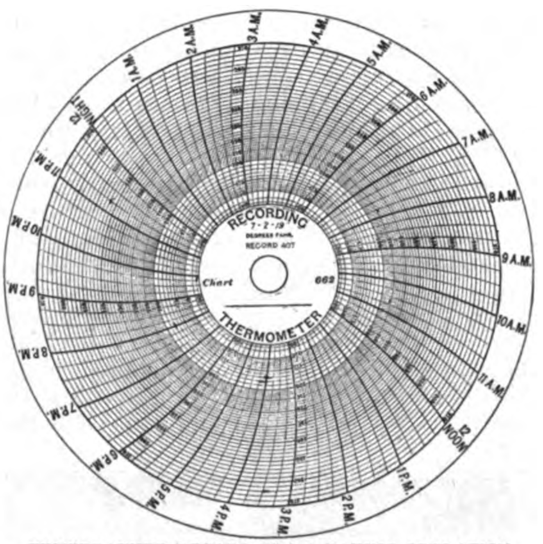
The effect that the quantity of material in the oven has on the time taken to cool and heat it to the temperature limitations of the thermostat is shown by a comparison of the chart before and after 2 p. m. In the first part of the chart after the material had been placed in the oven it took fifteen minutes to raise the temperature of the oven to 248 deg. Fahr. During the next hour the automatic control cut off the heat eight times and in the following hour seven times. At 1.45 p. m. the oven was opened and additional material was put in. The time that the oven was open was insufficient for it to cool entirely off. After the oven was again closed it took fifteen minutes to increase the temperature from 165 deg. Fahr. to 240 deg. Fahr. During the next hour heat was automatically cut off seven times and in the following period six times per hour.

The heat supplied is used for raising the temperature of the work, oven walls and heating equipment, for raising the temperature of the parts used for supporting and carrying the work, for raising the temperature of the ventilating air and for supplying the radiation losses which occur from the external surfaces of the oven. When material is placed in the oven it is usually at room temperature. It must be heated to the maximum temperature desired. After the work has reached its maximum temperature no additional heat is absorbed by it regardless of the length of time it may be held at that temperature, as a certain amount of heat is required for raising the temperature of a given substance through a given range of temperature irrespective of the length of time consumed in heating. However, if the heating is accomplished in one hour a certain amount of power will be required, but if the heating is accomplished in half the time, double the amount of power expressed in kilowatts will be necessary with exactly the same kilowatt-hour consumption. The total weight of the material supporting parts, etc., heated, multiplied by the degrees rise in temperature and by the specific heat of the metal is the heat required in British thermal units. This divided by 3412 is the energy consumption in kilowatt-hours.

The amount of power required for heating the air used in ventilating the oven depends on the initial and final temperatures of the air, the weight of air entering and its specific heat. With the kiln-type oven used in this case air is taken in at room temperature and is discharged at the oven temperature.

VENTILATION IS NECESSARY

In order to carry off moisture as it is forced out of the equipment being baked, an efficient system of forced ventilation is a great advantage. In the present oven, as installed in Brooklyn, air is taken in through a ventilating duct at the bottom of the oven. This duct is of rectangular shape, 6 in. x 3½ in. and it is provided with holes in the top through which the air enters. The air is thus taken in at the oven temperature and is drawn through the receiving duct at the bottom of the oven and sent outside the oven through a pipe 6 in. in diameter which may be seen at the back in the



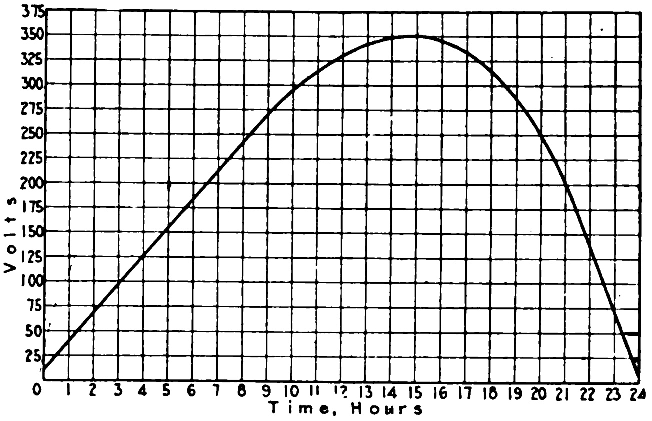
TEMPERATURE RECORD FOR A BAKING OPERATION

interior view of the oven. At the top of this pipe is located the ventilating blower which is driven by a direct-current 550-volt ⅛-hp. motor, having a speed of 1850 r. p. m. The arrangement of the ventilating pipes at the top of the oven is shown in an accompanying diagram and may be seen in the view of the exterior of the oven. From the motor or ventilating fan, the air is forced through a 5-in. pipe into a 10-in. pipe leading through the roof to the outside air. The top of this pipe is protected by a metal hood. From the bottom of this vertical pipe two pipes lead back to the top of the oven at each end. Three dampers for regulating the flow of air are installed in the ventilating pipes as shown in the accompanying diagram. One damper is located in the pipe leading from the ventilating fan to the upright pipe and is operated by a lever which extends to the back of the oven. Two additional dampers are installed in the two pipes leading from the bottom of the upright pipe to the opening in the top of the oven. These dampers are interlocked and are both operated from the same lever at the front of the oven. Efficient operation is obtained by regulating these dampers.

The problem which the shop foreman has to solve is to get out a certain amount of material in the shortest possible time. On wet or damp days when there is an accumulation of moisture in the atmosphere, it is necessary that the air in the oven be changed more frequently than would be necessary on a dry hot day. By watching the indications given by the recording thermometer, the man in charge is enabled to tell the length of time consumed in heating up and cooling off the oven and, by means of a series of voltage readings described later, he is able to tell the speed at which the drying is taking place. The dampers are then adjusted to meet the conditions and give the most rapid and efficient drying and baking.

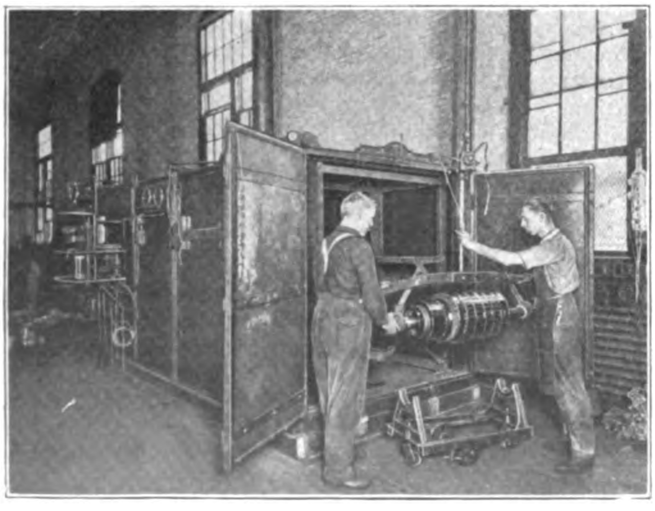
To provide for hand regulation of the controlling apparatus, two push-button switches are provided. A double push-button switch, located alongside the magnet switch, enables the operator to cut the equipment in and out at will. As a safety precaution to insure that the heating circuit is never closed when the doors are opened, an additional push-button switch is installed at the front of the oven. This is operated by a projection on one of the doors so that the heating circuit is opened whenever the doors are open.

To provide a check for the efficient operation of the oven and to make certain that no armatures are removed before they are properly baked and dried out, readings representing insulation resistance are taken at convenient time intervals with a voltmeter. As an aid to making the necessary connections for these readings, each armature as it is installed has a lead connected to the commutator. The armature shaft and core are grounded by the armature shaft resting on the inside metal supporting framework which is provided with a good contact to ground. The various connections leading from the commutator of each armature are all brought to a dial contact switch located on the outside of the oven.

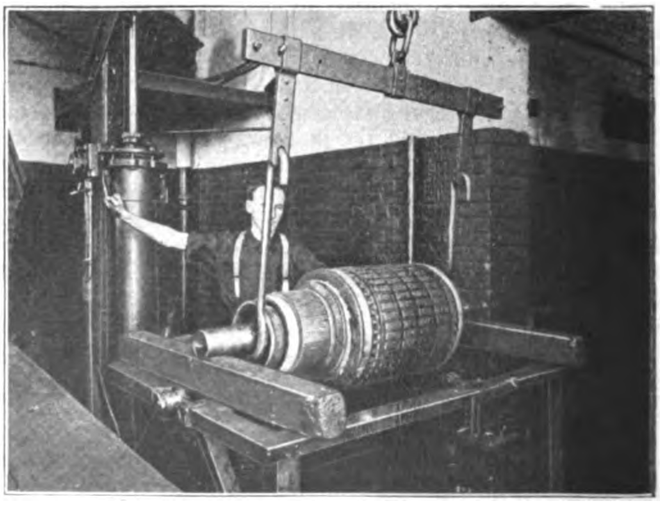


GRAPH SHOWING THE PROCESS OF DRYING OUT OF AN ARMATURE

The construction of this contact device may be seen from an accompanying illustration. For testing purposes one side of a voltmeter is connected to line and the opposite side is connected to the center of the movable contact arm of the contact apparatus. By moving this arm to its various positions the circuit is completed to the commutator of the armature, and the reading obtained by the



PLACING AN ARMATURE IN THE OVEN BY MEANS OF AN AIR HOIST



LOWERING AN ARMATURE INTO THE DIPPING TANK

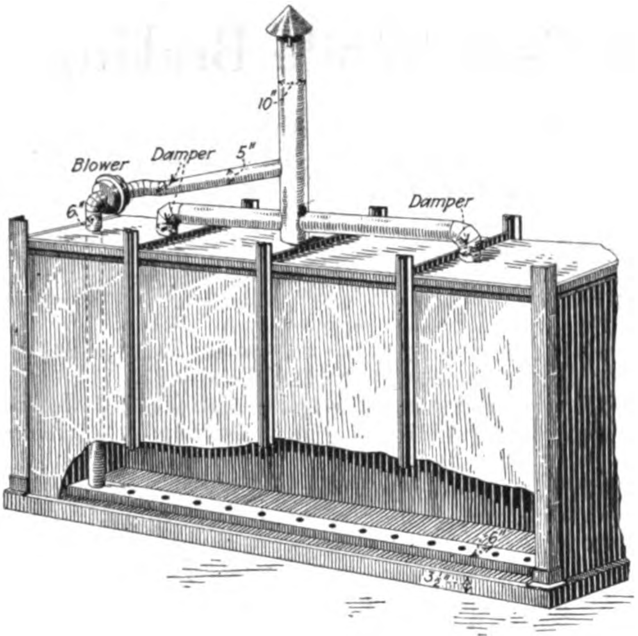


DIAGRAM OF VENTILATING PIPING

voltmeter provides a means of measuring the insulation resistance of the combined armature coils. An accompanying graph has been plotted from a series of readings taken on one particular armature. By referring to this graph it will be seen that the first measurement taken just after the armature had been installed showed but 10 volts. This voltage increased uniformly for approximately twelve hours, and a maximum voltage reading of 350 volts was obtained at the end of the fifteenth hour. This indicates that the insulation resistance of the various windings had decreased during this period, due to the forcing of the moisture out of the coils which provided a circuit of less resistance to the spider and shaft of the armature and so to ground. After fifteen hours of baking, the voltage readings decreased and the insulation resistance increased, so that at the end of twenty-four hours a reading of 10 volts was again obtained.

In baking armatures after they have been dipped in the insulating compound it is the practice of the Brooklyn Rapid Transit Company to require that they remain in the oven until they show a voltage reading of 10 or less. As these voltage readings increase for the first part of the baking period it is necessary to take several voltage readings at convenient intervals to make certain which side of the curve the readings fall on. Records in the form of the graph shown are not kept for every armature, but the usual procedure is to take a reading after the armature has been in the oven from five to six hours and then to take readings every three or four hours until a voltage of 50 volts or less is obtained, when readings are taken at more frequent intervals.

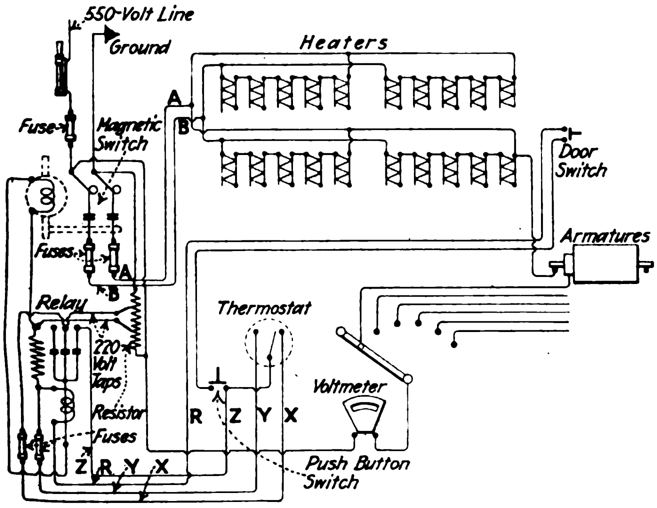


DIAGRAM OF ELECTRICAL CONNECTIONS

The practice of the Brooklyn Rapid Transit Company is to dip all armatures complete as they come into the shop for repairs. The process employed was described in the ELECTRIC RAILWAY JOURNAL for June 15, 1918. A modification of the method described there, however, is used by the Brooklyn Rapid Transit Company in that it dips its armatures in a horizontal rather than dipping them in a vertical position. An accompanying illustration shows the type of dipping tank provided. The armature is lowered into the bearing supports at each end of the tank and by operating the lever which is shown at the front of the tank, the height of the compound is brought up so that it will cover the lower half of the armature. The armature is then revolved slowly so that all parts enter the compound. After the armature is dipped it is allowed to drain for some time before it is placed in the oven.

Erratic Setting of Overhead Circuit Breakers

AN EASTERN railway operating surface cars equipped with type K control and overhead circuit breakers received a number of reports from motormen, stating that the circuit breakers were blowing continually. It was the practice of this company to reset all circuit breakers at the bench and the method used consisted of connecting one side of the circuit breakers to line and the other side to an ammeter. The negative side of the ammeter was connected to ground through a water rheostat. This water rheostat consisted of a barrel of water containing salt. One electrode was placed at the bottom of the barrel and the other electrode was adjusted by lowering it into the water so as to obtain different current values.

The cars reported for circuit breaker trouble were ordered into the shop and the man in charge of this work started to make the test. He found that he was unable to obtain an accurate setting due to a decided variation in the current values at which a circuit breaker would blow. For example, at one time, the breaker would open at 190 amp., the next time it would blow at 250 amp., and if tried again immediately it would blow at 110 amp. A careful test was made to determine if all connections were correct, and all wires properly insulated, but this inspection showed that everything was normal. The inspector then came to the conclusion that the ammeter was at fault and required recalibrating. The meter was accordingly sent to the manufacturer for recalibration and, upon its return, the resetting of circuit breakers was again attempted, but the results were the same as that previously experienced.

The master mechanic of the road was then called in an endeavor to determine the cause of the unusual condition. He found that a number of defective armatures had been piled in close proximity to the testing bench. This mass of magnetized iron caused a magnetic field which extended around the ammeter and resulted in inaccurate readings. The armatures were removed to another location and the testing then was carried on satisfactorily.

The National Industrial Conference Board has just published a pamphlet giving statistics of changes in the cost of living during the five years ended July, 1919. This pamphlet shows, among other things, that the increase between July, 1914, and July, 1919, was 73 per cent, and between March, 1919, and July, 1919, it was 7.3 per cent. The methods by which these figures are derived are given in the pamphlet.

Transference of Load in Cars While Braking

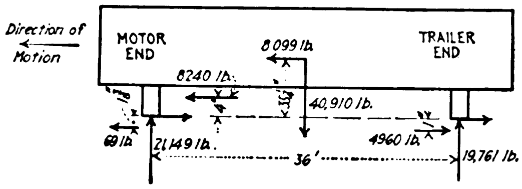
The Author Describes the Methods Used in Calculating the "Flywheel" of the Rotating Parts of Electric Car Equipment and Shows How the Load is Transferred Throughout a Train During the Retardation Period

By T. F. BURKE
Assistant Engineer of Car Equipment Interborough Rapid Transit Company, New York City

IN THE DESIGN and operation of electric railway cars it is often desirable to estimate the theoretical coefficient of friction between wheels and rails necessary to prevent skidding of the wheels during braking.

The following article outlines the calculations for determining the theoretical minimum coefficients of friction to prevent skidding for an electric railway train. In order to make the calculations as general as possible it is assumed that the train is composed of both motor and trail cars, and that each car has one two-motor truck and one trailer truck. All trucks are assumed to have two axles.

In general the method consists (1) in determining the rate of retardation of the train as a whole, including the added inertia effect of the rotating parts; (2) in determining the transfer load due to inertia, drawbar pull and brake-rod pull, thus giving the wheel loads during braking; (3) in determining the tangential force exerted by the rail against the wheel and (4) of expressing this force in per cent of the wheel load.



FORCES ACTING UPON BODY OF MOTOR CAR

The calculation of the effect of angle of brake hangers, location of the brakeshoe on the wheel, etc., are not given here. They are taken up and discussed very clearly and at great length elsewhere, notably in the various writings of R. A. Parke. His articles give very clearly the effects of inertia in transferring the load, but cover single-car operation, operation of trains of cars of like design and operation of cars in which the inertia of rotating parts is not of as great importance as in modern electric railway operation.

Practical consideration must be included in the design of new cars and analysis of operation of existing equipment, which cannot be gone into at length here. Among such considerations are the following: (a) The proportion of wheel load below the spring suspension, which is generally greater for motor trucks than for trailer trucks. (b) The fact that the greater the rotative energy in a system of wheels, axle and armature, the less is the liability of skidding while the car is passing over a small slippery spot on the rail. (c) The use of the same pattern of brakeshoe on both motor and trailer wheels.

These items all tend to increase the coefficient of friction necessary to prevent the skidding of trailer wheels over that for motor wheels.

Assume a train comprising seven motor and three trail cars, with dimensions and other data given in Table I.

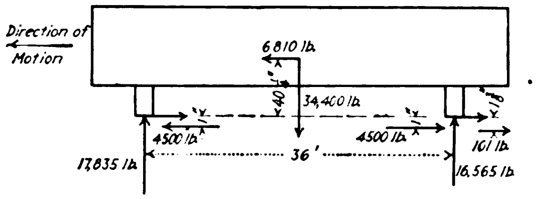
The kinetic energy in a pair of wheels, axle and gear when rotating is relatively greater than that in a non-rotating body of equal weight traveling at the same speed by the square of the radius of gyration of the rotating body divided by the square of the radius of the wheel.

In the case of the armature, shaft and pinion this value must also be increased by the square of the ratio of the number of gear teeth to the number of pinion teeth, using the radius of the motor wheel in the above.

The equivalent truck weights that contain the same amount of energy as that due to the rotation of rotating parts may then be found from:

$$W=\left(\frac{R}{r}\right)^2 \times W_r \text{ and } W=\left(\frac{R}{r} \times \frac{G}{P}\right)^2 \times W_r,$$

where W is the equivalent non-rotating weight
R, the radius of gyration of the rotating part
r, the radius of the wheel



FORCES ACTING UPON A BODY OF TRAILER CAR

W_r, the weight of the rotating body
G, the number of gear teeth
P, the number of pinion teeth.

By the use of these equations and by substituting the values previously assumed it is found that the rotation of each group of trailer wheels and axle increases the energy

TABLE I—DATA FOR USE IN COMPUTING BRAKING POWER OF TRAIN

	Motor Car	Trail Car
Weight of body:		
Motor end	20,400 lb.	17,200 lb.
Trailer end	20,510 lb.	17,200 lb.
Total weight	40,910 lb.	34,400 lb.
Weight of trucks:		
Motor truck	26,240 lb.	9,300 lb.
Trailer truck	10,210 lb.	9,300 lb.
Total weight	77,360 lb.	53,000 lb.

	Motor Truck	Trailer Truck	Both Trucks
Wheelbase	80 in.	66 in.	66 in.
Diameter of wheels	34¼ in.	31¼ in.	31¼ in.
Weight of pair of wheels, axle and gear	3,090 lb.	1,940 lb	1,940 lb.
Radius of gyration of wheel group	10.8 in.	10.5 in.	10.5 in.
Gear ratio	60:16	....	....
Weight of armature shaft and pinion	1,800 lb.	....	....
Radius of gyration of armature group	6.67 in.	....	....
Nominal service shoe pressure; one pair of shoes:			
Front wheels	26,180 lb.	13,640 lb.	12,375 lb.
Rear wheels	21,420 lb.	11,160 lb.	10,125 lb.
Ratio of emergency to service pressures	60:50	60:50	60:50
Height of center plate above rail.	29¾ in.	29¾ in.	29¾ in.
Height of brake pull rod above rail	33¾ in.	28¾ in.	28¾ in.
Pull in brake pull-rod service application	8,240 lb.	4,960 lb.	4,500 lb.
Height of center of gravity of truck above rail	18 in.	18 in.	18 in.
Height of center of gravity of body above rail	65 in.	....	70 in.
Center to center of trucks	36 ft.	....	36 ft.
Height of couplers above rail	28⅝ in.	....	28⅝ in.
Coefficient of friction of shoes on wheels	35 per cent	....	35 per cent
Brake rigging efficiency	70 per cent	....	70 per cent

The center of gravity of each body is assumed midway between the center of trucks.

of the moving train by an amount equal to the energy of a non-rotating weight of 876 lb., moving at the same speed as the truck. The corresponding weights for each armature, shaft, pinion group, and for each motor wheel, gear and axle group are 3840 lb., and 1229 lb. respectively, or 5069 lb., for each combined group of motor wheels, gear, axle, armature, shaft and pinion.

This gives the following data:

Equivalent weight of one motor car
$= 77{,}360 + (2 \times 5069 + 2 \times 876) = 89{,}250$ lb.
Equivalent weight of one trail car
$= 53{,}000 + (4 \times 876) = 56{,}504$ lb.
Equivalent weight of motor truck
$= 26{,}240 + (2 \times 5069) = 36{,}378$ lb.
Equivalent weight of motor-car trailer truck
$= 10{,}210 + (2 \times 876) = 11{,}962$ lb.
Equivalent weight of trailer-car trailer truck
$= 9300 + (2 \times 876) = 11{,}052$ lb.
Equivalent weight of ten-car train
$= (7 \times 89{,}250) + (3 \times 56{,}504) = 794{,}262$ lb.
Actual weight of ten-car train
$= (7 \times 77{,}360) + (3 \times 53{,}000) = 700{,}520$ lb.

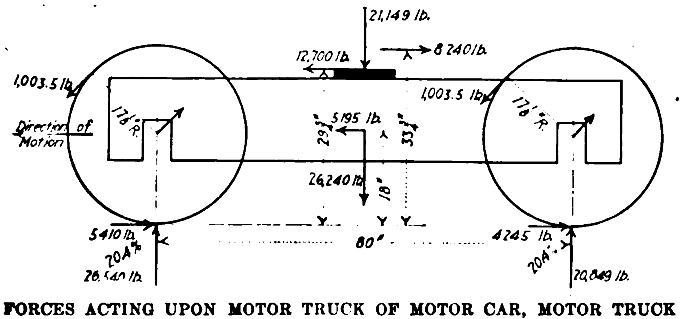
i. e., rotation increases the energy of the train by 13.38 per cent, that of the motor car by 15.37 per cent and that of the trail car by 6.61 per cent.

A brake-rigging efficiency of 70 per cent was assumed, so the actual shoe pressure on the entire train is 70 per cent of the total nominal shoe pressure, or 449,260 lb. The total friction generated by the brakeshoes is 35 per cent of the total actual shoe pressure, or 157,241 lb. This is the total "equivalent weight" of the train multiplied by 0.19797; therefore the rate of retardation of the train will be 0.19797 times the acceleration of gravity, or $0.19797 \times 21.93 = 4.34$ m.p.h.p.s.

The total shoe friction of one motor car is 35 per cent of the total actual shoe pressure of one motor and one trailer truck, or 17,738 lb., while the total force required to retard the car is $0.19797 \times 89{,}250$, or 17,669 lb. This leaves a balance of 69 lb., required to act through the drawbar in retaining trail cars.

Likewise the total shoe friction of a trail car is 11,025 lb., as compared with 11,186 lb., required to retard the car. This leaves 161 lb. by which the motor cars must retard each trail car through drawbar pull.

In so far as the transfer of weight is concerned, it is immaterial whether the drawbar reaction consists of a single force at one end of a car, or is the algebraic sum of forces acting at both ends of the car, since the drawbars are all assumed to be at the same height from the rail. In analyzing the transfer of loads we shall therefore consider the drawbar reaction to be a push of 69 lb., forcing the body of the motor car forward, and to be a pull of 161 lb., forcing the body of the trail car back.



FORCES ACTING UPON MOTOR TRUCK OF MOTOR CAR, MOTOR TRUCK LEADING

Referring to the diagram showing forces acting on the body of a motor car, let us consider first the motor truck as leading. The first force to consider is that due to the inertia of the car body, which acts horizontally forward through the center of gravity and is equal to 0.19797 times the weight of the body, or 8099 lb. This force acts 35¼ in. above the center plate.

Next in importance are the motor and trailer-truck pull-rod forces which act horizontally, forward 4 in. above and rearward 1 in. below the center plates respectively.

The drawbar reaction is a forward pull of 69 lb., acting horizontally 1⅜ in. below the center plate. The moments of all of these forces, except the last, about any point in the plane of the center plates is in such a direction as to lift a portion of the load from the rear truck and transfer it to the forward truck.

These forces have the following moments about the forward center plate:

$8099 \times 35\frac{1}{4} = 285{,}490$ lb.-in. due to inertia of car body
$8240 \times 4 = 32{,}960$ lb.-in. due to motor-truck pull-rod
$4960 \times 1 = 4{,}960$ lb.-in. due to trailer-truck pull-rod
Total $= 323{,}410$ lb.-in.
less $69 \times 1\frac{3}{8} = 95$ lb.-in. due to drawpull
leaving 323,315 lb.-in. tending to lift the load from the rear and add it to the front truck.

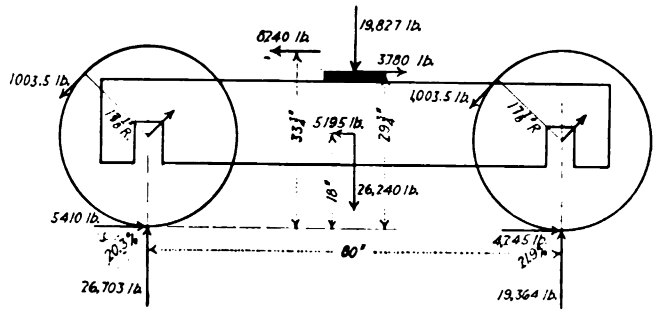
Dividing this by the center-to-center distance of the trucks, 432 in., gives 749 lb. transferred from the rear truck to the front, leaving 19,761 lb. on the rear trailer truck and 21,149 lb. on the front motor truck.

When the trailer truck is leading, the calculations are similar and result in a total net transfer of 573 lb. from the rear to the front truck, leaving 19,827 lb. on the rear motor truck and 21,083 lb. on the front trailer truck.

In considering the transfer of load on a trail car, the calculations are similar to those for motor cars, except that since the two pull rods are in the same plane and have the same pull their effect may be neglected, and also it is immaterial for the same reason as to which truck is in the lead.

The forces acting are shown in the accompanying diagram of forces acting on a trail car body. They result in a transfer of 635 lb. from the rear to the front truck, leaving 16,565 lb. on the rear truck and 17,835 lb. on the front one.

In calculating the forces acting on the trucks, let us first take the case of the motor truck when at the forward end of the car. The shoe friction required to retard the motion of translation of the truck is $0.19797 \times 26{,}240 = 5195$ lb. That to retard the motion of rotation of the wheels, axles, gears, pinions, armatures and shafts is $2 \times 0.19797 \times 5069 = 2007$ lb., or a total of 7202 lb. shoe friction to retard the truck.

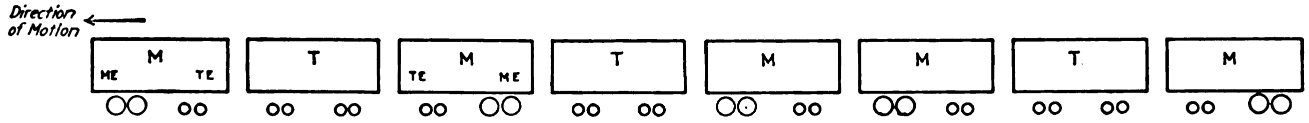


FORCES ACTING UPON MOTOR TRUCK OF MOTOR CAR, TRAILER TRUCK LEADING

The total nominal shoe pressure on the motor truck is 47,600 lb., therefore the total shoe friction on the motor truck is $0.35 \times 0.70 \times 47{,}600$ or 11,662 lb. This leaves 4460 lb. by which the motor truck retards the body and by which the body pushes ahead on the motor truck.

By referring to the diagram of forces acting on the motor truck we see that in this case the brake pull rod is pulling the truck back with a force of 8240 lb., while the net reaction of the body on the truck is a push of 4460 lb. forward; therefore the body center plate must be pushing the truck forward with a force of 8240 lb.+4460 lb., or 12,700 lb., as shown.

Since the truck is retarding the rotating parts by clockwise torques, the inertia of the rotating parts is reacting on the truck as a whole with the counter-clockwise torques as shown.



	M				T				M			
At Rest												
Wheel Load	23320	23320	15360	15360	13250	13250	13250	13250	15360	15360	23320	23320
Shoe Friction	0	0	0	0	0	0	0	0	0	0	0	0
Coef. of Friction	-	-	-	-	-	-	-	-	-	-	-	-
Service Stop												
Wheel Load	26540	20849	17216	12755	15719	11416	14948	10917	18027	13266	26703	19364
Shoe Friction	5410	4245	3169	2561	2859	2308	2859	2308	3169	2561	5410	4245
Coef. of Friction	20.4	20.4	18.4	20.8	18.2	20.2	19.1	21.1	17.6	19.3	20.3	21.9
Emergency Stop												
Wheel Load	27183	20355	17587	12235	16213	11049	15787	10451	18560	12848	27379	18573
Shoe Friction	6492	5094	3803	3073	3431	2870	3431	2870	3803	3073	6492	5094
Coef. of Friction	23.9	25.1	21.6	25.1	21.2	26.0	27.4	27.4	20.5	23.9	23.7	27.4

Drawbar								For 9 and 10 Car Trains
At Rest	0	0	0	0	0	0	0	
Service Stop	69	+92	+23	+184	+115	+46	+707	+138 +69 +0
Emergency Stop	-83	+110	+27	+270	+137	+54	+247	+169 +83 +0

Note: + Drawbar Reactions Indicate Tension; − Indicate Compression If the Direction of Motion is Reversed the Drawbar Reactions are Reversed

GRAPHICAL TABLE OF DISTRIBUTION OF LOAD, SHOE FRICTION AND DRAW BAR REACTIONS DURING BRAKING

The forces shown react with the following moments:

$12{,}700 \times 29\frac{3}{4} = 377{,}825$ lb.-in. center plate reaction
$5195 \times 18 = 93{,}510$ lb.-in. inertia of truck translation
$2 \times 1003\frac{1}{2} \times 17\frac{1}{8} = 34{,}370$ lb.-in. inertia of rotating parts tending to lift load from rear to front axle.

Total $= 505{,}705$ lb.-in.
$8240 \times 33\frac{3}{4} = 278{,}100$ lb.-in. pull rod reaction tending to lift load from front to rear axle.

277,605 lb.-in. net moment tending to transfer load from rear to front axle.

Dividing 227,605 lb.-in. by 80 in., the truck wheelbase, gives 2845 lb.,transferred from the rear to front axle, leaving 26,540 lb. on the front axle and 20,849 lb. on the rear.

The nominal shoe pressure on the leading pair of wheels is 26,180 lb., therefore the shoe friction on these wheels is $0.35 \times 0.70 \times 26{,}180$, or 6414 lb. The retarding of the rotating parts requires $0.19797 \times 5069 = 1003\frac{1}{2}$ lb., leaving 5410 lb. tangential force between wheel and rail. Similarly the tangential force on the rear pair is 4245 lb.

In the case with the trailer truck leading, the direction of the force exerted by the pull rod on the truck is reversed, which also results in changing both the magnitude and direction of the horizontal force exerted by the body center plate upon the truck center plate. The net moment of the several forces acting becomes 293,525 lb.-in., which tends to lift 3669 lb. from the rear axle and add it to the front, leaving 26,703 lb. on the front axle and 19,364 lb. on the rear axle.

Similar calculations for the trailer trucks give the results shown in Table II.

From this table it is evident that theoretically, under the assumed conditions the liability of skidding is about equal for all three trucks as the minimum coefficient of friction to prevent skidding is about the same, namely, 21.9 per cent for motor truck; 20.8 per cent for motor-car trailer truck, and 21.1 per cent for trail-car trailer truck.

The calculations for an emergency stop are similar to those for a service stop, and as they have been made for the latter car it is unnecessary to go through the entire process again, as both the coefficient of friction and the brake-rigging efficiency can be assumed the same as for service stop. The rate of retardation, therefore, and the forces in brake rods are 20 per cent greater for emergency, resulting in 20 per cent greater transfer of load, shoe friction and drawbar reactions.

For example, take the forward pair of motor wheels, the motor truck leading. With the car at rest they carry 23,320 lb. and during a service stop 26,540 lb., *i. e.*, 3220 lb. is transferred to them. During an emergency stop this difference is increased by 20 per cent. They therefore carry $23{,}320 + (1.2 \times 3220) = 27{,}184$ lb. The shoe friction becomes $1.2 \times 5410 = 6492$ lb., and the minimum coefficient of friction that will prevent skidding is 23.9 per cent.

TABLE II—DISTRIBUTION OF LOAD ON TRAILER-TRUCK AXLES

	Front Axle			Rear Axle		
Motor car— Motor truck leading.	Wheel Load Pounds	Rail Friction Pounds	Minimum Coefficient of Friction Per Cent	Wheel Load Pounds	Rail Friction Pounds	Minimum Coefficient of Friction Per Cent
Motor truck	26,540	5410	20.4	20,849	4245	20.4
Trailer truck	17,216	3169	18.4	12,755	2561	20.8
Motor car— Trail truck leading.						
Motor truck	26,703	5410	20.8	19,864	4245	21.9
Trailer truck	18,027	3169	17.6	13,266	2561	19.3
Trail car—						
Front truck	15,719	2859	18.2	11,416	2308	20.2
Rear truck	14,948	2859	19.1	10,917	2308	21.1

Similarly for the other wheels the figures in Table III are obtained.

TABLE III—LOADING ON AXLES IN MAKING EMERGENCY STOP

	Front Axle			Rear Axle		
Motor car— Motor truck leading.	Wheel Load Pounds	Rail Friction Pounds	Minimum Coefficient of Friction Per Cent	Wheel Load Pounds	Rail Friction Pounds	Minimum Coefficient of Friction Per Cent
Motor truck	27,184	6492	23.9	20,354	5094	25.1
Trailer truck	17,587	3803	21.6	12,235	3073	25.1
Motor car— Trailer truck leading.						
Motor truck	27,379	6492	23.7	18,573	5094	27.4
Trailer truck	18,560	3803	20.5	12,848	3073	23.9
Trail car—						
Front truck	16,213	3431	21.2	11,049	2870	26.0
Rear truck	15,287	3431	22.4	10,451	2870	27.4

The minimum coefficient of friction that will prevent skidding during an emergency stop then becomes: for motor wheel, 27.4 per cent; motor car trailer wheel, 25.1 per cent; trail car trailer wheel, 27.4 per cent. This is very uniform for the various conditions. For the reasons pointed out in the beginning, the trailer wheels are most liable to skid. This is desirable, as the costs involved in turning flat wheels are much less for the trailer trucks.

The rate of retardation would be $1.2 \times 4.34 = 5.21$ m.p.h.p.s.

The drawbar reactions become 83 lb. for a motor car forcing the car ahead, and 193 lb. retarding each trail car.

Chemical Fire Protection for the Car-Storage Yard

Chicago Elevated Has Built Ten Cars Equipped with Chemical Apparatus, Including Two 100-Gal. Operating Tanks and a 500-Gal. Auxiliary Supply Tank Particularly for Use to Extinguish Fires Where Water Mains Are Not Available

THE Chicago Elevated Railways, has several car storage yards where there are no fire water mains in the immediate vicinity. It has been impossible, therefore, to install hydrants and connect with the city water mains, and as a result fire cars equipped with chemical fire-fighting apparatus have been resorted to for protection. It is not assumed that these yards are as well protected as those provided with water, but the cars prove a very effective means of protection and have so far been very successful. Ten cars are in use in Chicago, one in each of ten different storage yards of the elevated system. All of these cars were built in the shops of the company, most of them several years ago. The bodies were designed especially for the purpose and were placed on either standard passenger trucks or those of the arch-bar type depending upon which happened to be available.

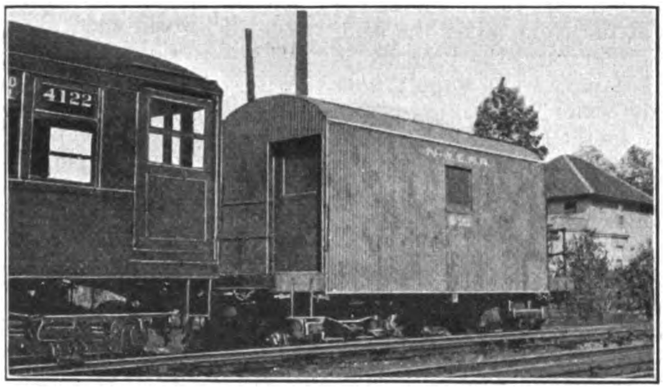
The general construction and appearance of the cars are shown in the accompanying illustrations. They are of two types, differing only in a few details of construction and in the type of the fire-fighting equipment. The four cars first constructed are of the type shown in the illustrations on page 754. The over-all length is 24 ft. 11 in., and the over-all width 7 ft. 11 in., while the cab is 18 ft. 10½ in. long and the over-all height from the top of the rail is 12 ft. 3½ in. None of the fire cars are equipped with motors but those of this type are equipped with air brakes. Current for lighting and heating the cars is obtained through the customary contact with the third-rail. These cars are sheathed with Transite so that no wood is anywhere exposed on the outside of the car.

The fire equipment was furnished by the American La France Fire Engine Company and consists of two 100-gal. tanks filled with water with 46 lb. of soda in solution in each. Immersed in this solution is a brass cylinder containing 1 gal. of sulphuric acid. In case of fire the cap is removed from the acid cylinder by lifting a rod in the top of the tank and the jar is inverted by turning a handle at the side of the tank. The crank or agitator at the front of the tank is then turned vigorously, thus mixing the acid, soda and water. When the pressure reaches 70 lb., which normally takes about three or four minutes, the solution is ready to play on a fire. In the meantime the motor car which is always coupled to the fire car has conveyed the equipment to the scene of the fire. Two 150-ft. lines of rubber hose are supplied and, by the arrangement of valves, both lines can be used simultaneously or both tanks can be discharged through either line. When not in use the hose is kept coiled up in wire racks above the tanks.

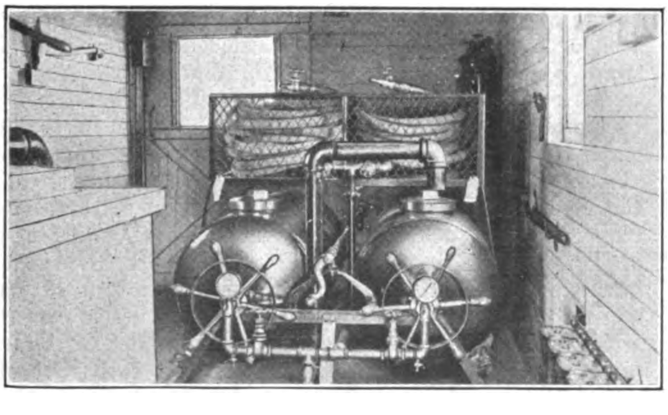
The equipment is located in one end of the car. In the opposite end is a 500-gal. auxiliary water supply tank which is used to refill the fire tanks. This is accomplished by air pressure direct from the motor car. Enough acid and soda are kept available to recharge immediately each of the fire tanks once. To accomplish this immediately after discharge the acid cylinder is returned to its normal position and the blow-off valve is opened to reduce the pressure. The cap and cylinder are then removed and the blow-off valve is closed. The tank is then filled with water, a new charge of soda is dissolved in it and a new cylinder of acid is immersed.

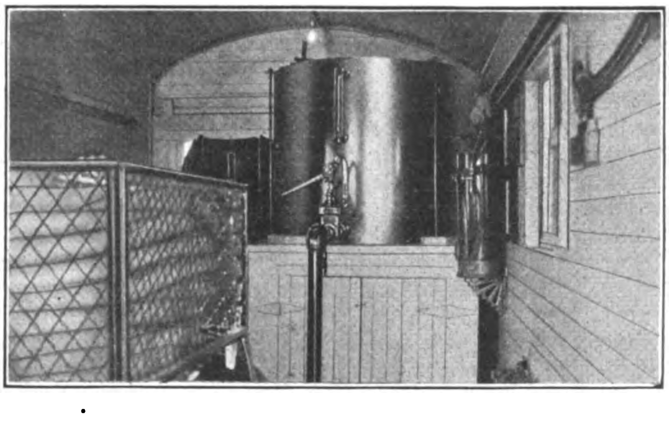
There are also, in the fire cars, two 6-gal. portable fire extinguishers made by the same company and working on a similar principle. Other equipment consists of two fire axes, two pike poles, one saw and two oil tail-lights. Com-

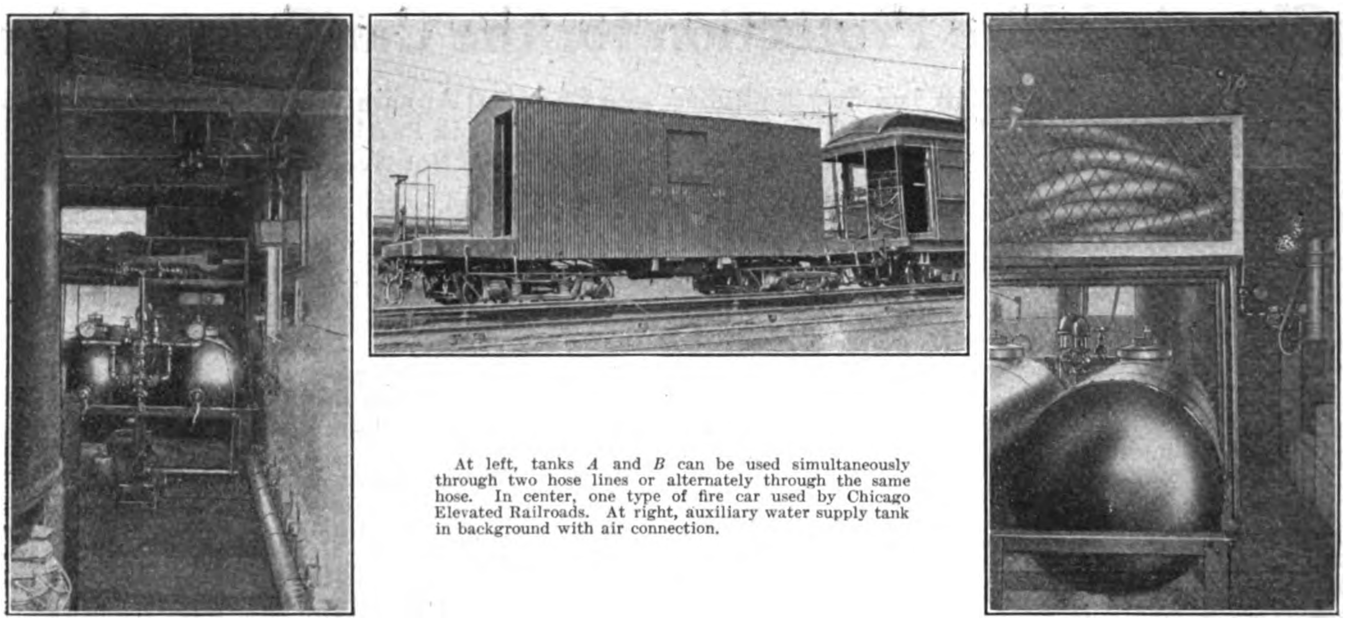
CHICAGO ELEVATED RAILWAYS' CHEMICAL FIRE-EXTINGUISHING APPARATUS FOR PROTECTING CAR-STORAGE YARD



At top, the latest type of fire car built by the Chicago Elevated Railways. At left, the operation of these tanks is more simple than on the older car. At right, the fire tanks are filled from auxiliary supply tank by gravity.







At left, tanks *A* and *B* can be used simultaneously through two hose lines or alternately through the same hose. In center, one type of fire car used by Chicago Elevated Railroads. At right, auxiliary water supply tank in background with air connection.

plete directions for operation are placed in glass frames on the wall. Although the cars are electrically lighted by six 23-watt tungsten lamps controlled by a switch at the doorway, an oil lantern is kept burning during all hours of darkness.

The type of car later constructed is illustrated in the halftones on page 753. This car has an over-all length of 27 ft. 4 in., and an over-all width of 8 ft. 5 in. The cab is 19 ft. long and the over-all height is 12 ft. 3½ in. This car has an arch roof and is sheathed with corrugated iron. Current for lighting is secured through the third-rail contact.

The fire equipment of these cars is furnished by the same company. It consists of two 100-gal. tanks with a somewhat different arrangement from that already described. In this case the acid bottle has a floating cork and in case of fire the entire tank is revolved, thus emptying the contents of the bottle into the water. A half revolution of the tanks by means of the handles at the front mixes the acid, water and soda and, as in the other case, the pressure is shown on the indicators. The auxiliary water supply tank has a capacity of 300 gal. and the water for refilling passes into the fire tanks by gravity and by the aid of a small hand pump.

It is, of course, necessary to heat the cars in the winter, which is done by the watchman, who maintains the same heat in the fire car as he does in the passenger cars. The watchman also takes care of the oil lantern.

A motor passenger car is coupled to the fire car as long as there is any other equipment in the yards. Thus the last car to leave the yard is the motor attached to the fire car. This, however, does not necessitate the permanent tying up of a passenger equipment, for when this car is needed all other cars are out and there will be no need for the fire equipment.

There are always men in the yard available to man the fire equipment so that special help for this purpose is not necessary. On a fire signal the nearest dispatcher or yardman takes charge as motorman, while the next lines up the switches and then operates the fire car as outlined. Others immediately begin moving cars away from the fire. Controller handles are kept in the fire car so that there may be no delay in getting the equipment under way by whoever arrives on the scene first. The fire tanks are recharged every six months, at which time a fire drill is carried out to see that all equipment is in good order. Fire drills without discharging of the tanks are held twice a month. The interior of the cars is white and the tanks are painted red and have brass trimmings.

Very seldom has necessity required the use of the fire cars, but all have seen some service. They have been shown to answer the purpose admirably and there has never yet been a case where the congestion in the yard was so great that the fire car could not reach its objective. If necessity demanded, the cars could be run out of the yards to serve near-by stations on the elevated structure or the structure itself, but under ordinary circumstances the city fire department can satisfactorily handle such cases.

Prospects of Railroad Electrification

IN THE Oct. 16, 1919, issue of the *Canadian Engineer,* F. H. Shepard, director of heavy traction Westinghouse Electric & Manufacturing Company, has an article analyzing the world-wide situation in the matter of railroad electrification. After enumerating certain specific advantages of electrification he refers to fundamental principles in this statement: "An electrical method will in the beginning take the place of an older practice because of some economic superiority. Then its almost unlimited inherent possibilities are developed, and in time results are accomplished that would be impossible at any cost with the older methods. There is good reason to suspect that the electric operation of the railroads is capable of a similar development and will in time revolutionize our present transportation methods and provide us with services we know little or nothing about today."

Mr. Shepard says further that since the United States has an abundance of coal railroad electrification there has been determined solely by the local conditions. Differing from North American, European and South American countries, with the exception of England alone, lack an adequate supply of fuel, but many of them have large amounts of water power, while France has a moderate amount. These resources combined with the high cost of fuel make extensive railroad electrification in these countries inevitable sooner or later. The neutral countries will probably be the first to undertake this work, Switzerland having a well-established program covering a term of years, while both Norway and Sweden are giving active consideration to definite projects. Steps preliminary to electrification are being taken in England, France, Italy, Belgium, Spain, Brazil and South Africa.

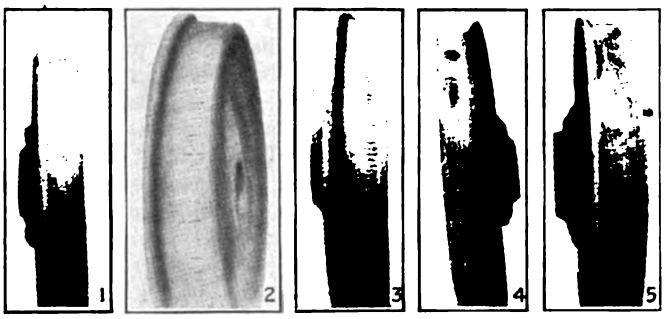
Limiting Features in the Life and Performance of Chilled Iron Wheels

A Discussion of the Effect that Braking Pressures and Mating of Wheels Have on Wheel Life, Together with Methods of Measuring Worn Wheels for Removal as Given by the Association of Manufacturers of Chilled Car Wheels

GEORGE W. LYNDON, president, and F. K. Vail, consulting engineer Association of Manufacturers of Chilled Car Wheels, have prepared a valuable study of the chilled wheel in its various aspects. Some parts of this are abstracted below.

The life of chilled iron wheels is reduced somewhat, due to the fact that the tread of the wheel is used for applying the brakes to retard the speed of cars. These braking operations develop high temperatures in the tread of the wheel in a short time, producing thermal cracks regardless of the type of metal of which the tread is composed. The coefficient of friction between the wheel and the rail is very irregular which causes the wheel to slip and cause flat spots. The friction of the brakeshoe is also of variable quantity and depends upon the velocity of wheel rotation and shoe pressure. At 10 m. p. h. the coefficient of friction in a modern brakeshoe will reach 40 per cent or more. With a coefficient of friction as high as this the tendency to skid is very great if the friction between the wheel and rail is very much less. Some average values for the coefficient of friction between the wheel and rail under different conditions are: clean dry rail, 20 to 25 per cent; clean, thoroughly wet rail, 18 to 20 per cent; oily and moist rail, 15 to 18 per cent; sleety rail, 15 per cent; snow-covered or frosty rail, 10 per cent.

A comparison of these values shows why the number of flat wheels is very much greater in winter than in summer. The percentage of slid flat and comby wheels developed in January and February is easily three times as great as that for July and August.

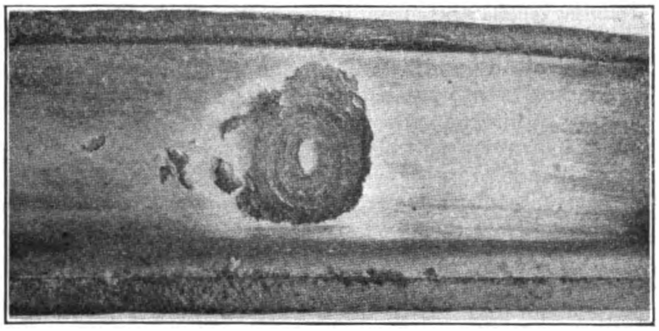


DEFECTS IN WHEELS. 1 AND 2—BRAKE-BURNT. 3—COMBY FROM BURNT BRAKE. 4—SLID FLAT, SHOWING HEAT CRACKS. 5—COMBY FROM SLID FLAT

Wheels of equal circumference should be selected for mounting on the same axle, as this materially improves the wheel performance, and at the same time reduces train resistance.

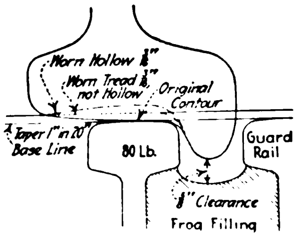
If one wheel is of a tape-size ⅛ in. greater than its mate the result will be a slippage, when in service, of 6 ft. per mile, and if each wheel is expected to give a performance of 60,000 miles the slippage will be 360,000 ft. or approximately 70 miles, providing the difference in diameter remains the same as when the wheel went into service. This latter assumption, however, will not hold, for the slippage reduces the diameter of the smaller wheel so that the difference is continually growing greater, thereby hastening the time when the wheel must be removed from service on account of wear.

Not only does slippage shorten the life of the wheel but, on account of the difference in diameter, the small wheel grinds the rail and a sharp flange is the result. The continual grinding against the rail also very materially increases train resistance, rail wear and the tendency for derailment on curves having worn rails.



TYPICAL SHELL-OUT IN WHEEL

Extreme care must be used in mounting wheels to insure proper gaging. Not only must the distance from flange to flange be accurate, but the wheels must be uniformly spaced from the center of the axle. In pressing the wheel on the axle recording gages should be used on the wheel press to permit a study of the conditions of mounting on each axle. The pressure should increase uniformly from beginning to end.

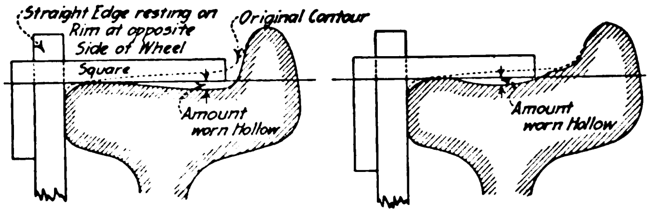


POSITION OF NEW WHEEL ON RAIL

Another common defect in wheels is known as "shell-out." Years ago it was supposed that shelling occurred on account of defects in the metal in the tread of the wheel; that possibly there was some foreign material, as slag or sand, imbedded in the metal which gave rise to this defect. It was found that the defect existed only in the class of service having maximum amount of skidding and under equipment of considerable weight. It was also found that where a shelled spot occurred in one wheel the mate wheel had a similar defect in the same plane.

The conclusion reached from this study was that the tremendous amount of heat generated at the small contact area between the wheel and rail during the period while the wheel is sliding is responsible for the peculiar result. The metal at this spot is heated almost to the melting point and is immediately cooled, giving it a very high temper. The subsequent pounding on the rail causes the metal to disintegrate, starting at the surface at the center and increasing in depth as the disintegration recedes from the center. This condition is aggravated by the improper boring and mounting of wheels, and also by irregularities in braking power between different cars, irregularities in the equipment itself arising from unequal piston travel, improper brake hangers and other improper adjustments.

The amount by which a wheel may be worn in tread before removal from service is left largely to the judgment of the car inspectors. The idea behind the M. C. B. rule on this point is that when a wheel is sufficiently worn to permit the rim to project below the top of the rail, where it is likely to receive blows from frogs and crossings, or when the flange becomes so high that the apex is likely to strike the bottom of flangeway, it should be removed from service. Wheels that are excessively hollow are likely to damage tracks and crossings on account of the overhanging rim, and of the high flange, which causes excessive pounding and rapid deterioration of the track at these points.



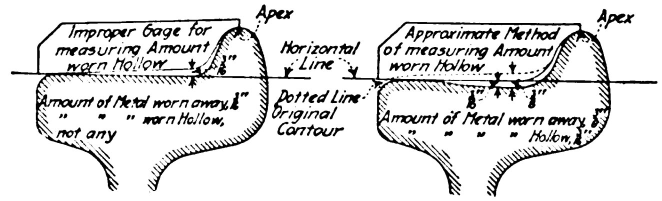
APPROXIMATE METHOD OF MEASURING AMOUNT BY WHICH WHEEL IS WORN HOLLOW

An accompanying illustration shows the position of a new wheel on the rail. It will be seen that a wheel of the taper shown can be worn $\frac{3}{16}$ in. at the throat, and still the rim will not project below the top of the rail. If the rail were wide enough to cover the whole wheel tread, the wear would continue evenly across the tread, in which case it could be worn to any depth without becoming hollow, and the rim would not project below the top of the rail.

It is the practice in track work to allow a minimum of $\frac{5}{8}$ in. for flange clearance at the bottom of flangeways in frogs, crossings, guard rails, etc. This allows the tread to wear down $\frac{5}{8}$ in. before the flange will strike frog and crossing fillings on new rails.

Methods for measuring the amount to which a wheel is worn hollow are shown in accompanying illustrations. One of these consists of using a straight edge which is laid across the face of the wheel resting on the rim at opposite sides, to which a square can be applied. This eliminates all reference to the original contour, height or flange and amount of wear near the rim, and simply shows the amount worn hollow. It is evident that the point of contact of the square must be at the highest point on the tread near the rim.

The second method shows a gage for measuring the approximate amount that a wheel is worn hollow. This gage is constructed so that when it has a bearing at the apex of the flange and on the highest point of tread near the rim, the bottom of the gage is horizontal with reference to the wheel when in service, and since the apex of the flange and the tread near the rim wear but slightly as compared with the tread of the wheel, the amount that the tread may be below the gage represents the amount that the wheel is worn hollow. The upper half of this illustration shows a wheel in which the taper has been worn away and no wear has taken place on the tread near the rim. The wheel, therefore, is cylindrical and is not worn at all hollow, although the gage shows $\frac{3}{16}$ in. wear. It is thus demonstrated that this is an improper method for measuring the amount worn hollow.


Apex
Improper Gage for measuring Amount worn Hollow
$\frac{3}{16}$"
Amount of Metal worn away $\frac{3}{16}$"
" " " worn Hollow, not any
Horizontal Line
Dotted Line Original Contour
Apex
Approximate Method of measuring Amount worn Hollow
$\frac{1}{16}$"
$\frac{1}{8}$"
Amount of Metal worn away $\frac{3}{16}$"
" " " " Hollow, $\frac{1}{8}$"

GAGE FOR MEASURING APPROXIMATE AMOUNT BY WHICH WHEEL IS WORN HOLLOW

In regard to the amount a wheel shall be worn hollow, the M. C. B. Association proceedings for 1905 recommend that wheels be allowed to wear down $\frac{3}{8}$ in. before they are condemned unless worn through the chill. Wheels of the ordinary taper can be worn $\frac{3}{8}$ in. from the original contour at the throat before they can become worn $\frac{3}{16}$ in. hollow. It is also evident that if the rim wears down, a total of more than $\frac{3}{8}$ in. can be secured before the wheel is worn sufficiently to condemn it. It is also evident that it is possible to modify the taper and especially the drop-off taper in such a manner that more than $\frac{3}{8}$ in. wear can be secured before the wheel is $\frac{3}{16}$ in. hollow.

Use and Misuse of Arc Welding Apparatus

Protection of the Operator's Eyes, Head and Hands Is Essential, and the Apparatus Should Be Screened to Protect Near-by Workmen

By H. L. Unland
Power and Mining Engineering Department, General Electric Company, Schenectady, N. Y.

MANY of the accidents which occur during welding operations are the result of misconception of the nature of the equipment and its proper use. By the use of a few simple precautions many such accidents can be avoided.

In the first place the eyes should be thoroughly protected from the light of the arc, as very brief exposure may bring on painful results. A mask is commonly used. Care should be taken that no chinks or holes exist in the mask, and the inside should be kept painted dull black to prevent reflection of the light from behind. The construction usually employed consists of a thin sheet of aluminum formed to the proper shape and provided with an adjustable band for supporting it from the operator's head. There is an opening in the front provided for a window of glass which may be either a number of individual sheets of different colors or a single compound sheet. The colored protective glass should be sufficiently dense to reduce the light intensity to a value not objectionable to the eye and still leave the definition of the area immediately around the arc clear. Different color combinations are used, but the most general seems to be a combination of red and green glass. It is advisable to keep a piece of clear glass on the outside, since in welding this outside surface may be struck by particles of molten metal which will roughen it.

A hand shield is frequently used for metallic electrode welding. It consists of a light wooden frame with provision for a protective glass window. The protective glass is the same as used in the mask, and a light box frame surrounding the window is fitted to the operator's face to prevent light from the side reaching the eye.

A proper construction for an electrode holder is essential for rapid and careful work. This should grip the electrode securely and the clamping arrangement should be such as to facilitate changing electrodes easily. It should be constructed so that excessive heat will not reach the operator's hands and the weight should be reduced so as to facilitate manipulation. Its construction should be such that all operating parts are protected from accidental contact to avoid injury to the workman.

Carbon electrodes should be rods of hard, homogeneous, uncored and uncoated carbon. The diameter necessary will vary with the current to be used, and the length will depend on the particular class of work to be done. The average lengths range from 9 to 12 in. For welding iron and steel the metallic electrode should be a high grade of low-carbon steel wire. A large number of tests were made by the Emergency Fleet Corporation to determine the best chemical analysis of wire for this purpose. The wire now supplied by the various manufacturers meets these requirements and can be purchased either direct from the maker or through jobbers, and can be obtained either in rolls or in short lengths. In ordering, " electric welding wire " should be specified since wire for acetylene welding is often treated in such a way as to render it unsuitable for electric welding. Electrode wire 18 in. in length is satisfactory for the usual operations, since it is about the greatest length that an operator can handle.

On account of the intermittent nature of the work it is possible to use smaller cables for welding circuits than is standard for the same current capacity on other work. In metallic electrode welding a length of at least 15 ft. of extra-flexible cable should be connected to the electrode-holder. For the ground connection or return cable, standard, extra-flexible cable insulated with varnished cambric for low-voltage circuits and covered with double waterproof braid may be used. For carbon electrode welding the arc is not as unstable as for metallic welding and therefore a heavier cable can be used.

It is difficult to give universally applicable figures covering amperes, speed, etc., for electric arc welding, due to the effect of conditions under which the work is done, the character of the work, and to a very large extent to the skill of the operator. The following figures are given as approximations and are based on favorable working conditions and a skilled operator.

METALLIC ELECTRODE WELDING

Light work 25 to 125 amp., heavy work up to 225 amp.

Electrode Diameter, Inches	Amperes	Corresponding Plate Thickness, Inches
1/16	25-50	Up to 3/16
3/32	50-90	Up to 1/4
1/8	80-150	1/8 to 3/8
5/32	125-200	1/4 up
3/16	175-225	3/8 up

NOTE: The same sized electrodes may be used with various thicknesses of plate. The heavier plate will require the use of the heavier current.

Approximate speeds and corresponding data for welding sheet metal with the metallic electrodes are:

Thickness of Plate Inches	Speed-Feet Per Hour	Cost Per Foot Dollars	Comparative Cost Per Foot Acetylene
1/16	20	2.12	1.78
1/8	16	3.12	4.66
1/4	10	7.13	13.10
3/8	6.5	12.30	36.10
1/2	4.3	19.80	Much higher
3/4	2.0	41.70	Much higher
1	1.4	61.30	Much higher

NOTE: The above figures are based on average figures for materials and labor. They will probably vary considerably for different localities and will vary slightly with the type of equipment, but the relative costs of gas and electric welding will in general hold true.

CARBON ELECTRODE WELDING USES

The carbon electrode can be used for welding and for building up metal in a large number of cases where the metal is not subjected to high strains or where it is under compression only. This process can be used to a very large extent in rough cutting of plates and surfaces.

The average current ranges for different types of work are: Light welding, 150 to 200 amp.; medium welding, 250 to 350 amp.; heavy welding and medium cutting, 400 to 600 amp.; very heavy welding and heavy cutting, 600 to 1000 amp.

The maximum values of currents permissible for carbon electrodes are:

Diameter of Electrodes Inches	Maximum Amperes
1/4	100
1/2	300
3/4	500
1	1000

Graphite electrodes permit the use of somewhat higher current densities, but the higher cost of graphite electrodes is a serious handicap in their use. Lower current values than the above may be used, but higher values will result in undue burning of the electrodes.

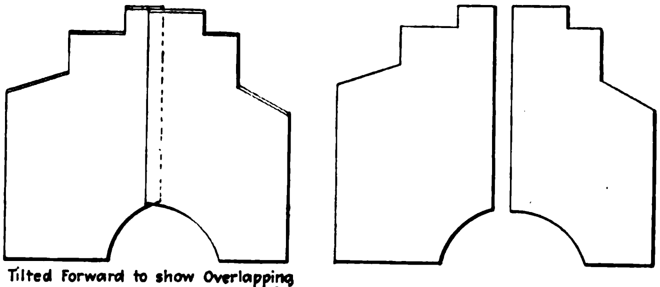
For depositing or building up metal by means of the carbon arc on flat surfaces where the work is accessible and all conditions favorable the following figures may be used:

Current Amperes	Pounds Per Hour	Cubic Inches Per Hour
200	1.5	5.4
300	3	10.8
400	4.5	16.2
500	6	21.6

NOTE: For continuous work the above figures may be used, but for short jobs of ten minutes or less, the rate will be double the above.

Improved Lubrication with Changed Motor Axle Boxes

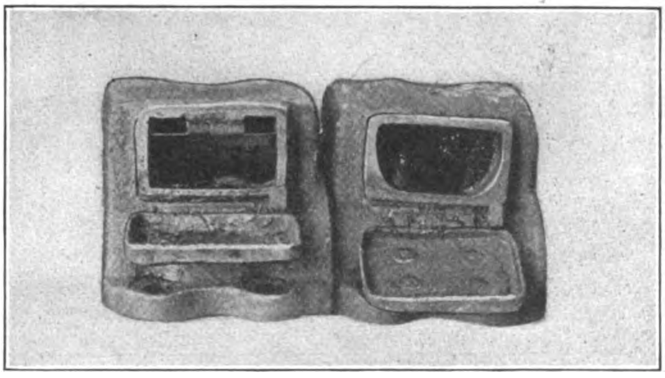
CONSIDERABLE difficulty was formerly experienced at Wilson Avenue shops of the Chicago Elevated Railways in maintaining proper lubrication in the motor axle bearing oil boxes of the GE-55 and GE-211 motors. These boxes are so large that unless an enormous quantity of waste is stuffed into them the waste will soon pack down in the bottom of the box away from the axle and become of little further use. On the other hand, if a sufficient quantity of packing is used to fill the box a correspondingly large quantity of oil must be used, much of which serves no useful purpose.



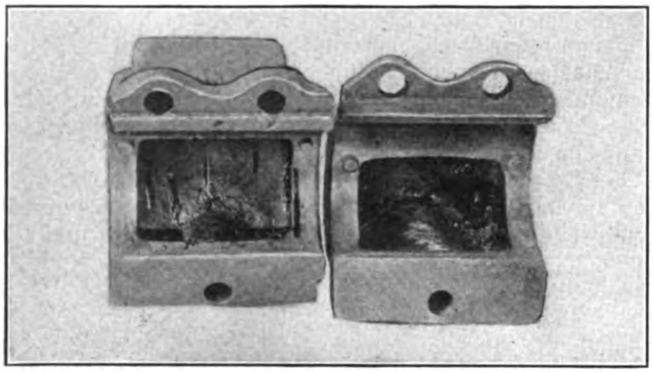
PATTERNS BY WHICH PARTITION IS MARKED OUT FOR CUTTING

To eliminate this trouble a partition is being welded into the boxes which divides the box practically in half. In order to get this inside the box it is essential that it consist of two parts, and No. 18 gage scrap sheet iron from old cars is used for the purpose. The proper patterns, as shown in an accompanying illustration, were first made by the cut-and-try method and from these the parts were marked out. These are shaped and installed as is clearly shown in the views of the completed boxes being electrically welded at the narrow end and around the circular edge.

Due to the inclination of this partition the force of gravity causes the packing to maintain constant contact with the axle. At the same time any surplus oil drains



REMODELED BOX AT LEFT—PIECES WELDED AT TOP EDGE—OIL AND WASTE PLACED IN SEPARATE COMPARTMENTS



REMODELED BOX AT LEFT—SLOPE OF PARTITION FORCES PACKING AGAINST AXLE

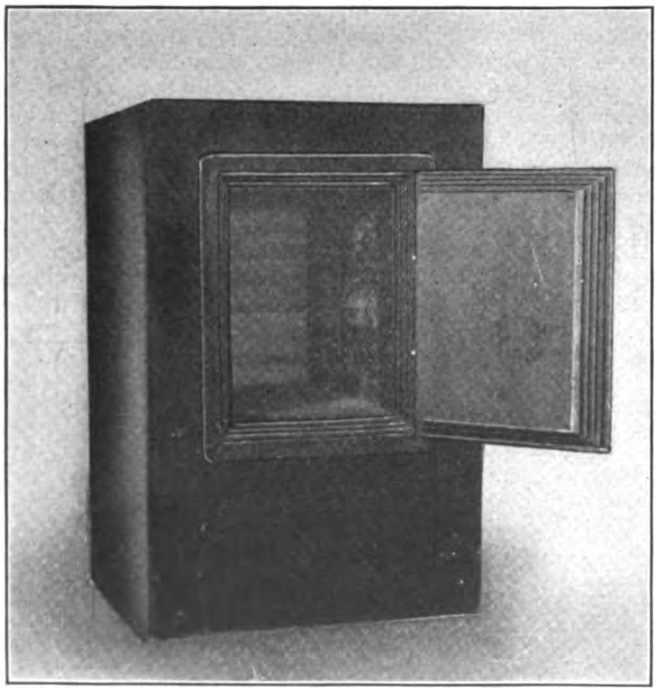
away from the packing and is absorbed by it only as needed for lubrication.

It is said that due to this slight change in the boxes at a very slight expense the amount of oil and packing necessary per car-mile has been greatly reduced and at the same time proper lubrication conditions are maintained.

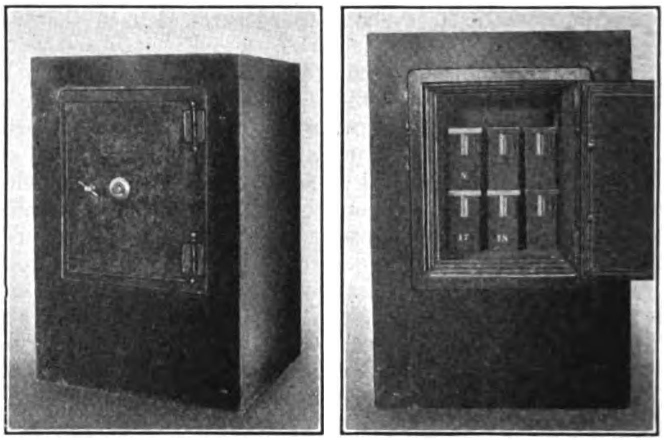
Providing Safe Storage for Fare-Box Vaults

ALL of the city cars of the Indiana Railways & Light Company, Kokomo, Ind., are equipped with Cleveland fare boxes. The vaults from these boxes are pulled twice a day, the second pulling taking place at the carhouse when the car is turned in for the night. These vaults are kept at the carhouse in a safe over night and are taken to the office every morning. The number of vaults to be pulled at night was recently increased by the equipment of additional cars with fare boxes, and as the full capacity of the safe was already being used it was thought that a new safe would have to be purchased. This necessity was obviated, however, when M. S. Ferguson, master mechanic, devised a method of increasing the capacity of the safe then in use.

The original interior dimensions of the safe were 16 in. wide, 22 in. high and 12 in. deep. By the use of an oxyacetylene torch the back of the steel safe was cut off and the safe was then set up on a brick foundation. A new wooden box corresponding in width and height to the interior of the safe was built onto the back, increasing the depth to 26 in. A wooden form 36 in. wide, 54 in. high and 40 in. deep was then built around the old safe and 1-in. steel plates were set on all sides half way between the form and the walls of the safe. Concrete of a 1 : 3 : 5 mix was poured into the form and further reinforced with ¾-in. steel rods tied with wire. This gives a heavily-reinforced wall of concrete 5 in. thick on sides, back and top of the old safe. A No. 14-gage steel plate facing was placed on the front of the safe and fastened in place by bolts anchored in the concrete. The new safe was then painted with black Eraderrust.



THE NEW SAFE IS AS STRONG AS THE OLD



STORAGE CAPACITY WAS DOUBLED BY INCREASING DEPTH
THE VAULTS STACK UP NICELY

The old safe held twelve vaults from the Cleveland boxes while the new one holds twenty-four and the cost of doubling the capacity has been very small as compared with the cost of a new safe.

Convention Statistics

THE registration figures, together with other statistical information for the recent Atlantic City convention compare very favorably with those of the two previous conventions held at the same place. While the attendance was not as large as in 1916, the exhibit space was exceeded. As for the new exhibitors in 1919 there were sixty-five that did not exhibit in 1916, while fifty-five who had exhibited in 1916 were not listed in 1919.

	1919	1916	1914
Officers of associations	30	66	31
American	367	248	196
Accountants	49	125	101
Claims	54	81	75
Engineering	284	547	360
Transportation	167	300	158
Total railway members	951	1,367	921
Individual members	48	44	73
Guests	315	231	144
Ladies	727	725	416
Manufacturers	1,125	904	900
Total other than railway members	2,215	1,904	1,533
Grand total registered	3,166	3,271	2,454
Exhibit space (square feet)	62,219	57,392	64,855
Number of exhibitors	155	145	165

An analysis of the records of the American Electric Railway Association giving an up-to-date list of companies now operating or about to operate one-man cars shows a total of 2409 cars. This includes one-man cars of all types; about 65 per cent being of the modern safety-car design.

Railway Shop Maintenance Kinks

Some Unusual Schemes Which Have Been Used to Keep Equipment in Service and to Reduce Maintenance Costs

By J. S. Dean

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

ALMOST every shop superintendent or master mechanic on an electric railway system has developed unusual schemes for handling certain details of his work that are ingenious and often effective in accomplishing the results sought. An interchange of ideas regarding such shop kinks will be helpful to other master mechanics. Some of these that have come to the writer's notice are presented herewith on their own merits and without comment. The reader is left, if interested, to prove or disprove their value by a fair trial. To save space the suggestions are given in condensed form, which will be convenient for reference.

Providing Proper Fit for Gears and Pinions

1. When the pinion fit is loose, a paper liner may be placed over the shaft before applying the heated pinion.
2. Some master mechanics use a thin sheet of metal liner instead of the paper liner.
3. The taper fit may be welded and the shaft remachined to give a tight pinion fit.
4. When the pinion goes on the shaft too far, thereby causing poor alignment of the sides of gear and pinion, a paper liner should be used to keep the pinion from riding up on the shaft too far.
5. When armatures are changed the pinions should be changed also so as to keep pinions and gears that have become well meshed always working together, to reduce noisy operation.

Remedies for Worn Split-Motor Housings

1. When housings or motor-frame seats become worn and the housing works loose, strips of canvas treated in white lead may be used to get a good tight clamping action of the frame on the housing.
2. In place of canvas, strips of advertising cardboard, well shellacked, have been used with success by some operators.
3. Worn housings may also be turned off, and metal rings may be shrunk on the machined surfaces and then turned to size to give a good clamping fit.
4. Worn housings can be welded up at fit and remachined to give better clamping action.
5. Worn tapped holes in housings may be welded up, using bronze; they can then be redrilled and tapped to standard size.

Insuring Proper Bearing Fits

1. Armature bearings should be pressed into housings. By using a special fixture to mount the bearings in the lathe, the finishing bore on the bearings can be made concentric with the housing fit.
2. Solid bronze armature bearings that have worked loose in the housings may be effectively tightened by the following methods:
   (a) By forcing a steel drift pin through the bore, thus expanding the metal. In doing this the bearing should be placed in a solid retainer (an old pinion bored out to the desired enlarged size) to limit the expansion and prevent castings from breaking.
   (b) By tinning the outside of the bearing shell with a heavy layer of babbitt metal.
   (c) By turning the bearing shell down and pressing on a piece of steel tubing which can be then turned to the desired dimension to give a tight fit in the housing.
3. A piece of copper may be set in the lower halves of split malleable-iron armature bearings, to allow a soft seat for armature journals. In case the babbitt melts out of the bearings this prevents the armature core from getting down on the pole faces.
4. Where trouble is experienced with hot car journals, a wider bearing seat than the standard M. C. B. bearing has given very good results.
5. The use of small helical springs under the lower half of a split armature or axle bearing to hold the bearing in place and to provide a spring support for the dead load has proved to be a source of great economy on one traction property.
6. Liners of thin fiber placed between axle bearings and bearing seats to take up wear in parts and to clamp bearings securely have been successfully used by some electric railway operators.
7. Instead of a split axle bearing one may use a solid bearing that is placed on the axle before the wheels are pressed on. If bearings require changing before wheels must be removed, the solid, worn bearing may be cut off and a split bearing used during the remaining life of the wheels.
8. When motors are changed the split axle bearings should be kept matched up with their respective seats on the axles.

Remedies for Brush-Holder and Carbon Brush Troubles

1. By replacing the steel supporting pins of an insulated-pin-type brush-holder with paraffine-treated maple pins to provide better insulation, satisfactory service has been obtained on small light-weight brush-holders.
2. Successful operation has been obtained by replacing broken porcelain insulators with similarly shaped insulators made of hard wood, of friction tape or of cord well shellacked.
3. Porcelains may be removed entirely and the insulating tubes may be sand-papered and painted with a good grade of air-drying insulating varnish with good results.
4. The size of worn brush-holder carbon boxes may be restored by placing a steel gage in the carbon box and by subjecting the sides of the box to a heavy pressure, thus closing them to the standard size.
5. Malleable iron brush-holder castings have been used successfully to replace worn out brass castings.
6. To get further life from worn carbons, a metal saddle about ¼ in. long may be mounted on top of carbons. This also prevents contact tips from wearing and breaking the top of carbons.
7. When a carbon is worn down in length, another worn carbon may be placed on top of it, to permit the use of the entire length of the original carbon.

Armature Troubles

1. When the armature end play becomes excessive, hard fiber washers may be used over the shaft between wiper and bearing flange. This same scheme is also used at axle bearings.
2. Brass washers are sometimes used on armature shafts between bearing flange and wiper, to take up the excess end play.
3. To improve commutation and increase the life of commutator brushes the surface of the commutator may be ground with an abrasive stone. The slotting or undercutting can then be filled with a commutator cement.
4. Old tops of two-piece armature coils may be used to repair damaged armatures that have been changed over so

as to use one-piece coils. The damaged coil can be sawed off at the rear and the top half only removed and replaced by the top half of the old two-piece coil. This saves taking up a throw of the armature coil.

5. Armature leads of a strap-wound armature that have become loose in the commutator neck can be made tight by driving in pieces of hacksaw blade between the commutator neck and the loose lead.

6. The front core band of armatures may be sometimes covered with solder and turned off to give a diameter ⅛ in. larger than the core. This band can be painted black and used as an indicator for the inspector in checking armature bearing wear.

7. A number of roads are operating armatures successfully by drifting armatûre leads down tight in the commutator neck, and not soldering these connections.

8. Armatures are sometimes operated with front and rear canvas or linen hoods (sometimes called heads or caps) left off to improve the ventilation and to save the expense of labor and material in renewing.

9. Before winding an armature some roads press the coils between two heavy hardwood planks clamped together by bolts. This allows the coils to be wound more easily without damaging the insulation.

MISCELLANEOUS PRACTICES

1. A sand blast is frequently used to clean carbon dust, etc., from the inside of controller boxes. This also can be used on commutators, grid resistors, etc.

2. Malleable-iron or sheet-steel commutator covers may be replaced by a similar cover made of wood. This is lighter, cheaper and noiseless.

3. Gaskets made from advertising cardboard may be used for air compressor heads. This material is reported to be as good as, and much cheaper than, the hard, red fiber ordinarily used.

4. Commutator covers may be slotted to advantage to allow better ventilation for old-type motors. This reduces the operating temperatures of motors that are overworked in service.

5. When motor connections in cars are being tested by running the car up and down a shop track or by slipping the wheels, a little water sprinkled on the track will cause the wheels to spin more readily.

6. One operator running in loop service cars that are equipped with old non-commutating-pole motors, has greatly improved the operation of these motors by shifting the brushes in a counter-clockwise direction.

7. The use of various types of cast or sheet-metal oil boxes with wicks to replace the grease method of lubrication on old-style motors has worked satisfactorily.

8. Air cylinders rigged up with plungers have been used to force mandrels out of babbitted armature bearings.

9. The wearing parts of trucks may be hardened by means of electric welding.

In considering these schemes it is well to keep in mind the fact, which is characteristic of human nature, that an idea or a pet hobby of any man when put in practice on his own equipment has all the details carefully worked out, developed and sometimes nurtured under his personal supervision. Under these conditions, difficulties are sometimes overcome that almost force the plan to work successfully—while with the customary care and attention ordinarily given to the rest of the equipment it might be pronounced a failure. On the other hand, there is no doubt but that some of these schemes will strictly on their own merit at once strongly appeal to the mechanical instinct of a number of operating men and prove of advantage if given a tryout on their own equipment.

Fine-Grained Sand for Concrete

IN A RECENT issue of the *Canadian Engineer,* F. E. Giesecke, professor of architectural engineering University of Texas, describes a systematic study which the engineering division of the University of Texas is planning with reference to the value of different grades of sand in concrete construction. The author states that there are many deposits of fine-grained sand which are generally considered too poor to be used in concrete construction and which have to be rejected under most specifications in force at the present time. With the exercise of proper care these might be used to advantage.

He gives as an example a sand having this sieve analysis: 78 per cent retained on a 200-mesh sieve, 43 per cent retained on 100-mesh sieve, 4.8 per cent retained on 65-mesh sieve and 3 per cent retained on a 48-mesh sieve. This sand would be rejected by most specifications, but when tested in concrete it made a fairly good showing. The concrete was made up with a blend cement and with Colorado River gravel carefully screened and rescreened, so as to contain no material finer than ¼ in. The proportions used were 14.3 per cent each of blend cement and fine-grained sand, and 35.7 per cent each of gravel ¼ to ¾, and ¾ to 1¼ in. respectively. Compared with the best concrete prepared in the laboratory of the University of Texas and with the same percentage of cement thoroughly rodded, this concrete was about 69 per cent as strong. While the author does not wish to be misunderstood as advocating the use of such extremely fine sand in concrete construction, nevertheless he states that there are many deposits of sands which are too fine to pass current specifications and yet which are sufficiently coarse to produce good concrete if used in the best possible manner.

I. C. C. Report on Railway Statistics

THE Interstate Commerce Commission has issued its thirty-first annual report on the statistics of railways in the United States, covering the year ended Dec. 31, 1917. The report calls attention to the fact that between 1915 and 1917 there was an increase of 41 per cent in the number of electric locomotives operated by railroads having operating revenues above $1,000,000 annually (*i e.* "Class I" roads). The data reported are as follows:

ELECTRIC LOCOMOTIVES IN OPERATION ON STEAM RAILROADS

	Number of Freight Service Type	Number of Passenger Service Type	Total Number
Eastern District	86	190	276
Southern District	14	...	14
Western District	40	12	52
Total, Dec. 31, 1917	140	202	342
Total, Dec. 31, 1916	129	190	319
Total, June 30, 1916	114	153	267
Total, June 30, 1915	93	150	243

The total number of steam locomotives in use is practically 61,500, a very slight decrease from the total for June 30, 1915, and an increase of about 700 over that for June 30, 1916.

Treating Rails in Place

The Sandberg "In-situ" process of treating railheads has been mentioned in this paper from time to time. It is a process for hardening rail-head surfaces by heat treatment and it has been used for some time in England in several places.

One of the first roads to use the process was the Croyden Tramways, which had some rail treated one and one-half years ago. The results have been very satisfactory, and more rail has been treated from time to time. So far, new rail or rail properly resurfaced before treatment, which has been subjected to the Sandberg process shows no signs of corrugation.

Iowa Association Adopts Mid-Year Meeting

Two-Day Operating Men's Session Held at Davenport with Papers, Discussion and Inspection Trips Proved So Successful That It Will Become Annual Event

THE operating men of the Iowa Electric Railway Association met for a two-day mid-year convention at Davenport, Iowa, on Sept. 17. A brief account appeared on page 587 of the issue of this paper for Sept. 20, but further particulars are now given.

J. H. Seisseger, general superintendent Mason City & Clear Lake Railroad, in speaking on safety cars, the first topic taken up, said that the Mason City lines of his company consists of two routes, respectively 2½ miles and 5 miles in length. There are two one-man safety cars on each line, giving a headway from 5.30 a. m. to 12.35 a. m. of fifteen minutes on one line and thirty minutes on the other. The cars were placed in operation on July 1, 1918, replacing 31-ft. open-platform cars operated by two men. From July 1 to Sept. 1 two men were used on the safety cars, the conductor being placed at the front end with the fare box. On Sept. 1, one-man operation was announced and begun on Sept. 12, the fare box having been changed to a location beside the controller. Neither the public nor the motorman missed the conductor. The expression of one trainman who at first refused "to do two men's work" was later that "good tools are a darn sight better than a poor conductor." There has not been a platform accident since the safety cars were placed in service. Mr. Seisseger is for the safety car "first, last and all the time."

The company has about 10 miles of interurban route and hauls a good deal of heavy freight as well as doing an extensive switching service. All freight handling is done by crews of two men, it having been demonstrated here that larger crews do not work efficiently. The average distance carload freight is handled is 3½ miles.

MAINTENANCE OF WAY DISCUSSED

On the forenoon of the second day, R. J. Smith, engineer way and structures, Tri-City Railway, Davenport, discussed the paper by R. H. Findley at considerable length. He considered track construction standards to be fairly well determined at present. Solid concrete sub-construction is not advisable, except under special conditions. Tamped ballast on a good subgrade is better. The amount of excavation governs the kind and quantity of ballast to be used. With solid concrete construction steel ties give good service. Money spent on proper drainage is well spent. Creosoted ties are in very general use, and Mr. Smith favors a creosoted hardwood tie, 8 ft. long. The 7-ft. tie may be desirable, as it limits the paving zone. There is, however, little saving in the first cost of the tie, and in fact its first cost may be greater while the tie is less stable. It will generally be found that an A. E. R. A. standard rail section will fit any particular case. There is at present little agreement on the necessity for tie plates, but they are not used on the Tri-City system. Tie rods are generally used with high rails. Brick is a good pavement for ordinary traffic, and granite block for especially heavy service. A monolithic construction is desirable, with the brick or blocks laid on a 1:4 mix grout bed while the grout is still soft. Joints should be filled with grout. This construction also permits the use of old brick with excellent results. The experience of the speaker with bitulithic filler has been unfortunate.

Maintenance consists largely of joint and paving repair. For this a small, lightly-equipped gang is best. Their equipment should include a small concrete mixer, a welder and a grinder. For extensive work an extra gang of from fifteen to twenty men is advisable, and these should be thoroughly equipped. Special work maintenance includes rigid and frequent inspection. The important thing is to keep it tuned up. Frequent consultation between the superintendents of way and transportation will reduce costs.

An astounding amount of equipment is needed in construction and maintenance work. A power shovel is probably the most important, and a crane with clamshell and hook is also necessary. Pneumatic tampers are very important. Four or five men with such a tamper will take the place of twenty with hand equipment and accomplish twice as much work. Welders and grinders should not be overlooked, and the latter are absolutely essential. Mr. Smith has found the resistance welder troublesome and considers the motor generator set more desirable. Power pumps are necessary. In the way of small tools, jacks and drills should receive more attention and should be carefully maintained. A track shop separate from the main car shops is advisable for these minor repairs. An important point is the necessity to watch the market to see whether repairs are really economical. Some jacks designed for service heavier than 10 tons should be included in the equipment, as these will relieve the much abused 10-ton jack.

Ties should not necessarily be selected to equal the life of the rail under ordinary traffic but should equal the life of the track. The life of the rail is generally about twenty-five years, while the life of the track is generally limited to thirteen to fifteen years, due to municipal changes in grade, paving, etc. The zinc chloride treatment of ties results in electrolytic action on rails and spikes and should never be used under any circumstances. This action is not as noticeable in steam railroad track and is apparently accelerated in electric railway track by the leakage of current. Office records may be too elaborate. These should be simple, but money spent on efficient records is well spent. An office check should be kept on the work of the welders and grinders and this may be profitably shown to the operators of this equipment. The keynote of the whole situation is the reduction of man power, and this is accomplished by efficient machinery.

R. H. Findley, author of the original paper, closed the discussion. Track construction, he said, is like building a house. The foundation should be constructed to last as long as the structure. Creosoted ties will generally last twenty-five years, which time is considered to be the life of the rail. Where changes in grade or paving are probable, such as in the business district, it may be advisable to use a cheaper tie. Mr. Findley also has never found any need of tie plates and agrees with Mr. Smith that the zinc chloride treatment of ties should not be used.

SHOP INSPECTION STARTS DISCUSSION ON SLACK ADJUSTERS, METERS, WHEEL GRINDING, ETC.

On commenting on the paper by John Sutherland and on the shop inspection trip, T. E. Wood, master mechanic Omaha & Council Bluffs Street Railway, asked information concerning night inspection of cars at Davenport, stating that this force in Omaha had been cut down to one man. He also inquired concerning the grinding of new wheels, stating that in Omaha all new wheels are ground.

In reply, Mr. Sutherland said that very little night work is done in Davenport but some oiling is done at the Rock Island shops. New wheels are not ground. All car inspection is done on a fifteen-day basis rather than by mileage. All cars are equipped with lightning arresters, but arresters on the poles and line would be better. "Pull-ins" have been reduced 90 per cent since Anderson slack adjusters were put on. No brake inspection is necessary and brake trouble has been practically eliminated since these adjusters were placed in service. Increased mileage is also obtained from the wheels, the increase being from 38,000 or 40,000 to about 56,000 miles.

F. V. Skelley, assistant superintendent, Tri-City Railway, Davenport, briefly described the use of the Economy meter on his property. Small blank forms, 3 in. x 5 in., are supplied in pads of 100 to the motormen. Readings are taken morning and evening, together with a record of the mileage. These reports are sent to the transportation department, and a tabulation for each motorman is made for a fifteen-day period. These records are posted, the records of men below the average appearing in red. The interest which the men take depends upon how much the work is pushed by the department heads. Supervisors instruct the men who do not operate properly and maintain low records, for it has been found that older motormen form a habit of operation which it is hard to change.

W. G. Brooks, Westinghouse Electric & Manufacturing Company, urged that greater interest be shown in the discussions and suggested that at the next meeting every man come prepared to describe his best device or method of accomplishing a piece of necessary work.

THE SAFETY CAR AGAIN DISCUSSED

Following the talk on transportation by J. H. Seisseger, the safety car naturally came foremost. Nic Le Grand, National Safety Car & Equipment Company, said that the three main objections to the purchase of the safety car have been the attitude of the public, the attitude of the unions and the lack of funds. The best evidence of the success of the cars is the fact that all companies who have purchased safety cars once have purchased a second time. There isn't a city in the country, said Mr. Le Grand, that cannot use some safety cars to advantage. Some railway companies have insisted on slight changes in the original design, but it is pleasing to note that the length, width, seating capacity and major standards have in no case been changed.

T. C. Roderick, assistant general manager Tri-City Railway, said that he is thoroughly in favor of the safety car and believes that it could be used on practically any line in Davenport. Results of operation in other cities have shown that riding is increased 15 to 40 per cent and the cost of operation reduced in about the same degree. Maintenance is also reduced about 50 per cent. "Do not go to a makeshift or to rebuilt cars," said Mr. Roderick, "but buy the best that can be obtained."

W. O. Jacobi, superintendent electric lines, Omaha & Council Bluffs Street Railway, in discussing the paper by John M. Drabelle, described the electrolysis conditions on his property and what had been done to alleviate them, as was described on page 850 of the Nov. 10, 1917, issue of the ELECTRIC RAILWAY JOURNAL. Speaking of the new automatic substation at Omaha, Mr. Jacobi said that if the trolley wire breaks and hits the rail this opens a contactor at the station and kills the line. The wire can then be picked up by the motorman who leaves his controller on the second point. The motorman by notching up his controller four times, can then put the line in service again. Edward Taylor, General Electric Company, explained various features of an automatic substation.

Closing the discussion, John M. Drabelle said that his property is now trying out a complete automatic boiler. This boiler has a continuous rating of 250 to 300 per cent of nominal rating. The equipment includes automatic draft control, automatic feed water regulator and stoker equipped with automatic fan and ram control. Substation operators, said Mr. Drabelle, just make an extra hazard.

After closing the discussion, President Ingalls announced that all commercial representatives were cordially invited to become members. In answer to his request for an expression of opinion on the success of the meeting and the merits of having a similar mid-year convention annually, it was moved and passed that a similar meeting lasting for two or more days be held annually and that the general plan of the session this year be followed with such improvements as were found desirable.

President Ingalls appointed the following standing committees:

Way and Structures: R. H. Findley, Omaha; W. L. Wilson, Des Moines; P. W. Wood, the Buda Company.

Shops and Equipment: John Sutherland, Davenport; C. M. Feist, Sioux City; W. H. Beattys, Westinghouse Traction Brake Company.

Traffic and Transportation: J. E. Negus, Fort Madison; A. H. Smith, Dubuque; Nic Le Grand, National Safety Car & Equipment Company.

Power and Distribution: John M. Drabelle, Cedar Rapids; W. O. Jacobi, Omaha; Edward Taylor, General Electric Company.

Claims and Accounting: M. Marcussen, Davenport; D. M. Finch, Des Moines; B. Bohnson, Clinton.

Publicity: W. G. Brooks, Westinghouse Electric & Manufacturing Company; L. E. Gould, Economy Electric Devices Company; Lesley C. Paul, ELECTRIC RAILWAY JOURNAL.

A central committee composed of the chairman of each of the above committees and with John Sutherland as chairman, will make arrangements for the next meeting.

On Thursday afternoon the delegates were taken by automobiles for an inspection of the government arsenal at Rock Island.

How to Maintain Track *

BY R. H. FINDLEY

Superintendent Track and Roadway Omaha & Council Bluffs Streets Railway

THE topography of the city, soil formations, climate and traffic conditions, municipal requirements and regulatory ordinances are controlling factors in track maintenance. In our city the streets have been extensively graded and filled, and we have tracks laid in paved streets which have been filled as much as 75 ft. We all know the difficulties connected with such work and the resultant maintenance costs. Embankments seem to settle for indefinite periods. Streets involving cut and fill cause settlement of water mains. Invisible leaks result which in turn damage all surface work.

Then, again, we are confronted with the installation of service pipe connections of all sorts and the ditching of streets for mains and conduits. The tunneling under street railway tracks for gas, water and sewer connections and careless backfilling cause untold damage to tracks and pavement between the rails. Such work eventually causes a failure of the pavement and chuck holes in the track, with their resultant hazards to vehicles and expenses in repairing.

By a proper regulatory ordinance this evil could be overcome. Ditches can be adequately tamped through the use of compressed air or other mechanical means. Water is generally used for settling trench excavation, but its use is too easily abused if not enough water is employed when the dirt is pulled in with a power back-filler.

---

* Abstract of paper presented at mid-year meeting of the Iowa Electric Railway Association, Sept. 17 and 18, Davenport, Ia.

Great care should be taken to have adequate surface and sub-drainage. In our city, we think it unnecessary to provide for sub-drainage under all track laid, on account of the irregular and steep grades of most of our streets, but at low points we have found it desirable to take care of the sub-drainage as well as the surface drainage. Provision for proper surface drainage should particularly be made at special work points at street intersections. Water is perhaps the worst enemy to any piece of track or paving, and its elimination should always receive first consideration.

We feel that the use of the standard rock-ballasted type of construction is best for our own local use, modified to suit sub-soil conditions as they are met with in the work, through the use of concrete sub-slab construction. This is recommended practice and is quite generally employed by electric railways over the country.

EXPERIENCE WITH TIES

There always has been and always will be a great difference of opinion on the selection of ties. We have adhered to the use of a 6-in. x 8-in. x 7-ft. creosoted tie in paved track, while the general trend among the larger cities has been towards an 8-ft. length or towards steel tie construction. Up to 1915 we used as standard the white oak tie, both hewn and sawed. Our results with these were not satisfactory. Difficulty was experienced in getting good timber. The producers do not care to cut up good white oak timber into ties, when it can be sold much higher by board measure. Since 1915 we have used the creosoted red oak as standard.

In 1912 we installed several thousand 8-ft. creosoted ties in open track. These were purchased by inspection at the plant, and were treated with 2½ gals. of oil to the tie. We did not specify an expensive grade of creosote oil but accepted a commercial grade of medium priced oil, having what we thought was a satisfactory analysis. This oil was somewhat low in the tar acids or toxic properties and heavy in the anthracine series, which is the most involatile and insoluble part of the distillate. The oil had a specific gravity of 1.09 at 130 deg. F. These ties are laid in cinder-ballasted open track, and their perfect condition today gives us reason to expect at least sixteen to twenty years life. On warm days these ties still "bleed" the oil, showing the insolubility of the preservative. The use of an 8-ft. red oak tie treated with 2½ gals. of good creosote oil of proper analysis is bound to show economy for permanent open track.

During 1913, in 5 miles of paved track, we used five different kinds of treated red oak 6-in. x 8-in. x 7-ft. ties. These were installed in rock-ballasted track on lines of heavy travel and consisted of the following types: Card process, zinc chloride, creosote 2 gal. of oil to the tie, 2½ gal. to the tie and 4 gal. to the tie. We have an exact record of these ties for our own future reference and feel very strongly inclined toward the use of treated hardwood ties. We must use a type of tie in paved track which will remain sound throughout the life of the rail to insure us in the future against some of the expense of paving and track maintenance. The use of a poor tie has been perhaps the worst mistake of the past. With the high labor costs today, let us use the best type of wooden tie or, as an alternative, use a steel tie.

We have been averse to using an extremely rigid type of track construction, having had considerable rail breakage through joint failures on some track installed about twelve years ago. On a non-resilient track, the noise is objectionable to the public, cars are badly racked, rail corrugation develops more rapidly, and rail crystallization is bound to take place much sooner. On one section of track in the Stock Yards district of our city, we cross a number of cattle passes over which our rails are imbedded in the reinforced concrete top, providing an extreme form of rigid construction. The rails in this concrete are very badly corrugated, while those in the remainder of the track show little sign of such trouble. Some corrugation has also appeared in short sections of our rock-ballasted construction now and then. After they are ground out these corrugations usually disappear for good unless accompanied by lateral corrugations at the gage line, which are somewhat difficult to remove.

RAIL-JOINT MAINTENANCE

Maintenance of rail joints among most of us requires considerable expense. A heavy traveled section of track should have a welded joint, and a proper weld requires expense and care in the making to insure permanency. The trend today is toward lighter equipment, and as the weight of cars is reduced, our joint expenses should become correspondingly less. With any mechanical joint a high-tension bolt should prove economical. Grinding of newly-installed joints is universally recognized as good practice. The arc welder is well adapted to making repairs and is indispensable for joint work of all sorts.

LABOR-SAVING TRACK TOOLS USEFUL

Roadway maintenance men must take advantage today of all devices and tools possible for elimination of labor. Men desire to pick their jobs and if forced into the "heavies," such as shoveling rock, handling ties, coal, etc., they expect more wages or hunt another job. A 5-ton single-truck crane to handle ties and rail from stock piles to the job is "worth its weight in gold." We have used one for years and have also employed it for handling and installing all special work, moving rollers, rail girders, concrete mixers, air compressors, stone crushers, hydraulic rail benders, etc., back and forth from the yard to the job. The present-day economies of such equipment show a tremendous saving of labor. We are now using such a crane for removing the remains of some of the old cable railway, consisting of concrete slabs with cast-iron yokes, laid under the tracks and their miscellaneous underground structures, preparatory to grading a downtown hill in the city of Omaha. By being properly equipped for such work, we will cover the cost of removing this concrete and iron, out of the salvage.

An electric shovel for making excavations will lower the cost of loading wagons or dump cars to about one-fifth that of hand shoveling and will replace at least twenty men where its use is practicable. Such equipment is indispensable if a company wishes to accomplish anything.

Pneumatic tie-tamping outfits are very efficient for those using plain ballasted construction and produce a much better tamped track at less expense than hand tamping.

Derricks equipped with clam shells for handling rock and sand, and locomotive cranes where the volume of work warrants their use, are indispensable. There were times during the war when by the use of our 15-ton electric locomotive crane we saved as much as $100 a day on demurrage alone in handling steam coal. Crushed stone is unloaded from gondola cars for one-fifth of the cost of hand shoveling, and with fixed charges included, our cost today is less than if such material was unloaded by hand.

A stone crusher of portable size earns more for us than its original cost each year in reclaiming crushed rock and ballast from old materials formerly hauled and wasted at the dump. A crusher is particularly desirable in cities located some distance from quarries. Dump cars, electric track drills, portable saws, hydraulic rail benders by which girder rail may be bent for curves, small job cranes mounted on flat cars and modern concrete mixer machinery should all be mentioned as labor savers, invaluable to any railway. In this line I do not want to overlook a type of portable toilet which we use whenever accommodation for track men cannot be found handy. It is of a chemical type and mounted on four small wheels and can be pulled around and located near the gangs. These toilets are desirable from the men's standpoint as well as our own and are well worth using.

TYPES OF SPECIAL WORK COMPARED

Special track work, involving as it does a large investment, should receive considerable study from roadway men. In plain curve construction alone, the selection of the type of rail is very important for obtaining maximum life out of curves. Most of the standard guard rail sections are essentially side bearing rails, that is, one in which the web supporting the ball is directly under the gage line of the rail. In the double guarding of plain curves, which a few years ago we thought necessary, we observed that the outside rails of plain curves failed long before the inside rails, due entirely to the position of the rail support. Through the use of a single guard and more of a center bearing rail on the outside of the curves we are obtaining almost double the life. This has been our standard for the last six years.

We are all familiar with the use of the arc welder in maintaining special work. We find it invaluable for uses in and about special track work, such as building up and maintaining joints and hard center plates after they have been reset. If our hard center plates were of some weldable material rather than manganese we would have more success in maintaining intersections. A few years ago we installed a 90-deg. girder crossing which was under heavy traffic and had forged heat-treated Mayari steel plates instead of manganese. Mayari is a chrome nickel steel. This installation has taught us to believe that other alloy steels for hard center uses are perhaps more desirable than manganese. The physical properties of manganese include a low elastic limit. In fact, what is needed for a hard center, with a flangeway cut through the middle, is a steel having a high elastic limit to prevent the stretching of the fibers at the intersection and the consequent breaking off or chipping so noticeable on manganese. Manganese has its field for switch pieces, tongues, frog castings, etc., but for hard centers I feel that better service could be obtained from some more suitable alloy. After four years of heavy traffic in a downtown intersection, these chrome nickel centers are perfect and show hardly any appreciable sign of wear.

We have used the thermit process for making heavy welds on broken switches and mates and have installed some thermit welded sections for 90-deg. girder crossing repairs. There is a field, not extensively developed at the present time, to which we look for future economies, in the use of the thermit process in special work maintenance. In connection with all welding around special work, a light type of portable grinder will be found very useful and can be made easily in any well-equipped shop.

Clearance type curves which make operation safer for the public and save time at congested points should be installed if possible. All complicated layouts are better supported if long switch timbers or ties of different lengths are used. When these ties are air tamped on a good bed of crushed stone very satisfactory results are obtained.

SOLID MANGANESE FOR HEAVY TRAFFIC

Solid manganese construction has its field, depending upon service conditions. We find the solid manganese railroad crossing is the type to use under heavy traffic, for instance at such locations where a carbon rail crossing will last only three or four years, providing, however, that the proportionate cost of manganese is not more than two to one. The solid 90-deg. type of manganese girder construction for paved streets, with flange bearing entirely across the crossing, is very satisfactory for use in heavy traveled locations. One gets away from loose center troubles, has less paving maintenance and keeps on better terms with traffic officers. We all know how loose centers spatter the mud. A switch piece of few parts gives the least trouble, and for this reason solid cast manganese is well adapted for such locations. However, we have recently been trying the bolted manganese hard-center switches and mates on account of the high price of the solid manganese. Bolted hard-center construction on a machined bed bearing has given us the best satisfaction and the least number of loose center troubles.

Railways which operate single-end cars have usually an uneven wear of wheel flanges. Trucks crowd one rail or the other, and as a result one wheel flange will be worn very thin while a double flange effect results on the opposite wheel. Such a state of the wheels is particularly hard on special work, because of the lateral motion of the car in crowding through the narrow throatways at special work. Hardened center plates should have long easy graduated throatways up to the intersection so that the car may go easily through the intersection plates without the lateral jar sometimes so noticeable. Such a situation, if not taken care of, will rapidly loosen any hard center, and for such conditions as these we find the bolted plates more satisfactory than a keyed-in fastening.

SOME HINTS ON PAVING

Paving is one of our largest items of expense. The brick block thoroughly grouted seems to give the greatest satisfaction in our city. The more expensive dressed granite block is very well adapted to paving tracks when well grouted in place. We have been compelled by the city to use an asphalt filler for brick pavement in our tracks, but on account of the poor success with the soft filler we have gone back to the use of cement grout, in and along the tracks only, the city using the asphalt on the remainder of the street.

Creosoted block when laid against a groove or trilby rail makes a very satisfactory pavement for car tracks. With T-rail the results are not so good, especially on viaducts and bridges. Attention must be given them now and then to keep out the water, through the application of a squeege coating of bituminous filler.

We have never used concrete pavement between our rails, and in fact there is only a limited amount of such street construction in Omaha. The natural limestone on our market is poor for surface usage. We have, however, adjacent to our tracks some very fine examples of concrete pavement which, after about seven years, has worked into ruts, and this resulted in a move to add about a 2-in. coat of asphalt. As a result of this, we have anticipated a request for a change in track elevation, and as a remedy we have proposed a double crowned pavement whereby some water from the sides would be drained into the tracks and removed through gratings in the tracks. Such developments are always possible with concrete pavement and should be taken into consideration when a track is laid in a concrete paved street, as by establishing a cross-section of a street which would provide in the future for surfacing with asphalt with no interference with the tracks at such a time.

In conclusion: Our biggest problem of maintenance today is our labor. We must make up for the shortage by the use of machinery and all types of labor-saving devices. Labor costs can be reduced if our men have good tools to work with. The system of tool maintenance should receive close attention. Picks, drills, hammers of all kinds, chisels, etc., should be sharpened well and properly tempered by a real blacksmith and a sufficient reserve supply kept on hand so that men will always be well equipped. Economy is the watchword clear down the line. Only through advanced methods of doing work can we keep the costs down.

Power Distribution for Street and Interurban Railways *

BY JOHN M. DRABELLE

Electrical Engineer Iowa Railway & Light Company, Cedar Rapids, Iowa

THE power distribution systems for electric railways are, in general, divided into two groups: The alternating-current high-voltage distributing system to the substations, and the direct-current distributing system. The high-tension lines should be designed to give the maximum of mechanical strength at the minimum investment cost, and the same applies equally well to the calculation of the line copper.

There are many good types of lines that can be chosen. For moderate voltage, up to and including 13,200, the flat-arm construction is probably the simplest and cheapest and of the maximum mechanical strength. On lines for higher voltages, the spacing of conductors is such that the flat arm becomes so long that it is impracticable to handle and in general, is mechanically weak, especially under such strains as those produced when one or two wires heat. The best conductor arrangement, therefore, is the equilateral triangle, either using a ridge pin and a two-pin arm, or the metal type, the "Keystone," the "Bo-Arrow" and the "Wishbone." Particular attention should be paid to the selection of insulators. A cheap insulator is an expensive luxury.

Where only single-circuit lines are involved, the protective and relay equipment is quite simple and in general the following rule can be laid down: Bellows or inductive-type inverse time-limit relays for substation protection are ample so far as the relay equipment is concerned, and of the two types, the induction type, as developed by both the Westinghouse and the General Electric Companies, is comparatively inexpensive and reliable, and far ahead of the bellows type.

Aluminum-cell lightning arresters are at present the last word in efficiency. Both of the large manufacturing companies have modified their arresters by using either the sphere gap of the General Electric, or the impulse gap of the Westinghouse Company. The value of charging resistance is no longer in dispute, especially when telephone interference is involved and it is particularly desirable on interurban lines that have telephone lines for railway dispatching purposes underneath their high-voltage lines.† In general, lightning arresters should be overhauled each spring, new electrolyte put in and new trays installed where needed.

Single-circuit lines should be sectionalized at each substation so that the maximum amount of high lines can be kept in operation at all times during a case of trouble. Where two or more high-tension lines operate in parallel, the relay problem becomes very complicated, and in general, is handled by the use of inverse time-limit induction relays set very high at the power house or generator end of the line. At the receiving, or substation end, of the line some type of wattmeter relay, having both current and potential coils, is used.

DIRECT-CURRENT SYSTEM GIVES MOST TROUBLE

The direct-current distribution system is subject to far more losses and mechanical troubles than the high-tension line. The trolley and feeder are provided with sectionalizing equipment so that trouble may be quickly isolated and the rest of the system kept in operation. To accomplish this end section breakers in the trolley should be used, as well as section switches in the feeders.

The calculation of the direct-current trolley system, especially where inter-connections are involved, such as in city work, may be extremely complicated. The solution of the problem starts with the time card, the weight of the equipment and the rating of the motors. From these data, the speed-time curve for the various lines is worked out, and from this the load in amperes and kilowatts. From this point on it is a matter of applying Ohm's law and utilizing the wire tables.

The negative return or rail circuit is not to be overlooked or neglected in calculating line losses. I know of nothing in the system that will cause bigger power loss than the average return circuit of street or interurban railways, unless it is regularly inspected and the bonds are kept to the maximum of efficiency. Testing bonds is not an easy job and whoever undertakes it should endeavor to get accurate readings which may be used for analyzing causes of trouble. There are quite a number of good forms of bond testers on the market, and the money which is spent for one of these is well spent.

The protective equipment for the direct-current railway circuits at the power house or substation comprises an instantaneous carbon-break circuit breaker and a lightning arrester outfit. The aluminum-cell arrester has made good in this field also. While it is more expensive than the spark-gap type or magnetic blowout type, and requires attention and maintenance, it does protect the equipment.

One of the later developments in the direct-current distribution system for street railways, is the automatic feeder switch which normally ties all of the trolley system of the town together and isolates it in case of trouble. This feeder switch is being used quite successfully in several Iowa towns and it gives the maximum use of trolley wires and feeders by having them all tied together in one common network, cutting down losses and making the general system voltage higher over the entire town. A device similar to this, but applying more especially to the substation, is the automatic reclosing circuit breaker. This device saves a substation attendant considerable work, and also closes a circuit with greater certainty, as a rule, than does the average substation attendant of today.

SELECTION OF SUBSTATION EQUIPMENT

The selection of substation equipment opens up a wide range of topics for discussion. The rotary converter is cheaper and its efficiency is higher than the motor generator set but, on the other hand, the latter can be used for the correction of power factor and is slightly more reliable and stable than the rotary, particularly the 60-cycle type. A big development, however, in the substation line which is not yet fully appreciated is the automatic substation. Its advantages and disadvantages are set forth in tabular form below:

POINTS, PRO AND CON, REGARDING THE AUTOMATIC SUBSTATION

Advantages:

1. Elimination of attendants.
2. Reduction in idling losses (runs only when power is required).
3. Located at points of maximum demand and ruling grades.
4. Automatic feeder protection and accelerating of trains.
5. Impossible to over-load.
6. Smaller units than hand-operated stations, due to automatic current-limiting features of equipment.
7. Mitigation of electrolysis problem in city work.

Disadvantages:

1. Slightly higher first cost.
2. More complicated than hand-operated substation.

One of the greatest advantages of the automatic substation is the current-limit control feature. This control is accomplished by means of relays, contactors and resistors. The relays are normally closed and the contactors shorten the resistors until one and a quarter of full-load current of the machine has been reached. Then the first relay opens, inserting a definite amount of resistance between machine and trolley. If the overload continues and increases the second relay opens, and if it still continues to increase, the third relay opens, inserting all of the resistance between the machine and trolley. To prevent the burning out of the resistors, due to long-continued overload, there is installed a thermostat device which will shut down the substation until the resistors have a chance to cool.

---

* Abstract of paper presented at mid-year meeting of the Iowa Electric Railway Association, Sept. 17 and 18, Davenport, Ia.

† There has been a later development known as an oxide film arrester. This is a development of Dr. C. P. Steinmetz and V. E. Goodwin of the General Electric Company. This arrester has the peculiar property that charging is unnecessary.

Now let us consider just for a moment what can be accomplished under heavy traffic conditions: Visulize an amusement park with the usual line-up of cars waiting for the people to go home. The rush starts; very shortly several cars are moving, taking practically the full-load rating of the machine. Another car starts, and the motorman, being careless in the handling of his controller, causes a heavy rush of current to take place. What happens to the substation? The current-limiting contactor relays get to work, cutting down the trolley voltage slightly until the poorly handled car has accelerated up to speed and is only taking free-running current. With the hand-operated substation the circuit breaker would have been tripped out. The "automatic" kept all of the cars moving and prevented any one motorman from taking all of the available power of the substation.

Again let us consider the application of the "automatic" to city service where the peak-load figures may be from 1200 to 1500 amp. This peak load today is 800 to 900 amp. due to the current-limiting feature of the "automatic." This feature also permits the use of smaller rotaries than would be usually employed in a hand-operated substation.

Another feature of the automatic substation particularly applying to city work is that we can have a large number of small substations rather than a few large units or direct feeding from the power house. Without these small units heavy, negative, return currents have to be handled and rather high voltage drop occurs even with the most careful bonding between rail and water mains, telephone cables, power cable and the like. Thus it is possible to reduce the electrolysis problem to a minimum.

Maintenance of Equipment *

BY JOHN SUTHERLAND

Master Mechanic Tri-City Railway, Davenport, Ia.

IT HAS been frequently said that the price of success in any branch of railroading is "eternal vigilance." This is especially true in the maintenance of railway equipment. There are much greater opportunities of effecting economies in this line than in most of the other branches of railroad operation.

The modern method of shop maintenance is well established and rests almost entirely on preventing trouble in service, through proper inspection and scrutiny of the apparatus at reasonable intervals, rather than the old system of keeping a force in the shop to fix things up after trouble develops. It would be difficult to find a road to-day which is not making an attempt to follow up the prevention method. A good, effective system for inspecting the apparatus, once thoroughly established and properly continued, is bound to have beneficial results.

There is no class of labor in railway operation which calls for more conscientious work than that of inspection. It is no easy task for the foreman to check up the efficiency of an inspector; so much depends upon the individual conscientiousness of the man that it is essential to give considerable weight to this human characteristic in the selection of inspectors. Due consideration must be given not only to the selection of the men but to the surroundings and facilities in connection with their work.

The inspection of equipment in this enlightened age is comparatively simple on account of the development of the ventilated interpole motor and ease of accessibility to give the different parts a thorough inspection; flashovers are practically eliminated and this enemy of inspectors gives them more time for other parts of the equipment.

The continuous capacity air compressor has put the intermittent service machine in the discard, and the old difficulty of leaky pipes and leaky valves between inspections is amply taken care of with this continuous machine, as on the old intermittent type a leak almost invariably burnt out the armature and the maintenance was excessive on any of the old type of compressors. Another noteworthy feature of the continuous machine is the splendid design of accessibility for ease of inspection. The buzzer is a great improvement over the old monitor bell, and the inspector has no dry batteries to bother with. We have experienced very little trouble with any of our buzzer equipments. The lighting systems have been changed on a number of our cars to center lighting. Previously we had ten 23-watt lamps on the sides of cars and now have five 23-watt lamps in the center with a selector switch. This is a big time saver for trainmen or inspectors. If the circuit goes out he turns the selector switch and short-circuits the bad lamp and at the same time brings in a dummy light in the corner of the car to make a complete circuit of five lights. If the trainman is anyway energetic at all, he will take out the dummy light at the end of the line and put it in the socket where the broken lamp is, turn back the selector switch to normal position and then he has all lights in the center burning.

Installation of controllers with individual blow-out coils for each finger is a step in the right direction, and the ample capacity of the fingers with the improved tension is worthy of mention. Another admirable feature is the wooden controller cover instead of the old steel type. We have not had a controller blow out in eighty double-end equipments since 1913 with the K-35-G or the K-36-J and can only attribute this immunity to the improvement just mentioned over the old K-10 and K-12 type of controller.

A marked and commendable advance has been the elimination of the bulkhead in all the latest design of cars. We are now removing all bulkheads and putting in pipe stanchions and a dividing rail for the conductor between the entrance and exit doors. A big saving in weight and maintenance is accomplished by removing obsolete bulkheads, as all master mechanics of the progressive type are advocating weight reduction. Cars without bulkheads are easier of access and less liable to accidents as they have pipe stanchions to which passengers can hold on, while with bulkheads there is nothing which passengers can grasp. Another bad feature of the bulkhead is that the swing door is liable to catch the fingers or the clothes of a passenger when going out or in. Car seats of the pressed steel type are a great improvement over those of the old castings type, and the maintenance of this modern seat is nil compared with the old type. Another marked feature is the solid gear over the split type. The inspector has forgotten how to look for loose gear bolts.

There are many other factors that enter into low maintenance cost, and one of them is a well-kept storeroom. It is not a paying proposition to keep a car costing from $10,000 to $12,000 out of service any length of time while waiting for material to repair it. Every company should have a first-class man in its storeroom, and he should be held responsible for all repair parts and also keep his stock up to the minute. His main problem is the cost of investment for the supply of repair parts, and with this in view he will never overstock on anything, although it is always

---

* Abstract of paper presented at the midyear meeting of the Iowa Electric Railway Association, Sept. 17 and 18, 1919, Davenport, Ia.

more economical to have the repair parts in the storeroom than hold the cars out of service. Another feature is to keep records of the different parts of the equipment. By this method it is possible to detect any faulty inspection promptly and place the blame where it belongs. A company cannot be too careful with records, as this is the only means it has to determine the ways for more economical maintenance. There never was a time like the present for practising economy, as material has doubled in price.

There is nothing more discouraging to a master mechanic than to have the manager say, "Look at these figures, this other road is about the size of ours but its maintenance is 10 per cent lower. Investigate this and find the reason why they can make such a showing." Maintenance comparisons look well on paper, but no two cities have the same conditions to contend with. The city with the low maintenance cost probably has the following advantages: The line voltage is good, the feeders are adequate for the service, the track is in first-class condition and well bonded, the equipment is of the most modern type and the cars are light and properly selected for the service, while the city with the high maintenance has everything just the opposite. Maintenance and inspection work vary in every city, and no hard and fast set of rules will apply to all properties, as the different kinds of equipment have their own specific peculiarities and a schedule of inspection must be made to suit their requirements.

Letters to the Editors

More About Wood-Block Paving

WISCONSIN VALLEY ELECTRIC COMPANY

WAUSAU, WIS., Sept. 29, 1919.

To the Editors:

I noted with great interest the articles in your Aug. 16 and Sept. 20 issues in regard to the repair of wood-block pavement. In 1911 we paved a portion of our track with woodblocks. The city at that time insisted on a 1½-in. sand cushion. This sand cushion, however, ran as high as 2 in. to 2½ in. in places. The result was the same as mentioned in Mr. Crandell's article. The pavement buckled and we have had endless trouble ever since it was put in.

In 1916 the writer tore out one block of this pavement on a double track and instead of using the sand cushion we put concrete 1:2:4 mixture on top of the old paving base, struck this off with a template and placed the blocks on it immediately. We then rolled them with a garden roller and let them set for twenty-four hours. The filler was then poured, which consisted of an asphalt filler instead of the pitch filler which was used at the time the pavement was originally put in. Up to the present time the blocks which we put in this way show no failure of any kind. The writer personally believes that the filler had something to do with the failure of this pavement originally as in cold weather we have often noticed cracks in the pavement which would be as much as an inch wide, and, of course, when the weather would moderate, water and slush would get under the blocks and the result would be shifting of the sand cushion and buckling of the pavement.

Mr. Swartz in his article published in the ELECTRIC RAILWAY JOURNAL OF Sept. 20, advocates the laying of blocks so as to nose under the rail. This is the way our blocks were put in originally. When we later put the blocks on the concrete as mentioned, we placed them longitudinally with the rail. They then fit close to the web of the rail and this method seems to be working satisfactorily. The wheel flange passes along the center of the block instead of over one end, as it would if it were placed with the end of the blocks against the web of the rail, in which case the dirt, ice and snow which accumulate in the flangeway have a tendency to work in between the web of the rail and blocks. If this accumulation of ice and snow gets hard enough the pressure of the passing wheel will have a tendency to press down the end which is against the web of the rail and tip the outer end of the block up in which case the pavement will eventually buckle.

I believe as does Mr. Swartz that it is advisable to use a block with ⅜-in. lugs instead of using a spacer. Personally, I feel that wood blocks should not be placed in car tracks at all, but of course the city authorities cannot always be made to see our point regarding the kind of pavement to be used along the car tracks.

W. C. RASMUSSEN,
Superintendent, Railroad Department.

Results With Wood Block Paving

THE BARRETT COMPANY

CHICAGO, ILL., Oct. 11, 1919.

To the Editors:

In your issue of Sept. 20, A. Swartz, of the Toledo Railway & Light Company, invited replies to his criticism of an article by J. S. Crandell, published in the Aug. 16 issue, relative to repairs and construction of creosoted wood-block track areas. I do not wish to enter into a discussion of the merits or demerits of the two types of construction described by Mr. Crandell and Mr. Swartz, but I desire to discuss some of Mr. Swartz's conclusions, as to the proper type of construction for wood-block pavements in street car areas.

After an experience of practically twenty years with both the manufacture of wood blocks and the construction of wood-block pavements, I am not an ardent advocate of the use of wood block in street car areas. Personally, I believe a good stone-block pavement is more desirable. If, however, it has been decided to construct a wood-block pavement, it has been my experience that every detail of treatment and construction must be carefully observed to assure even a small measure of success.

Summing up Mr. Swartz's conclusions I find he believes that: (1) Pavement between car tracks should be level. (2) A nose block should be used next to the rail. (3) A ½-in. sand cushion should be used under the blocks. (4) The block should be provided with a lug at least ⅜ in. deep. (5) A pitch mastic filler is more desirable than a straight pitch filler. I shall take up these items in order.

1. I believe with Mr. Swartz that too much crown is not advisable. It is my impression that in Toledo in the past year or two a gutter construction was used, that is, the pavement was dipped towards the center of the track instead of being crowned. I had the pleasure of inspecting some of this construction and it appealed to me as very practicable. The only criticism that I had to offer at the time was that there seemed to be an insufficient number of drains provided. It is of course essential when blocks are laid either level or dipped towards the center, that an adequate number of drains at right angles to the rail be provided. The essential feature in wood-block track construction, in connection with drainage, is to get the water away from the rail as rapidly as possible. My experience indicates that water gets in under the blocks in the space between the blocks and rail.

2. Many things can be said in favor of the nose block when used on the outside of the rail. My experience, however, with the noses or flange block inside of the rail in connection with a T-rail has been very unsatisfactory. It

is practically impossible to keep the flangeway free from dirt, and unless this is done the flange of the wheels will ride the dirt and break the block directly under the flange thus permitting the entrance of water.

3. Mr. Swartz's experience with a sand cushion and his conclusions therefrom are rather surprising, in view of the fact that a sand cushion has been practically condemned in connection with wood-block paving by the committees of nearly all technical societies, including the American Wood Preservers' Association, as well as users of wood blocks throughout the United States. The method of laying the blocks directly on concrete with an intermediate paint coat of bituminous material has long been recognized abroad and has been in use in this country successfully for the past ten years. Within the past three years, practically every city using any considerable quantity of wood blocks has adopted this form of construction as standard.

Mr. Swartz refers to results in Toledo as not having been satisfactory. I am sure he must refer only to the track construction, as I have good reason to believe that the bituminous paint-coat method of construction used in the past two years in Toledo has been extremely satisfactory. Probably Mr. Swartz's difficulties are not due to the fact that blocks were laid on the bituminous paint coat directly on the concrete, but to some other phase of his construction. I am under the impression that the type of construction used in Toledo between the tracks last year, which I believe was the first track laid directly on concrete, was radically different from that used in any other city, in that the gutter type of construction was used—that is, the blocks were dipped towards the center instead of laid level or crowned. It is just possible that this type of construction had something to do with the unsatisfactory results Mr. Swartz refers to.

4. Mr. Swartz states that he prefers a lug block having a lug ⅜ in. deep. A lug of this depth would in my opinion invite considerable trouble. The use of a ⅜-in. lug would result in a joint between the blocks of about ½ in., as it is not possible to lay blocks up to within the depth of the lug even with ramming. A joint of this width would soon have dirt ground into it by the traffic, especially during periods of hot weather, that would unquestionably result in bulging of blocks sooner or later. It is not possible absolutely to waterproof a block by the injection of any quantity or quality of creosote oil. It is therefore necessary, in order to prevent expansion, so to construct the blocks in the pavement as to make pavement as a whole and the blocks individually as near waterproof as possible. For this reason, a construction which seals the bottom and the sides of the blocks, and produces the minimum opportunity for water to get in between the blocks, will give the best results. Properly applied a pitch filler can be used in connection with a rectangular block without a lug and the sides of the blocks thoroughly waterproofed. The use of the rectangular block, however, requires considerable care in construction or else all the joints will not receive the filler. From this viewpoint it might, therefore, be advisable to use a lug or some sort of spacer to separate the blocks.

5. The Crandell spacer does not provide a large joint and therefore should be as effective as a small lug and far more satisfactory than a large lug. I am inclined to agree with Mr. Swartz that if a large lug is used, that is a lug $\frac{3}{16}$ in. or larger, then a mastic filler consisting of 50 per cent pitch and 50 per cent hot sand will be more satisfactory than a straight pitch filler. With the use of a large lug there is a tendency to use entirely too much filler, which either floats the blocks or squeezes out onto the surface. A straight pitch filler can be used in connection with a lug block but requires care and judgment in its application.

WALTER BUEHLER,
Engineer of Paving and Wood Preservation.

Association News

Arrangements Made for Coal Supply

DR. H. A. Garfield, who has been reappointed fuel administrator, collaborating with Director-General Walker D. Hines of the railroad administration has arranged for the coal situation to be handled at Washington through the Central Coal Committee of the railroad administration. The principal duties of that committee are to care for the movement of coal. Acting in co-operation with the central committee are seven regional and various district committees which have been appointed as needed throughout the country, whose function is to distribute coal as the necessity and requirements arise in accordance with the Nov. 1, 1919, priority list of the railroad administration. All public utilities are fourth in the order of priority on this list.

The National Committee on Gas and Electric Service has been revived by the national railway, electric light and gas associations. Headquarters have been established by George W. Elliott, secretary, in the Railway Associations offices in the Munsey Building, Washington. In consultation with Manager W. V. Hill of the American Association, Secretary Elliott has effected the appointment of those who will represent the public utilities in connection with the supply of coal. These appointments being:

To the regional committees: *Southwest*—C. L. Holman, Laclede Gas Company, St. Louis, Mo., *Southern*—Rawson Collier, Georgia Railway & Power Company, Atlanta, Ga.; *Northwest*—John P. Gilchrist, vice-president, Commonwealth Edison Company, Chicago, Ill.; *Central*—George F. Mitchell, assistant to president, Peoples Gas Light Company, Chicago, Ill.; *Western and Northern New York*, J. T. Hutchings, Rochester (N. Y.) Railway & Light Company; *Southern New York*, Clifton W. Wilder, New York (N. Y.) Edison Company; *Allegheny*—J. A. Pearson, United Gas Improvement Company, Philadelphia, Pa.; *Pocahontas*—J. W. Hancock, manager, Roanoke Railway & Electric Company, Roanoke, Va.

To the district coal committees: *Boston and New England*—C. H. Hodskinson, Edison Electric Illuminating Company, Boston, Mass.; *Cincinnati*—W. W. Freeman, president, Union Gas & Electric Company, Cincinnati, Ohio; *Detroit*—B. E. Morrow, Consumers Power Company, Jackson, Mich.; *Kansas City*—P. J. Kealy, president, Kansas City (Mo.) Railways; *Omaha*—J. E. Davidson, vice-president, Nebraska Power Company, Omaha, Neb.; *Des Moines*—E. G. Schmidt, president, Des Moines (Ia.) City Railway; *Peoria*—R. S. Wallace, vice-president, Central Illinois Light Company, Peoria, Ill.

The understanding relating to the appointment of the public utility representatives is that each representative will handle the situation impartially for all electric light, gas and electric railway companies in his territory. All public utility matters must first be investigated by these representatives and their recommendations will then be accepted by the regional or district committees and relief granted in so far as possible.

On Nov. 7, 1919, Secretary Burritt notified all electric railway companies by letter that all coal on the rails Nov. 1. had been commandeered by the railroad administration and that in order to secure an additional supply new orders must be placed with the public utility representative assisting the regional or district committee. In applying for such assistance it is of the utmost importance that careful and accurate data be given of the number of days supply on hand, the daily consumption, together with information as to the kind of service performed.

If the necessity arises additional regional committees with a public utility representative co-operating will be appointed.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Favors Municipal Ownership

Local Transportation Committee of Chicago Council Approves Mayor Thompson's Plan

The specter of municipal ownership and operation is again being held over the Chicago traction properties. This time the proposal originates with Mayor Thompson whose plan—outlined in the ELECTRIC RAILWAY JOURNAL for Sept. 13, page 535—was approved by the local transportation committee of the City Council on Oct. 29. The prompt endorsement of this measure by the committee was a surprise to all interested parties. The explanation was made that "if the plan fails it's the Mayor's funeral, not ours."

There are many hurdles yet to be encountered by the Mayor's proposition. It will probably be indorsed by the City Council at an early date. The Mayor would then have authority to spend up to $250,000 in the employment of engineers and experts to formulate the details of his scheme. Within nine months this commission would be expected to make a report. Then would come the preparation of various measures for the State Legislature and, in the event of their passage, the submission for popular approval. At the end would come the important step of fixing a fair price for the existing properties and making payment to the investors. It would probably take three years to carry out this program.

ALDERMEN ADVISE CAUTION

While giving a tentative indorsement to the Mayor's plan, several of the Aldermen and their special counsel, Walter L. Fisher, took occasion to advise caution in advertising that the program could be carried out for a 5-cent fare. They wanted the Mayor to seek refuge in a service-at-cost arrangement. He would not be restrained, however, and said that even with present high costs he could duplicate the Chicago properties and make a profit on a 5-cent fare. It might even be possible to operate for a lower rate.

The city's lawyers did not relax their efforts, meanwhile, to have the 5-cent fare restored by the State Public Utilities Commission. Severel hearings were held, mostly on questions of valuation. Announcement was made by the city that if a favorable ruling is not handed down soon a bill will be filed in the courts to enjoin the collection of a 7-cent fare or to have the 1907 contract declared void.

Troops Patrol Knoxville

Trainmen and shop employees of the Knoxville Railway & Light Company, Knoxville, Tenn., walked out on Oct. 18, completely tying up railway service. The strike followed the breaking off of negotiations between the company and the men and the adoption of a strike resolution on Oct. 17.

The strikers asked for a wage scale of 55, 60 and 65 cents an hour. The company offered a scale of 40 to 46 cents. The men also called for time and a half for overtime and for the installation of two straight shifts of nine hours each. The present wages of 36, 38 and 40 cents an hour were fixed by the War Labor Board with the understanding that the men might reopen the question at the end of six months. The employees claimed that, since the board was no longer in existence, the decision of the board ceased to be binding.

An attempt by the company to resume service on Oct. 26 led to rioting. One thousand National Guard troops were ordered to the city owing to the inability of the police to preserve order. The presence of the troops enabled the company to run a number of cars on Oct. 27. At a meeting of the Central Labor Union on Oct. 27 it was decided to call a general strike on Nov. 1 if in the meantime the railway employees had not won their case.

St. Louis Wage Award Changed

Changes in the award directed by the Public Service Commission of Missouri last August in working conditions and wages of the employees of the United Railways, St. Louis, Mo., have been ordered by the commission. This makes more definite certain conditions, especially in the matter of payment for overtime. The company is directed to put into effect as soon as possible, or at least by Jan. 1, the adjustment of pay on the basis of an eight-hour day with a minimum of nine hours, without an overtime penalty, to conductors and motormen on the following schedule:

> Time of work not to exceed nine hours for 40 per cent of the runs; not to exceed 12½ hours for 40 per cent of the runs; not to exceed fourteen hours for 20 per cent of the runs. On Sundays and holidays, the runs shall not exceed eight hours and payment shall be made for actual time with a minimum of six hours. Seventy-two per cent of the runs shall be straight runs, 15 per cent to be completed within a spread of ten hours and 15 per cent to be completed within a spread of twelve hours.
>
> Overtime shall be paid on the basis of time and one-half at the regular scale of wages. When delays are caused by accident or blockade, straight time shall be paid. Dating from June 1, 1919, the wages paid conductors and motormen shall be: for first year of service, 50 cents an hour; second year, 55 cents; third year and thereafter, 60 cents. The period of service shall be computed from the first pay day following the date of employment.

In the original award, conductors and motormen were allowed one day off every ten days. This is changed to allow them one day off every seven days. An additional allowance of 50 cents a day over regular wages is ordered for conductors and motormen breaking in new men. They are allowed seven and one-half minutes each for taking cars out and putting them in the shed. Duplicate reports of all accidents and disorders are required to be made. Thirty minutes time is allowed for the work.

Adjustment of hours of work for other employees are: workmen in material yards, nine hours a day; porters, janitors, car cleaners, ten hours a day; watchman, twelve hours; hostlers, 10½; repairmen and switchmen, nine hours. Electrical workers are allowed an increase in their present wage scale of 45 per cent from Sept. 1, 1919. Present wages in the original award are defined to mean wages in effect on Aug. 5, 1919. Unclassified employees are given a classification and any increase of 45 per cent over the wages they were being paid Sept. 1, 1919.

Low Fare Cry No Bait

Victory of Governor Coolidge Sweeps Aside Efforts to Make Five-Cent Fare a Political Issue

The re-election of Governor Calvin Coolidge, of Massachusetts, on Nov. 4 marks a high tide in the history of the old Bay State. The stand of Governor Coolidge for law and order which made him a national figure following the desertion of their posts by unionized members of the Boston police force has been emphatically approved by the electorate, and the defeat of the forces which threatened to disrupt the policy of Governor Coolidge is welcomed by all good citizens regardless of party affiliations.

The defeated candidate for the governorship, Richard H. Long, Framingham, attempted among other things to make the restoration of the 5-cent fare upon the electric railways of the State an issue to attract votes. Despite the acute financial condition of many of the railways and the existing high fares, the public refused to be led astray from the real issues of the campaign, and very little discussion of electric railway problems and affairs marked the political contest as carried out in the appeals which were made to the voters.

PUBLIC CONTENT WITH PRESENT PROGRAM

It is evident that the public rested content, so far as the election was concerned, with the knowledge that Governor Coolidge's call for a special session of the Legislature this month to consider the forthcoming report of the special investigating commission headed by former Congressman Charles G. Washburn offers a more hopeful solution of traction difficulties than the near-promises of the unsuccessful aspirant for the gubernatorial chair.

In no uncertain tones, therefore, Massachusetts has declared her determination to support government of the people, by the people and for the people against the selfishness of any particular class or group which attempts to place its own interests before the common welfare.

President Pardee Addresses New England Club

J. H. Pardee, president of the American Electric Railway Association, addressed the first fall meeting of the New England Street Railway Club at Boston, Mass., on Sept. 25. He spoke optimistically of the future of the industry, looking forward to its rehabilitation under private ownership and operation and public control. New capital to the amount of more than $200,000,000 a year is needed in order that the industry shall develop as the public requires. The public interest is paramount, the speaker declared, and the co-operation of the public is essential to the continuance and expansion of service. A. C. Colby, master mechanic of the Connecticut Company, Bridgeport, Conn., led an informal discussion upon the subject of one-man car maintenance, before the usual dinner.

New Construction Planned in Harrisburg

Officials of the Harrisburg (Pa.) Railways have filed with the Public Service Commission of Pennsylvania a statement that they will construct a new carline from North Seventh and Herr Streets to North Eighteenth and Herr Streets, reaching the northeastern section of the city. At present the nearest carline to this district is in State Street, about half a mile away.

The company proposes to replace the single track in North Seventh Street, from North to Herr Streets, with two tracks, extend two tracks east from Seventh to Cameron and one track east from Cameron to Eighteenth. No estimate of the cost has been made. Officials stated to the commission that the new line will be made possible as soon as franchises are granted by city officials.

The plan to extend a car line to this district of the city was made after residents in the section complained to the Public Service Commission about lack of adequate service. They asked also for a crosstown line in one of the numbered streets, probably Seventeenth or Eighteenth, but the railway officials contended that sufficient revenue could not be derived from this line if it were constructed. Plans for crosstown service in the eastern part of the city will be developed later.

One-Year Wage Agreement at Richmond

The Virginia Railway & Power Company, Richmond, Va., on Oct. 17 signed an agreement with its employees whereby a new wage scale was established effective for one year. The agreement came as the result of a series of conferences between officials of the company and union representatives which began in July. A 5 per cent increase in wages was granted, effective from Oct. 16, making the Richmond rate from 37 cents to 42 cents an hour, according to length of service from one to four years, and the Norfolk rate 43 cents to 47½ cents an hour. The 6-cent fare is already in effect in Norfolk and the agreement provides that, should a 6-cent fare be granted in Richmond, the Norfolk wage scale is immediately to apply in that city also. It was estimated that the increase would cost the company $150,000 a year, one-third of it in Richmond.

The company maintains the principle of the open shop, and while dealing with the union officials as representatives of large groups of employees, reserves the right to deal with other employees or groups of employees. The 5 per cent increase is to apply to all employees from the grade of superintendent down, whether or not they are members of the union.

All questions except those in connection with wages and hours, and those affecting operating costs, are to be submitted to arbitration.

Railway Offered to Cities

Powell Evans, president of the Schuylkill Railway, Girardville, Pa., has proposed ownership of the lines of the company by the public in a communication addressed to the County Commissioners and Councils of the communities served by the railway. He said in part:

> I would be willing at this time to effect a sale of this property on a basis of value equal to a just appraisal and at an interest rate which is fair at the present time; and could assure the delivery of a substantial majority of the controlling stock and the underlying securities at a pro rata price out of the amount of the purchase according to the priorities and rights of all concerned therein, respectively. This plan would obviously return nothing for the stock and shade the values of the junior securities now outstanding. It would, however, provide the communities served with the ownership and management of their local transportation.
>
> If your communities will study and adopt this plan, I am inclined to believe that all the security holders concerned would concur. In the meantime there must be an immediate settlement of the urgent need of greater income.

Wage Arbitration in Portland, Ore.

Union officials and railway officers have agreed to submit to arbitration the demands of the trainmen of the Portland Railway, Light & Power Company, Portland, Ore., for increased wages. The platform men have presented to the company demands for a maximum wage of 80 cents an hour, with wage increases for all shop men, carhouse men and laborers working in the maintenance of way department, more than 1800 men in all. The platform men now receive 52 cents an hour the first three months, 54 cents the next nine months and 56 cents after a year's service. The new demands provide for 76 cents, 78 cents and 80 cents an hour for similar periods.

Franklin T. Griffith, president of the company, asserts that the wage scale asked for is unreasonable and absolutely beyond the power of the company to pay. The demands, if met, would represent an increased labor cost to the company of 172 per cent over the labor cost of 1917, according to Mr. Griffith.

An arbitration committee of three will be appointed to investigate and report on the matter.

News Notes

Wage Agreement at Petersburg, Va.—Conductors and motormen on the Petersburg lines of the Virginia Railway & Power Company, Richmond, Va., have accepted a wage increase of 5 per cent offered by the company.

Ashtabula May Purchase Railway.—The City Council of Ashtabula, Ohio, on Oct. 14 voted to approve the offer made by directors of the Ashtabula Rapid Transit Company, whereby the city may acquire the holdings of the company for $296,000. An expert appraised the property at $363,000.

Car Strike in Lima, Peru.—The strike movement, just settled among the port workers at Callao and the railroad employees, has spread to the electrical employees of Lima, Peru. The electric light and power plants and the electric railways are completely tied up by a strike which broke out on Oct. 5.

Strike at Sheffield, Ala.—Thirty-five trainmen of the Sheffield (Ala.) Company went on strike on Oct. 12, demanding a wage scale of 55 to 60 cents an hour and changes in working conditions. The contract between the employees and the company which expired on Oct. 11, provided for wages of 35 and 40 cents an hour for an eleven-hour day.

Service Restored at Eureka, Cal.—Service was resumed on October 4 on the lines of the Humboldt Transit Company, Eureka, Cal., following a shutdown lasting two weeks as the result of a strike. The men demand a wage of 55 cents an hour. The pay question, which has not yet been settled, will be submitted to arbitration.

Would Have City Purchase Line.—The Corporation Counsel of Spokane, Wash., is preparing an amendment to the city charter to permit the purchase by the city of the power plants and city lines of the Spokane & Inland Empire Railway. It was planned to submit the proposed amendment to the voters at the November election.

Wages Adjusted in Hamilton.—The Minister of Labor at Ottawa, Ont., has been advised that the Hamilton (Ont.) Street Railway and its motormen and conductors have adjusted their dispute, obviating the necessity of appointing a board of conciliation to deal with the matter. Concessions granted by the company include an increase of 4 cents an hour in wages.

Cars Stop at Bluefield.—Service on the railway lines of the Appalachian Power Company, Bluefield, W. Va., is at a standstill as the result of a strike of the trainmen. The men recently organized a local union and became affiliated with the Central Labor Union. They now demand recognition of the organization by the company and arbitration of any disputed points which may arise.

Men Reject Shore Line Offers.—The offer of R. W. Perkins, receiver of the Shore Line Electric Railway, Norwich, Conn., to take back the striking employees as individuals and not to sign a contract with the men as a body, was turned down by the men, who also agreed not to call the strike off. Service over the lines of the company was resumed some time ago, so that the strike continues in name only.

A Commissioner of Franchises.—The City Council of Cleveland, Ohio, on Oct. 14 adopted a resolution, requesting Mayor Harry L. Davis to appoint a commissioner of franchises, as provided in the city charter. While this will change proceedings to some extent in relation to franchise matters, the appointment of a commissioner was considered imperative in view of the coming controversy over the gas rates.

Trainmen Study Mr. Mitten's Testimony.—The Philadelphia (Pa.) Rapid Transit Company has distributed among its employees a circular giving the main facts brought out in the testimony of President T. E. Mitten before the Federal Electric Railways Commission at Washington. During the first two weeks in which the company's saving fund plan for its employees has been in effect 2500 accounts were started.

New Car Line Proposed for Cleveland.—An ordinance is now before the City Council of Cleveland, Ohio, which grants the Cleveland Railway the right to construct tracks on West Third Street to Scranton Avenue, to Jefferson Avenue, S. E., thence up Broadway hill and along Broadway, S. E., to East Thirty-first Street. This track will furnish service to the employees of factories, furnaces and lumber yards in what is known as "the flats." The cost will be about $200,000.

Men Walk Out at Northampton.—Sixty trainmen of the Bangor & Portland Traction Company, Bangor, Pa.; the Northampton Traction Company, and the Northampton, Easton & Washington Traction Company, Northampton, Pa., went on strike for higher pay on Oct. 13. The companies, which compose the so-called "Hay System" operate the local lines in Northampton and interurban lines in western New Jersey and eastern Pennsylvania.

Recommends City Take Over Line.—Thomas F. Murphine, superintendent of Public Utilities of Seattle, Wash., has recommended to the City Council the purchase of the Greenwood Avenue line from a subsidiary of the Puget Sound Traction, Light & Power Company for $81,482 or at an appraised valuation, the line to be absorbed into the municipal system, thus eliminating the present necessity of patrons of the line paying two fares. The matter has been referred to the utilities and finance committees.

Minneapolis Franchise Vote Dec. 9.—The City Council of Minneapolis, Minn., by formal motion has set the date of the special election on the proposed cost-of-service franchise for the Minneapolis Street Railway as Dec. 9. An attempt by the Socialist members of the Council to have the motion referred to a committee, and to have the date set one month later, were both voted down. The motion, which was submitted by Alderman John Walquist, chairman of the committee on street railway matters and extensions, was passed by a vote of sixteen to eight, only the seven Socialists and Alderman Peterson voting against it.

Loop Subway Proposed.—A subway loop, to circle the great shopping, hotel and theatrical district between Times Square and Thirty-fourth Street, New York, N. Y., suggested by the Thirty-fourth Street Board of Trade, has received the indorsement of Travis H. Whitney, former chairman of the Public Service Commission for the First District of New York; Milo R. Maltbie, public service consultant, and the transportation committee of the Forty-second Street Property Owners & Merchants' Association. It is to be submitted to the Public Service Commission, and is already under consideration by the New York Board of Trade & Transportation.

Union Officials Ousted.—As an outgrowth of the strike of conductors and motormen in the employ of the Muskogee (Okla.) Traction Company some time ago, Jesse Green and G. W. Ritchie, president and secretary, respectively, of the local union, have been ousted by their organization, and C. B. Burk and W. H. Clucks have been elected in their stead. It is said that the ousting of Green and Ritchie will bring an end to the strike. The company agreed to recognize the union, which was the main point of contention in the strike, if new officers were chosen by the union. On this basis the strikers were put back to work. Cars were operated about a month by non-union labor.

City Wants to Know About Interurbans.—C. W. Hobson, J. F. Strickland, the Dallas (Tex.) Railway and their bondsmen, who guaranteed fulfillment of the conditions of the service-at-cost franchise granted the Strickland-Hobson interests covering the operations of railway lines in Dallas, have been asked by the City Commission to make definite report at an early date regarding the construction of two interurban lines, each at least 30 miles in length, called for by the terms of the franchise. On January 8, 1917, the city entered into an agreement with the traction interests and during the war the time for fulfillment of the contract, on account of war conditions then prevailing, was extended.

Forecasts Massachusetts Legislative Report.—The Boston *Post* says that the special committee of the Legislature appointed to consider the needs of the electric railways in that State in its report will favor lower fares on the Boston Elevated Railway, 7 and even 6 cents being suggested. The basic idea underlying conclusions in both majority and minority reports is that the elevated should not be looked upon as an ordinary business enterprise, but as a great public utility with a social, economic, industrial and community value. It will be recommended that the present method of levying subsidy on basis of number of car riders be abandoned as inequitable, and that future apportionments among cities and towns involved be 50 per cent on basis of population and 50 per cent on valuation.

Strike in Middletown.—A short strike on the lines of the Wallkill Transit Company, operating in Middletown, N. Y., and between that city and Goshen, has been ended. Employees of the company objected to plans which the company advanced for the operation of one-man cars and went out in order to enforce their demands. During the time the men were out the company operated only one car. This was manned by former Judge H. B. Royce as motorman and by W. M. Gould, general manager of the railway, as conductor. It is said that under the terms of the strike settlement the company will postpone for the present the installation of the one-man cars in Middletown under the plan which the officers first had in mind.

Wants Strike Responsibility Established.—A petition asking an investigation of the strike of the employees of the Pittsburgh (Pa.) Railways last August has been filed with the Public Service Commission of Pennsylvania by A. E. Anderson, Pittsburgh attorney who filed suit for several millions in damages against the Amalgamated Association following the strike last May. In his petition Mr. Anderson refers to the legal obligation of a public service corporation in Pennsylvania to maintain at all times reasonably adequate service, and points to the two-week suspension during the strike as a failure to meet this obligation. He wishes the commission to establish, by investigation, who is culpable when public service employees abandon their posts in the face of a contract and after arbitration.

Favorable Wage Action on I. T. S.—The men on nearly all divisions of the Illinois Traction System, Peoria, Ill., have voted to accept the company's recent wage offer on recommendation of the State mediator appointed by Governor Lowden. From Aug. 1 to Oct. 1, retroactive, the pay will be 55 cents an hour for motormen and conductors and 42 cents for brakemen; from Oct. 1 until Dec. 1, 1920, a period of fourteen months, 60 cents for motormen and conductors and 47 cents an hour for brakemen. The present pay is 50 cents for motormen and conductors and 37½ cents for brakemen. One feature of the proposition in regard to the brakemen is a little different than in former contracts. The brakemen are raised the same number of cents that the motormen and conductors are raised and not the same percentage. The original demands for the motormen and conductors was 75 cents an hour.

Improvements Held Up in Cleveland.—Because of a refusal to relay its tracks on East 140th Street at this time, Fielder Sanders, Street Railway Commissioner, has ordered the Cleveland (Ohio) Railway to do no further repair work until it takes some steps toward doing this special work. As a result improvements on about 7 miles of track are being delayed. This includes the completion of the East Thirtieth Street crosstown line and a section of track on Euclid Avenue. Joseph Alexander, vice-president of the railway, inquired of the City Council whether Commissioner Sanders had been authorized to issue such orders. It was ascertained that the instructions were to make some move that would result in the improvement of the East 140th Street line, but that no specific instructions had been issued. Mr. Sanders said he acted as he thought necessary.

Strike Investigation Squabble.—Governor Smith, of New York, in a letter sent on Oct. 24 to Raymond F. Almirall, foreman of the Extraordinary Grand Jury in New York, refused to supersede District Attorney Edward Swann in the investigation of charges that arose from the strike of the Interborough Rapid Transit Company employees. The Extraordinary Grand Jury undertook investigation of the Interborough strike at the instance of the District Attorney after receipt of a letter from Mayor Hylan, who wrote that certain correspondence and information that had reached him seemed to indicate that collusion may have existed between employees and officials of the Interborough Rapid Transit Company to bring about the strike as propaganda in the move for getting increased fares on the transit lines. Mr. Swann made statements intimating that the jury had been packed with men prejudiced to the interest of the railway. The jurymen resented this and appealed to the Governor for relief.

Court Acts on Des Moines Matters.—At least a temporary or makeshift settlement of the local railway problems in Des Moines, Ia., was reached recently when Judge Martin J. Wade, of the federal court, approved that portion of the request of the receivers of the Des Moines (Ia.) City Railway for service reductions. The reductions proposed are principally on loop-district service. It is said that the cuts in the loop district will affect a saving in a year's time of about $26,000. Judge Wade recently set a date for hearings on the objections of the trainmen to a reduction in the wage scale and the protests of residents of the districts outside of the city against an increased fare. The reductions in loop service are to be submitted to the city car supervisor, Scott Goodrell, before going into effect. Officials of the union have announced that pending the final settlement they will abide by their contract even though there is a cut in service.

Increase in Pay for Clerical Force.—In order to stop resignations the Tri-City Railway & Light Company, Davenport, Ia., has instituted a top-to-bottom raise in salaries averaging 14 per cent on the former wage paid and totaling $1,800 monthly. The raise affects office employees, men and women, numbering more than 225, both in the Iowa and Illinois branches of the company. When the trainmen received a 60-cent scale after their strike in August many office employees, earning less money than the trainmen, asked for jobs on the cars. Many others resigned and numerous requests for raises in pay were made. Although short of funds the company decided it could not dispense with the services of veteran and efficient employees and instituted the sweeping raise. Since the 60-cent scale of the trainmen went into effect the company has also put into force a bonus of 7 cents an hour for its linemen. They formerly drew 63⅓ to 68⅓ cents an hour. Their scale now varies from 70 to 75 cents.

Financial and Corporate

Appointment of Receiver Denied

The appointment of a receiver for the Union Traction Company of Indiana, which was asked for in the Federal Court at Indianapolis, Ind., by John F. Anderson, Philadelphia, has been denied by Judge A. B. Anderson. The question of foreclosure of a mortgage against the company will come up later.

The complaint brought by Mr. Anderson, who is holder of $10,000 of bonds of the company, alleged that the company failed to pay the principal of the bonds when it matured on July 1.

Affidavit filed by Arthur W. Brady, Anderson, president of the railway, showed that some time before the bonds fell due the company obtained the consent of the Public Service Commission of Indiana to a plan for the extension of the bonds, and that at the time the suit was brought the consent of the trustees and almost 91 per cent of the bondholders has been obtained to the extension.

The affidavit further stated that the assets of the company at a fair valuation are worth several millions of dollars more than the total liabilities, exclusive of stock capital liabilities, and valued at the present cost of reproduction are worth several millions of dollars more than the total liabilities.

The affidavit said also that the company is not insolvent and is able to provide for the payment of all debts as they fall due.

Bankrupt Companies May Be Included in Merger

The creditors of the Grafton Light & Power Company, Grafton, W. Va., and of the Grafton Traction Company, now in bankruptcy, met recently before the referee to receive a report relative to a merger of power interests in which the property of the two defunct corporations in Grafton named above is expected to be included.

Attorney Coniff, representing the trustee, asked for a further delay of proceedings owing to the fact that the Maryland Commissioners had not yet passed on the question of the merger of the properties as contemplated. After considerable discussion it was decided to continue the case. The time of the next meeting will depend on the action of the Maryland Commissioners on the application for the merger of the Maryland and West Virginia properties named in the proceedings, of which the properties at Grafton are a part, but the meeting will be not later than Nov. 18, and may be much sooner if the commission disposes of the merger question earlier.

In the meantime it was agreed that releases should be prepared by attorneys in New York, sent out to all creditors of the two bankrupt concerns, who should execute these releases which will include a consent to the dismissal of the bankrupt proceedings upon payment of the debts, and mail them, with sight drafts attached to a designated bank in New York with directions to deliver the releases upon payment of the drafts. By doing this, while waiting on the Maryland Board of Commissions, all parties will be that much nearer a settlement when the board acts, provided that action is favorable to the merger. Definite notice of the next general meeting of creditors will be sent out by the referee in advance of such meeting.

Ohio Electric Gets $259,742 Judgment

In an opinion handed down on Oct. 24 by Common Pleas Judge Stanley W. Matthews at Cincinnati, the Ohio Electric Railway was awarded judgment against the United States Express Company for $259,742, with interest at the rate of 6 per cent. The suit was based upon an alleged breach of contract for carrying express matter over 571.61 miles of track of the Ohio Electric Railway for the express company.

The contract went into effect on June 1, 1909, for ten years. at a guaranteed minimum of $65,744. Under it the railway was to be permitted to carry its usual freight business, merchants' dispatch business and baggage of passengers. At the time the railway was carrying the mail under a government contract. On Jan. 1, 1913, the parcels post order went into effect. This reduced the amount of express business materially. One year later the Interstate Commerce Commission ordered a reduction in the schedule of express rates. The United States Express Company put the new rates in effect, but the business was so reduced by the parcels post that the express company gave notice that it would terminate its contract with the railway on June 30, 1914.

Suit was immediately filed by the railway for the recovery of $10,000 due for the first year of the second five-year term. Amendments were filed as further payments accrued and the suit was heard after the contract date had expired and for the entire amount due for the five years.

The court held that the railway had performed its contract in relation to its merchants' dispatch business; that the carrying of mail and parcels post by the railway was not a violation of its contract to give the express company exclusive right for forwarding express matter; that the right to terminate the contract accrued only when a law, regulation or order impaired the contract in a substantial degree, and that the order of the Interstate Commerce Commission was not such a law, regulation or order; that only fair and uniform rates were contemplated by the contract, and that it must be presumed that the rates fixed by the Interstate Commerce Commission were fair, reasonable and non-discriminatory.

Judgment Against Davenport Interurban

A court action which will either mean resumption of railway service at Muscatine, Ia., on a 7-cent basis or the selling and possible scrapping of the city lines there took place recently when Judge M. J. Wade in the Federal Court handed down a judgment of $1,168,000 against the Clinton, Davenport & Muscatine Interurban Railway in favor of the Tri-City Railway & Light Company.

The latter company financed the building of the interurban and the acquisition of its Muscatine division properties. The Clinton, Davenport & Muscatine Railway has never been able to pay off these notes. To collect its judgment the Tri-City Railway & Light Company may ask the sale of the Muscatine City lines on a writ of execution. These lines have never been a paying investment. The city of Muscatine has fought every move the company has made to put the properties on a paying basis, including a request for a 7-cent fare.

There has been no railway service in Muscatine since Aug. 1 as a result of the fight against the company. The city is also fighting the operation of one-man cars there in an action which is now before the Supreme Court of Iowa.

Judge Wade's decision gives the parent company a chance to sell the entire Muscaine system and draw out of a money-losing proposition which has brought incessant trouble through the hostile attitude of a political faction there.

Railway May Be Saved

Vigorous efforts will probably be made to save the Blue Hill (Mass.) Street Railway from being junked, according to advices from the towns of Milton, Canton and Stoughton, the municipalities served by the company.

It was expected that service would be discontinued on Oct. 1, but a special meeting of citizens will shortly be called in Canton to discuss maintaining service until after the special session of the Massachusetts Legislature to be devoted to electric railway problems is well under way.

Sentiment in Milton, whose townspeople include many persons of wealth, is also understood to favor assisting the company to continue service.

The system is operated with six 5-cent fare zones between the Mattapan terminus of the Boston Elevated Railway and Stoughton, hourly service being provided from end to end and half-hourly service between Canton and Milton.

The company is in the hands of a receiver, George Spalding. No one-man cars are operated, and there is practically no jitney competition in the towns served by the company.

Road Once Abandoned Shows Profit

William E. Massey, appointed trustee of the Ocean City Electric Railway, Ocean City, N. J., by the Court of Chancery from June 12 to Sept. 30, on Oct. 27 made his report to the City Commissioners, the city and the owners of the road having jointly asked for the appointment. The statement shows that the total amount received by the trustee was $22,647; total operating expenses, $16,678; taxes paid for the current year on the property and franchise, $1,559, and the amount in hand after all deductions is $3,475. The physical condition of the property, the trustee states, is better than on June 10, when he took charge. In the order of the court the trustee was to serve without pay, but was to be allowed his actual expenses. For these he makes no claim. The trustee adds that there is one disputed claim growing out of the operation of the railroad, wherein the claimant contends that there is a liability resting upon the trustee for damages alleged to be due. Until this matter is adjusted he cannot present his final report. The road was abandoned, and the conditions under which service was restored were referred to previously in the ELECTRIC RAILWAY JOURNAL.

Seattle Blows Its Own Horn

The Seattle (Wash.) *Municipal Railway News* published in the interest of the municipal railway in that city, recently said:

> Seattle has had six months of municipal ownership and operation of its street railway lines, the first of October marking the beginning of the second half of the year. Six impossible months, according to the uncompromising declaration of many prophets both at home and abroad. Nearly every issue of a street railway publication that comes to hand quotes some wise professor to the effect that municipal ownership can at the best be nothing more than a brief nightmare. Many at home have made the unqualified prediction that the whole venture would run into the ground in less than six months. Unless, of course, the people would be willing to pay out much hard cash to meet excess obligations.
>
> Still, the months have passed, the trainmen are still wearing the S. M. insignia in their caps and the cars are being dispatched from an unassuming office on the fifth floor of the County-City Building.
>
> The 2000 odd employees of the street railway are still drawing their wages and salaries and nobody has yet said that they were not paid out of the earnings of the system. Auditor Hyatt is authority for the statement that the street railway department has even paid the first and only interest instalment on the purchase price which has fallen due since the city came into possession of the lines.
>
> Wages have gone up since the city purchased the lines. The service has improved materially. Withall, we still ride for 5 cents, with the understanding that, unless unforeseen reasons arise, we shall continue to do so.
>
> At some later day the exact figures to tell the story of the first half year will be forthcoming. Meanwhile, the system continues a "going concern" and worth more than when the city purchased it.

Financial News Notes

Orders Service Abandoned.—The Public Service Commission of Pennsylvania on Oct. 22 issued an order authorizing the Hanover & McSherrytown Street Railway to abandon tracks and service over several streets in Hanover.

Asks Authority to Abandon Service.—Because of poor business, the Miamisburg & Germantown Traction Company has asked permission of the Ohio Public Service Commission to abandon its line between Miamisburg and Germantown, Ohio.

Mr. Perkins Made Receiver of Shore Line.—R. W. Perkins, Norwich, Conn., president, was appointed temporary receiver for the Shore Line Electric Railway on Oct. 1 by Judge Joel H. Reed, of the Supreme Court, on the application of the estate of the late Morton F. Plant.

Ask Cut in Tax.—The Connecticut Valley Street Railway, the Concord, Maynard & Hudson Street Railway and the Northern Massachusetts Street Railway through counsel, have asked the Public Service Commission of Massachusetts to reduce the amount which they pay the cities and towns served by them as an excise tax.

Bondholders Get Ohio Road.—By order of the Common Pleas Court the property of the Miamisburg & Germantown Traction Company, appraised at $18,000, was sold on Sept. 29 to the bondholders' committee. The line extends from Miamisburg, to Germantown, Ohio a distance of about 5 miles.

New United Railways Director.—At the annual meeting of the United Railways Investment Company, Jersey City, N. J., controlling the United Railroads, San Francisco, Cal., the retiring directors were re-elected, with the exception of Eben Richards and Frederick V. Van Vorst, deceased. Harry B. Lake was elected to take the place of Mr. Richards and L. F. Loree succeeds the late Mr. Van Vorst.

Default on Interest and Sinking Fund.—The Humbolt Transit Company, Eureka, Cal., in its petition to the Railroad Commission for an increase in fare from 6 cents to 10 cents says: "The company by reason of lack of money has been compelled to default on the payment on the interest of its bonds due Oct. 1, 1919, and also in providing for the sinking fund to redeem its bonds."

Protective Committee Purchases Collateral.—Harold B. Thorne purchased on Oct. 1 for the account of the Washington (D. C.) Utilities Company, noteholders' protective committee, the 27,500 shares of common capital stock of Washington Railway & Electric Company, pledged as collateral for the note issue. The amount of the notes outstanding is about $1,381,000. The amount paid for the 27,500 shares of stock is stated to be about $5,000.

Municipal Aid for Massachusetts Line.—The town of Sharon having agreed to aid it financially, the Norton, Canton & Sharon Street Railway, Norton, Mass., has been authorized by the Public Service Commission to resume service upon its lines between East Sharon and Sharon Heights. The line, which is approximately 3 miles in length, was abandoned a year ago because the expenses of operating it were much higher than the total of the fares collected.

Small Bond Issue Authorized.—The Public Service Commission for the Second District of New York has authorized William G. Phelps, receiver of the Binghamton (N. Y.) Railway, to issue $9,000 in receiver's certificates, the proceeds of which are to be used for payment of the cost of extending its Port Dickinson line to the Hire's Condensed Milk factory. The extension has been authorized by the commission.

Receiver for St. Louis Subsidiaries.—Rolla Wells, receiver of the United Railways of St. Louis, Mo., has been appointed receiver of three subsidiary companies by Judge Dyer in the Federal Court. The appointment was made on the request of Thomas Francis, attorney for the United Railways. The three subsidiary companies are the Missouri Electric Railway, and the Florrissant Construction, Real Estate & Investment Company and the Merchant's Express Company.

Note Issued to Secure Extension.—The Humboldt Transit Company, Eureka, Cal., has been authorized by the California Railroad Commission to issue a promissory note for $20,000 to the First National Bank, Eureka. The note is secured by a pledge of $40,000 of the company's first mortgage 5 per cent bonds. The bank recently advanced money to the railroad to enable the company to purchase rolling stock and to extend its Myrtle Avenue tracks in Eureka.

New Company at Paducah.—Articles of incorporation of the Paducah (Ky.) Electric Company, with $1,200,000 capital stock, and the Paducah Railway with $1,000,000 capital stock, were filed on Sept. 23 in the office of the Secretary of State of Kentucky. On Oct. 1 the properties of the Paducah Traction & Light Company were taken over by the Paducah Railway under the terms of the reorganization outlined previously in the ELECTRIC RAILWAY JOURNAL.

Seek to Abandon Power Service.—Prior to the entire dismantling of the road of the Cincinnati & Columbus Traction Company, Cincinnati, Ohio, bondholders of the company have asked the State Utilities Commission through W. S. Little, attorney of the Union Savings Bank and Trust Company, to retain jurisdiction pending litigation. This action was taken to relieve the trust company of maintaining electric lighting and power service east of Owingsville and between that town and Hillsboro.

Municipal Line Piles Up Deficit.—H. Roy Harrison, Commissioner of Public Works of Tacoma, Wash., reports that the tideflats municipal railway is running behind at the rate of $100,000 a year. The commissioner is confronted with the necessity of either curtailing service on the lines or transferring sufficient funds from the Department of Public Works to pay the deficit. The city's operation of the line has been fraught with heavy financial losses, despite increased fares. The obligations of the municipal railway are said to be more than $500,000.

St. Louis Assessments $36,595,397.—The assessment for 1919 of the public service corporations of St. Louis, Mo., fixed by the State Tax Commission and adopted by the State Board of Equalization, has been handed down to St. Louis authorities as $36,595,397, which will yield a tax of approximately $900,000. The electric railway valuations were as follows: United Railways, $20,420,884; St. Louis, Lakewood & Grant Park line, $52,008; St. Louis & East St. Louis Railway, $235,370; St. Louis Electric Terminal, $254,908; Carondelet & Webster Grove Railway, $9,101; St. Louis Electric Bridge, $825,000.

Final Cleveland Dividend Hearing.—Final arguments on the request of the Cleveland (Ohio) Railway for an increase in dividends from 6 per cent to 7 per cent were heard by the Board of Arbitration on Oct. 30. Attorneys Harry Crawford and Thomas Sidlo represented the company, while Street Railway Commissioner Fielder Sanders and Assistant Law Director Alfred Clum spoke for the city. Both sides may submit briefs. The arbitrators are Joseph R. Nutt, president of the Citizens Savings & Trust Company; W. E. Davis, commissioner of light, and Attorney A. A. Stearns.

Successor Company Incorporated.—Articles of incorporation were filed on Sept. 22 in California for the San Francisco & Sacramento Railroad as the successor to the Antioch System which embraces the Oakland & Antioch, Oakland, Antioch & Eastern and the San Ramon Valley Railroad. The directors for the organization are: Jesse H. Steinhart, S. J. McAtee, L. L. Levy, San Francisco; S. P. Westington, Alameda; S. T. Maar, H. J. Sutherland, and H. A. Mitchell, Oakland. The sale of the road under mortgage foreclosure was set for Oct. 22, when the reorganization will be complete.

Receiver for Jacksonville Company.—A refusal by the public, through referendum vote, to allow an increase in the 5-cent fare charged by the Jacksonville (Fla.) Traction Company, has resulted in a receivership for the company. The company paid 7 per cent on its common stock before the war. Due partly to war conditions, and partly to decisions of the War Labor Board, the wages of trainmen have been increased approximately 100 per cent since 1914. Fuel costs have increased even more, according to the utility managers. In the last year, they say, the company has operated at a loss, though the lines have carried more passengers than ever before.

Moline Net Inadequate.—The income of the Tri-City Railway, Davenport, Ia., on its Rock Island, Moline & Eastern Traction Company branch, is falling short of the net earnings permitted under a decision of the Illinois Public Utilities Commission by $90,000 a year. The report of the company for September shows that the net income for the month before deducting anything for depreciation was $14,402. In twelve months this would amount to $172,835. The depreciation is figured at $60,000, leaving a balance for return on investment of $112,835. This is equal to an annual return of 3.9 per cent on a valuation of $2,900,000 fixed by the commission. The commission had held 7 per cent as reasonable. The yearly interest on bonds and notes alone amounts to $89,090, according to the company.

Atlantic City Road Doing Better.—A complete monopoly in transportation upon Atlantic Avenue, Atlantic City's main business thoroughfare, following the expulsion of jitneys, enabled the Atlantic City & Shore Railroad, Atlantic City, N. J., to show a gain of $42,512 during the year ended Sept. 30. The Atlantic City division was operated at a loss of $25,007 in 1918. The Atlantic City-Ocean City division showed a deficit for the year of $22,677, compared with a loss of $27,956 for 1918. These figures have been submitted to the United States District Court in support of a petition for the appointment of Stern & Silverman, Inc., Philadelphia, as assistant operating managers to A. J. Purinton, the receiver. Stern & Silverman are financially interested in the railway.

New Preferred Issue Planned.—The stockholders of the Cities Service Company, New York, N. Y., will meet on Nov. 17 to amend the charter to provide for the right of the company to redeem all or any part of the present preferred stock at 112; to make changes in the provisions relating to the reinvestment fund on the present preferred stock in respect to proceeds from junior securities, and to provide an issue of a second preferred stock, of which $3,000,000 in shares of $10 par, to be known as Preference B shares, will be offered at $7.50 a share. The directors believe the Preference B shares will prove as popular as did the Cities Service bankers shares among common stocks, the bankers shares having been issued some eight months ago. The number of holders of record of bankers shares increased from 1061 on March 15, 1919, to 4443 on Oct. 15.

Seek to Foreclose Connecticut Line.—In the Superior Court in Bridgeport, Conn., Bristol & White, New Haven, as attorneys for the holders of the second mortgage bonds of the Danbury & Bethel Street Railway Danbury, Conn., have filed a petition asking the permission of the court to institute proceedings to foreclose the property. The foreclosure proceedings will be directed against Judge J. Moss Ives, as the receiver of the road, and it is understood that they will not be contested by the receiver. The foreclosure action is actually a formality in connection with the proposed re-organization of the road by the holders of the second mortgage bonds, as a measure of self protection. The second mortgage bondholders set up in their application to the court the fact that they have not received interest upon their bonds in two years. The second mortgage bondholders are maintaining the payment of interest on the first mortgage bonds.

Buffalo Southern Reorganization Planned.—The reorganization of the Buffalo (N. Y.) Southern Railway by a new company, the Erie County Traction Company, Inc., is planned under a petition filed with the Public Service Commission for the Second District, by Robert B. Austin, William J. Wheeler and Edward L. Frost, representing the bondholders' committee. The new company plans to have capital stock of $450,000, to make a mortgage of $1,000,000 and to issue immediately under it $100,000 in 6 per cent Series A bonds. Authority by the commission is asked to issue the stock and mortgage bonds as proposed or as the commission may determine before approving the reorganization. The Buffalo Southern Railway extended from the Buffalo city line to East Seneca, to Ebenezer, to Hamburg, and from Orchard Junction to Orchard Park. It entered Buffalo on the International Railway's tracks. The commission will hold a hearing upon the application.

Baltimore-Annapolis Stock Offered.—The stockholders of the Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., on Oct. 15 authorized the issuance and sale of 20,885 shares of 6 per cent non-cumulative preferred stock (par $50) at $37.50 per share. The stock will carry accrued dividends from Oct. 1, 1919. The holders of both preferred and common stock are entitled to subscribe to the new offering to the extent of 23.43 per cent of their present holdings. Subscriptions were payable on or before Nov. 1, 1919. Poe & Davies, Baltimore, Md.; Otis & Company, Cleveland, Ohio, and Moorhead & Company, Washington, D. C., are offering the stock publicly. In a letter to the bankers the president of the railroad says that on Dec. 31, 1918, the capitalization of the company consisted of $5,239,000 of bonds, $1,455,750 of 6 per cent non-cumulative preferred stock and $3,000,000 of common stock.

More Massachusetts Abandonments.—The trustees of the Eastern Massachusetts Street Railway, Boston, Mass., have consented to continue the operation of the Wakefield Park-Montrose line until Jan. 1, as a result of the efforts of the Wakefield selectmen and a citizens' committee. A special town meeting will be called early in 1920 to consider the appropriation of money to help to meet the expenses of the line. Two of the lines of the company were to discontinue operation on Nov. 1. One is that running through Grove Street, West Roxbury, to the Oakdale section of East Dedham, and the other running from Spring Street, West Roxbury, to Needham. The trustees say that these lines have not been paying expenses, and the citizens of Needham and Dedham have refused to make appropriations in order that the service might be continued. The Needham selectmen have arranged for a jitney service from Needham square to Spring Street, connecting with the Boston Elevated Railway.

Offers Lease to City.—A direct offer has been made by the Reno (Nev.) Traction Company to lease its lines in Reno and Sparks to the city or any company or syndicate on a basis of rental equal to 6 per cent interest on the bonded indebtedness of the company, amounting to $152,000 altogether, or on a rental basis of 6 per cent on the physical valuation of the property as appraised by three engineers, representing the city, the public service commission and the traction company. This proposal was made by Attorney Goodell of the company at the hearing before the Public Service Commission on the application of the company to abandon certain of its lines. The offer was made following a statement by City Attorney Pike that John T. Read claimed to have a company ready to take over the property and operate it if the Reno Traction Company would lease the lines on a reasonable basis.

Hearing on Abandonment.—A hearing was held recently by Deputy Public Service Commissioner Edward J. Glennon, of the First District, in reference to the cessation of operation by the Brooklyn & North River Railroad, which for the past eight years had operated from West Street, Manhattan, over the Manhattan Bridge to Flatbush Avenue and Fulton Street, Brooklyn. The road stopped running on Oct. 4, according to a statement by its officers, because of the constant losses to which it was subjected, and owing to the fact that there was no prospect in sight of making any money. The line was owned by various street railroads in Manhattan and Brooklyn. Except for the Third Avenue Railway, these lines are all in receivership, and have expressed themselves as unwilling longer to finance the losses of the Brooklyn & North River Company, which have aggregated $464,269. The company owes the Third Avenue Company $275,000. The city has announced that it favors mandamus proceedings in an attempt to compel the road to continue operation.

Chautauqua Line Would Abandon Branch.—The Chautauqua Traction Company, Jamestown, N. Y., recently made application to the Public Service Commission for the Second District, for approval of a declaration of abandonment of its Barcelona branch running in Portage Street in Westfield to the New York Central depot and continuing in North Portage Street into the town of Westfield. The company claims the line is no longer necessary for the successful operation of the road or convenience of the public. The branch was originally built with the idea, the company says, of developing Barcelona as a residence section and summer park, and the plan has been abandoned. The company says it has operated the branch for several years at great financial loss. The abandonment, it is claimed, has been contemplated for some time and especially at the present time in view of the company's financial condition. The company says the operation of its entire system is unprofitable. Its annual report for 1917 shows a net corporate loss of $58,285 and for 1918, $61,579, and for the first six months in 1919, $56,138. The Barcelona division for 1917 shows net loss of $17,019; 1918, $6,128, and for eight months in 1919 the loss was $3,613.

California Railway & Power Shows Loss.—The California Railway & Power Company, controlled by United Railways Investment Company, New York, N. Y., and a holding company of the United Railroads, San Francisco, Cal., has reported for the fiscal year ended June 30, 1919, showing net loss for the year of $28,528, which compares with a net loss of $10,056 for the previous year and with net income of $18,544 for 1917 and income of $166,380 for 1916. The total income for the year was $134,000, against $222,000 for the previous year, $92,425 for 1917 and $203,327 for 1916. Dividends were paid in 1917 of $28,000 and in 1916 of $196,000 on preferred stock, but none has been paid since. The total deficit for the year was $34,026 against a deficit of $5,948 in 1918, surplus of $32,558 in 1917 and surplus of $14,013 in 1916. Assets of the company, which consist entirely of stock and other securities, are placed at $49,739,527. The company owns 50,000 shares of first preferred of United Railroads stock, 200,000 shares of preferred and 79,500 shares of common; 199,990 shares of Sierra & San Francisco Power; 20,000 shares of preferred and 29,995 shares of common stock of Coast Valleys Gas & Electric and 99,975 shares of stock of San Francisco Electric Railways.

Traffic and Transportation

Ticket Selling Campaign

Active Campaign by Salesmen Planned by Kansas City Railways to Sell Transportation in That City

The Kansas City (Mo.) Railways is planning to merchandise fare tokens. It will put on a campaign to sell the tokens, and push their sale as vigorously—and with as varied a program of promotion and publicity—as would the distributer of soap or candy. There will be a sales manager in charge of distribution. He and the salesmen will cover the Kansas City district, urging the merchants to carry the tokens, delivering them, and advertising them, educating the public to the advantages of using tokens. Firms will be urged to buy tokens in large quantities for resale to employees.

REASONS FOR CAMPAIGN

The purpose of the campaign is twofold: directly to secure distribution of the tokens, and indirectly to overcome the psychological condition that has temporarily reduced patronage of street cars. The company officials believe that people who patronize jitneys rather than cars because of the increased fare are not doing so from motives of thrift, since they pay 10 cents for a ride in the jitney, against 7 cents on the street car. The public just does not like the idea of paying more fare. The vigorous campaign for the sale and use of tokens, now to be undertaken is designed to break the traditions of the past, and start a current of buying car tickets.

The Kansas City Railways, it will be remembered, was authorized by the Public Service Commission to install an 8-cent fare on Sept. 1, with seven tickets for 50 cents and fifty tickets for $3.50. The company, pending wide distribution of the tickets at a rate costing 7 cents each, collected a 7-cent fare. The commission's orders were to go into effect on Sept. 21. In the interim, however, city officials had agreed to help work out the company's problem. One of the city's helpful acts was to put into effect an ordinance regulating jitney traffic. When this agreement was reached, the company announced that a flat fare of 7 cents, for one fare or any quantity of tickets, would be established.

This change with reference to fares did not alter the plan of merchandising the tokens. Instead, it made the merchandising task more difficult, since there would be no inducement in lower prices for quantities of tickets. Tokens will be sold, probably, in smaller quantities than formerly planned—it is expected that most purchasers will buy five or ten at a time from stores and stands, and from conductors.

SEVEN-CENT FARE CONTINUED

The Kansas City Railways will continue to charge a flat 7-cent fare until the service-at-cost plan is tested. Theoretically, with an equal volume of patronage, the receipts under 7 cents should be 16 per cent more than the receipts under 6 cents. The actual increase in receipts has been about 10 per cent. Many incidental conditions, however, affect this result—among them the continuing of the 6-cent fare for passengers boarding cars on the Kansas side of the state line; another, the activity of jitney drivers this late summer.

The recording fare boxes on the company's cars will be discontinued this winter. Seven hundred fare boxes have been ordered from the Woods Fare Box Company, Decatur, Ill., for installation. When the Woods boxes are in service, the company will do away with trip sheets, and will in several other ways simplify the work of the conductors.

Metal Tickets for Washington

Upon the request of the Capital Traction Company and the Washington Railway & Electric Company, the Public Utilities Commission of Washington, D. C., on Oct. 27 modified its recent order granting an increased fare so as to authorize the use of metal tickets or tokens in lieu of the paper tickets provided in the original ruling. This latter ruling will permit the continued use of the fare collection boxes which have proved successful in accounting for fares collected.

The companies stated they would not be able to obtain a sufficient quantity of metal tickets in time to place them on sale on Nov. 1, when the original order became effective, but they expect to have the metal tickets ready for sale by Dec. 1, 1919. In the meantime, paper tickets will be issued at the rate of four tickets for 25 cents, as required by the original order.

The railways have agreed to continue the use of the present form of coupon tickets for the federal and district governments in purchasing inter-company transfers, instead of the metal tickets, in order to provide the most convenient method of issuing transportation to government employees for official use.

The order further provides that settlements between the several companies in the District of Columbia for tickets collected shall be made monthly.

Wants Ten Cents in Eureka

Asserting that it is backed by the labor council of the city of Eureka and by the Eureka Merchants' Association, the Humboldt Transit Company, which operates in Eureka, Cal., has applied to the Railroad Commission for authority to increase fares from 6 cents to 10 cents. The company claims that unless it receives financial relief it will be unable to continue in business. It declares that it is facing an expenditure of $100,000 for reconstruction work and says that to secure the funds to rehabilitate its system it must obtain additional revenue. The company says:

> The only feasible manner in which this can be done is to increase the rates of fare. The company has been informed by the labor council of the city of Eureka and by the Merchants' Association of the same town that these organizations will assist the company to get the increase asked for and the company believes that the citizens of Eureka, by a large majority will favor the increase, realizing that if the system is to be maintained some means must be found to provide additional revenue.

The company points out that for the six months ended June 30, 1919, it expended $23,905 in excess of the revenue for that period. The company recently increased the wages of the platform men from 36 cents an hour to 50 cents an hour, an increase of $9,000 in the cost of labor since June 30, 1919. It points out further that it has to pay to the city of Eureka 3½ per cent of its gross earnings as a franchise tax and to the State of California 5¼ per cent of its gross receipts.

3,126,651 Passengers a Day

This Is Record of New York's Rapid Transit Lines—Figures for Nine Months Increase 60,000,000

During the nine months period from January to September, inclusive, the total number of passengers carried on the subway lines of the Interborough Rapid Transit Company, New York, N. Y., was 397,922,538, an increase of 74,122,453 over the traffic of a similar period during 1918.

FIGURES BY MONTHS

The net increase in both the subway and elevated lines was 60,932,365, the elevated lines showing a decrease in the nine months of nearly 14,000,000. The maximum day's traffic was on Oct. 20, when the subway carried 1,955,301 passengers and the elevated lines 1,171,350, making a total for the day of 3,126,651. The following table shows the changes month by month:

	1918		1919	
	Subway	Elevated	Subway	Elevated
Jan.	38,099,384	29,804,233	42,957,191	28,522,788
Feb.	34,577,337	27,318,237	39,748,613	25,537,217
Mar.	38,154,181	31,182,504	45,361,853	29,363,773
Apr.	36,739,288	30,821,249	45,724,974	29,546,361
May	35,708,136	31,518,252	45,299,450	30,166,287
June	32,450,792	29,971,340	41,516,538	28,906,516
July	31,063,192	30,285,706	39,527,523	27,834,065
Aug.	27,128,496	30,030,489	37,394,205	26,594,623
Sept.	31,079,279	28,665,995	42,392,191	29,136,287
Total	305,000,085	269,598,005	379,922,538	255,607,917

Total Subway and elevated, 1918.....574,598,090
Total Subway and elevated, 1919.....635,530,455

Net increase 60,932,365

Frank Hedley, president of the company, asked whether the growth in traffic would be sufficient eventually to carry the Interborough Company across the danger line of bankruptcy, replied that it would not at a 5-cent fare. He explained this by saying that the increase in costs had so far exceeded the increase in revenues that nothing save a greater fare would ever enable the company to pay its fixed charges and keep the service at its present point of efficiency.

It was because of the loss on the elevated lines that the Interborough Company, lessee of the lines, suffered a net loss of about $4,000,000 during the year ended June 30 last.

BROOKLYN TRAFFIC ALSO GROWS

Great as the growth of the Interborough traffic has been it is far below the comparative growth of the Broadway subway operated by the Brooklyn Rapid Transit Company. During the eight months, from January to September, the traffic of this line has grown in one year from 27,462,286 to 38,491,127, an increase of more than 11,000,000. The following figures indicate the varying monthly increases:

BROADWAY SUBWAY

	1918	1919
January	2,498,761	4,611,720
February	2,805,747	4,439,510
March	3,419,917	5,146,106
April	3,511,698	5,053,599
May	3,659,658	4,909,239
June	3,614,660	4,736,924
July	3,828,107	4,951,436
August	4,123,738	6,645,593
Total	27,462,286	38,494 127

Portland Wants Eight Cents

A Plan Is Advanced for Segregating Railway Properties and Operating Them Under New Franchise

The Portland Railway, Light & Power Company, Portland, Ore., recently presented arguments before the Public Service Commission for an increase in fare from 6 cents to 8 cents. Franklin T. Griffith, president of the company, set forth the plea that the company cannot continue to operate on the present 6-cent fare with increased wages and present operating expenses.

The petition filed by the company asks for the cancellation of the existing fare and substitution of one that will insure a return of 7 per cent upon the investment. Mr. Griffith stated that this return can only be realized by an 8-cent fare, if the unit fare system is to be continued. Zoning of the transportation districts has been discussed, but this was not taken up at the hearing.

The company presented testimony to the effect that the 6-cent fare has barely sufficed to meet the increase in wages and operating expenses when passenger traffic was at its height. It is now declared that a sharp decline in receipts has followed the waning of the intensified industrial period.

It is estimated that the year ending Aug. 31, 1920, will show net earning of only 2.13 per cent on an $18,568,000 valuation fixed by the Public Service Commission for the railroad property of the company. Operating expenses for the year ending Aug. 31, 1920, are expected to be $3,430,000, or double the expenses of the year 1916.

About one-sixth of the passengers avail themselves of the 5½-cent fare, procurable by the purchase of reduced price ticket books.

A possible solution of the electric railway problem in Portland was offered at the hearing by the city, through J. P. Newell, who is employed by the city to aid in opposing efforts of public utilities companies of Oregon to increase rates. The plan is the creation of a tripartite profit-sharing enterprise, to include the public, the railway employees and the company as the beneficiaries.

The commission granted a conference on the plan. This was participated in by city legal officials, traction officials, and members of the Public Service Commission. President Griffith expressed willingness to participate in the conference, but said that the company's plea for immediate relief should not be abridged in any way by such discussion. He pointed out that the fruition of such a plan would require considerable time, while the affairs of the railway require the earliest possible relief.

Under Mr. Newell's plan it would be necessary to separate the properties of the railway company from the light and power and other business. He would then determine the amount of interest paid on the indebtedness of the railway properties. The valuation placed on the railway properties by the Public Service Commission in 1916, with the addition of the value of betterments and extensions made and installed since the compilation of the valuation figures, would be used under the proposed new franchise.

Mr. Newell proposes that a minimum return shall consist only of the payment of the actual interest on the indebtedness and a low rate of profit on the investment. If the money rates declined he would increase the minimum rate of profit by an amount equal to the reduction. When the returns to the company rise above the minimum, one-half of the excess would be paid to the employees as a bonus up to the point where the bonus equalled 10 per cent of the payroll. The remaining half of the excess would be added to the profit of the company, up to the point where the return is 1 per cent above the minimum. Above that point as the net income rises, the excess would be added to the profit in progressively decreasing percentages until the profit reaches a maximum of 8 per cent at the point where the bonus to the employees reaches its maximum. The remainder of the excess over the minimum return would be set aside as a guarantee fund until such fund reached the amount of $500,000. Whenever the return on the valuation fell below 1 per cent over the minimum, the guarantee fund would be used to maintain the bonus and the return on the investment at the same amount as though the return were at 1 per cent over the minimum.

A committee of five representatives of the public, the corporation and the employees will be appointed to discuss the Newell plan and to consider the other problems facing the railway.

Six-Cent Fare Stands

Voters of Saginaw and Bay City Approve Increase Allowed Temporarily by Municipal Authorities

At a special election held at Saginaw, Mich., recently the voters ratified by a majority of 728 the temporary increase in fares granted by the Common Council to the Saginaw-Bay City Railway so that it might resume service after the strike which tied up its lines last July. At a similar election held in Bay City, the temporary rates granted there were ratified by a majority of 1825.

The trainmen on the Saginaw local division of the Saginaw-Bay City Railway struck for higher wages on July 25, the strike tying up all local service in Saginaw. The company took the attitude that it could not pay a higher rate of wages on the 5-cent fare, under which six tickets were sold for 25 cents, and eight labor or school tickets for 25 cents.

The company declared wages could be raised only if a higher fare were allowed. The Common Council, in order to secure resumption of service, granted the company a temporary increase of fare, the rate being 6 cents, with labor and school tickets at the rate of five tickets for 25 cents; labor tickets being good between the hours of 5 a. m. to 7 a. m. and 4:30 p. m. to 5:45 p. m. School tickets are good for school children on school days only. This temporary increase was not to become permanent until approved by the electors of the city of Saginaw at a special election to be held on Sept. 9. Service was resumed in Saginaw on July 31. The result of the special election was to ratify the temporary grant by a vote of 3279 for and 2551 against the increase.

The trainmen on the Bay City Division struck on July 31, the tie-up lasting until Aug. 19. The company took the same stand in Bay City as in Saginaw, and the Common Council on Aug. 18 passed a temporary ordinance permitting the railway to charge 6-cent fares with labor tickets at the rate of thirty-six tickets for $1.50, good only between certain restricted hours. This ordinance, as in Saginaw, was not to become permanent until approved by the electors of Bay City at a special election on Sept. 9. At this election the vote was 3509 for, and 1684 against the increase.

Arbitrators Report

After Inquiry They Report for Continuance of Six-Cent Fare in Kansas City, Kan.

A year ago, in the midst of litigation and various controversies between the city of Kansas City, Kan., and the Kansas City Railways, in the Federal Court on the Kansas side, Judge John C. Pollock, presiding in the court, suggested a board of arbitration. The city and the company assented, the former naming A. L. Berger and the latter naming Frank Hagerman. This board on Sept. 19, 1919, filed its report, covering all the matters which had been under discussion. The findings are not binding. Judge Pollock has final jurisdiction. The board recommended improvement in service; that for sixty days the company file with Judge Pollock a report of the number of cars operated on each line, Judge Pollock to decide as to sufficiency of service.' The board made the following recommendations, among others:

> That certain extensions, about 2 miles, be completed, one new line and one viaduct built, and an incline built by which a present surface line can use the elevated structure.
>
> That various lines be rerouted.
>
> That the elevated structure be kept in service.
>
> That the company pay car license claims of $8,000 a year and park maintenance claims of $5,000 a year.
>
> That the matter of rental of the Intercity viaduct, now owned by the two cities and on which cars now run, be left to agreement between the company and the two cities.
>
> That any fare less than 6 cents is not remunerative, and the minimum of 6 cents should prevail during the remaining life of the Kansas City, Kan., franchise, which is two years.

The recommendation with reference to the rate of fare, leaves that matter practically in Judge Pollock's hands. It is possible that the court may entertain the company's application for introduction of its appeal for 8-cent fares, into the matters to be considered by the Board of arbitration; if such application is not acceded to, the company may, under the recommendations of the board, be free to seek action on fares by the State Utilities Commission. This commission had declined to grant authority for a 6-cent fare. The company is collecting 6 cents on the Kansas side now, under a restraining order issued by Judge Pollock.

The company, through its attorneys, has already filed an application with the commission for an 8-cent fare on the Kansas side of the state line.

Six Cents in Norfolk

The increased electric railway fare in Norfolk and Portsmouth, Va., became effective on Sept. 28 and Sept. 30 in accordance with the terms of an ordinance of the City Councils, and at the same time the new fare—6 cents—became effective on the suburban lines of the Virginia Railway & Power Company in Norfolk County under the terms of an order of the Corporation Commission of Virginia.

The original ordinance and order in Portsmouth provided for a charge of 2 cents for each transfer issued, but in its final passage the City Council took the position that by allowing the 2-cent transfer, the proceeds of which were to go to the city in lieu of compensation for the use of streets, a tax was put on the citizenship. It, therefore, eliminated both the charge for transfers and for the use of the streets. In consequence the fare is 6 cents without a charge for transfer.

The City Council of Portsmouth has taken the position that the 2-cent transfer is not revenue to the company, but that it is a tax on the people and the ordinance would make the company the city's collector of this tax.

Transportation News Notes

Seven Cents Asked in Charleston.—The Charleston Consolidated Railway & Lighting Company, Charleston, S. C., has petitioned the City Council for permission to charge 7-cent fares. The company would sell four tickets for 25 cents.

Seven Cents in Brunswick, Ga.—The Railroad Commission of Georgia has authorized the City & Suburban Railway, Brunswick, Ga., to raise fares from 5 cents to 7 cents. The company some time ago asked the City Council of Brunswick for permission to charge the 7-cent rate.

Wants Seven-Cent Fares.—A. A. Hardage, as receiver for the North Alabama Traction Company, which operates the electric railways in Albany and Decatur, Ala., has filed a petition with the City Councils of both cities asking for permission to increase the fare from 5 cents to 7 cents.

Eight-Cent Fares on Pennsylvania Roads.—The Delaware County & Philadelphia Electric Railway, Clifton Heights, Pa., and the Media, Glen Riddle & Rockdale Electric Street Railway, Media, Pa., announced that on Oct. 26 they would raise the fares on their lines from 6 cents to 8 cents.

Would Sell Commutation Tickets.—The Louisville & Northern Railway & Light Company, New Albany, Ind., has petitioned the State Public Service Commission for permission to put on sale trip commutation tickets to sell at twenty-five times the regular one-way fare. Each ticket will be good for forty single trips.

Fare Reduced to Six Cents.—Fares on the lines of the Paducah (Ky.) Traction Company were reduced from 7 cents to 6 cents on Oct. 1. On that date the properties of the company were taken over by the Paducah Railway, recently given a franchise which stipulates a 6-cent fare for one year.

Higher Fares Asked on Pottsville Road.—The Eastern Pennsylvania Railway, Pottsville, Pa., on Oct. 10 announced increases of fares on its lines to take effect in thirty days. The increase averages 1 cent a zone, and is necessary to meet the 10 per cent increase in wages recently awarded to the conductors and motormen of the company.

Urges Retention of Six-Cent Fare.—The special railway committee of the City Commission having in charge the matter of a permanent increase in fares for the Grand Rapids (Mich.) Railway has recommended that the agreement by which the company was permitted to charge a 6-cent fare with nineteen tickets for $1 be continued for a further trial period of sixty days.

City's Complaint Dismissed.—The Public Service Commission of Pennsylvania has dismissed complaints filed by the city of Meadville against the 7-cent fare of the Northwestern Pennsylvania Railway. The opinion holds that uncontradicted testimony does not show that the fare will provide revenue much in excess of the operating costs, and that the 7-cent fare is not unjust or unreasonable.

Higher Fares for Asheville.—The Corporation Commission of North Carolina has issued an order allowing the Asheville Power & Light Company to increase fares in Asheville from 5 cents to 6 cents. The order is based on a showing of a 3.92 per cent return on an investment of $1,063,998.

Asks Seven Cents in Glens Falls.—The Hudson Valley Railway, Glens Falls, N. Y., has applied to the Public Service Commission for the Second District, for a fare rate of 7 cents within its local zones and 14 cents on its through zones. The company on Nov. 19, 1918, was authorized to charge a 6-cent fare.

Fares to Be Raised at McKeesport, Pa.—The Highland Grove Traction Company, operating in the city of McKeesport and North Versailles Township, Allegheny County, Pa., has filed a new tariff of rates, effective Nov. 1, with the State Public Service Commission. Under the new schedule tickets would be sold in strips of six for 30 cents, instead of six for 25 cents.

Orders Eight-Cent Fare Suspended.—The Public Utilities Commission of Illinois has suspended until Feb. 28, 1920, the proposed fare increases of the East St. Louis & Suburban Railway, East St. Louis, Ill., by which the fare in East St. Louis, Brooklyn, Venice and Alton would have become 8 cents on Nov. 1. The fare in the city of Alton now is 7 cents and in the other cities 6 cents.

Fares Raised to Five Cents.—The Railroad Commission of Wisconsin has authorized the Chicago & Milwaukee Electric Railway, Highwood, Ill., to raise its fares within the Milwaukee city limits to 5 cents. The company has been selling tickets at the rate of six for 25 cents and twenty-five for $1. The city did not oppose the company's petition.

Would Charge Nine-Cent Fares.—The Schuylkill Railway, Girardville, Pa., has filed with the Public Service Commission of Pennsylvania an application for authority to charge a 9-cent fare. The company would sell six tickets for 50 cents. The present fare is 8 cents, with seven tickets for 50 cents. The trainmen recently walked out, demanding a wage increase.

City's Authority Contested.—A number of citizens of London, Ont., have brought suits for injunctions to annul the by-law under which the City Council last April permitted the London Street Railway to increase fares. The company raised wages at the time of the fare advance on the understanding that the higher wages would continue only during the life of the higher fare.

East St. Louis and Alton Want More.—The East St. Louis Railway and the Alton Granite & St. Louis Traction Company, Alton, Ill., have filed petitions with the Public Utilities Commission of Illinois asking for authority to charge 8-cent fares. The East St. Louis Railway has been operating on a 6-cent fare granted by the commission on Aug. 8, 1918, to be in effect until Oct. 31, 1919.

Tokens in Seattle.—The Seattle (Wash.) Municipal Railway is bent on finding improved means of selling transportation. The sale of tickets has been entirely discontinued except children's tickets. There was a demand and a need for something in place of tickets, however, so the city obtained tokens. These take the place of tickets. They are registered by the fare boxes. The school tickets are soon to be replaced by tokens.

Higher Fares in Moose Jaw.—The voters of Moose Jaw, Sask., have ratified a franchise ordinance recently passed by the City Council under which the Moose Jaw Electric Railway is permitted to charge 7-cent fares. Before the higher rate can become effective the ordinance must be submitted to the city authorities for final approval.

Higher Fare Refused at Jacksonville.—The voters of Jacksonville, Fla., at a special election on Oct. 21 defeated a proposition to permit the Jacksonville Traction Company to charge 7-cent fares. The City Council recently passed an ordinance submitting the question of higher fares to a referendum vote. Auditors selected by the city had reported that the company was operating at a loss of $9,000 a month.

Seven Cents in Buffalo.—The Public Service Commission for the Second District of New York, will authorize the International Railway, Buffalo, N. Y., to charge 7-cent fares beginning Nov. 10. Tickets will be sold at the rate of four for 25 cents. The commission has not yet issued its formal order in the case. Chairman Hill in announcing the commission's decision said that the details of the order remained to be settled.

One-Cent Fare Reduction.—The Public Service Commission of Pennsylvania has authorized the Southern Pennsylvania Traction Company, Chester, Pa., to reduce its fares from 8 cents to 7 cents a zone on one day's notice. The company, which operates lines from Darby to Wilmington, recently installed 8-cent fares on its Pennsylvania lines under authority of the commission. A number of complaints were filed protesting against the increase.

Seven-Cent Fares in Davenport.—The Tri-City Railway, Davenport, Ia., which has been collecting 7-cent fares on its Illinois lines since Aug. 9 under an order of the State Public Utilities Commission, has been authorized to charge 7-cent fares in Davenport. The City Council has passed an ordinance granting the higher rate in accordance with its agreement to allow an increase equal to that authorized by the Illinois Commission.

Increase in Freight Rates Refused.—The Alabama Public Service Commission has denied the petition of Receiver Lee C. Bradley of the Birmingham Railway, Light & Power Company, for an increase in the less-than-carload freight rates charged by that company on its lines in Birmingham. The commission has granted Mr. Bradley's petition for the abandonment of the less-than-carload freight service on the eastern division.

Six Cents in Winnipeg.—The Public Utilities Commission of Manitoba on Oct. 3 issued an order permitting the Winnipeg Electric Railway to collect 6-cent fares. The city authorities immediately went into court and obtained a temporary injunction restraining the company from installing the new rate. The court on Oct. 8 refused the city's application for a permanent injunction and dissolved the temporary stay. The 6-cent fare went into effect the following day.

Jitney Bonds Protested.—The Eastern Massachusetts Street Railway, Boston, Mass., has appealed to the State Public Service Commission from the terms of an ordinance passed by the city of Brockton fixing the amount of bonds for jitney operation. The ordinance requires a bond of $500 for each five-passenger jitney with $100 additional for each passenger in excess of five. The railway contends that a bond of $2,500 should be required for each five-passenger jitney.

Personal Mention

Mr. Ford Resigns

Head of Companies at Portland, Me., Went Into Business in New York on Nov. 1

A. H. Ford has resigned as vice-president and general manager of the Cumberland County Power & Light Company, Portland, Me., to acquire an interest in the firm of Hamilton & Wade, Inc., New York, and from Nov. 1 as vice-president, will actively participate in the work of that firm of insurance brokers, advisers and engineers. Mr. Ford has long been identified with public utility companies as an executive and manager. His insurance experience has been acquired in solving the problems and purchasing insurance for utility companies with which he has been connected and in ten years of service on the insurance committee of the American Electric Railway Association.

Mr. Ford has long been active in the work of the American Electric Railway Association. He also served as president of the New England Street Railway Club. Under his direction, at Portland, where he has been since June, 1914, the Cumberland County Power & Light Company has developed rapidly and has installed the zone system now in effect.

Mr. Ford was born in New York in 1859 and his early education was received at Evansville, Ind. At the age of sixteen he left school and entered the steam railroad field, serving as traveling auditor and treasurer of roads connecting with the Evansville & Louisville Railroad. In 1893 he became secretary and treasurer of the New Orleans (La.) Traction Company, Ltd. This road at the time was being changed from horse power to give electric service. In 1900 Mr. Ford became manager of the New Orleans & Carrollton Railroad, then controlled by the New Orleans banking firm of Isidore Newman & Sons, and for fourteen years Mr. Ford was identified with interests controlled by this establishment. In 1904 he removed to New York to become manager of the operating department of Ford, Bacon & Davis, engineers, but continued as president of the American Cities Company, with headquarters in New York City.

In 1907 he resigned these positions to become president and general manager of the Birmingham Railway, Light & Power Company, Birmingham, Ala., and in June, 1914, was appointed vice-president and general manager of the company at Portland, Me., from which he has now resigned.

Mr. Taurman at New Post

A. Taurman, who has been superintendent of rolling stock of the Virginia Railway & Power Company since 1908, has resigned to become superintendent of equipment of the Birmingham Railway, Light & Power Company, Birmingham, Ala. Previous to his connection at Richmond, Mr. Taurman served the Southern Railway, with which system he began in 1901 as apprentice machinist and left after successive positions as foreman, draftsman and shop engineer. Later he acted for brief periods as assistant locomotive inspector for the American Locomotive Company, Richmond, and also served as designing engineer for the New York Air Brake Company, Watertown, N. Y. Mr. Taurman is a member of the American Society of Mechanical Engineers. As an electric railway man, Mr. Taurman has given considerable attention to mechanical improvements, not only in rolling stock but in grade crossing protection and track work.

Mr. Porter, General Manager

H. Hobart Porter has been elected general manager of the Brooklyn (N. Y.) City Railroad by the board of directors and has assumed control and management of the property, which has been returned to its owners under an order issued by Judge Mayer of the United States District Court, as noted in a recent issue of the ELECTRIC RAILWAY JOURNAL.

Mr. Porter is a member of the engineering firm of Sanderson & Porter. He was born in New York in 1865 and was graduated from the School of Mines of Columbia University in 1886. He has since been continuously engaged in connection with engineering projects, having formed the firm of Sanderson & Porter in 1897. He is president of the American Waterworks & Electric Company, Inc., which owns and operates a number of waterworks and electric properties in the United States. Mr. Porter has acted as engineer in an advisory capacity to a number of the largest concerns in the United States.

H. H. PORTER

He is a member of the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the American Institute of Mining & Metallurgical Engineers and the American Society of Civil Engineers. He is a director of the Engineering Foundation, and of the Engineering Section of the National Research Council.

Patrick Concannon has been made assistant superintendent of transportation of the United Railways, St. Louis, Mo., vice Henry O. Butler, who has succeeded Bruce Cameron as superintendent. Mr. Concannon was superintendent of the third division J. J. Woolan, superintendent of the sixth division, will be superintendent of the third, and Louis Hisserich, superintendent of the St. Charles division, becomes superintendent of the sixth. The St. Charles line will be under the jurisdiction of the general roadmaster of the other county lines.

John M. Bramlette has resigned as vice-president and general manager of the Lincoln (Neb.) Traction Company and will devote his attention, at least for the present, to personal affairs. Mr. Bramlette has been associated with electric railway interests in the Middle West for many years, having entered railroading at St. Joseph, Mo., in 1887. From St. Joseph he went to Denver and later to St. Louis, where he joined the Union Depot line, which was then being electrified. Two years later he was made shop foreman of the East St. Louis Electric Street Railroad. In 1901 he became general manager of the East St. Louis & Belleville Traction Company, Belleville, Ill. He remained with that company for several years, resigning in 1906 to become general superintendent and later general manager of the Michigan United Railways. He was appointed general manager of the Lincoln Traction Company in 1913.

C. F. Crane has joined the Harrisburg (Pa.) Railways as assistant to F. B. Musser, president of the company. The position of assistant to the president is a new one, having been recently created by the board of directors. Mr. Crane entered the employ of the Geneva & Auburn Railway twenty years ago as a clerk and during the next five years was gradually advanced, finally becoming passenger agent. At the end of that time he resigned to become general passenger agent of the Rochester & Eastern Railway, with headquarters at Canandaigua, N. Y. Two years later he became connected with the Rochester (N. Y.) Railway. He was next appointed general traffic agent of the Eastern Pennsylvania Railways, Pottsville, Pa., becoming general superintendent of railways two years later. He remained with the company for several years, and then resigned to take the position of superintendent of transportation of the Wilkes Barre (Pa.) Railways. He resigned on Oct. 1 last to become associated with the Harrisburg Railways in his present capacity.

C. E. Morgan, for a number of years general superintendent of the Michigan Railway, has joined the Brooklyn (N. Y.) City Railroad as assistant general manager. Mr. Morgan will be in active charge of the company's lines, which have been returned to it because of the inability of the Brooklyn Rapid Transit Company to make rental payments. Mr. Morgan began his railroading experience as clerk in the office of a steam road. For the next five and one-half years he acted as assistant to the president, the purchasing agent, and the auditor of the Indianapolis & Greenfield Electric Railway. During this period the line was extended to Richmond, Ind., and the handling of the transportation system of the road, then about 60 miles in length, came under his direction. In 1905 he had charge of the work of rebuilding and operating the Indianapolis line and was also superintendent of the Danville line of the Terre Haute, Indianapolis & Eastern Traction Company. Later, as superintendent, he inaugurated service on the Indianapolis & Terre Haute line of the latter road and operated that division for several years. In 1909 Mr. Morgan accepted the position of general manager of the Indianapolis, Crawfordville & Western Traction Company, known as the "Ben Hur Route." He resigned three years later to become connected with the Michigan Railway.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Pole Market Is Fair With Good Deliveries

Cedar Poles Firm—Chestnut Varieties Show Slight Variation—Business Increasing

Quotations on cedar poles have not advanced since July 1, when they went up 10 to 15 per cent. The Northern and Western varieties were advanced at different times as announced from different localities, but the majority of the lists were effective about that time. It is believed that this new list will continue until the first of the year without any considerable change.

Good Cedar Pole Season

Cedar stocks are low, and if the demand should increase to large proportions, some sizes will run out. There probably will not be many more poles of the Northern cedar taken out before winter, although there will be some. With the Western cedar the situation is slightly different, as poles are hauled during the off season of the year, and as a result the pole prices naturally respond more quickly to variations in labor scales. Although stocks are low, deliveries of 500 miles in a week can be made on cedar poles at the present time by several large concerns.

There has been no general increase in the price of chestnut poles, although there have been some variations, according to the grade of pole ordered. The stocks held are fairly large and prompt deliveries are being made. Orders are being handled promptly, and as a rule the poles are en route within two or three days of the time the order is placed.

The season just closed was far better than the previous one as regards the sale of cedar poles. A numbr of reports show a variance, but the majority indicate that shipments on this variety were better this season than last. However, the comparison with regard to chestnut poles does not show up quite so well but indicates that the sales for the past season are below a pre-war normal year. Generally speaking, there are no large individual orders reported, but the majority of the orders are a fair size or made up of a large number of small orders.

Other Demands Curtailed

In other lines, such as those for creosoted pines, the demand has been curtailed by the plant prices of poles. It has been estimated that the demand is about one-third off the normal pre-war years. Naturally the prices are especially sensitive to a change in the labor market on account of the amount of labor necessary to prepare poles for the creosoting process. In addition to the added labor cost, the price of creosote has advanced in about the same proportion as labor. On account of the war the creosote which usually was imported from Germany, England and Japan was gradually cut off. Of the total of 80,000,000 gal. used annually in this country it is estimated that half came from these three countries. On account of a large demand and excessive ocean freight rates, the supply is not nearly up to normal.

There is a great deal of restlessness and general inefficiency being shown which has the effect of creating a labor shortage in the pine-producing belt, where most of the work is done by negroes. This has also had its effect upon the prices of the creosoted pine poles, so that unless more favorable circumstances come about a general advance in the market is looked forward to throughout the rest of the year.

Paint and Varnish Market Fair

Linseed Oil and Turpentine Take Drop in Price, But Finished Products Remain Firm

Conditions in the paint, varnish and enamel markets have not been affected by the recent decline in the price of boiled and raw linseed oils and of turpentine. Although the drop in linseed oils has been in the neighborhood of 35 cents during the past thirty days, this is not unusual as an increase of 65 cents in the price of oil in a month has been registered during the past year without causing an immediate effect on prices. The present drop, however, will not affect the market for a number of months, as all high-grade varnishes and enamels are aged from six months to a year and a half. Then again, large manufacturers have contracted months ahead in order to protect themselves and no change of price is looked for in the near future. In fact, in at least one instance quotations on some grades of varnishes and enamels have advanced in price since the drop in oil was registered.

Linseed Oil Unsteady

Weakness in the flaxseed market is given as the cause for the drop in linseed oil. Prices have been extremely high and a sharp decline has been expected for some time. However, most stocks have been short, and it was thought that perhaps the prices would stay up. Imports of flaxseed, however, have been better of late, and this has been one of the contributing factors in driving down the price. Again, many large consumers filled their requirements for a great many months ahead when oil was around $1.15, and hence are not yet in the market for new supplies.

The amount of paints, enamels, and varnishes held in the distributers' and jobbers' stocks is not large, and enamels especially are in large demand. Deliveries are important these days, as railways generally are ordering for immediate use in painting a specified number of cars. Good deliveries are being made, in fact ten days to two weeks is quoted by two well-known concerns.

Prices remain about the same as usual. Although there is not a great deal of buying just at this time, a considerable amount of business is looked for between now and the time cold weather sets in. Then the volume of orders usually slacks off until about Feb. 1 when the spring painting season commences.

Heavy Demands for Brakeshoes

Business for Past Sixty Days Approximates Normal—Production Resumed After Five-Week Tie-up

The volume of business in the brakeshoe market, which for the past seven months has been very light, has increased to large proportions during the past two months until present orders indicate that the business is about normal. The necessity of putting rolling stock into condition for the winter season is partly responsible for the large amount of business now being placed, the larger portion of which of course is in the steam railroad field.

Since March of the present year there has been very little buying by the steam railroads on account of the policy laid down by the regional directors of the Railroad War Board. The policy followed was to distribute the stock on hand wherever it was most needed regardless of where the stock was held previously. This policy lead to a depletion of all stocks with the result that practically all the steam railroads and electric railways are now endeavoring to restock on brakeshoes.

Stocks Are About Normal

The manufacturing companies during this period of slackness were forced to close down part of their factories and to run throughout a part of the spring and summer months on a greatly reduced scale. Had it not been that the force employed, which in some instances did not approximate more than 60 per cent, was piling up brakeshoes for future stock, the railways which are now placing orders for large quantities would be unable to fill anything but a very small per cent of their requirements. As it is, stocks are in pretty fair shape, and although the manufacturing companies have just experienced a five-week tie-up, they expect to be in a position to meet all requirements, and if no further serious trouble is forced upon them, they will be able to continue to fill orders. Railways having yearly contracts for brakeshoes have first call on new stock and are being taken care of promptly as they have been in the past.

Cotton Cord Scarce

Bell cord and trolley cord are scarce. Present stocks of the cheaper grades are practically sold out and those of the more expensive cords are fairly well depleted. No deliveries are being quoted on orders which cannot be filled from the broken lines now on hand. New orders are accepted, however, subject to mill conditions. On some grades the mills do not expect to be able to make delivery until February or March.

Labor conditions are unsettled. All efforts to increase production are being made but without success. In a number of places mills are running night and day to get caught up with orders on hand. Prices have again been advanced, this time the increase amounting to approximately 10 per cent.

Rolling Stock

Rutland Railway, Light & Power Company, Rutland, Vt., has placed an order for one safety car.

Birmingham Railway, Light & Power Company, Birmingham, Ala., has ordered twenty-five safety cars from the Cincinnati Car Company. The first of the cars were for Nov. 1 delivery.

Connecticut Company, New Haven, Conn., has specified the following details on the forty safety cars recently ordered from the Osgood Bradley Car Company:

Number	40
Date order was placed	September, 1919
Builder	Osgood Bradley
Type	Safety
Seating capacity	32
Weight, car body	8,000 lb.
Weight, trucks	4,000 lb.
Weight, equipment	4,000 lb.
Weight, total	16,000 lb.
Length over all	27 ft. 10 in.
Truck wheelbase	8 ft. 0 in.
Width over all	7 ft. 9¼ in.
Height	10 ft. 3¾ in.
Body	Semi-steel
Interior trim	Mahogany
Headlining	None
Roof	Arch
Air brake	Westinghouse
Armature bearings	Ball
Axles	A. E. R. A. No. E-2
Bumpers	6-in. channels
Signals	Consolidated buzzer
Car trimmings	Enameled
Control	West. K-63-B
Couplers	Bar and pocket
Fixtures	Curtain Supply No. 89
Curtains	Double-coated Pantasote
Designation signs	Keystone
Door mechanism	Air-operated
Fare boxes	Johnson
Fenders	H. B.
Hand brakes	Osgood Bradley
Heaters	Consolidated truss plank
Headlights	Golden Glow
Journal bearings	Friction
Journal boxes	Symington
Lightning arresters	Westinghouse
Motors	Ten cars—West. 506 Ten cars—G. E. 258
Motors	Outside hung
Varnish	Anglo-American
Sanders	Ohio Brass
Sash fixtures	J. L. Howard & Co.
Seats	Osgood Bradley
Seating material	Slat type
Slack adjuster	Anderson
Springs	Railway steel spring
Step treads	American mason
Trolley catchers	Keystone
Trolley base	U. S. No. 15
Trolley wheels or shoes	Wheels
Trucks	Osgood Bradley No. 25-96
Ventilators	Osgood Bradley
Wheels	Griffin 26 in.
Special devices	Full equipment of Safety Car Devices Company material

Trade Notes

William F. Hart has resigned as sales manager of the Rubber Insulated Metal Corporation, Plainfield, N. J.

Ajax Metal Company, Philadelphia, Pa., recently opened a branch office in Cleveland, Ohio, in the Schofield Building. L. E. Purnell is district manager. The Pittsburgh office has been discontinued.

Driver-Harris Company, Harrison, N. J., has filed plans for the erection of a new three-story reinforced-concrete building, about 50 ft. by 100 ft., to be located at its plant.

G. E. Anderson, formerly assistant to the vice-president of the American Locomotive Company, has been appointed assistant Eastern sales manager of the Duff Manufacturing Company with headquarters at 50 Church Street, New York City.

H. S. Greene, formerly sales manager Nungesser Carbon & Battery Company, Cleveland, Ohio, is now assistant sales manager of the National Carbon Company, Inc., Cleveland.

Dickey Steel Company, Inc., Woolworth Building, New York City, has been appointed sales representative for the New York and Philadelphia districts of the Worcester Pressed Steel Company, manufacturer of electric sheet steel.

Chicago Mica Company, Valparaiso, Ind., has recently employed L. T. Frederick as consulting engineer and production manager. Mr. Frederick was formerly process engineer of the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

Skee Ball Company, Philadelphia, Pa., has been reorganized from the F. D. Este Company. Edwin V. Dougherty, Jr., is president, J. W. Harper, vice-president and E. H. LeBoutillier, treasurer. The present office and factory is located at 1015 North Bodine Street.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., announces that F. D. Egan, former works manager of the Pittsburgh Iron & Steel Foundries Company, has accepted a position in its general engineering department.

Chicago Pneumatic Tool Company on Oct. 1 will remove its Birmingham office from Brown Marx Building to 1925 Fifth Avenue, North, where a service station with a complete stock of the company's appliances and repair parts will be maintained.

Electric Storage Battery Company, Philadelphia, Pa., has arranged for the erection of a new one-story addition to its plant at Nineteenth and Willard Streets. Contract has been awarded for the structure, which will be about 32 ft. by 97 ft. and is estimated to cost $14,000.

Bound Brook (N. J.) Oil-Less Bearing Company announces that Harry J. Lindsley, who has been Western sales manager for the past seven years, and William F. Jennings, who has been Eastern sales manager for the past five years, have been made vice-presidents of the company.

Ward Leonard Electric Company, Mount Vernon, N. Y., manufacturer of "Vitrohm," vitreous-enameled resistor units, lamp dimmers, rheostats and electrical controlling devices, announces the removal of the office of its Philadelphia representative, William M. Tompkins, from the Commonwealth Building to the Bourse Building Machinery Exhibit, Philadelphia.

Samuel F. Joor, consulting engineer of Chicago, has joined the American Steam Conveyor Corporation of that city in the capacity of sales engineer. Mr. Joor has had wide experience in the conveyor field, at one time being Western manager and sales engineer of the Jeffrey Manufacturing Company, and previous to that being with the Link Connected Belt Company.

C. H. Norwood, contracting electrical and mechanical engineer, has moved his offices to 116 West Illinois Street. Chicago, and has incorporated his business as the C. H. Norwood Company. James E. Noonan has become a member of the firm. The company will continue to furnish electrical and mechanical equipment for all types of moving bridges.

Western Electric Company has acquired 50 acres of land at Norfolk, Va., on which to provide a plant for the manufacture of submarine cable. It is expected that at a later period other products will be manufactured at this place. The new property, having a frontage on the southern branch of the Elizabeth River, opposite the Portsmouth Navy Yard, has fine deep-water facilities.

Worthington Pump & Machinery Corporation has purchased the plant, patterns, accounts, patents and other assets of the Epping-Carpenter Pump Company, located at Pittsburgh, Pa. The plant will be operated as the "Epping-Carpenter Works." Orders and contracts now in hand will be completed by the Worthington Pump & Machinery Corporation, and all further business will be for its account.

Unit Railway Car Company, Boston, Mass., has sold a Unit car to the LaCrosse & Southeastern Railway of LaCrosse, Wis. This line is 42 miles long, and the present equipment consists of three locomotives and thirty-nine cars. The Unit car will enable the company to provide a faster, cleaner, and more frequent service. It was expected that the car would be in operation about Nov. 1.

John T. Rome, specialist in electrical insulation material, has established headquarters at Montreal. He specializes in supplying suitable insulation from specifications and drawings of prospective electrical work and is the Canadian representative of the Imperial Porcelain Works of Trenton, N. J. Mr. Rome represents the Wilmington Fibre Specialty Company and the General Insulate Company.

New Advertising Literature

Ohio Brass Company, Mansfield, Ohio: A folder "How to Make a Good Splice."

Schutte & Koerting Company, New York: A pamphlet "Our Part in the War." A copy will be mailed to those applying for it.

Conduit Electrical Manufacturing Company, South Boston, Mass.: Bulletin 422 describing its Type K-2 air circuit breakers.

Du Pont Chemical Company, Wilmington, Del.: A circular giving a list of new machine tools and other equipment used in its war plants but now no longer required.

Allis-Chalmers Mnufacturing Company, Milwaukee, Wis.: Bulletin on steam turbine blading. An illustrated description of the process of manufacturing and installing blading in turbines of this company's manufacture.

American Steam Conveyor Corporation, Chicago, Ill.: A folder " A Pertinent Ash Pile Question," discusses the cost of moving ashes from the boiler plant to the bin or ash pile and shows the savings that can be accomplished.

Esterline Company, Indianapolis, Ind.: A book, "Typical Graphic Records," in which is reproduced a number of interesting curves covering various industries which, for the past eighteen years have been closely studied by this company.

Ingersoll Rand Company, Easton, Pa.: Form No. 8707, a 40-page 6 x 9-in. illustrated bulletin on "Little Davis" pneumatic drills, grinders and saws; Form No. 945, illustrating E. R. and F. R. compressors in small machine shops, power houses, etc.; Form No. 954, descriptive of the "Air Lift Method of Pumping"; Form No. 9029, a pictorial products catalog illustrating and describing practically the entire line of products marketed by this concern.

Electric Railway Journal

This is a delayed number of this paper and is issued on Nov. 20.

Volume 54 New York, Saturday, October 25, 1919 *Number 17*

A Car-Less Town of 200,000 Inhabitants

THE Toledo Railways & Light Company took the only course possible on Nov. 9 when it stopped service in Toledo after the city had voted to support the Council in its franchise position. The failure to reach a settlement of the franchise situation in Toledo has certainly not been the fault of Mr. Doherty. In other cities his aid in connection with creative business enterprises is eagerly sought, but in Toledo there has been an element which has been unwilling to settle the traction question on any business basis. As its franchise had expired, the company decided that it could no longer continue to carry passengers at less than cost, and so withdrew its cars.

Much has been said in the past in some quarters about the supercession of the railway by automobiles. Toledo is known for its extensive output of automobiles, so that it is in an excellent position to test the merits of automobile and jitney transportation instead of trolley cars for the entire traffic of a city. Railway managers will watch the experiment with interest during the coming winter.

"Off Again" in Denver

THEY say the principal mental gymnastics for residents of Denver these days consists in guessing what the street car fare will be the following week. In the good old days the railway company functioned very well on the 5-cent basis. Then as costs went upward the people considerately voted for a 6-cent fare to meet the new expenses. Again it was necessary to boost the price a cent higher, but this time the people rebelled and the fares went back to 6 cents and then to the old nickel basis. Then came the War Labor Board wage scale and the necessity for additional revenue to pay it. A strike, a settlement, a temporary restoration of the 6-cent fare quickly followed.

A few weeks ago the elastic 6-cent fare ordinance failed of passage at the general election, and under the terms of an agreement with the city the fare reverted to 5 cents. This meant also that the company was authorized to cancel its wage schedules and the employees were notified that this would be done. More strike talk and another appeal of the company for help! As conditions now stand the City Council must grant a 6-cent fare or the citizens will again be deprived of local transportation. If the employees win their demand for a still higher wage the rate of fare must be advanced even above the 6-cent level.

We commented on the Denver situation last July as comparable to the adventures of our old friend "off again, off again, Finnegan." The "mile high city" must be seeking an unenviable reputation for treatment of investors. It would appear to be about time that those who have the interests of Denver at stake should come down from the clouds around Pike's Peak and take notice of the fact that laws of economics are no different there. The traction nickel is no bigger there than elsewhere. It will not stretch any more on the street car than in the corner grocery. Wake up, Denver!

Wages Depend Primarily on Rate of Production

IT WILL be interesting to see how the Federal Commission deals with the labor problem when making its report on the electric railway situation next month. The representative of organized labor stated repeatedly at the hearings that his clients were asking for a recognition of certain principles rather than the fixing of specific increases in wages. He, of course, knew that this was all the commission could possibly do. He admitted that a carrying out of these principles would very materially add to the cost of operation, but he was insistent on a recognition of the "bill of rights for democracy in industry" even if it meant that the railways would thereby be placed in the hands of receivers.

Much was said about the "increasing productive efficiency of motormen and conductors," but the labor representatives found it hard to make their claims reconcile with their denunciation of the Philadelphia plan of co-operative effort. They called this a "form of corporation feudalism" and declared the "paternalism of the company was offensive to self-reliance." The fact that commendable results had been obtained through the Philadelphia plan meant nothing to them. They had insisted that "more contented employees would take a keener interest in making economies," but where the Amalgamated Association could claim no credit for results on a certain property they could see only a menace to their organizing activities. If we remember correctly organized labor was never very keen for what it termed "the stop-watch methods of efficiency experts."

Mr. Lauck, in speaking for the labor element at the Washington hearings, admitted that the employees were anxious to have the industry rehabilitated and made prosperous. He conceded that his clients as well as the general public were dependent on street railways for there livelihood and could not permit them to cease operation. Why then should his colleague from Cleveland complain because "men who formerly made eight trips for ten-hours pay now had to make nine trips and were paid less per trip"? Would these union representatives have street railroading put on a "piece work" basis? Why should they pick out a system where the wage scale is among the highest in the country and denounce efficiency methods which make possible a low rate of fare? Surely the employees will get nowhere with such contentions.

The members of the Federal Commission undoubtedly expected to have a helpful constructive program presented by the labor representatives. In making their report they will want to deal fairly with the railway situation as affecting the public, the employee and the investor. No one would make any serious opposition to the claims of employees for proper working conditions and a suitable wage scale. However, no burdens can be imposed which the traffic will not bear, and the commissioners are not likely to make recommendations which will impose too heavy a burden on the traveling public. The investor is asking only a reasonable return and is willing to co-operate with the highest possible efficiency of management. The employee should not ask more nor expect to do less.

Passenger Locomotives for St. Paul Cascade Electrification Ready for Service

WHILE the locomotives which were exhibited before a notable gathering of railroad men at Erie, Pa., on Nov. 7 represent a logical development in the field of direct-current equipment, they also embody several novel ideas. They may be said to be of a composite design or type, evolved from the experience of the manufacturers in connection with the New York Central and earlier St. Paul machines. We hope at an early date to be able to take up a number of the technical features of the new type of locomotive in some detail.

Among other features which attracted attention at Erie, one was the provision for permitting sidewise motion of the ends of the body with respect to the end trucks, the weight being carried upon rollers. Another was the way in which the heater cab including its contents, is installed as a unit and hung from the operating cabs. It can thus be lifted off intact and replaced. Again the motor ventilation was considered rather unique in that a fan is placed directly over each motor, the fans being motor-driven in pairs, with a fan on each end of a motor shaft. This gives an air circuit much shorter than in the earlier locomotives and the result shows in a low motor temperature under sustained load.

In the new locomotive the bipolar type of motor, used successfully for many years on the New York Central, was adopted in the interest of simplicity. This permits the use of a gearless drive in which the motor armature can be dropped out between the pole pieces without disturbing the field in any way. It also makes possible a series arrangement of the field poles with the entire locomotive serving as the return magnetic circuit, thus conducing to weight economy in the locomotive.

Of course this simplicity carries with it a number of compensatory disadvantages, the effects of which have to be minimized as far as possible. For example, a large air gap between armature and pole surfaces must be allowed, and the pole areas are smaller proportionately than in standard motors, to provide clearance for getting the armatures out. This in turn entails high field magnetomotive force—in other words, many ampere-turns. The field coils obviously must contain much copper. In regeneration also a considerable field current must be supplied to the motors, in this case eight out of twelve, which are acting as generators. Again, the mounting of the armature upon the axle lowers the center of gravity of the locomotive, and subjects the armature to a certain amount of jarring action.

By way of mitigation of these handicaps the designers of the locomotive have shown no small ingenuity. For example, four of the motors have been utilized in regeneration to furnish the exciting current, thus rendering unnecessary a large motor-generator set which would have been required if the plan used on the earlier St. Paul locomotives had been adopted. Further, the center of gravity has been raised fairly high by placing much of the auxiliary equipment as far above the wheel treads as possible. As to the durability of the armature, the New York Central's experience proves that on first-class track, at any rate, armature maintenance is a very small item in the year's expense account.

Referring to the size of the field coils, it must be remembered that these are carried on the spring-supported part of the locomotive and the only dead weight is that of the armature which is built directly on the axle. This construction reduces considerably the dead or non-spring-borne weight which in the gearless locomotive is approximately one-half that of the geared locomotive now in operation.

The center of gravity of the gearless locomotive as a whole is about 6 in. lower than that of the geared units. However, the G. E. engineers maintain that the effect of location of center of gravity upon the riding qualities of the locomotive is of secondary importance as compared with the question of proper design of leading and trailing trucks. By such proper design a movement of the front and rear ends of the locomotive can be obtained at high speeds which reproduces the effects which on the locomotive are attributed to the high center of gravity. This claim appears to be justified by the results of the tests, as the locomotive exhibited remarkably smooth riding qualities up to speeds of 65 m.p.h.

Design problems and their solutions other than those suggested above will be taken up in due course. The purpose of this comment is simply to indicate where the new locomotive stands in respect to its predecessors. If the testimony of the speakers at the dinner which followed the Erie demonstration is taken at its face value the completion of these machines is a real achievement. It is also highly creditable to the Erie works of the General Electric Company, barely eight years old, which built their mechanical as well as electrical parts.

The Coal and Other Strikes

A NOTABLE difference in the attitude of the general public towards strikes is apparent not only on the street but at elections and in Congress. It does not require a keen analyst of public opinion to discern that the country as a whole is getting very tired of the ceaseless stoppages of work to enforce higher pay and exasperated as well at the reduced production and the higher cost of living thereby entailed. Formerly, there was considerable sympathy, independent of the merits of the strike, for the " poorly paid " workman. Most people realize now, however, that during the past three years the income of the so-called workman has increased by a much larger percentage than that of the great body of other citizens, most of whom also work for their living. It is with a feeling of satisfaction, therefore, that the vast body of the American people have viewed the attitude taken by the administration in the prevalent coal strike. This with the result of the election in Massachusetts is sufficient proof that no body of American citizens is more powerful than the government.

In the case of the printers' strike in New York, the many letters which we have received and are constantly receiving prove that we have the support of our readers in resisting unreasonable demands. We shall continue to use the facilities of an out-of-town printing office until conditions in New York have returned to normal.

Another Attempt with the Zone Fare in New Jersey

THE Public Service Railway, with creditable spirit, has accepted the revised schedule of zone fares recommended by the Public Utility Commissioners, of 5 cents for the first two zone-miles and 1 cent for each additional zone-mile, with 1 cent for a transfer. While the company points out that these rates are very low it pledges its utmost to make the plan a success and to this end earnestly solicits the co-operation of the public with whom, it says, the ultimate decision will rest. Both commission and company deserve great credit for these continued efforts in the employment of distance tariffs. That is the direction in which the electric railway fares of the future, at least for large systems, lie, although considerable experimentation may be necessary before the proper basis for fares is determined.

Where any zone fare is established we urge upon the commission having jurisdiction the adoption of a liberal policy toward the company in regard to the actual rates. As the powers of a commission to reduce fares if they produce too large a return to the company is recognized, such a policy cannot cause any injustice to the public. At the same time it will encourage the companies, and after all they are the ones on whom the responsibility for carrying out any plan depends and theirs is the pecuniary loss if it proves a failure. Such a liberal policy is more than ever important now when the best method of increasing the average electric railway fare is surrounded with so much uncertainty.

Five Cents Will Pay for Only a Five-Cent Ride

AN UNFORTUNATE controversy has been spreading through the country in the past few months, precipitated by misinterpretation of statements given out to show the results which had been secured in Philadephia on a so-called 5-cent fare. While some persons considered these statements sufficiently answered by calling attention to the fact that the 3-cent charge for certain transfers in Philadelphia makes the average fare per passenger almost 4 cents, the fact remains that this is not a complete reply and undoubtedly much harm will be done if the impression is left in the public mind that if one large system can give satisfactory service for a 5-cent fare there is no reason justifiable why other traction companies should charge more for similar service.

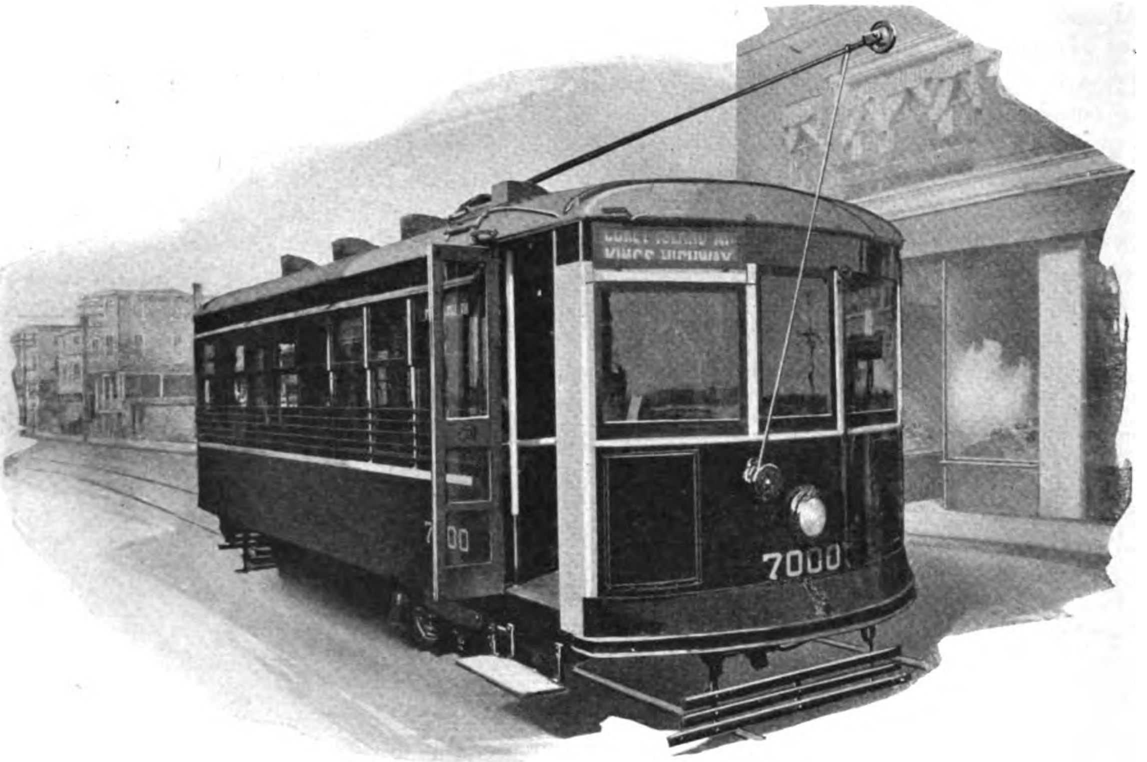
The statement of Mr. Mitten was discussed at length during the hearings before the Federal Commission in Washington. A very intelligent answer was presented by J. D. Mortimer, who contended that the reasonableness of the present revenues of the Philadelphia company at a 5-cent fare with a charge of 3 cents for a transfer could only be determined by making an analysis of the cost of service. This statement was printed in our Report Number of Oct. 11.

In this week's issue of this paper we quote at length from a statement given out by President Leonard A. Busby of the Chicago Surface Lines in which the fare situation in Chicago, Philadelphia and Cleveland is treated from a different and very interesting angle. Mr. Busby shows that the so-called 5-cent fare in Cleveland means an average fare per passenger 7 per cent below that of Philadelphia, and the 7-cent fare in Chicago also means an average fare per passenger lower than the much talked of 5-cent fare of Philadelphia.

President Busby does not let his comparison of conditions in these three cities rest on this showing alone. He points out that the average length of ride varies greatly, the advantage for the passenger being with Chicago. He also refers to the much heavier public burdens, such as cleaning, sprinkling and paving of streets, and city compensation, which is a special charge carried by his company, and its more liberal allowances for wages, maintenance and renewals.

Even with these favorable arguments for higher fare in Chicago, however, Mr. Busby, makes it clear that a standard established on conditions peculiar to one city cannot be made generally applicable. " The question in every city," he says, " is revenue sufficient to meet operating expenses and pay a fair return on the investment. A rate of fare which does not do this fails to meet the cost of service."

Members of the Federal Commission, whose forthcoming report will undoubtedly have an important effect on public opinion, had an unusual opportunity to consider the influence which local conditions must have on a rate of fare. It is suggested that, in reaching their final conclusions, they would find a helpful exhibit in the comparisons made by Mr. Busby.



THE FIRST OF BROOKLYN'S NEW SAFETY CARS

Safety Cars for Brooklyn

The Structural Details of the Car Body and Platforms Are Practically Those of the Previous Standard Safety Car—A New Truck and New Motors Have Been Developed and Some Improvements Incorporated in Other Equipment Parts

AS ANNOUNCED in the news columns of this paper for June 14, 1919, the Brooklyn Rapid Transit Company just previous to that date placed an order for 200 safety cars with The J. G. Brill Company, of Philadelphia. The order was for cars completely equipped excepting the registers and fare boxes. At the time of placing the order, the type and make of the equipment had not been definitely decided on other than that it should be furnished to meet the railway company's specifications. The details of the equipment are now available, and consist of the specific apparatus shown in Table I.

TABLE I—SAFETY CAR EQUIPMENT

Motors	100 equipments General Electric type 264-A, and 100 equipments Westinghouse No. 500-E 10.
Control equipment	K-63.
Air brakes and safety car control equipment	Safety Car Devices Company.
Trolley stands	Nuttall No. 11 ball-bearing complete with B. R. T. standard 13-ft. trolley poles, harps and wheels.
Lamp receptacles	General Electric, special B. R. T. standard keyless locking receptacles.
Headlights	Dayton Manufacturing Company.
Notice frames	B. R. T. standard.
Trolley catchers	100 equipments, Ohio Brass Company, and 100 Earll.
Life guards	H. B.
Ventilators	Railway Utility Company.
Heaters	Gold Car Heating & Lighting Company, each equipment consisting of ten cross-seat heaters No. 405-E and two truss-plank heaters No. 448-E.
Heat-regulator equipment	Railway Utility Company.
Seats	Brill Company, "Waylo" slat.
Buzzer equipment	Consolidated Car Heating Company.
Side and end routing signs	Hunter.
Sash locks	O. M. Edwards, 13½.
Trucks	Brill No. 79-E.
Slack adjusters	Gould Coupler Company.
Fare boxes	Vogelsong.
Safety panels	Kranz Manufacturing Company.
Sanders	Wyoming.

In the car construction very few changes have been made from the standard double-end safety type of car manufactured by the Brill Company. Practically all the changes have been brought about by a desire of the Brooklyn Rapid Transit Company to use fittings, accessories and auxiliary equipment that are already standard for the B. R. T. system to provide a construction with as few pockets as possible where dirt can accumulate, and to incorporate some changes which the engineers of the manufacturer considered desirable to increase the popularity of safety cars and provide greater safety in their operation. The cars will have straight sides, round ends, arched roof, double sash, stationary top sash, lower sash arranged to raise, platform floor on the same plane as body floor, floor strips over the entire floor including the platform and space between the cross-seats, and standard folding doors and steps.

Some of the general dimensions of these cars are shown in Table II, on page 785.

The over-all length of these cars is 3 in. greater than the standard safety car previously constructed. This was increased at the suggestion of the manufacturer in order to increase the width of each end buffer 1½ in., as was considered desirable in order to afford greater protection to the door and step mechanism in case of collision or the bumping of street traffic. This increase of 1½ in. in the buffers is carried across the entire end, but the sides are beveled off to prevent interference with street traffic and the catching of wheel hubs, and to eliminate pockets.

The roofs of the cars are to be in three sections, the two ends being separate from the center. These sections are to

TABLE II—PRINCIPAL DIMENSIONS OF BROOKLYN SAFETY CARS

Length over all	28 ft. ½ in.
Length over dashers	26 ft. 9½ in.
Length of platform over dashers	4 ft. 6 in.
Length over body corner posts	17 ft. 9½ in.
Width over sheathing	7 ft. 8 in.
Width over all	8 ft.
Distance rail to top of floor	Not more than 2 ft. 4 15/16 in.
Distance rail to top of roof	9 ft. 10⅝ in.
Maximum height over trolley bridge	Not to exceed 11 ft. 5 in.
Maximum height over trolley stand	Not to exceed 11 ft. 11 in.
Seat spacing	2 ft. 4½ in.
Post spacing	2 ft. 4½ in.
Distance floor to top of window rest	2 ft. ⅜ in.
Distance floor to bottom of top sash	4 ft. 2½ in.
Distance floor to point of arch	6 ft. 6 in.
Width of exit and entrance door in the clear	2 ft. 6 in.
Aisle width	22 in.
Height running rail to top of step	Not to exceed 15 in.
Distance step to top of floor	13 15/16 in.
Seating capacity	32
Diameter of wheels, new	26 in.

be built so that the joints of the boards will overlap. This staggering of the roof boards is provided to give a more secure and stronger construction.

Some of the other modifications made from previous construction are these: The water table is pressed as an integral part of the letterboard; the side posts are extended down over the side sill; crown pieces are substituted for the dasher angles and furring previously used for the floor supports; belt rails, ¼ in. x 1¾ in., are used instead of dropper bars, and the sash rack of the motorman's window has been changed slightly to provide a tighter fit and to prevent rattling.

The floor strips over the entire floor are arranged longitudinally in the aisle and across the car between the seats. A vestibule curtain is provided to keep the light from interfering with the motorman's vision. This is of sliding type with a total depth of 43 in.

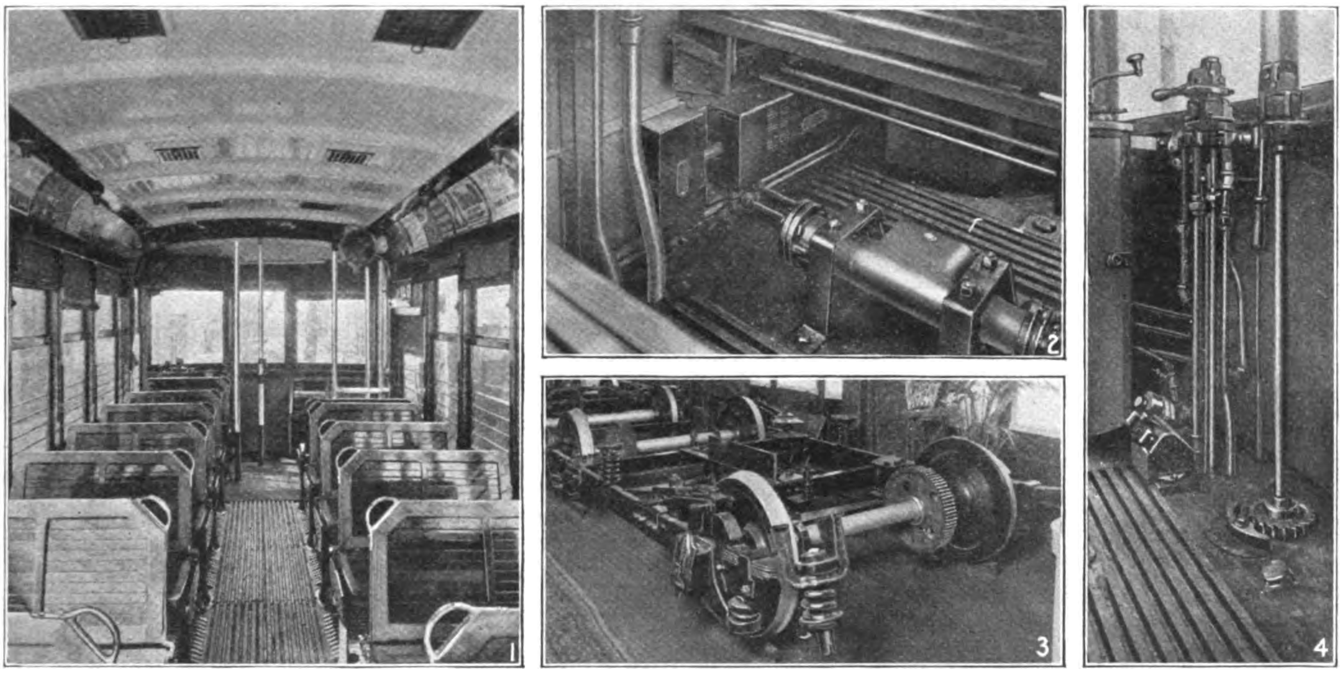
The seating arrangement is standard, but the seat construction is one recently developed by the Brill Company. There are eight reversible cross-seats each side of the aisle, one being on the platform for use by the motorman at the front end. These seats are 34 in. over-all length and with pressed-steel pedestals and ends. The seat cushions and backs are of cherry slats, the seat backs being provided with bronze grab handles of the corner type, the cushion being stationary and does not change position with the position of the back. There is to be no opening between seat and back. The seat construction provides for the use of cross-seat type of heaters. A seat back and cushion made of cherry slats is installed on the platform directly in front of the right vestibule window. The cushion is hinged and arranged to fold up when not in use. There is also one passenger seat with hinged cushion installed on the left-hand side of the motorman's seat on each platform. The motorman's seat is of the cross-seat type with reversible back so that it can be used by passengers when not required at the front end of the car. The construction provides for a raising of the seat cushion so as to increase its height when used by the motorman.

In the painting of the car it is not intended that any striping or decoration of any kind shall be applied. The lettering and numbering will be confined to the simplest arrangement possible.

SOME DETAILS OF CAR EQUIPMENT

The trucks are of an entirely new type developed by the manufacturer and called Brill 79-E. These are of all-steel construction with solid forged side bars, entirely free from bolts, nuts and rivets. They are designed to carry 75 per cent of the weight at the ends through one-quarter elliptic springs. The wheelbase is 8 ft., with the wheels of 26-in. diameter and 2½-in. tread, having a flange ⅝ in. deep and 1 in. thick. The axles are of hammered steel with a 3-in x 6-in. journal. The wheel seat is 3 15/16 in., the gear seat 4 in., and the motor bearings 3¾ in. long with 48 in. between wheel hubs. The truck frame is spring suspended, and in addition to providing for friction bearings the journal boxes are arranged so as to provide for easy removal.

In the ELECTRIC RAILWAY JOURNAL of Sept. 22, 1917, page 531, the usual equipment for light-weight safety cars was described. Only essential features or changes from that previously described are given in the following: The usual air-brake and door-step operating equipment is furnished by the Safety Car Devices Company. Much time was spent by the engineers on the arrangement of the piping and the location of the apparatus to make the layout as simple as possible and to prevent any liability of freezing. All piping is carried inside the car, except where other construction is absolutely necessary. Special precautions have been taken in regard to the drainage of the pipe and all pockets are avoided. Whenever it has been necessary to change the size of pipe, precautions have been

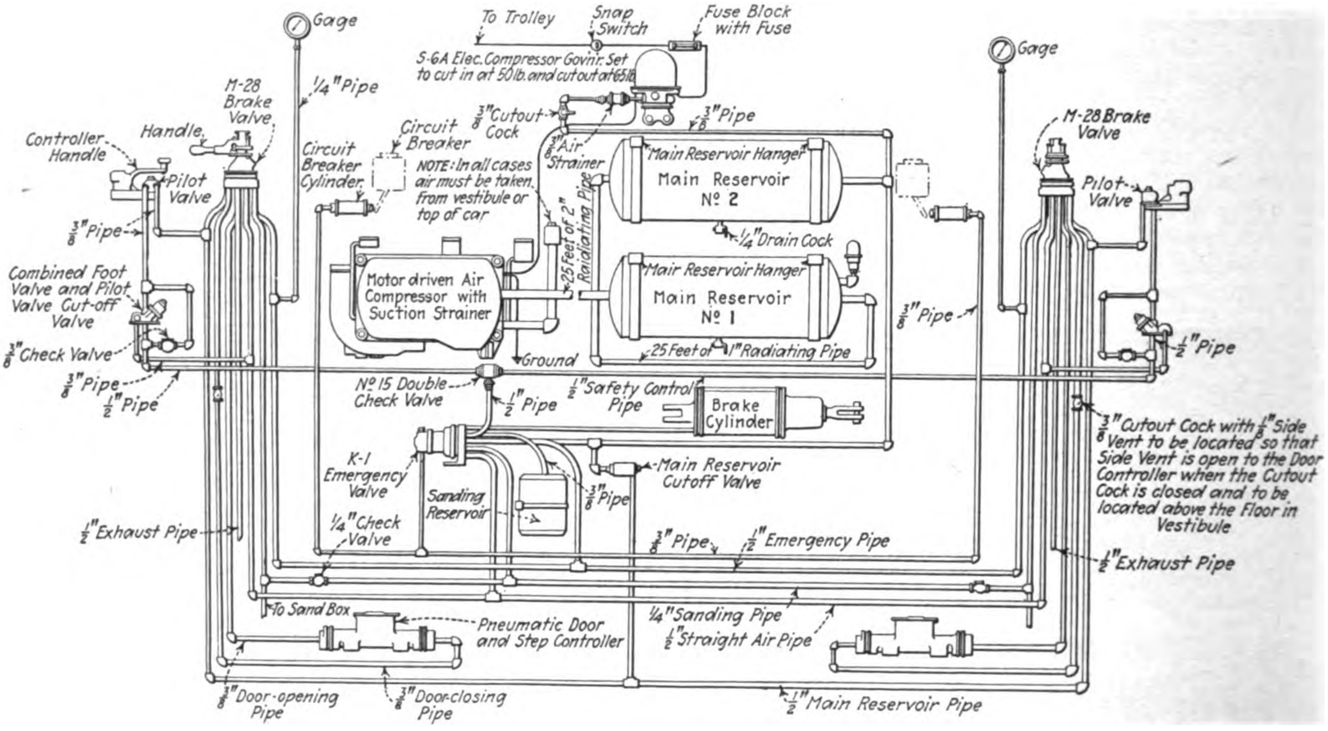


SAFETY CARS AND EQUIPMENT DETAILS. 1. INTERIOR OF CAR. 2. DOOR AND STEP CONTROLLER AND TRUSS PLANK HEATER INSTALLATION. 3. NEW TYPE TRUCK. 4. BRAKE VALVE PIPING AND FOOT VALVE INSTALLATION.

taken to prevent rapid expansion of air which would cause freezing. The underlying principle of all this work has been to produce equipment with as great reliability or safety as it is possible to provide.

Cooling coils are arranged on both sides of the main reservoirs, which are two in number, and the pipe from the compressor to the first main reservoir is increased from 1 in. to 2 in. diameter before it enters the reservoir. Experience has shown that this is a point at which freezing is liable to occur, and this increase in diameter is an attempt to prevent any rapid expansion which might take place in the air. All air equipment having automatically moving parts is placed inside the car, the only equipment which is carried underneath being compressors, main reservoirs and brake cylinder.

The operation of the brake valve and its various operating positions are like those of the braking equipment previously described. The first position to the right of the "handle-off" position is now called the "door opening and brake maintaining position." With the handle in this position connections are provided for opening the doors and the brakes are still held applied. The addition of this maintaining port in the rotary valve in the "door-open" position insures the setting of the brakes at the same time that the doors are opened even though the brakes may not have been applied by the movement of the handle to the "door-open" position. This prevents the motorman from opening the doors without applying the brakes. Previous to the installation of this maintaining port numerous cases were found where motormen would open the door to allow policemen, firemen, or newsboys to drop off without slowing up the car. The emergency position, which is the position of the handle furthest to the right, releases the air from the closing side of the door and step controller so that the doors and steps on both ends of the car can be easily moved by hand. It is intended that the rear door and step be used as an emergency exit in such a case. The brake valve handle is of the familiar hinge type which permits of its use for sanding by merely depressing it in any position.

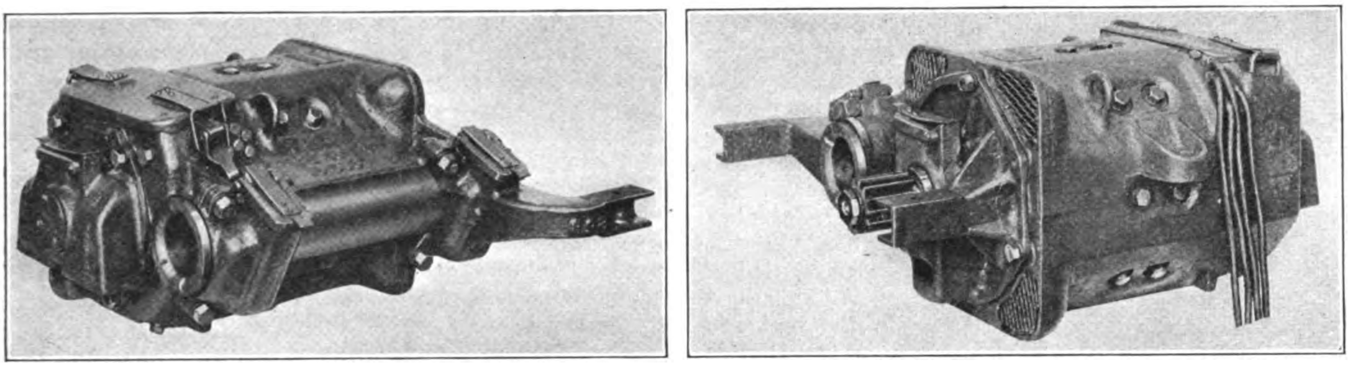

Gage
To Trolley
Snap Switch
Fuse Block with Fuse
S-6A Elec. Compressor Govnr. Set to cut in at 50 lb. and cut out at 65 lb.
1/4" Pipe
M-28 Brake Valve
Handle
Controller Handle
Pilot Valve
3/8" Pipe
Combined Foot Valve and Pilot Valve Cut-off Valve
3/8" Check Valve
3/8" Pipe
1/2" Pipe
Circuit Breaker Cylinder
Circuit Breaker
3/8" Cutout Cock
3/8" Air Strainer
NOTE: In all cases air must be taken from vestibule or top of car
25 Feet of 2" Radiating Pipe
Motor driven Air Compressor with Suction Strainer
Ground
3/8" Pipe
Main Reservoir Hanger
Main Reservoir No 2
1/4" Drain Cock
Main Reservoir Hanger
Main Reservoir No 1
25 Feet of 1" Radiating Pipe
No 15 Double Check Valve
1/2" Pipe
1/2" Safety Control Pipe
Brake Cylinder
K-1 Emergency Valve
Sanding Reservoir
3/8" Pipe
Main Reservoir Cutoff Valve
1/2" Exhaust Pipe
1/4" Check Valve
3/8" Pipe
1/2" Emergency Pipe
To Sand Box
Pneumatic Door and Step Controller
1/4" Sanding Pipe
1/2" Straight Air Pipe
3/8" Door-opening Pipe
3/8" Door-closing Pipe
1/2" Main Reservoir Pipe
Gage
M-28 Brake Valve
Pilot Valve
3/8" Pipe
1/2" Pipe
3/8" Cutout Cock with 1/8" Side Vent to be located so that Side Vent is open to the Door Controller when the Cutout Cock is closed and to be located above the Floor in Vestibule
1/2" Exhaust Pipe

PIPING DIAGRAM FOR DOUBLE-END SAFETY CAR

To insure that sand will always be applied to the rails whenever an emergency application of the brakes takes place, no matter how initiated, air is admitted from a sanding reservoir to the sand pipe through an emergency valve. This sanding reservoir is normally kept supplied from the main reservoir, and its use adds materially to the safety of the equipment in three important respects: First, it insures the sanding of the rails automatically for every emergency application of the brakes. Second, it removes the danger of decreasing the main reservoir pressure through blowing of air into the sand trap after an emergency application of the brakes. Third, this sanding operation will start as soon as the emergency valve moves, which insures that sand will be applied to the rails before the brakes are applied and should prevent the sliding of the wheels in case the rails should be at all slippery. The rails also are continuously sanded until the stop is made, which adds materially to the efficiency of the stop. As the sanding reservoir is of fixed volume, the sand is distributed for the required time of making the stop without danger of an excessive amount of sand being used after the car comes to rest. Sanding operations for ordinary service stops are made by the use of the sanding feature incorporated in the operating valve.

SAFETY CONTROL EQUIPMENT INCLUDES FOOT VALVE

In the description of the controller safety apparatus previously published it is stated that the controller handle should always be held down when the car is in motion. As a temporary relief from this necessity and for the convenience of the car operator, a foot valve is installed in these equipments for operation in connection with each operative end of the car. By gently pressing downward on the stem of this foot valve the connection through the safety control pipe between the relay valve and the emergency valve and the controller pilot valve is cut off. The pressure on this foot valve must be maintained until the car operator is prepared to resume his attention to the controller handle. The foot valve is placed in the safety control pipe, with



GE-264-A RAILWAY MOTOR—AT RIGHT, SUSPENSION SIDE. AT LEFT, AXLE SIDE

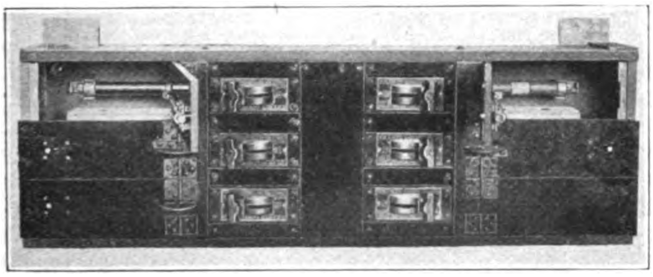
one connection leading to the emergency relay valve and the other leading to the controller pilot valve.

The valve is held off its seat by a spring, thus normally establishing communication from the emergency relay valve to the controller pilot valve. When it is desired to use the foot valve, foot pressure is imposed upon the plunger, which forces the valve to its seat, thus cutting off the communication previously established. Upon release of this foot pressure the spring returns the valve to its normal or open position. Should the hand be removed from the controller handle without making use of the foot valve, an airbrake application of approximately 35 lb. brake cylinder pressure will be made and the relay valve of the emergency valve will be unseated. This causes the circuit breaker cylinder to operate the circuit breaker and thus cut off the power from the motors. It also causes an emergency brake application together with the distribution of sand to the rails and the removal of air pressure from the door-closing side of the door and step controller. This balances the air pressure in this controller so the doors and steps may be operated by hand if required.

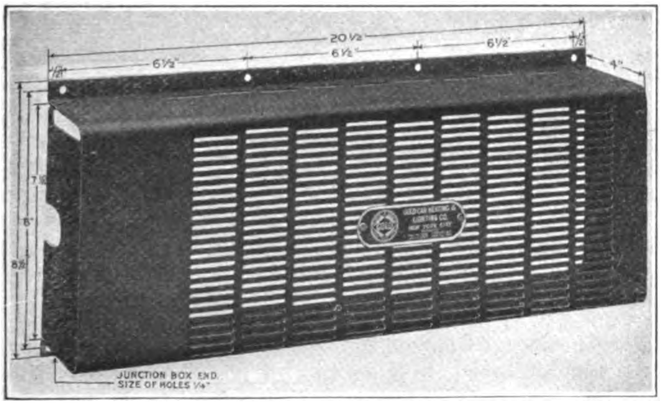
In the construction of the combined foot and cut-off valves, provision is made whereby the protection valve will lift when a straight air-brake application is made with a pressure of 35 lb., permitting straight air pressure to close off the control pipe. This permits the operator to remove his hand from the controller handle without bringing on an emergency application of the brakes, as is convenient for drifting down grade or when completing a stop. With the brake applied in this manner, if for any reason the brake cylinders should leak to a pressure of 15 to 18 lb., the protection valve will shift and automatically bring on an emergency application of the brakes.

The main reservoir cut-off valve is another safety precaution installed in the main reservoir pipe leading to the brake valves located on their respective platforms. The object of this device is to insure main reservoir supply of air pressure for the brake cylinders in the event of an accident of such a nature as to break the pipe on either platform. The connection for supplying main reservoir pressure to the brake cylinder is taken off before reaching the main reservoir cut-off valve. Such an accident as would break the piping on the platform or underneath the car would cause the emergency valve to operate and would insure the availability of a proper supply of main reservoir pressure for use in the brake cylinder.

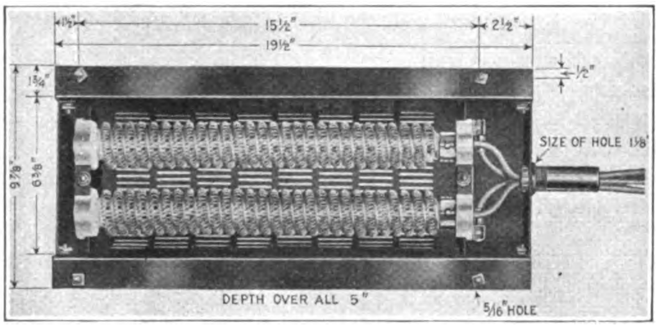
Among the recommendations of the manufacturers for the maintenance of the air-brake equipment is included one to the effect that but one brakeshoe be changed at a time. This recommendation came about as the result of a series of tests which showed a loss of 37½ per cent retardation on a safety car due to the change to new shoes, although these shoes had already been "broken in" with five days wear at the time the test was made. The fact is that on account



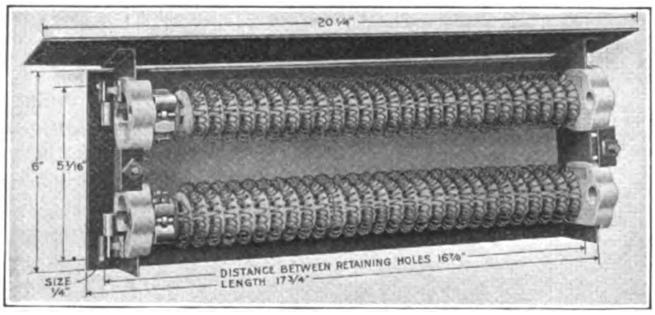
NEW TYPE SAFETY PANEL



NEW TYPE OF CASE FOR TRUSS-PLANK HEATER

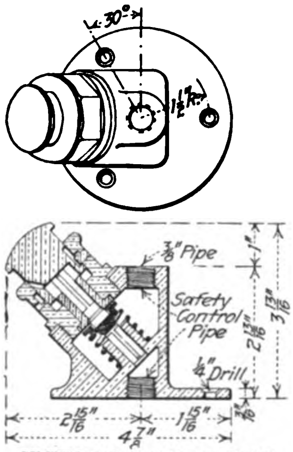


INTERIOR OF CROSS-SEAT HEATER



INTERIOR OF TRUSS-PLANK HEATER

of the light shoe pressure used with safety cars it takes more time to wear the shoes to the proper wheel bearing, and to wear off the hard outer skin of the shoes than is the case on heavier cars. In view of this loss of braking power the manufacturer has recommended that properties operating safety cars make shoe renewals one at a time as far as possible, allowing several days between successive replacements. This situation has been taken up with the brakeshoe manufacturers and their attention called to the excessive variation in new and old shoe performance, with the idea to having this variation reduced to a minimum.



SECTIONAL VIEW OF FOOT VALVE

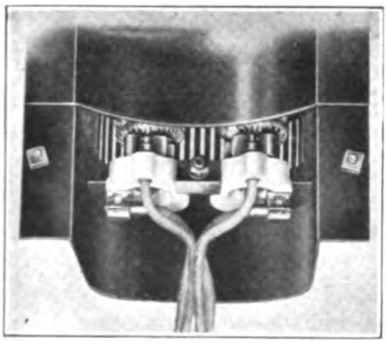
The motor equipment for these cars consists of 100 equipments of GE-264-A motors and 100 equipments of Westinghouse 560-E-10 motors. Both manufacturers are furnishing a box-frame, commutating-pole, self-ventilating type of motor. In the specifications for these equipments the manufacturers were furnished with the dimensions and approximate weight of the cars and additional operating data and information as given in Table III.

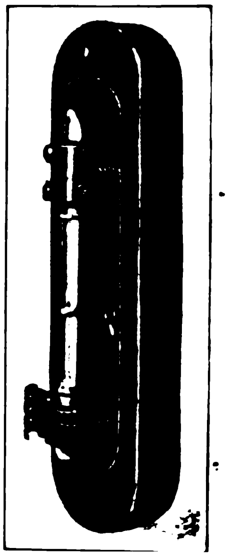
TABLE III—SERVICE REQUIREMENTS

Diameter of driving wheels, new	26 in.
Diameter of driving wheels, worn out	24 in.
Estimated total weight of car completely equipped but without passenger load	16,250 lb.
Estimated maximum passenger load	8,950 lb.
Estimated average passenger load on which speed graphs were based	24 passengers at 140 lb. each, 3,360 lb.
Trolley voltage, minimum	400 volts.
Maximum	650 volts.
Average	550 volts.
Schedule speed	9 m.p.h.
Number of stops per mile	10
Average rate of acceleration	1.75 m.p.h.p.s.
Average rate of braking	2 m.p.h.p.s.
Duration of coast	Not less than an average of 10 seconds for each 528 ft.
Average duration of stops	8 seconds.
Radius of sharpest curve	29 ft.
Maximum grade	5.3 per cent.
Length of maximum grade	1200 ft.; being a portion of a continuous grade of approximately 4,000 ft.

The motors were required to operate at voltages between 300 and 750 without damage to any part, and to withstand without flash-over or puncture the momentary surges in potential that occur on the system.

Additional details of motor construction requirements were the following: Motors to be outside hung, and to have a single nose suspension with a removable wearing plate. All motor leads and internal connecting wires to be secured to the shell by cleats fastened with tap bolts and lock washers. Armatures to be constructed to withstand a car speed of 35 m.p.h. without damage to any part when the wheels are worn to 24 in. in diameter. Armatures to be constructed so that the shafts may be removed readily without disturbing the commutator or winding. The banding of the armatures to be flush with the core and wrapped over a continuous strip of tin held with sufficient clips and soldered with pure tin. The field coils to be made of copper straps thoroughly insulated and impregnated, and finally coated with a compound having a melting point above 135 deg. C. Brush-holders are designed to permit of ½ in. radial wear of the commutators, and provision to be made for the adjustment of brush tension from 3 to 10 lb. in steps of 1 lb. each. The brush-holders to be designed so that the brushes are staggered on the commutator. The gear cases furnished to be made of sheet steel in one piece.


CONNECTION END OF CROSS-SEAT HEATER


NEW TYPE THERMOSTAT

The GE-264-A motor is similar in all respects to the GE-258 motor, which has been largely used with safety cars. It was designed to meet the preference of some customers for a motor of this size equipped with the standard type of sleeve bearings with oil and waste lubrication, instead of ball bearings. This necessitated the use of a different frame and resulted in the development of the 264-A motor. A five-turn armature is used with the new motor, which was adopted to give a low-speed armature. A special feature is the low power consumption obtained in the class of service specified.

The use of a safety panel in these cars is a new departure in safety car construction. All switches and fuses in the light, buzzer, compressor, register and heater circuits are mounted on this 600-volt panel. It is of the Westinghouse-Krantz safety type and is somewhat similar in design to panels previously used in the new subway cars and stations of the Brooklyn Rapid Transit and New York Municipal Railway systems. The panel is mounted above the vestibule window within easy reach of the operator and controls the electrical circuits of the car as shown in the accompanying diagram.

The switches are all single-pole and, with the exception of one, are all single-throw. The switch controlling the light transfer circuit is double-throw to take care of transfer of light from the front to the rear headlight as is necessary for double-end operation. All switches are double-end, double-brake, quick-break, brush-type with brushes protected by arcing contacts at each end.

Each switch is mounted on a separate bakelite micarta panel covering an individual compartment, insulated from each adjacent compartment by means of molded asbestos composition barriers. These act as arcing shields to prevent the arc formed upon opening a switch from communicating with an adjacent circuit. Fuse connections for National Electric Code fuses are provided in compartments separate from those of the circuit switches. The cover or door over each fused compartment is interlocked with the corresponding switch mechanism so that it can be opened only when the switch is in the off position and the fuse contacts dead. This thus provides safety to the operator in case it is necessary to replace the fuses. The use of

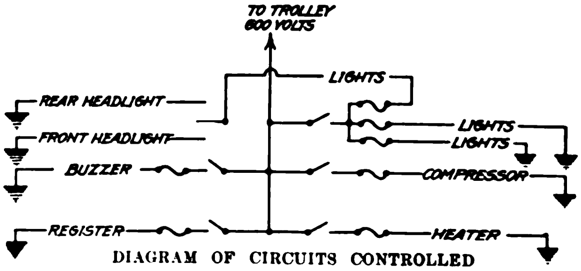


DIAGRAM OF CIRCUITS CONTROLLED BY SAFETY PANEL this panel is an additional safety precaution to the already large number of safety devices for this class of equipment.

TRUSS PLANK AND CROSS-SEAT HEATERS USED

The heater equipment of these cars consists of ten Gold Car Heating & Lighting Co.'s interchangeable deflector cross-seat heaters No. 405-E and two truss-plank heaters No. 448-E. Each of these types of heaters has two coils per heater, and the supports with resistance coils are interchangeable. It was necessary to have twelve heaters per car so that a coil temperature of 450 deg. Fahr. per coil would not be exceeded. The cross-seat type of heater would have been used throughout except for the fact that only ten seats were available for heaters, as of the total of sixteen cross seats in the cars, four were utilized for sand boxes and two for air apparatus. The location of the truss-plank heaters overcomes the necessity of having a cabheater near the motorman. These heaters provide for a maximum power consumption for heating of approximately 7500 watts. The coils are arranged in two circuits of 3750 watts per circuit on a 550-volt circuit, which allows approximately 7 amp. per circuit. The voltage of 550 is used in calculation, but the coils are required to have sufficient carrying capacity to operate on 600 volts, and the maximum coil temperature is figured on a 600-volt basis with a car temperature not to exceed 60 deg. Fahr. when the test is made.

The seat construction employed, as already described, permits the use of the cross-seat heaters without interference with the heater parts. Also, this type of construction provides easy access to the heater coils for repairs or removal. There is no doubt that a cross-seat type of heater is the most popular with the traveling public, and the use of this type should make safety cars even more popular than they are at the present time. The operating company's engineers also felt that the cross-seat type of heater was much more efficient than the truss-plank heater and was therefore much to be preferred on this account. Experience in Brooklyn has shown that in extremely cold weather passengers have allowed cars to pass which were known to have truss-plank heaters in them, as they preferred to wait for a car with heaters of another type.

The case for the cross-seat heater has a flange along each edge so that no additional hangers are required. The flanges rest on two angles of the seat and are bolted to them. The clearances are so arranged that even should the bolts become detached the heater could not fall to the floor or jar to a position which would be dangerous in operation. The hinged type of seat construction makes inspection particularly easy, as all that is necessary is to raise the seat and remove the deflector plate, when the entire inside of the heater is exposed. The coils with ventilated porcelain cores are constructed in units, so that these can be withdrawn and reinserted as such, and repairs can be readily carried out on the bench of the maintenance shop.

Some of the improvements in heater construction which are incorporated in these heaters consist of the use of terminal spring clips, so that the connecting leads can be quickly withdrawn and inserted whenever it is necessary to remove a coil and to prevent wear and breakage of the ends of the wires, which are furnished with service wire brass tips. The cores of the heaters are of the ventilated type, and are made up of one 3-in. and two 6-in. sections per core. The cores and coils are interchangeable in all the heaters of the car. A space is provided at the ends of the coils into which the leads can be brought in conduits so that the conduits can be brought inside the heater. This type of construction is favored as being in line with the safety precautions taken throughout the entire construction of these cars. In discussing with the manufacturer the cases provided for these heaters, representatives of the Gold Car Heating Company stated that they had in mind to recommend cases made of aluminum for safety cars. Such a type of construction would be light, and would have other desirable characteristics such as attractive appearance and ease of cleaning. The accompanying illustrations show the details of the construction of the heaters used.

THERMOSTAT OF NEW TYPE FURNISHED

The heat-regulating equipment for these cars will be of a type manufactured by the Railway Utility Company. It includes a thermostat which has recently been developed. The principal changes from the type of thermostat formerly furnished comprise the use of a dust and a tamper-proof cover, of a new method of transmitting temperature changes to the mercury bulb and of a stamped metal and molded base, and the mounting of the thermometer elements on springs. The cover of the thermostat is now made without ventilating perforations, and is clamped down so as to make an airtight joint. The mercury bulb is in contact with a sensitive metal conductor with spring tines. These in turn come in contact with the unperforated metal case, and the car temperature changes are transmitted through these from the cover to the mercury bulb. It is claimed that this new device is much more sensitive than the old one in which a case with slots or perforations was used, dependence being placed on ventilation or the circulation of air to affect the elements. By mounting the thermometer on springs the danger and troubles produced by shocks and vibration have been lessened, and the thermometer made more rugged to withstand rough usage. The base of the thermostat, which consists of molded insulation with a stamped metal base fitted over it, provides a light and attractive type of construction.

Salary Increases Recommended for Railroad Engineers

A report has recently been rendered to Engineering Council by the sub-committee on railroads of the committee on classification and compensation of engineers. The members of this sub-committee are Francis L. Stuart, Frank H. Clark and Bion J. Arnold. The committee points out that on railroads under federal control there has been an increase of the wages of men receiving salaries less than $2,500 in the classes of draftsmen, tracers, inspectors, rodmen, chainmen, etc. Further effort in this direction, except for the adjustment of the inequalities existing in the various regions, is not recommended at the present time. The committee recommends, however, an increase in the salaries of those receiving more than $2,500 per annum, in view of the higher cost of living.

Electric Installations in Japan

The director general of electric exploitations, Department of Communications, Japan, has issued a statistical report showing the conditions of electric installations in Japan at the end of 1917, with the exception of Formosa, Korea, Saghalien, and Kwantung. According to this report there is in Japan a single-track mileage equivalent of about 1420, with approximately 4100 motor cars and 450 trail cars, or a total number of cars of nearly 4550. The total mileage of power lines supplying electric traction, and combined electric traction and electricity supply systems is about 10,500. The fixed capital engaged in traction and combined traction and supply system is nearly $190,000,000, estimating normal rates of exchange on Japanese money. The profits were about $15,000,000 on these undertakings, and about one-half of this sum was paid out in the form of dividends.

Eighth Annual Safety Congress

Safety Experts Met at Cleveland Oct. 1 to 4—In Addresses by Electric Railway Men Closer Co-operation with American Electric Railway Association was Urged—R. N. Hemming was Elected Chairman of Section

THE opening session of the electric railway section of the Eighth Annual Safety Congress was held in the club rooms of the Electrical League at the Hotel Statler, Cleveland, Ohio, on Oct. 2 with H. B. Adams, safety supervisor Aurora, Elgin & Chicago Railroad, presiding, and with John H. Cox, chief adjuster Cleveland Railway, acting as secretary. The program of the convention contained six papers by electric railway officials. Abstracts of four of these papers are given elsewhere in this issue. All the papers brought out considerable discussion, but perhaps the greatest interest centered in the proposed plan of Harry Reid to secure the co-operation of all the electric railways in the country in the safety movement by having the American Electric Railway Association adopt some standardized plan for safety work. It was pointed out that the electric railways generally have not recognized the National Safety Council as a body working for their interests, although many companies have taken up safety work and have found it of great value in the reduction of accidents. It was argued that until electric railway companies recognize the National Safety Council, it cannot extend its services to this branch of transportation. Members of the section believe that the American Association is the logical organization to take up the work in such a way as to reach a successful issue in the shortest possible time. They authorized Chairman Adams to appoint a committee to confer with the American Association on the proposal of Mr. Reid.

SAFETY CAMPAIGN SHOWS EXCELLENT RESULTS IN ACCIDENT REDUCTION

Before the close of the second session, held on Friday morning, all of the delegates reported that the safety work done by them had shown excellent results in the reduction of accidents, and that they were constantly devising new ways and means to prevent other accidents that are incidental to railway operation. It was argued that many lives may be saved, that much loss of time may be prevented and that much of the money paid out in claims can be retained in the treasury by the adoption and execution of simple but effective plans for insuring safety, when actuated by humanitarian ideals as well as by the material results that would accrue to their company.

For the first time a woman delegate was present; Miss Laura A. Roadifer, representing the Philadelphia Rapid Transit Company, who reported on the work that she had done in educating the school children in avoiding street car accidents. She has had the satisfaction of knowing her efforts have produced results, for there has been a decrease in accidents among the little people of the territory served. This was evident both by the city records and those of the railway company.

The plan generally followed has been to organize the children and hold meetings in the Chamber of Commerce building where subjects pertaining to their safety were discussed. Some time ago this organization issued a card in which the children pleaded with automobile owners and users for a "50-50" opportunity on the street. This card was planned to be distributed in various ways so as to reach every car owner, but of late the demand for the cards from insurance companies and others has been so great that there is no need for miscellaneous distribution. This appeal of the children has brought forth a wonderful effect in increasing the care exercised by automobile drivers where children are concerned.

SKEPTICISM OF THE PUBLIC DIFFICULT TO OVERCOME IN PHILADELPHIA

In the light of what has already been accomplished, the Philadelphia Rapid Transit Company is now about to establish an accident prevention department and to adopt a systematic plan for an aggressive campaign. In Philadelphia, as in some other cities, the railway company has found it extremely difficult to convince the public of its sincerity in the prevention of accidents, for the public has preferred to adhere to the old idea that a railway company is only interested in what it can earn for its stockholders. The establishment of an active department should be of great aid to Miss Roadifer in her work, for the public should be convinced of its sincerity when it is understood that the company wants to preserve life, both because of the moral and humanitarian principles recognized and the financial saving that will result or accrue to both the company and its patrons.

The officers chosen by the section for the ensuing year as follows: Chairman, R. N. Hemming, Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., vice-chairman, John H. Mallon, Metropolitan West Side Elevated Railway, Chicago; secretary, John H. Cox, Cleveand Ohio Railway.

During the Safety Congress, H. B. Adams, chairman of the electric railway section, made for the congress three addresses to Cleveland high-chool pupils, talking to about 3,000 pupils in all.

In the parade of 4,000 high school boys held on Thursday afternoon, Oct. 2, 1919, there was a demonstration made by the Cleveland Railway of the proper methods of alighting from and boarding cars. A special car, the only one on the street at the time, passed slowly along the route of the parade, maintaining a speed at which the boys walked and all the time a number of boys were boarding and alighting from it. It was rather an original demonstration and elicted many favorable comments.

SAFETY CAMPAIGN TO BE CARRIED TO THE SCHOOLS

The inauguration of an educational section was also decided upon at the congress. Its purpose will be to formulate courses of study for the schools and introduce them into the curriculum wherever possible. Primary schools will be taken first, but later on the officers hope to see the educational work taken up by high schools, colleges and technical institutions. They especially feel that all engineers should have safety work as part of their course of study in order that in their future operations they may have this in view.

At the meeting of the public safety section, a suggestion was made that a joint session of the public safety, electric railway and educational sections be held at the next congress, for the members believed that, as these three sections have much in common as to ways of distributing information, plans might be mapped out that would prove of importance and value to all three.

Safety Before and After the War *

BY E. F. SCHNEIDER

General Manager, Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.

WHILE the war was on, it was natural to look forward to a rapid return to normal conditions in the labor world soon after the armistice was signed. It was also anticipated that the prices of foodstuffs and necessities would be lowered, and a general feeling of complacency and satisfaction was likewise confidently hoped for; but, alas, none of these things came to pass. Labor is still scarce, much more arrogant in its demands and a great deal harder to handle. Contracts with labor unions seem to be broken with impunity, invariably against the advice of the national officers. The general feeling of unrest has been greatly intensified and there seems to be an almost universal sentiment, regardless of consequences, of "I am going to get mine while the getting is good."

There is perhaps more to be said regarding safety before and during the war than there is to be said of safety after the war. Safety, so far as the application of the fundamental principles is concerned, reached its highest state of perfection just before the war, in the use of all kinds of safety devices and appliances, such as the installation of block-signal systems, the display of cautionary signs, the use of moving pictures. All of this had a tendency to carry the propaganda of the prevention of accidents to a successful conclusion. The idea heretofore has been to make things as "fool-proof" as possible; and I understand it is estimated that the accident account in our industrial world has been reduced some 8 per cent. That of course makes it worth while and I do not wish to depreciate the use of any device which will eliminate accidents. I do, however, wish to protest against the abstract proposition for which we seem to be striving, *i. e.,* to make things fool-proof, for I am not a believer in trying to make automatons out of intelligent employees. We need men who are honest, industrious, painstaking and careful, and the best safety device known is a careful man.

Before we entered the war there was not the strained and intense feeling which was so marked and prevalent everywhere after war was declared. But the employee who had a son of draft age, or one who had enlisted, was of necessity "on the anxious seat" all the time. This anxiety he naturally carried to his work, as he would not have done in normal times.

The shortage of men due to war conditions made a vast difference in the working personnel of electric railways. The difference in the attitude of the men toward their employing company was noticeable, for they realized a job could be obtained anywhere. To keep the lines filled, precedents and rules were broken and the turnover was large. An applicant was not questioned closely, his recommendations were not scrutinized. Men eighteen years of age were hired as conductors and men fifty years old as motormen. The inexperience of the younger and inability of the older man to readily adapt himself to the work caused an unfortunate condition. It was impossible to get efficiency out of either class. Those of a proper age who applied were as a rule undesirables.

As an illustration of the attitude of men regarding discipline, one of our superintendents in disciplining a trainman for an offense said to him, "You will have to lay off ten days." He came right back saying, "Oh, you go to —," and turned in.

A moderate amount of relief from this state of affairs was brought about by the employment of women in a few cities as conductors on city lines. After watching the operation of cars with conductorettes, and scanning reports regarding their work, I am convinced that they conducted themselves properly at all times, and took care of their part of the business carefully, intelligently, politely and with fewer accidents than the men. Whether conductorettes would have maintained their efficiency after years of service I do not pretend to say, but they certainly made a good record as far as they went.

My investigations tend to show that there was a slight improvement regarding accidents after the war. Statistics upon this subject were gathered from 115 companies throughout the United States and Canada, covering 17,765 miles of track. A comparison of the accidents showed 153,878 in 1916; 167,806 in 1917; 144,554 in 1918 and 64,108 for the first half of 1919, or at the rate of 128,216 for the year.

The figures based on the first half of 1919 would seem to show a decrease over the figures of 1916, but as to whether the whole year of 1919 would show this improvement is of course problematical. A slight improvement is likewise noted in 1918 over 1917 but the difference certainly in either case is not due to any improvement in the personnel of the employees.

One-man cars are largely a result of conditions brought about by the war and wherever used have materially decreased the number of accidents. A great many roads were compelled to decrease their mileage in order to reduce operating expenses, both during and after the war. This of course, cut down the hazard in proportion to the reduction in mileage. The great increase in the number of automobiles has, however, correspondingly increased the number and severity of that class of accidents.

There are many ways to be progressive but one is sufficient if along proper lines. We do not have advantage of sufficient regulatory laws, but even if we had they would mitigate accident hazard in only a small degree. We have the benefit of safety boards, safety appliances, warning signs, etc., which are a great help as far as they go, but they do not seem to prevent the majority of railroad accidents.

Electric railways have never fully realized the benefit from rigid discipline as ordinarily enforced. The principle of "safety week" extended through the whole year is perhaps the only solution of the difficulty, to bring forcibly to the mind of every employee the moral obligation resting upon him to preserve human life and limb, relying upon the fact that all men have within them that which will naturally keep from harm those entrusted to their care and those who come within their zone of danger.

Nationalization and Standardization of Accident Prevention *

BY HARRY REID

President, Interstate Public Service Company, Louisville, Ky.

THE need for nationalizing and standardizing accident prevention is of equal importance to all sections of industrial work. Statistics covering the number and character of accidents occurring in connection with street and interurban railways are not available so far as the whole traction operation of the country is concerned. This is due to a lack of standardized accident statistics the gathering of which would be but one of the features of standardization of accident prevention. We know, however, from a survey of the figures of certain systems or groups of electric railway lines, that the total accident loss, which is made up of settlements for claims and compensation in the transportation industry amounts to a vast sum. We do know that the suffering and sorrow caused by these accidents are to a great extent avoidable if the proper steps are taken for the education and safeguarding of passengers and pedestrians. We know further, that when a traction company carries on a well-organized and efficient prevention movement substantial reductions are made in the number and costs of accidents.

---

* Abstract of paper presented before the Eighth Annual Safety Congress, Cleveland, Ohio, Oct. 2, 1919.

* Abstract of paper presented before the Eighth Annual Safety Congress, Cleveland, Ohio, Oct. 3, 1919.

The first step towards working out a basis for future standardization is the determination of a proper medium through which the newly accepted standards can best be circulated. This organization, which must necessarily be national in extent, should have at its disposal the best talent obtainable. Just what body should undertake this is a question, but inasmuch as we are at present considering only accident prevention as applied to electric railway operation, there are several organizations which suggest themselves. The National Safety Council naturally comes to mind in this connection. While I am a member of that council, and appreciate the work which it is doing, I would not recommend that it alone attempt to solve this problem. The council can be of much service by promoting a movement that will lead to the establishment of a commission to set the proper standards to be recommended, or to the appointment of some existing organization for the same purpose. The most logical organization is the American Electric Railway Association, or possibly a committee appointed by and working under its auspices. I believe that the most advisable means would be a committee which would, if possible, secure the recognition and support of the federal government for the express purpose of nationalizing and standardizing accident prevention. It may develop that this committee would work in connection with the United States Bureau of Standards.

The establishing of proper standards of accident prevention, and the nationalizing of such standards when accepted present probably the most difficult of the problems connected with the entire question. This matter is not disposed of by the appointment of the commission or organization to carry on the work. This most important step towards our own ultimate goal should spur us on to take an active interest in suggesting plans for the guidance of the commission, or for the carrying out of the new work by an existing organization. The first duty of this suggested commission should be to conduct a thorough investigation of the best and most practical ideas and methods now in use for reducing accidents. The action taken from this point on will be governed largely by the results of this investigation. It will undoubtedly develop that the need for education, not now fully appreciated, will be emphasized.

The city and interurban lines in Indiana and Kentucky with which I am connected, were, so far as I know, the first electric railways to carry on safety work in the thoroughly organized manner that has in the last ten years been productive of such good results and extended to so many other public utilities. This plan lays emphasis upon the educational feature of safety work, and includes in proper groups every employee of the company.

The branch of the work, in my opinion, which is most needed by the majority of companies is that which has to do with proper organization, instruction and education of employees. The support or co-operation of the companies to be affected by such a plan will in a large measure determine its success. The most capable commission obtainable may draft recommendations as to efficient, practical and modern methods of accident prevention, yet unless these methods are endorsed and applied by the companies for whose benefit they are intended the value and results of the entire undertaking will be negligible. The necessary steps should be taken by this commission to insure the proper co-operation of the utilities concerned.

Suppose that the needs for nationalizing and standardizing accident prevention have been fully appreciated; that the proper organization has been provided to conduct the necessary investigations and set the standards; that this body has satisfactorily completed its work, and that the support of the companies concerned has been assured. What is now to be expected as a result of this progress, and just what are the benefits which may be looked for? Any advance statement as to the results to be attached by the electric railway business as a whole must necessarily be speculative in character, but as an indication of what may be expected I will cite the case of one of the traction companies with which I am connected. It operates both city and suburban lines. This company has reduced the number of its accidents 75 per cent and the accident costs 80 per cent since the safety work was first organized. Another interurban electric railway in Illinois, whose safety work is conducted upon the same plan and under the direction of the same bureau, reduced its accident costs 62 per cent in one year.

Electric railways of small size which feel (and many of them are justified in doing so) that they cannot afford to employ a safety engineer would derive a special benefit from this plan. These companies would have the opportunity of adapting methods which have been tried out and found to be practical and effective by the larger companies, and would also have a uniform outline of safety plans which could be followed and carried out by their own organization.

Why Does Not Every Electric Railway Have a Safety Organization? *

By C. B. Proctor

Claim Agent, Memphis (Tenn.) Street Railway.

IT SEEMS STRANGE that it should be thought necessary to discuss this subject, because it is remarkable that any electric railway should now be without a safety organization. To my mind there can be but one fundamental reason for such failure and that arises from a failure to understand its purposes. In view of this fact, it is wise to inquire what a safety organization is, and of equal importance, what it is not.

The ideal safety organization is composed of a select body of men representing every department of the railway; men of intelligence, men whose ambition it is to render to the car patrons safe and courteous service, men who do their utmost by example and influence to develop in themselves and associates a high state of efficiency; men who practice the Golden Rule and endeavor to persuade their fellow workmen to do likewise, men who teach safety by precept and example, first, last and all the time; men who are loyal to their country, their fellow employees and their company; men who so act because it is right and are actuated by the desire to bring happiness instead of sorrow, to prevent, instead of cause, pain and suffering, at the same time realizing that such conduct redounds to the pecuniary benefit of themselves and their company.

The safety organization is most emphatically not a collection of spies. It tries to down no one, but to elevate all. It wants to derive no man of his job, but aims to help him keep it and improve himself and his job. It purposes to interfere with no one's rightful prerogatives, but hopes to better the service by pertinent suggestions. It intends in no way to interfere with the administration of discipline; nor is it to be used as a disciplinary measure. It tries to accomplish nothing through compulsion, but endeavors to get results from education and appeal to the higher princi-

---

* Abstract of paper presented before the Eighth Annual Safety Congress, Cleveland, Ohio, Oct. 2, 1919.

ples that are implanted in all. In such an organization there is no room for personal malice, no place for the backbiter or the disorganizer. Its purpose is not to disorganize or breed strife, but to unite and promote harmony. The successful safety organization must have the hearty support of both the management and the organized employees.

The foregoing briefly outlines the ground plan of a hundred per cent efficient safety organization. We rarely reach this mark, but with the assistance of a live safety organization, accidents with their attendant loss in life, in pain and suffering and in dollars and cents, can be reduced fully 50 per cent.

When we consider what the electric railways are facing today it seems incredible that the management, or organized employees of any electric railways, should fail to avail themselves of such a valuable adjunct. Such failure can only come from a complete misconception of the uses and purposes of the safety organization on the part of either the management, the employees or both. It is, I believe, fear of its misuse that prevents the universal adoption of the safety organization.

From experience we have learned what can be accomplished with the aid of the safety organization. It is not a panacea. It in no way interferes with the administration of discipline, nor does it operate to any man's hurt, but it does provide a medium for the getting together of officials and employees on a friendly basis. It does promote harmony and co-operation and it certainly aids materially in reducing to a minimum the risks of operation and cost of maintenance.

The Human Factor in Safe Operation and Maintenance of Rolling Stock *

BY FRANK R. PHILLIPS

Superintendent of Equipment Pittsburgh (Pa.) Railways

THE human factor, in whatsoever relationship it may be considered, is the most important question now before the minds of the people of all nations. Dissatisfaction with the present order of things is rampant. It manifests itself in many ways, but rarely survives cold clear light of reasoning. Nevertheless the minds of all the people are yearning for a "something," which seems to be lacking in our social and political structure, a remedy for which economists and other students of the problem have so far failed to provide.

A superintendent of the motive power department of an electric railway, if he would attain the full measure of success, must be in addition to everything else, a thorough student of human nature. It is not enough that his plant and equipment be provided with the most effective safety devices, nor is it enough that his system of inspection and supervision be the last word in the art. He must know men—their weak and strong points—and he must be able in some measure to define their various moods.

Even if the safety equipment and organization be ever so efficient, and the campaign of education in accident prevention ever so complete, one dissatisfied employee may in an unguarded moment, through an act of commission or omission, be the means of a holocaust or shambles.

While I strongly advocated the use of the most effective safety devices and a comprehensive, thorough and continued educational campaign through the medium of shop talks, committee activities, scareheads, and bulletin boards, I am convinced that the ultimate can be reached only through a personal appeal to the individual employee.

A personal appeal, however, to be effective must be clothed with sincerity and an earnestness of purpose. Moreover, if a personal appeal to an individual is to be productive of the greatest good, the right to make such an appeal must first be established. The mere fact of being a superior officer does not give the right.

If we are to be successful in our relationships with men, we must eschew subterfuge and insincerity and, without other purpose than mutual good, meet them on their own plane. Their acquaintance must be cultivated until one knows them and can address them by their first names, until one knows their families, their associates, and home surroundings—their hopes, joys and sorrows. In other words, there must first be prepared the seed-bed of mutual understanding. Judgment and due regard for the other's welfare and viewpoint must be exercised in planting the seed of desire, and the growing plant must be nurtured and cultivated until it blossoms forth into the maturity of accomplishment. Then if the winds and storms of demagogism, bolshevism, and all other "isms" of social unrest come, a relationship founded upon mutual confidence and respect will weather the storm.

Perhaps the importance which a personal appeal to the individual occupies in safety work may best be emphasized by reference to the results of observations made by the writer during the pre-war period. A personal examination into the underlying causes of many accidents of major and minor degree, covering a period of several months, showed that more than 93 per cent were the result of man failure and less than 7 per cent to equipment failure. In practically all of the accidents charged to equipment there were evidences of lack of proper care on the part of some individual. I can recall but two or three cases directly chargeable to defective material. The accidents under observation included collisions, derailments, controller burnouts, etc.

With respect to accidents to employees in the shops and carhouses, it is of interest to note that the bureau of factory inspection of the Department of Labor and Industry of Pennsylvania has made the Pittsburgh Railways the object of special commendation because of the completeness and efficiency of its safety equipment. The most is made of the literature and bulletins issued by the National Safety Council. They are posted conspicuously in prominent places throughout the shops, carhouses, substations, etc., as well as in all places where our men congregate. At the weekly staff meetings and monthly round-table conferences, safety discussions are a permanent item on the program. Without this equipment and these activities, the company would feel delinquent in its duty. Nevertheless, it holds to the belief that the personal appeal is productive of more efficacious results than all of the others.

As most plant accidents cause incipient local infection due to slight cuts and bruises, and minor accidents resulting from neglect to use goggles to protect the eyes when grinding or chipping, or when cutting rivets or bolts, etc., all of our plants are equipped with first-aid kits, in charge of one or more men trained in first-aid methods. At the principal shop a first-aid department is maintained in charge of a capable, experienced graduate nurse, and at the main office a dispensary is maintained in charge of competent physicians and surgeons, with equipment and appointments second to none in the district. Yet an employee loses an eye, another an arm, and a third his life, all because they thought it nonsensical to have such a trifling thing as a scratch tied up in a rag or to take the time to put on the goggles; besides they were busy anyway and did not want to be bothered. This is the attitude that must be combated, and under such circumstances disciplinary measures would do nothing more than to make the men resentful and perhaps even more careless. But a suggestion given in the proper spirit, and at the psychological time, from one in whom the employee has genuine con-

---

* Abstract of paper presented before the Eighth Annual Safety Congress, Cleveland, Ohio, Oct. 2, 1919.

fidence and manly respect, will accomplish vastly more practical good than a multitude of "curtain lectures" and front-office interviews. It is not an easy or simple task to create a foundation of mutual respect. It requires seasoned judgment, patience, persistence, courage and some sacrifice.

With us the new employee is afforded a probationary period, which provides an opportunity for observing his particular traits of character, fitness and ability to fill the job. Set rules of procedure are impossible of formulation. Each case is a problem in itself. Many rebuffs, frequently sneers, suspicion almost always, will be met, but the individual is hopeless indeed who will forever withstand such an effort to improve his condition.

If then, it is a maximum of safety we seek, which means more to the individual than to the company, how much more probable is its accomplishment, therefore (given the physical essentials) if we have the honest support of the employees.

Carelessness, thoughtlessness, selfishness, and irresponsibility are enemies to safety as well as to social order, and they are without the reach of material things. First, let us seek and establish a basis of mutual understanding between the men and their employers, founded upon genuine respect and trust, and greater success will be added to the effort to improve their condition.

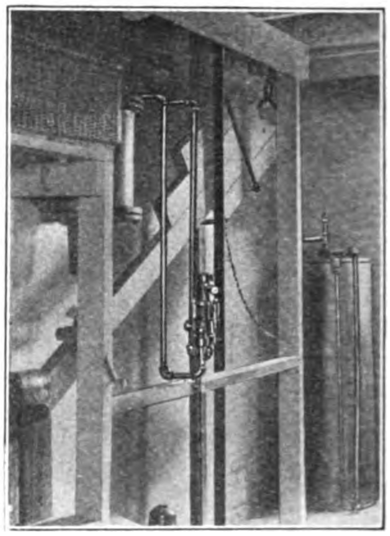
Air-Operated Tower for Line Cars

Indiana Railways & Light Company Replaces Hand Operation With Air Operation at Slight Expense

UNTIL recently the Indiana Railways & Light Company had hand-operated towers on all its line cars. Realizing, however, that the raising of these towers required much labor on the part of the crew, M. S. Ferguson, master mechanic, applied a simple air-operated device for performing this function. The cars were already equipped with compressors and air brakes so the adoption of an air-operated device was a logical step.

The tower of the car, shown in an accompanying illustration, was formerly hand operated from inside the car by means of a winch. Two men were required to raise the tower and at best it was a laborious procedure taking several minutes. As now equipped a gentle pressure on the handle of an air brake valve places the tower in position almost instantaneously. The cost of the change was small as practically all of the material was salvaged from old equipment.

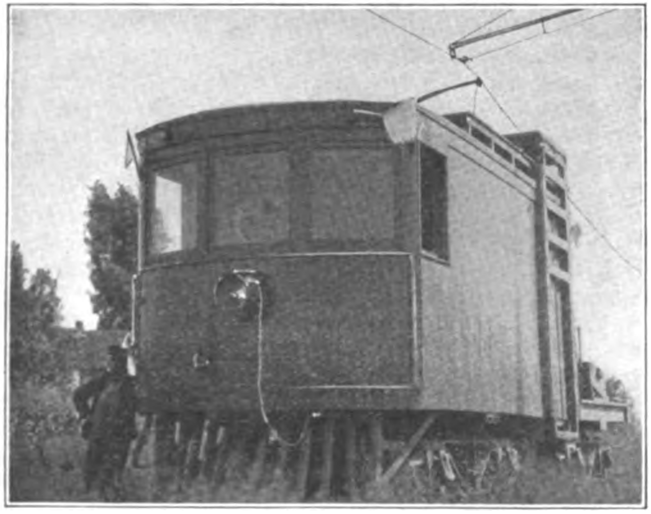
A 10-in. brake cylinder, removed from an old car, is mounted on a 2-in. x 18-in. oak plank. This is bolted to the side of the line car in a vertical position with the piston end of the cylinder down. The plank is also securely anchored to the sill of the car. The piston end is fastened 1 ft. from the end of a 2-in. x 4-in. iron bar, 6 ft. 6 in. long, and this end is held by a 1¼-in. bolt and a 1-in. x 6-in. iron U-strap bolted to the floor through the sill. On the other end of the lever are strapped as counterweights three pieces of 2-in. x 4-in. iron totaling about 6 ft. in length. This lever works vertically between two 2-in. x 2-in. x ¼-in. angles set 2½ in. apart and the lever can be held in any position up or down by means of a pin. This pin is safety precaution which eliminates the possibility of accident resulting from the accidental movement of the brake-valve handle. A "straight-air" valve controls the operation of the tower.



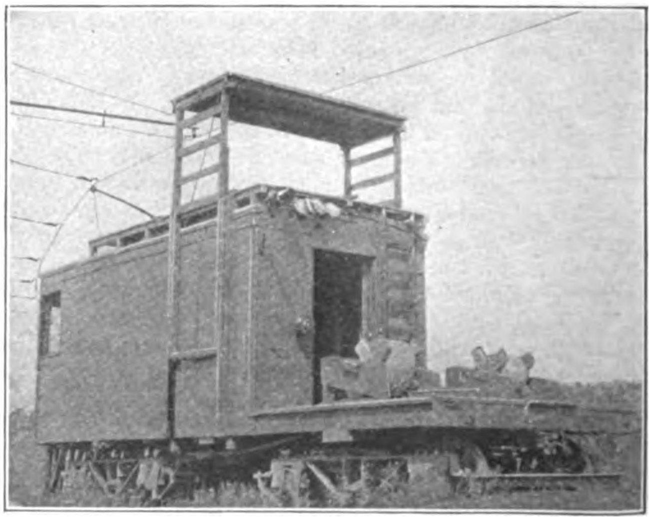
BRAKE CYLINDER, LEVER AND CONTROL VALVE MOUNTED INSIDE CAR

One half-inch twisted chains, by means of which the tower is raised and lowered, are fastened to the counterweighted end of the lever. These chains pass over pulleys suspended from the roof of the car. The one passing out through each side of the car near the roof is fastened to the lower member of the tower leg. The air equipment was so located that these chains would come in the center of the tower supports. The tower has an effective rise of 5 ft.

C. W. Rice, chairman of the employment bureau conducted by the engineering societies, reports that during the ten months ending Sept. 30, 1919, the bureau interviewed 17,083 men, registered 4858 men and 1988 positions, and placed in positions approximately 1000 men. The work is to be continued.



TOWER CAR OF INDIANA RAILWAYS & LIGHT COMPANY



AIR OPERATED TOWER IN POSITION FOR WORK

Fares in Chicago, Cleveland and Philadelphia Compared[*]

The Nominal Fare Tells Only Part of the Story—Actually the Average Fare in Chicago Is Less Than in Philadelphia and the Average Length of Ride Is Greater in Chicago Than in Either Philadelphia or Cleveland—Other Comparisons Made

BY L. A. BUSBY
President Chicago Surface Lines

THERE is a 7-cent fare in Chicago, a 5-cent fare in Cleveland, and a 5-cent fare in Philadelphia.

On this statement it would seem that the car riders in Cleveland and Philadelphia were paying the same rate of fare. But they are not. Car riders in Cleveland are paying 7 per cent less fare than car riders in Philadelphia, although each city has a 5-cent fare.

It would also seem that car riders in Chicago with a 7-cent fare are paying much more than car riders in Philadelphia on a 5-cent fare. The exact reverse is true. The average fare per passenger in Chicago is now 3.92 cents, while the average fare per passenger in Philadelphia is 3.98 cents. The average fare per passenger is determined by dividing the total passenger receipts by the total passengers carried—cash, transfer and free.

"But how is this?" the car rider asks. "There is a 7-cent fare here, and a 5-cent fare in Philadelphia. How can the average fare per passenger in Chicago be lower than in Philadelphia?" The answer is not difficult. To say there is a 7-cent fare in Chicago, and a 5-cent fare in Cleveland or Philadelphia, tells only part—a rather small part—of the story.

While there is a 5-cent fare in Philadelphia, there is also a 3-cent charge for a transfer at 580 out of 900 transfer points—and what is more important—*there is only one transfer.* This means that after you use one transfer, whether you pay 3 cents for it or get it at a free transfer point, you must pay another nickel if you have not reached your destination. In Chicago, you pay 7 cents and get a free transfer, not only one, but as many as you need, so long as you are traveling in the same general direction.

There is a 5-cent fare in Cleveland—and by the way, the fare in Cleveland before the war was 3 cents. But in addition to the present 5-cent fare, there is a 1-cent charge for a transfer, and the average fare is 3.7 cents per passenger—about 7 per cent less than the average fare in Philadelphia and about 5 per cent less than the present average fare in Chicago.

CHICAGO GIVES LONGER RIDES FOR LESS FARE THAN PHILADELPHIA

In Chicago, the percentage of free transfers and free passengers to passengers paying cash fare, is 77.85 per cent—in Philadelphia, the percentage is only 21.35 per cent. This means that in Chicago, for every 100 passengers paying fare, seventy-seven receive and use free transfers, while in Philadelphia, for every 100 passengers paying a 5-cent fare, or 3 cents for a transfer, twenty-one receive and use free transfers. Many of these passengers in Philadelphia are obliged to pay another nickel in order to reach their destination. The result is that in Chicago, with a 7-cent fare, the average fare per passenger is 3.92 cents, while in Philadelphia, with a 5-cent fare, the average fare is 3.98 cents per passenger. It all depends on what you get when you pay your fare.

And in this connection, it must not be forgotten, that during the period from 1910 to 1918 inclusive—nine years—the average fare in Chicago was only 2.83 cents, while in Philadelphia the average fare was 3.98 cents. That is, Philadelphia until Aug. 8 last had a 40 per cent higher average fare than we had in Chicago, and even now has a slightly higher average fare than ours.

Nor is this all the difference. In Chicago, as found by the Parsons Commission, the average ride per passenger on the surface lines is 4.16 miles—the longest average ride of any street railway company in the country; while in Philadelphia, according to the Ford, Bacon & Davis report, the average ride per passenger is 2.79 miles. In Cleveland, the average ride per passenger is 2.19 miles, or about one-half the length of the ride in Chicago.

To put it another way, during the nine and one-half years preceding Aug. 8 last, the average length of ride on the surface lines was 49 per cent longer than in Philadelphia for a fare which averaged 40 per cent less. And in Cleveland where the average fare is slightly lower than in Chicago, the average length of ride is only one-half as great.

But the rate of fare and length of ride are only two of the factors to be taken into account in comparing rates of fare and operating conditions in different cities. There is also a vast difference in the amount of public burdens imposed on the companies.

PAYMENTS TO CITY AND RENEWALS COMPARED

The Cleveland Company is not required to clean, sprinkle or pave its right-of-way in the streets but is required to maintain the paving.

The Philadelphia Company is not required to clean, pave, repave or maintain the paving in its right-of-way. In lieu of this and all other compensation to the city, the company pays the city at present $785,000 per year. For the past nine years these payments have averaged $722,000 per year.

The Philadelphia Company has recently proposed to the city, that the 3-cent charge for transfers could with advantage be abolished, provided the city would eliminate its annual charge of $785,000 and would also abolish the use of transfers in the central business district, it being estimated that the loss on the 3-cent transfers would be fully made up by additional fares collected in the central business district, if transfers were abolished, and by the elimination of the charge of $785,000 a year.

But the Chicago Surface Lines have been obliged not only to maintain the paving in their right-of-way, to clean and sprinkle streets, to pay fees of city inspectors and expenses of Board of Supervising Engineers, but, in addition, to pay 55 per cent of their divisible net receipts to the city. These items have averaged during the past nine years the sum of $2,838,207 per year, or four times the amount required to be paid for like items in Philadelphia

---

[*] Statement issued to the press by Mr. Busby on Nov. 6, 1919. Mr. Busby says that the figures for Philadelphia and Cleveland were taken from published official reports of the companies, or from statements furnished by the management. The figures for Chicago were taken from records of the companies, which are audited annually by a certified public accountant, selected jointly by the city and the companies.

In addition, the Surface Lines have been obliged to pave their right-of-way and has expended for the cost of paving, in addition to the foregoing items, during the past nine years, the further sum of $5,694,971. This means that during the past nine years the Chicago companies have paid in the shape of direct public benefits, in addition to their general taxes, the sum of $31,238,934, while the Philadelphia Company, during the same period, has paid $6,498,000, or about one-fifth as much, while receiving 40 per cent higher average fare.

Nor can anyone say that we have failed to maintain our property and to provide adequate funds for renewals. The Parsons report, in speaking of the high average speed on the Surface Lines said:

> **The reasons for the high speed are partly the wide streets through which many of the cars run, but principally the good physical condition of the roadway and rolling stock, and the ability of the cars to accelerate and retard at high rates.**

As to our renewal fund, let the facts speak: At the end of the last fiscal year the Chicago Surface Lines had a cash balance in their renewal fund of $9,258,932 while the Philadelphia Company had a cash renewal fund of $1,126,801. During the nine years in question, from 1910 to 1918 inclusive, the Surface Lines actually expended for renewals of their properties $15,954,693 and the Philadelphia Company expended $7,428,124 which means that at the end of the nine years, the Chicago companies had more than eight times as much cash in their renewal fund as the Philadelphia Company and had spent for renewals during the period more than twice as much. We are building up a cash renewal fund so that our equipment and other property, when worn out will be replaced by new equipment and new property without increasing the price at which the city may purchase the property.

COMPARISON OF WAGES AND PERFORMANCE

There is also another vital factor to be considered—the rate of wages paid employees. For some years, Chicago and Cleveland have paid their trainmen about the same rate. Since last August, however, the maximum rate for trainmen in Chicago has been 65 cents per hour, as against 60 cents per hour in Cleveland. But during the nine year period we have been discussing, the Chicago companies have paid considerably higher wages than have been paid in Philadelphia. At the present time, the maximum rate for trainmen in Philadelphia is 58 cents per hour, while in Chicago, the maximum rate is 65 cents per hour. And approximately this same difference in wages applies to the employees outside the train service.

While Chicago trainmen get higher wages than Philadelphia trainmen, they are doing more work, measured by the number of passengers carried daily per trainman. The figures for 1918, based on actual number of trainmen required to fill schedules, show 444 passengers daily per trainman in Chicago, and 412 passengers daily per trainman in Philadelphia.

In September, 1919, the average daily wage of trainmen in Chicago was $6.19; in Philadelphia the average daily wage was $5.51. The average day's work in Chicago was nine hours and thirty-two minutes, as against nine hours and thirty minutes in Philadelphia. On that basis, the average yearly wage of trainmen in Chicago, working 307 days, would be $1900, as against $1690 in Philadelphia.

During the nine year period, trainmen's wages in Chicago have increased 116 per cent, and in Philadelphia 151 per cent. The greater increase in Philadelphia is due to the marked difference in wages existing in 1910, at which time the maximum wage in Chicago was 30 cents per hour, and in Philadelphia 23 cents per hour—an initial difference of 30 per cent.

Notwithstanding these differences in operating conditions, the operating cost per car-mile in Chicago during this nine year period has been less than the cost per car-mile in Cleveland, and but little in excess of the cost per car-mile in Philadelphia.

The great fact to be borne in mind is, that during all these years, the Chicago companies have borne these unequal burdens, have set aside an adequate renewal fund, and have built up and maintained a great street railway system on a 5-cent fare, and continued to do so until the great war when an increase of more than 100 per cent in wages within the past four years, and a still greater increase in the cost of most of our operating materials and supplies. made an increase in fares imperative if the companies were to survive and continue to render service.

Even under these adverse conditions, the Chicago companies were able to maintain their credit until the War Labor Board in August, 1918, increased wages $3,700,000 per year. This, with the increased cost of operating materials and supplies, reduced the companies' net earnings to such an extent that it was impossible to sell bonds on any reasonable basis to procure new capital needed for equipment and extensions. And when to this situation an additional burden of $9,000,000 in wages and other operating expenses was added last August, the result, without an immediate increase in fares, would have wiped out all return on the investment and left an operating deficit. The car riding public of this city realized that only on increase in fares could save the situation and have paid the increased fare practically without protest.

CHICAGO RIDERS CONSIDER 7-CENT FARE WARRANTED

A good deal has been said about higher fares resulting in loss by reason of decreased riding. In our judgment, that all depends on whether the patrons believe the increase is fair and reasonable. The best answer to this proposition has already been given by the car riding public of Chicago. The riding per capita today in Chicago under a 7 cent fare is greater than in Philadelphia under the so-called 5-cent fare, being 453 rides per annum per inhabitant in Chicago on the Surface Lines alone, as against 400 in Philadelphia.

Notwithstanding the flood of misrepresentation which has been poured out for years by politicians and others, the great majority of people in Chicago realize the truth of ex-President Taft's statement a year ago that, "A 7-cent fare is about the equivalent of a 5-cent fare before the war," and if this was true in 1918, how much more is it true at the present time with over $9,000,000 added to operating expenses following the wage increase of last August.

The management submits these facts so that the people of Chicago may clearly understand that, taking into account their transfer privileges and their length of ride, it is manifest they are actually getting cheaper transportation in Chicago on the basis of a 7-cent fare than is being furnished in either Cleveland or Philadelphia on the basis of a so-called 5-cent fare.

In submitting this statement, the management is not suggesting increased fares in other cities as the solution of the transportation problem, because operating conditions are widely different in every city. We do say that increased fares are the only solution in Chicago under our present transfer system, our present length of ride, and with the public burdens, including the 55 per cent to the city, which by ordinance are imposed upon the companies.

The question in every city is revenue sufficient to meet operating expenses and pay a fair return upon the investment. A rate of fare which does not do this fails to meet the cost of service, and failure to meet the actual cost of service, whether in Chicago, Cleveland, Philadelphia or any other city, can only end in disaster to the public.

Investment Bankers Discuss Railway Problems

Importance of Utilities to Every Individual—Advantage of Customer Ownership of Stock of Utilities—Importance of Proper Maintenance and Depreciation Funds—Municipal Ownership Not Looked Upon With Favor as Solution

THE Investment Bankers Association of America held its eighth annual convention at St. Louis during the week of Oct. 20. At the closing session, George W. Hodges, New York, was elected president, and Frederick R. Fenton, Chicago, secretary of the association.

The report of the committee on public service securities, of which O. B. Willcox, vice-president of Bonbright & Company, New York, is chairman, is of particular interest to the electric railway field. In his address at the opening of the convention, President William G. Baker, Jr. had the following to say in connection with the work of this committee:

"Perhaps no committee in the association has had more perplexing problems than that on public service securities, because one class of securities with which this committee concerns itself is that of street railway transportation. It is no exaggeration to say that no industry in the country has been more demoralized during the past year than this. It is a situation in which a large proportion of the membership have a very real interest. It is obviously impossible for your committee, or the association, to perform the miracle of making a dollar buy services and supplies quoted at a dollar and a half. But they have followed the situation from the standpoint of the investment banker, and I am saying what they would probably be too modest to assert when I tell you that they have had a very large share in perhaps the most important study that has yet been made of the nation-wide street railway situation.

"In a country like ours conditions are not changed simply by asserting they should be changed. Progress follows the enlightenment of the public and the education of the people as to what is sound and fair. This progress of education is not the work of a few days. The advance only comes as a result of cumulative and constant endeavor. I am telling you no news when I say that the two classes of securities most unpopular today are those covering the railroad and street railway properties. Your association, through the committee to which I have referred, has been assisting in this work in showing the public and the law-making bodies just what it will mean for the country to have these two great industries permanently discredited."

That portion of the report of the committee on public service securities, which is of interest to the electric railway field, follows:

REPORT OF COMMITTEE ON PUBLIC SERVICE SECURITIES

About $15,000,000,000 capital, representing a considerable part of all of the savings of the people of the country, is invested in public utilities, devoted to great community needs, furnishing the common requisites of business and community life, particularly light, heat, industrial power and local transportation. The securities representing these savings are held by thousands of investors, large and small, and by nearly every bank and financial institution of the country, and in endowment funds of churches, colleges, schools, hospitals, and in other trust funds. The integrity of these investments is of direct or indirect consequence to every citizen, and the maintenance of the service and the expansion of the time and money and labor-saving devices of public utilities are incalculably important to every man or woman with an industrial interest in the country whether as investor, employer or wage earner.

While all operating costs and every expense of living have increased, the investor in whatever class of securities has made a compulsory contribution to the common burden in receiving a fixed return in dollars of much depreciated purchasing power. The cost of new capital has also risen. The expansion of utility systems in the last few years has been of limited extent.

The commissions charged with the regulation of utilities have endeavored quite generally to adjust the machinery of regulation to the exigencies of war and reconstruction and have quite generally recognized their most important function, the securing of good service, as even more essential than insistence upon low rates. The regulation of utilities as now practised is by the state utility commissions, and where untrammelled by franchise provisions, legislation or other conditions beyond direct control, it is generally constructive and protective of the investment.

Utilities which are economically sound and which have successfully survived the stress of the war and early reconstruction periods; those which are regulated with the avowed effort on the part of commissions to encourage efficient service, provide good credit, and promote reasonable extensions in the interest of the public through the exercise of the right and the power to raise rates in proper cases, as well as to lower them; such public utilities offer investment in all essentials second to none.

CUSTOMER OWNERSHIP

Most public utilities were originally established and financed in the communities served, but with expansion and large capital requirements, the local financial interests have often been superseded by general public distribution of securities. This is unfortunate. The customer is a better customer and the community more alive to the interests of the local public utility if the securities of the utilities are held in large part by the public served. The customer who is also a security owner will find his interest as an investor protected by equitable rates, which upon reflection he will find that he can well afford to pay as a consumer; the taxpayer will hesitate to throw unjust and inequitable burdens upon property in which he is a part owner, or to contemplate their confiscation through starvation; the local banker who profits by prosperity in his community may well afford the effort to distribute among his customers the securities of local public utilities, upon the success, credit and expansion of which the prosperity and growth of his community depend.

TWO IMPORTANT ITEMS IN UTILITY FINANCING

The investor is primarily interested in the integrity of his investment and this is very largely affected both by expenditure for replacements to offset wear and tear and obsolescence, so that the property which is security for the investment shall be maintained at 100 per cent of its original value, and by provisions which will guard against the loss of the property through foreclosure which may be due to a deficiency in earnings resulting from temporary conditions.

Investors in their own interest may well recognize the insistance of utility operators that adequate provision be made out of earnings for maintenance, replacements and obsolescence, and can even afford to accept a smaller return on their investment in order that large provision may be made to protect their capital. It is fortunate that provisions in mortgages and in conditions for stock issues, for the protection of the property and against injudicious distribution of earnings are becoming more frequent.

On the other hand, the investors in both bonds and junior securities of utilities will find their several interests protected by a small ratio of bonded indebtedness to total values, of bond interest to total earnings, and by provisions against the payment of an undue proportion of the costs of additions and extensions out of the proceeds of bonds, and both the stockholder and the bondholder should wisely guard the safety of their investments by the proper provisions to establish and maintain these safeguards. The bondholder would have a large proportion of equity to safeguard his investment and a smaller proportion of earnings required for his interest; while the stockholder would own his proportionate share of the larger equity and have the protection of a larger proportion of earnings for interest and dividends and therefore run less risk of either suspension of dividends or of default in meeting the provisions of the prior lien security, which might completely wipe out his interest in the property.

CONSTRUCTIVE ATTITUDE OF COMMISSIONS

The Maryland Public Service Commission has recently declared:

"In the course of a relatively few years the street railway has become one of the most important adjuncts to life in all thickly populated communities. With water, gas and electricity, it has become one of the prime necessities of life. Without it, business would come almost to a standstill, and social life in our cities and suburban communities would be most radically changed. So dependent have the people of our cities become upon the street railway, that an interruption of only an hour or so in the service is almost instantly felt throughout the length and breadth of the community, and continuous, bad or inadequate service is a thing which no community will long tolerate if redress of any kind can be found.

"From the above reasons it follows that the prime obligation which any state regulating body, such as a public service commission, owes to the public, in connection with the property and affairs of a street railway corporation, is, first, to see that the property of such corporation is at all times so constituted, equipped and maintained as to enable those in charge of the same to render at all times adequate service to the public; and, second, to see that such character of service is at all times rendered.

"The former proposition requires that the company shall at all times be kept in such a condition, financially, that it can command investments in its property by the investing public, in order that the necessary extensions to meet the demands of a rapidly growing community may be made promptly when and as required; and that its roadbed, power houses, and equipment may always be of a type and capacity to render adequate service economically and efficiently. There is no statutory law which can be resorted to in order to compel the investing public to invest its money in a public utility rather than in any other class of enterprise, and the only laws which can be appealed to are the natural laws of trade and commerce, which lead men to invest their money where it may reasonably be expected to yield them a fair return for its use, and forbid the investment of money where there is no reasonable hope or expectation of such a return."

The Kansas Commission has declared:

"The commission is not unmindful that public interest requires that investments wisely and conservatively made, in securities issued by public utility concerns, should be safeguarded and protected by law. Otherwise, such public utility concerns may not be financed at reasonable rates of interest, and the public thereby secure good service at reasonable rates."

The street railway systems of the country have been built upon the theory that the street car riding public should and would pay all costs of operation, taxes, special assessments, maintenance, depreciation and returns on capitals, and that the benefits to riders were sufficient to justify that theory, regardless of the enormous benefits to others, directly resulting from the operation of the street car lines and their use by the public. Upon that theory, also, towns have been laid out, industries established, residence districts defined, the financial, retail and industrial sections of cities built up, and suburban districts created.

While the attempts to maintain the integrity of some $6,000,000,000 invested in the street and interurban railways upon the 5-cent fare have resulted in the present failure and approaching disaster, and investors in street railways have faced first diminishing returns and now the possibility of total loss, other investors in real estate, in buildings and in industries, utterly dependent upon local transportation and which would instantly become valueless if deprived of it, have doubled and trebled enormous capital. Traffic statistics indicate that, notwithstanding the enormous increase in automobiles, the street cars in almost all cases are carrying more passengers than they did ten years or even five years ago, and more striking still, they are carrying more passengers per thousand of population. If, as the figures indicate, the trolley cars are doing more business per capita than ever before, it is obvious that they are performing an increasingly useful and necessary public service; and it follows that some solution must be found for the difficulties precipitated by fixed fares and depreciated nickels.

On May 15 last the Secretaries of Commerce and Labor laid the matter before the President, who was then in Paris, by cable, resulting in the appointment by the President of the Federal Electric Railways Commission, to study and report on the problem, consisting of representatives of the Treasury Department, the Department of Commerce and of Labor, the National Association of State Commissioners, the American Cities League of Mayors, the Amalagmated Association of Street & Electric Railway Employees, the American Electric Railway Association and the Investment Bankers Association of America. The commission got to work promptly and has held hearings in Washington, in which the views of the several parties in interest have been presented. It is expected that the commission will report before the end of the year.

The street railways have needed about $300,000,000 each year to refund maturing obligations and between $600,000,000 and $700,000,000 new capital each year for improvements and extensions to meet the demands of industry and commerce for local transportation. The destruction of street railway credit has effectually checked expansion and the deadening influence will be increasingly felt in every branch of industry throughout the country, until some plan for credit and investment has been found which will permit the profitable operation and the renewed and continuous expansion of street railway systems.

Is municipal ownership of street railways the solution of the problem? Experiences in public ownership and operation have convinced every honest observer that it is more expensive, and less efficient than private control, and fails to respond to public requirements for expansion and improvement because it is without the spur of private initiative; and that it is dangerous to the public welfare because expert control is replaced by political control. Municipal ownership will be adopted generally as the solution of the street railway problem, it is safe to say, only if no means can be found under private ownership, financing and management, to divide with the public generally or that part of the public specially benefited the costs of adequate, efficient service required for community and industrial welfare and growth, above the returns from the rate of fare decided on as the maximum safe contribution to these costs to be imposed upon the riders. On no other basis can municipal ownership or operation be justified. If resorted to in certain cases, it is also safe to say that the public conscience, unless damaged by demagogs, will approve fair compensation to the private investors whose property may be taken over. Municipal efficiency and credit cannot be built upon municipal dishonesty and confiscation.

Notwithstanding the plight of the street railways as a whole, there are notable exceptions in certain street railway systems which, due to exceptionally favorable conditions of short hauls and density of traffic and in some instances to prompt and equitable increases in rates, have been able to operate successfully and profitably, to meet their obligations and maturities and maintain their credit and obtain new capital on the basis of substantial surplus of earnings and such companies should not suffer through the distress of other less fortunate systems.

Accounting for Depreciation*

Current Provision for Depreciation Is Highly Important—Historical Depreciation Data Useful in Valuations

By John Jirgal
Hagenah & Erickson, Chicago

THE accountant finds many theories advanced with respect to the handling of depreciation, depending upon whether rate, taxation, condemnation or capitalization cases are under discussion. There are also mistaken opinions as to just what is the accepted accounting practice on the subject. For instance, the assumption among many engineers is that when reservation is made for depreciation, a fund is actually established, represented by cash or securities. Such fund is further assumed to be available at all times for the purpose for which it is created and any unused balance is assumed to be earning interest. In practice, the utilities which have established funds are so few as to be exceptional in this regard. The predominating practice is to establish a reserve which, when scientifically set up, merely measures the utility's liability for depreciation which has accrued at the present time but which will be realized at some time in the future. The annual allowance is deducted before the investor receives any compensation because it is only in this way that enough assets are retained in the business to meet the renewal and reconstruction obligations of the utility.

When depreciation first received the attention of the accountant the annual allowance made for this purpose was looked upon merely as an equalization over yearly periods of expenditures which were large and occurred at irregular intervals. To correct this condition of affairs the accountant conceived the idea of setting aside annually about the same amount for depreciation. The amount so set aside was designed to be sufficient over any given number of years to meet all payments for renewals and replacements. The amount over and above such requirements was either left in the reserve or used for other purposes.

About 1907 the period of regulation was ushered in and at about the same time investigations along other lines were being carried on. The outcome of these investigations was the foundation of certain theories of equitable relations between investors, consumers, taxpayers, etc. The result of all these investigations, as far as the accountant was concerned, was to convince him that a more scientific analysis of depreciation requirements must be made in order to insure the payment of renewal and replacement obligations and also to provide for the accrued depreciation which the commissions at that time stated was deductible from the cost of the property in determining the amount upon which a utility was entitled to earn a return. The most natural thing to do under the circumstances was to examine the causes for depreciation and in order to obtain reliable information on the subject the accountant turned to the engineer for data. The result of extensive investigations was the formulation of the life method of making annual appropriations for depreciation. This method of appropriating income, at least in a measure, insured a reserve balance which approximated the accrued depreciation in the property. Many utility companies soon found that their reserves were not sufficient to meet the estimates of commissions on the amount of depreciation, and plans for increasing the reserve balances to correct this shortage were considered.

Administration of Depreciation Fund

The accountant is concerned only with the establishment of the utility's liability for accrued depreciation and the retention of enough assets of whatever description in the business to meet in some way the realized or maturing depreciation. He keeps no specific funds for that purpose alone, but on the contrary by the very nature of his entry permits the temporary use of the reserve for many purposes. When renewals are actually made these temporary borrowings are in effect repaid, although there is no transfer of funds. In order that this point may be clearly understood the following explanation of the accounting practice with respect to this item is made: Suppose a utility has a plant investment of $100,000 against which stands a mortgage represented by bonds to the full amount of such investment. If $10,000 is set aside for depreciation each year and the depreciation reserve so created is invested in new property the utility has at the end of five years a property investment of $150,000, a bond indebtedness of $100,000 and a depreciation reserve of $50,000. At this point the utility may be called upon to renew property worn out in the service to the full extent of the $50,000 provided for depreciation. It is plain to see that there are no funds, in the way of cash or liquid assets, to pay the cost of renewal, but there is a plant investment which is in excess of the amount contributed by investors as represented by bondholders. The officers of the company, therefore, go to the trust company and request an additional $50,000 of bonds for the additional amount of property expenditures. From the proceeds of the sale of such bonds they receive $50,000 in cash which is used to pay for renewal. This transaction wipes out the cash account and the depreciation reserve and leaves a plant investment of $150,000 and a bonded debt of $150,000. In this example the entire reserve is used up for illustrative purposes only. If it is properly set up, such reserve would always have accumulated the accrued depreciation.

The above explanation has been made because it has an important bearing from the accountant's viewpoint, on the question which I am asked to discuss. Such question has been prompted by the situation in which street railway companies at present find themselves and from the explanation which has thus far been made it can be seen that even if a company had in its depreciation reserve every dollar of accrued depreciation which it was estimated it should have, it might not be in a position to make renewals and replacements which are urgently needed. This is so because the earning power of the street railways may be so reduced that no investor will risk his funds no matter what additional investment has been made in the property. This is only another way of saying that investment funds are prompted by two considerations, *i. e.,* the cost or value of the property and its earning power. Both must be present in order to attract funds. If the earning power of the property is so low that there is danger that even the interest on the funds contributed will not be paid, the renewals and replacements must necessarily be deferred until funds are available. The first step, then, is to increase the earning power of the property and this can be done under the present system, only by an increase in the rates of fare.

---

* Abstract of paper presented at meeting of Western Society of Engineers, Chicago, Sept. 8, 1919.

Now it may be that the accountant's method of providing for depreciation is to be condemned for this state of affairs, but it has been based upon the reasonable assumption that the street railways would always be able to earn sufficient to pay a fair return on their investment. If the failure to do this should permanently obtain, then, not only the depreciation policy of the accountants must fail, but the entire undertaking must do likewise.

When it is stated, then, that street railways as a class have not earned the accrued and maturing depreciation, it is important to distinguish whether what is meant is that no cash funds are on hand for renewal purposes or whether the amount earned each year has been such a percentage on reasonable property cost as not to permit of depreciation reservation.

CURRENT PROVISION SHOULD BE MADE FOR ACCRUED DEPRECIATION

Having thus stated the accounting method of handling depreciation there is presented this problem: "Should each generation bear its share in developing the art?" I think that the answer to this query with some qualification can be made in the affirmative and this for three reasons.

1. Because each generation and in fact each year and month within each generation is responsible for the using up of property in direct proportion to the demand which it makes upon the service.
2. Because at any given moment the investment in a utility must be found intact so that transfer of ownership will not result in loss to any of the parties.
3. Because it is only in this way that continuity in service is guaranteed.

This current provision has an important bearing on our whole transportation problem. Our corporate form of management is such that the investors in any undertaking are constantly shifting. Especially is this true of that portion of the investors which is in active control of the management. If accrued depreciation is not provided for currently there is always a question as to who is responsible for the shortage. If dividends are declared before depreciation is provided for then, the more conservative stockholders who follow in control must not only make the depreciation allowance for which they are responsible, but they must also provide for the shortage in the depreciation reserve as well. The public deals only with the property as a continuing entity, and therefore is not concerned with changes in management in so far as such changes effect responsibility for depreciation allowances. To the investor, therefore, the current reservation for depreciation is exceedingly important for it is only in this way that his investment is protected.

Another reason why each generation should bear its share of depreciation is that it is only in this way that service can be made continuous. The setting aside annually on a life basis of an amount for the depreciation of any given unit provides a reserve which, when the unit goes out of service through the action of the agencies of depreciation, permits of its replacement. In other words continuous service cannot be guaranteed unless provision for continuation is made in advance. The importance of continuity of service is lost sight of by those who recognize in matured depreciation the only loss in value which has taken place. They neglect the important factor that when this year's earnings are not sufficient to provide for renewal expense there is no other provision by which such expense can be met.

In summary of what has been said above it may be stated that depreciation should be provided for currently because it is incurred currently, and because it is only in this way that the investment can be kept intact and continuity of service for the present and future generations assured.

But the argument may be advanced that granting all this the situation may still obtain that a utility has been unable to earn sufficiently to provide for any but maturing depreciation. If this fact can be established it would seem that the rate-making base would have to ignore the depreciation element or provide for an allowance by way of going concern value. This argument obtains only in cases where commissions have established depreciated cost as the most important evidence of value.

During the past year increased consideration has been given to cost of reproduction new and original cost as the most important evidences of value, while the advocates of depreciated cost appear to be losing ground. The tendency appears to be toward an annual allowance for depreciation based upon the sinking fund method with undepreciated cost considered as the most important element in value determination.

To those commissions which consider accrued depreciation in valuation matters it is important to submit evidence as to whether depreciation has in fact been earned and this can only be done by an examination of the records covering the entire history of the property. The importance of such examinations is not fully appreciated at the present time. The utilities are inclined to the cost of reproduction as their best basis for valuation claims. The historical data are considered as secondary and very often ignored. The commissions passing on these matters must often content themselves with mere statements of historical facts without much in the way of exhibits, and quite naturally because of the intangible character of such statements they choose to ignore them.

When the historical facts are available it is a simple matter to make a yearly allowance for depreciation such that when the renewal and reconstruction charges which have been incurred are taken into account there is left an amount which represents the accrued depreciation either on a straight line or a sinking fund basis, the basis used depending upon the theory of value held by the regulating body. In order to avoid distinguishing between repair and renewal charges the yearly allowance made should be sufficient to cover both items. This is more in accord with present-day street railway accounting practice and has the advantage of eliminating all disputes on the method of handling maintenance and depreciation items in the past. If one allowance is made to cover both items all charges of whatever nature which have to do with maintaining the property in service condition can be made against such allowance.

In conclusion I may be permitted to emphasize that it is highly important in matters involving depreciation and valuation to have historical facts at hand so that claims with reference to the property can be definitely substantiated. Old records which may appear to have little connection with present investigations may be useful in settling matters now very much in dispute.

News of the Electric Railways

FINANCIAL AND CORPORATE . TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Toledo Company Ousted

Following an Official Announcement of Franchise Vote Railway there Suspends Operation

Unless some plan can be devised to meet the emergency situation created by the adverse vote at the recent election in Toledo, Ohio, it would appear that the Toledo Railways & Light Company must cease operation of all cars in Toledo and that the interurban lines also will be barred from the streets.

Scanning of scattered precincts throughout the city at first indicated that the ouster ordinance would be carried by a majority of 3000 to 4000, but this was reduced by the vote from the fashionable seventh ward and the best residential precincts of the fourth and fifth wards.

The ouster ordinance was passed by the City Council on June 30 last and would have become operative on July 31, thirty days after enactment, had it not been held in obeyance by a petition for a referendum. The total vote in the referendum was 39,157, of which 19,158 were cast for the ordinance and 19,035 against it.

Frank R. Coates, president of the Toledo Railways & Light Company, made the following statement after the unofficial election returns had been reported:

> We do not, under any circumstances want to inconvenience the public. We shall keep on operating cars until we are informed officially whether the ouster has carried.

The company's answer when the official count had been announced was to withdraw service entirely. This was done at 1.30 a. m. on Nov. 10. Not only were the cars withdrawn from service, but they were taken out of Ohio over into Michigan.

Henry L. Doherty, of H. L. Doherty & Company, New York, operating managers of the property, issued a statement declaring that the company wished to obey the law. The people had voted to oust the company. It was their decision and the company proposed to abide by the will of the people.

Merchants, trades people and others are howling for the restoration of service. The Council, however, appears obdurate. On the spur of the moment it voted almost unanimously against the repeal of the ouster measure. Under the terms of the city charter even if the Council changes its tactics and votes, under pressure of the merchants, to repeal the ouster, such repeal will have to be submitted to the voters at another election.

The withdrawal of cars from Toledo has attracted nation-wide attention in the news and editorial columns of the daily press. There has also been started on the rounds of the press a character sketch of Mr. Doherty, which appeared originally in the Philadelphia *Ledger*. The trend of the newspaper comment is that Toledo got exactly what it wanted and deserved.

Mr. Doherty returned to Toledo on Nov. 12 from Kansas City, Mo., whither he had gone from Toledo after service had been withdrawn, and conferred with Mayor Schreiber. As a result a conference was arranged of railway officials, members of the railroad committee of the Council and representatives of the House, who voted to oust the company.

It was stated on Nov. 12 that the Kansas City Railways had made an offer for the Toledo cars. Mr. Doherty was quoted to the effect that the cars were for sale, if the company in Toledo could not make the city see the point.

Meanwhile the trainmen have been heard from. They have adopted resolutions insisting that the men receive pay for the time they are out of employment.

Favor Retaining Sir Adam Beck

The Provincial elections held on Oct. 20 resulted in the defeat of the Hearst government, and Sir Adam Beck, chairman of the Ontario Hydroelectric Power Commission, who ran as an independent candidate in London, Ont., was also defeated. In consequence of this, a meeting was held in Toronto, Ont., on Oct. 29 of about 400 representatives of the various municipalities interested in the Hydroelectric Commission's power and electric railway projects.

The meeting was unanimously in favor of having Sir Adam retained as a member of the commission, and a resolution was passed to that effect on motion of Comptroller Maguire of Toronto, and Mayor Winter of Windsor.

A second resolution was passed providing for steps to be taken to secure a seat for Sir Adam in the Legislature, and a third resolution expressing the feeling of the meeting that it was essential to the interests of the hydroelectric projects to have him continue in office and expressing approval of his leadership in the past.

Mr. Nixon Enters Disclaimer

Public Service Commissioner Lewis Nixon of New York City issued a statement on Nov. 8 announcing his position in the matter of the buses now being operated by the city. Mr. Nixon explained that it appeared to be necessary for the commission to clear its skirts of any responsibility for the buses, and to make it plain that the commission was well aware that the buses were operating without proper authority, but that the commission did not want to interfere as long as the buses served a public need. Mr. Nixon said:

> For months now buses have been running in direct violation of law. This commission has no police power, but when accidents begin the question of proper service demands that this commission so clear its skirts that it may avoid being an accessory.
>
> Doubtless steps could be taken to stop the buses until legal requirements had been complied with, but I did not propose having the city government say that I was the one who stopped them.
>
> Instead, I preferred to have the experiment run its course, and saw no reason why I should pull the chestnuts out of the fire for them. If a private car runs without a state license it is held up by the police. So a letter was written to the Police Commissioner asking him to tell me by what authority such duty is set aside in the matter of buses when transgression is flagrant.
>
> Possibly there is an impression that bus lines run by the city, and in part at the expense of the people, paying no licenses or taxes, irresponsible as to injuries and placed on routes at will, are not subject to regulation by this commission. We shall keep in touch with the situation and see that responsibility is fixed. Again I say that if buses are of real service, and can be regulated in the public interest, they will receive every possible support by this commission.
>
> The management so far is running true to form. Like master, like man, seems to produce rather impudent refusal to recognize any regulation other than the sweet will of some agent whose temporary exercise of power causes an inflated sense of importance.

Inter-Professional Conference

Meeting of Professional Men Planned to Be Held at Detroit in the Interest of the General Public

With the purpose of bringing together the professional men of the country in order to plan more effective relations and act together on matters pertaining to the public good, an inter-professional conference is being called to meet in Detroit, Mich., on Nov. 28 and 29. The conference was suggested by the post-war committee of the American Institute of Architects, which was established to study the new obligations thrust upon the architectural profession by the war.

SUBJECT FOR DISCUSSION ANNOUNCED

It is the hope of those fostering the movement to perpetuate to an appreciable degree the enthusiasm of the war-time service rendered to the public by the professional men of the nation. The subjects which might well come before such an inter-professional organization have been classified under three heads:

A—The functions and inter-relations of professional organizations.
B—Relations of professions to the public.
C—Educational obligations of the professions.

The Detroit program provides for an opening session in which representatives of the various professions will give their views as to the desirable objects, scope, method of procedure and organization of an inter-professional body. Following this discussion, which will be opened by Thomas R. Kimball, president of the American Institute of Architects, the purpose is to appoint a committee on plan and scope which will be asked to report on the succeeding day, when, if necessary, both sessions will be devoted to a discussion of the committee's report and to the permanent organization of whatever type of body may be agreed upon.

MANY PROFESSIONS REPRESENTED

To date, among others, representatives of medical, legal, education and construction professions have accepted membership on the organizing committee. It includes Dr. Alexander Lambert, president of the American Medical Association, New York; Thomas R. Kimball, president of the American Institute of Architects, Omaha; Calvin W. Rice, secretary of the American Society of Mechanical Engineers, New York; Frederick L. Ackerman, New York; Felix Adler, New York; Charles A. Beard, New York; Charles A. Boston, New York; N. Max Dunning, Chicago; Henry W. Hodge, New York; Robert D. Kohn, New York; Arthur D. Little, Cambridge, Mass.; Basil M. Manly, Washington; Milton B. Medary, Jr., Philadelphia; George A. McKean, Detroit; E. J. Mehren, New York; Frank A. Waugh, Amherst, and Charles H. Whitaker, Washington.

The office of the organizing committee of the Inter-professional Conference is at 56 West Forty-fifth Street, New York. The meeting in Detroit will be held at the Hotel Statler.

Detroit Mayor Disagrees With Commission

Settlement There Depends Upon Reconciling Views of the Mayor, the Street Railway Commission and the Council

Mayor James Couzens of Detroit, Mich., has presented his views on the recent Street Railway Commission report in a communication to the City Council. The Mayor stated that in his belief the Board of Street Railway Commissioners and the engineers of the board had given the most thoughtful consideration to the necessities of the situation. Evidence was shown that careful surveys had been made as to location of population, trend of traffic and the probable developments of the future. In view of the fact that the center of the city is reached by radial streets, providing facilities for getting to the downtown section by subway lines as proposed in the report, the suggestion of the board in this connection is agreed to. The proposed surface line extensions, rerouting, etc., were also approved in a general way by the Mayor.

NO PLAN FOR FINANCING

It is pointed out that the commission's report does not state how the proposed subways or dips are to be financed. In asking that the Council favor the financing of the subways by issuing general public improvement bonds without provision for sinking funds, and providing for the interest thereon being placed on the general tax roll, the Mayor emphasized the fact that the necessity of the subways is not brought about wholly by the needs of the car riders themselves, but rather for the relief of congested surface traffic. These conditions are attributed to the large increase in the use of the automobile, the immense growth of the city and the consequent handling of commodities over the streets. In as much as the car riders are not responsible for these conditions, they should not, in the Mayor's opinion, be required to bear the expense of putting the cars under the surface.

In the matter of financing the surface line extensions, the Mayor states that one of the objections to having the financing done by the Detroit United Railway is the cost to the company of raising the money, which cost must be added to the fares. According to the report 147.54 miles of track at a cost of $11,113,650 are needed. Other expenses would bring the total to $16,613,650. To raise this amount Mayor Couzens estimates would cost the company including brokerage discounts, etc., 10 per cent of the principal, or $1,661,365. On the other hand, judging from the city's ability to borrow money, the city would be able to finance these extensions on a 4½ per cent basis, thereby saving $913,749 a year.

MAYOR OUTLINES HIS OBJECTIONS

What the Mayor asserted were unsurmountable objections to entering into an agreement with the street car company embodying the best features of the Tayler, or Cleveland, plan were enumerated as follows:

1. It would be obviously necessary to agree at a valuation of the now existing property and the subsequent approval of the people to such a valuation.

2. It would mean the absolute death of municipal ownership even though a price were agreed upon, because the people would never consent to purchase at a price on which they might even be willing to pay interest.

3. It provides city control of the operation of the cars by the dictation of the schedules, number of cars, routes, and other conditions directly affecting the public comfort. It is inconceivable that the city, having failed in its control of the company under present conditions, would be able to control the company after it had once got a definite term agreement.

To the Mayor an agreement to guarantee a return on the company's investment would mean that the company would have no interest whatsoever in the rate of fare because it would be permitted to charge any rate of fare that would insure the 6 or 7 per cent agreed return on the investment. Briefly, there would be no incentive for economy or efficiency.

The main difficulties to the plan as set forth by the Mayor are:

1. Providing funds for extensions.
2. Providing a sliding scale of profit so that the company has an incentive to economize after the regular interest is earned.
3. The 6 per cent interest provided for is inflexible and does not take care of the costs of capital for investment in street railway utilities.
4. The plan under which the number of cars for service is determined does not lead to satisfactory conditions of car loading nor of frequency. The standards of car loading applied in Cleveland call for a larger proportion of standing passengers than is permitted by any standards ordered or recommended by any regulating authority. The question of standards of service has a very important bearing upon the rate of fare.
5. Absolutely controlling the character of expenditures made by the company is a great difficulty.
6. Determining the value upon which earnings are allowed.
7. Determining the amounts allowed for operating expenses, legal expenses, depreciation, deferred depreciation, cost allocated to interurbans, etc.

To carry out the plan of constructing a subway requires future legislation, specific authority being necessary to undertake the construction of it. This means asking the Governor to call a special session of the legislature.

In concluding his report the Mayor suggested to the Council that a proposition be submitted to the people authorizing their public officers to issue public utility bonds to build the surface extensions recommended and to purchase all such necessary equipment as will give the service thereon needed; that the legislature be asked to pass legislation to permit or require an interchange of use of the Detroit United Railway and city trackage facilities, thereby permitting the use of complete electric railway facilities of the city, eliminating the objections to the so-called piece-meal construction plan.

There are now three parties to the controversy, the Mayor, the Street Railway Commission, and the Council. It is realized that the first thing to be done is to decide upon a plan which will be indorsed by both the Mayor and the commission as well as the Council, before the voters are asked to decide for or against it, as nothing could be gained in asking the voters to support a scheme upon which the administration and commissioners cannot agree.

Wage Increase Follows Arbitration

A wage increase of 8 cents an hour, which means an annual expenditure of $150,000, has been granted the employees of the Memphis (Tenn.) Street Railway by the board of arbitrators. The back pay under the award will amount to $25,000. The new rate is retroactive to Aug. 1.

The motormen, conductors, barn and shop repair men will work a minimum of eight hours and a maximum of eleven hours daily. The board of arbitrators after an executive session and deliberation lasting twenty-four hours decided on the shorter working time and also ruled that the men were not entitled to their demand for an average wage of 75 cents an hour.

Roane Waring, H. P. Hanson and Bishop Thomas F. Gailor, arbitrators, ruled that the dual check system of registers was not too intricate. On the question of heaters for vestibules the board decided in the negative. The scale of wages as adopted by the board is as follows: 42 cents an hour for the first six months; 45 cents for the next eighteen months, and 48 cents for two years or more of service. The old scale of wages, put in effect fifteen months ago, was as follows: 38 cents an hour minimum and 40 cents maximum.

T. H. Tutwiler, president of the company, said that the decision, increasing the company's expenditures as it does, would have a bearing on the company's request for increased fares before the State Utilities Commission. The commission appointed to appraise the property of the company is expected to report soon. Following this the company may submit any additional facts desired. The wage increase will of course be brought to the attention of the appraisal commission.

Paving Cost a Problem

Seattle Must Decide Whether Its Municipal Electric Railway or Property Owners Shall Pay

At a special session recently, the City Council of Seattle, Wash., adopted a general policy, which is later to be expressed in the form of an ordinance, requiring the electric railway department to defray the cost of paving its right-of-way in the residence districts, and to assess the cost of paving between the car tracks in business districts against the property, abutting upon the street improvement.

Thomas F. Murphine, Superintendent of Public Utilities, is preparing to make a strong fight on the proposal when it comes before the City Council in the form of an ordinance. Marked differences of opinion were expressed by the members of the Council. Mayor C. B. Fitzgerald takes the position that it is unjust to saddle the street paving costs on the railway. The Mayor is strongly opposed to raising fares, which it is generally conceded will be inevitable if the lines must bear franchise obligations. Mr. Murphine calls attention to the fact that the municipal railway is asked to pay for street paving and build streets for the use of other traffic, including its competitors, the jitney buses.

About a month before the city began the negotiations for the purchase of the Puget Sound Traction, Light & Power Company's lines, a report filed by Mr. Murphine recommended that the company be relieved of certain obligations on condition that service be continued at a 5-cent fare. During the negotiations between the city and the private company, Mr. Murphine's report was the basis on which the probable returns to the city on a 5-cent fare were estimated. Members of the Council who were most active in pushing the deal continually referred to the fact that under municipal ownership, the system could be operated without the obligations required of a private corporation.

Tunnel Talk Again

Project for a Route from Manhattan to Staten Island Revived—Two Routes Are Proposed

The city administration of New York has decided to build a tunnel to Staten Island. Surveys, maps, and plans are now being made by engineers under the direction of John H. Delaney, Transit Construction Commissioner. The actual work of constructing the tunnel is expected to begin in the coming year. The most important question to be decided now is the route.

PUBLIC HEARINGS PLANNED

Public hearings will be held by Commissioner Delaney to obtain the consensus of opinion as to whether the tunnel should connect with the Fourth Avenue subway in Brooklyn and extend to St. George, Staten Island, from a point at Sixty-fifth Street, Brooklyn, or whether it should connect with the Interborough subway at the Battery.

It is stated that the city officials favor the Brooklyn connection. The reason given is that the distance is only about 2 miles, in comparison with the 5 miles from the Battery to St. George. It is explained that a tunnel could be built under the shorter stretch of water for about $12,000,000, which is something like $6,000,000 more than the estimates made before the war; that a tunnel from the Battery to Staten Island would cost about $20,000,000, and that the long trip direct from the Battery to Staten Island, during which no passengers could be picked up, would be very serious from an operating standpoint.

It was said that the lack of money might delay the actual beginning of the work, after the route had been decided upon, for six or nine months. With a tunnel operating from Richmond Borough, it was said, past inconveniences from strike of ferry and longshore workers would be wiped out, supplies could be brought to all points of the city from the New Jersey shore in case of need, and the residents of Staten Island would not again be marooned because of a strike of the ferry hands.

OBJECT TO BROOKLYN ROUTE

The Staten Island subway committee, which has been urging a tunnel connection with Manhattan instead of with Brooklyn, objects to the attitude of those city officials who want the proposed tunnel connected with the subways operated by the Brooklyn Rapid Transit Company, instead of those operated by the Interborough Company.

Legislating Against the Interurbans

Councilman John W. Reynolds, of Cleveland, Ohio, has prepared an ordinance that, if passed, will compel interurban cars to stop at the city limits and force passengers to transfer to the already crowded city cars. He contends that the interurban cars operating over the city tracks have caused most of the track and pavement troubles. The Tayler grant, under which the Cleveland Railway operates, provides for the payment of 25 cents per car-mile by the interurban companies. According to Mr. Reynolds, this amounts to $125,000 a year, while the city is compelled to spend many times that amount in track and pavement repairs. To compel the interurban railways to stop their cars at the city limits would put Cleveland in the same position as regards interurban railways that Cincinnati has labored under for years. Within a few years provision will be made for bringing the interurban cars into Cleveland over the Van Sweringen right-of-way.

Councilman Mitchell has prepared an ordinance that would limit electric freight trains to two cars. The present ordinances allow three-car trains to be operated, but the roads have not yet exercised this right. Street Railway Commissioner Sanders has ruled that the City Council has authority to limit the number of cars that may be operated as a train.

Trenton Wage Award Announced

The board of arbitration which recently took up the wage question for the employees of the Trenton & Mercer County Traction Corporation, Trenton, N. J., has instructed the company to grant the following increase:

Platform men employed for first three months, 46 cents an hour; nine months, 48 cents an hour; more than nine months, 50 cents an hour; 5 cents an hour additional for all employees engaged in teaching new motormen and conductors; time and a quarter for all employees who work over the schedule time of runs, the same pay to apply to men employed on snow plows and sweeper work and carhouse work; 5 cents an hour additional for operators of one-man cars, and a pro rata increase to all other employees. All extra platform men are to receive pay for six hours a day.

The new agreement is to expire on April 1, 1921. The increase pay is to date from July 1, 1919. The operators of one-man cars have been receiving 47 cents an hour. They demanded 75 cents. Other platform men have been receiving 42 cents an hour. They demanded 50 cents an hour.

News Notes

City Votes Purchase Funds.—On Nov. 5 the Municipal Council of Attleboro, Mass., appropriated $30,000 as its share of the purchase price of the Norton, Taunton & Attleboro Street Railway. Another $5000 was voted to cover the purchase of equipment and supplies.

Calls on Men for Arbitration.—The "Mayors' Committee," comprising executives of towns in the vicinity of East St. Louis, Ill., who have interested themselves in the dispute between the employees and the management of the East St. Louis & Suburban Railway, met on Oct. 23, and passed a resolution calling on the railway employees to submit their demands to the State Board of Arbitration.

First Installment of Back Pay.—The United Railways Company, St. Louis, Mo., recently paid its trainmen the first of six installments of back pay awarded by the Public Service Commission, to which the controversy on wages was submitted. The total payments will be $684,000, the October installment being $114,000. The back pay dates from the expiration of the old contract on June 1. The men are now being paid at the rate of 50, 55 and 60 cents an hour, according to length of service.

Strike in Aberdeen.—The trainmen of the Grays Harbor Railway & Power Company in Aberdeen and Hoquiam, Wash., are on strike, supporting union linemen, who walked out because of alleged violations of the closed-shop agreement. All cars between Aberdeen and Hoquiam and Aberdeen and Cosmopolis are also idle. To date power for operation of the industrial plants of the city has not been interrupted. The management of the company has declined to grant the demands of the men.

Drive for Membership in American Association of Engineers.—The American Association of Engineers contemplates a national drive for membership along the lines used in obtaining subscriptions to Liberty Bonds. The ninety clubs and chapters will divide their members into membership teams, each with a certain territory to cover, under the supervision of a team captain. Prizes will be given for the largest accessions to membership. It is hoped to increase the number of members from 8500 to 10,000. The drive will take place during the first two weeks of December.

Fender Trial in Washington.—A demonstration of a new type of "pick-up" fender will be held in Washington, D. C., before the Public Utilities Commission on Nov. 17. Motion pictures of the fender in operation will be shown and a working model of it will be submitted to the commission for inspection. The commission now has under consideration a request from the local companies, submitted several months ago, that fenders be abolished entirely. Fenderless cars have been in operation on certain lines in Washington since that time. The commission will hold in reserve any decision on the fender question until after the demonstration of the new fender.

East St. Louis Men Make Demands.—The East St. Louis & Suburban Railway, East St. Louis, Ill., in contesting the demand for increased wages which have been made by its conductors and motormen shows a table in the East St. Louis *Daily Journal* comparing the wages paid in a large number of cities in the Central West in 1916 and in August, 1919, together with the percentage of increase in the three years. The increase in wages paid East St. Louis trainmen in 1919 over 1916 was 88 per cent. It exceeded the advance made in all but two of the cities included in the list, those being Davenport and Des Moines, Ia., where the increase was 93 and 100 per cent. The East St. Louis trainmen have voted to strike unless their demands are met.

Court Authorizes Paving.—An order was issued by Judge William I. Grubb, of the United States District Court at Birmingham, Ala., on Nov. 1 authorizing Receiver Lee C. Bradley, of the Birmingham Railway, Light & Power Company to proceed with the paving of Tuscaloosa Avenue. The company is required to pave between its rails and a strip 18 in. wide outside of its rails. According to a statement filed by the receiver in the Federal Court the work will cost $100,000 exclusive of the rails, which have already been purchased by the company. The contract for the paving of the remainder of the street was let by the city to the Dunn Construction Company in 1917, but the work has been held up because the Birmingham Railway, Light & Power Company was not prepared to pave its portion of the street.

Financial and Corporate

Shore Line Receivership

Proceedings Reviewed Covering the Appointment for City and Interurban System in Connecticut

As noted previously in the ELECTRIC RAILWAY JOURNAL R. W. Perkins, president of the Shore Line Electric Railway, Norwich, Conn., has been appointed receiver of the company. The application was brought by the United States Trust Company, New York, and others, executors of the will of M. F. Plant. The application stated that the estate owns 6,921 shares of the 7,000 shares of common stock, 2,898 shares of the 3,000 shares of preferred stock, both of a par value of $100, $2,725,000 of bonds, and $3,460,000 of the $3,500,000 of debentures.

REASONS FOR ACTION

The plaintiffs set forth that the outstanding accounts must be paid and that actions are threatened that would interfere with the complete operation of the road and that its assets are in danger of waste through litigation and attachments. The plaintiffs also alleged that there was urgent need of a receiver to take possession of the property and franchises in order to protect the interests of the creditors and stockholders.

Following his appointment Mr. Perkins made a statement in which he said in part:

> The owners of the Shore Line Electric Railway have secured the appointment of a receiver for the protection of its creditors.
>
> This action seemed necessary because of the fact that the property, as a whole, for the first six months of the year 1919 operated at a material loss, the gross revenue not being sufficient to meet actual operating expenses, exclusive of taxes, rentals and interest, and the expectation for the coming three months, based upon the earnings of 1918, indicate a still further loss in actual operating expense.
>
> It will be remembered that in the testimony before the special commission at Hartford last winter the statement was made that the trend of expense, as compared with earnings, was such that it would not be possible to operate the properties after Labor Day without material loss, and that the community was facing the failure of at least some of its transportation service. This condition has been emphasized by the recent strike of employees and would also have been emphasized had an increase of wage been granted. Just what is to be the future of the properties in eastern Connecticut is a problem, the solution of which will call for the co-operation of all who are in any way interested in the continuance of electric railway transportation.
>
> The Shore Line has never been a profitable investment, and it is now numbered among the many properties in New England and outside of it that have been compelled to surrender to the inevitable where gross revenue does not equal operating cost.

Mr. Perkins then reviewed electric railway conditions generally.

MR. PERKINS ALSO APPOINTED IN RHODE ISLAND

After Mr. Perkins had been appointed by the court for the Connecticut lines of the company Herbert W. Rathbun, acting for the executors of the estate of Mr. Plant, presented a petition for the appointment in Rhode Island of an ancillary receiver to take over the properties of the Shore Line Electric Railway. He stated that Mr. Perkins had just been appointed receiver by a judge of the Superior Court for New London County for the Connecticut properties under a bond of $50,000. The properties in Rhode Island include the lines between Westerly, Watch Hill, Pleasant View, Weekapaug, Ashaway and a part of the Norwich and Westerly system and appurtenances. Judge Dunn promptly entered a decree appointing Mr. Perkins temporary ancillary receiver to operate the road in Rhode Island and make contracts for a period of three months.

No Deposits Now

Mention is made elsewhere in this issue of the appointment of a committee in the interest of the holders of the first and refunding mortgage 5 per cent bonds and the three-year secured convertible 7 per cent notes of the Interborough Rapid Transit Company. The committee, of which J. P. Morgan is chairman, does not deem it necessary at the present time to ask for the deposit of bonds and notes, but it did make a public statement. It said:

> The Interborough Rapid Transit Company, notwithstanding great increase in its operating costs and the maintenance of the 5-cent fare, has been able thus far to pay its fixed charges upon the first and refunding mortgage 5 per cent bonds and three-year secured convertible 7 per cent notes.
>
> As the issuing bankers, we are deeply interested in the continuance of such payments and the avoidance of defaults. For some time past we have informally conferred with others similarly interested as to the propriety or necessity of taking steps in the interest of the holders of such bonds and notes. We have caused careful analyses of past and prospective earnings of the subway system to be made, but it has not heretofore appeared that concerted action was necessary to protect such investments.
>
> We have always believed, and we still believe, in the inherent soundness of investments in the bonds and notes. In view, however, of the general traction situation in New York and in response to requests from the holders of large amounts of the bonds and notes, we have agreed to head a committee, to act when necessary or advisable, to further the interests of the holders of such securities.

Yonkers Road Still Going Behind

The Yonkers (N. Y.) Railroad, in its condensed income and profit and loss statement for the quarter ended June 30, 1919, filed with the Public Service Commission for the Second District, shows:

Operating revenues	$273,873
Operating expenses	238,886
Net operating revenue	$ 34,987
Taxes assignable to railway operations	8,982
Operating income	$ 26,004
Non-operating income	266
Gross income	$ 26,270
Deductions from gross income:	
Rents	35,713
Interest on funded debt	12,500
Interest on unfunded debt	20,545
Total deductions from gross income	$ 68,758
Net corporate loss	$42,488

From the above a loss of over $42,000 is shown for the quarter. The railway operating expenses and revenues, if maintained during the year, would thus show a total loss of something less than $170,000 for the twelve months.

This is the first report made public by the Yonkers Railroad covering any part of the period during which the extra fares have been collected. It was on April 28 that the extra fares to points outside of the city limits were put into effect. The report shows receipts and disbursements for two of those months—May and June—and three days of April.

Brooklyn Road States Its Case

Shows Its Stock Is Held Mostly Locally by 1472 Individuals, etc., 742 of Them Women

On Oct. 28 Frank Lyman, president of the Brooklyn (N. Y.) City Railroad, recently separated by court order from the rest of the Brooklyn Rapid Transit System, addressed the following letter to the stockholders of the Brooklyn City Railroad:

> The property of your company, which was leased to the Brooklyn Heights Railroad on Feb. 14, 1893, was operated by that company until the latter was placed in the hands of Lindley M. Garrison, receiver, under order of United States District Judge Mayer, on July 14, 1919.
>
> The receiver in compliance with an order of the court, failed to pay on Oct. 1, 1919, the rental as provided in the lease of the Brooklyn City property by the Brooklyn Heights Railroad, and the officials of your company thereupon demanded the return of the property. This demand was ordered to be complied with, and the receiver of the Brooklyn Heights Railroad, by court order, ceased to operate the lines of your company at midnight between Oct. 18 and 19, 1919, at which time your company began the independent operation of its properties under the direction of its own officials.
>
> The gross receipts from the operation are encouraging, and it is hoped will exceed the operating costs. It is impossible, until the period of operation has been much more extensive, to submit estimates of earnings, or operating costs.
>
> Your directors hope that ultimately the state and city authorities will relieve surface railroads from their present universal embarrassment. Every share of your capital stock was paid for in cash, a dollar in money for a dollar in stock, and we cannot believe that a fair return will be denied on such an investment devoted to the public service.
>
> Demand for a fair return upon the property of the Brooklyn City Railroad should now be made by its shareholders, a great number of whom are Brooklyn men and women, the guardians of children and the trustees of deceased shareholders. They live in this borough, and wish it well, and only ask a fair return for the service they are giving their fellow citizens. If every shareholder will be at pains to inform himself or herself of the justice of our claim, and then make known the facts, a just public opinion will be created.

There was appended the following analysis of the stock list of the company:

	Number of Holders	Shares	Par Value
Women	742	391,951	$3,919,510
Trustees, administrators, executors, guardians, life insurance companies, charitable institutions and colleges	208	407,799	4,077,990
	950	805,750	8,057,500
Other corporations, individuals, etc.	522	394,250	3,942,500
Total stock list	1,472	1,200,000	$12,000,000

Merger Urged for Ohio Roads

The State Public Utilities Commission on Nov. 4 issued warning to the Union Bank & Trust Company, trustee for the Cincinnati & Columbus Traction Company, that unless service was maintained to Owensville, Ohio, heavy penalties would be exacted for failure to comply with the commission's orders. The company has at various times sought to discontinue service, receiving at one hearing a grant to discontinue its service beyond Owensville; now the company seeks to shut off service from Norwood to Owensville, which resulted in a protest from Owensville citizens.

Citizens of Hillsboro, Ohio, a village beyond Owensville, without electric railway service for some time, have appealed to B. H. Kroger, owner of the Cincinnati, Milford & Blanchester Traction Company, urging a merger of this line with the Cincinnati & Columbus Traction Company. As the latter company is desirous of discontinuing operation, the merger is generally regarded as the most practical solution.

Richmond Company Has Smaller Surplus

The annual report of the Virginia Railway & Power Company, Richmond, Va., for the year ended June 30, 1919, shows a surplus after taxes, charges and depreciation, of $435,332, equal to $5.45 a share earned on the $7,999,400 preferred stock. In the preceding year surplus was $958,645, equivalent after preferred dividends to $3.39 a share on the common stock. The consolidated income account for the year compares as follows:

	1919	1918
Gross receipts	$8,429,283	$7,457,530
Operating expenses	5,393,533	4,100,493
Net earnings	$3,035,750	$3,357,037
Other income	154,771	115,865
Total income	$3,190,521	$3,472,902
Taxes, interest, etc.	2,104,706	1,924,378
Other charges	144,732	120,077
Depreciation	505,757	469,802
Balance	$435,332	$958,645
Preferred dividends	239,976	479,952
Common dividends	†300,679	179,243
Deficit	$105,323	*$299,450

* Surplus.

† Paid in stock of Old Dominion Iron & Steel Corporation.

St. Louis Earnings Increase

An increase in revenue of $123,790 for the last three months over the preceding quarter is revealed in the quarterly report of the United Railways, St. Louis, Mo., filed with the City Register on Oct. 15. The total revenue for the quarter was $3,846,605. The daily average gain for the three months ended Sept. 30 in passengers carried is given as 9,814 passengers over the previous period, totaling 885,746 passengers.

The report also shows a daily average increase of 22,434 passengers over the similar quarter last year. The total number of passengers carried during the quarter was 63,504,230, of which 7,289,462 were 7-cent fares, 55,114,329 were 6-cent fares, 51,566 were 5-cent fares in the county, 78,371 were 3.5-cent child fares and 970,512 were 2.5-cent child fares. The number of cars, on an average, used daily during the last three months, is given at 1280 for days of week except Saturday and Sunday. For Saturday the average is given at 1,178 cars and for Sunday an average of 723.

The fifth monthly report of Rolla Wells, receiver for the company, was filed in the United States District Court on Oct. 14 and shows that the company had twice as much money on hand at the conclusion of the month of August as it did at the end of July. On July 31 the cash on hand amounted to $577,725, while exactly one month later the balance on hand was $1,010,543. During the month of August the company collected a total of $1,418,400, while the disbursements amounted to $985,583. Of the receipts for the month more than $1,300,000 was realized from fares.

Sale Under Foreclosure Confirmed

The protective committee of the Lewiston, Augusta & Waterville Street Railway first and refunding 5 per cent mortgage bondholders, who bid in the property at the sale held in Auburn, Me., Sept. 5, complied with all necessary requirements and the sale has been confirmed by Judge Morrill.

The Lewiston, Augusta & Waterville Street Railway has been reorganized under the title of the Androscoggin & Kennebec Railway, following the sale of the property of the company at public auction early in the fall. Alfred Sweeney, Lewiston, continues as general manager. The service on the Turner branch, the property of which was sold without the franchise, has been discontinued.

Municipal Railway Head Optimistic

In a communication filed recently with the City Council, Thomas F. Murphine, superintendent of public utilities, in charge of the Seattle (Wash.) Municipal Railway, said:

> Our increase for this year over the receipts of the company, combined with the city lines of last year, will approximate 11½ per cent. If this increase should continue for the first three years at even 7 per cent (which is less than the average percentage of yearly increase in the city's population during the last ten years) the year ending March 1, 1922, will show revenue more than sufficient to make the first payment on the bonds, and unless non-paying extensions are authorized by your honorable body, our expense of operation will not be materially increased. This without any further savings in the way of economies in operation.
>
> It will be remembered that among the various demands of the traction company, during the negotiations which resulted in the purchase by the city, were those providing for a 6-cent fare, with 1 cent additional for transfers, and the abolition by the city of jitney transportation, and that the city officials were willing to grant all the demands to the company except the 6-cent fare and the 1 cent additional for transfers.
>
> This department has not asked that the jitney transportation be abolished for the reason that at the present time, during the peak load, we believe the jitneys are performing a good service, but the city is at present losing approximately $1,000 a day to the jitneys during the off-peak hours when our cars are running at not to exceed a 10 per cent load, and we again recommend to your honorable body that this jitney transportation be so regulated that it will furnish service when and where needed and do away with useless and senseless competition.
>
> As before stated, this would increase our net revenue approximately $1,000 a day and would just about meet the increase in wages which we understand your honorable body expects to put into effect on Oct. 1.
>
> Action such as has been suggested in the interest of the Seattle Municipal Railway has been taken by city officials in practically all cities of the United States for the benefit of private companies and also the private companies have been allowed to increase their fare to 6, 7 and even as high as 10 cents. Surely such action would be justified by a city not only to protect its own investment but to keep the fare down to 5 cents.

Kansas City Reports Deficit of $2,391.115

The comparative income statement of the Kansas City (Mo.) Railways, for the fiscal years ended June 30, 1919 and 1918, follows:

Year Ending June 30	1919	1918
Income from transportation	$6,414,148	$6,622,706
Income from power sales, etc.	1,614,449	1,549,698
Gross earnings	$8,028,598	$8,172,404
Wages and expenses—transportation department	$2,916,025	$1,985,609
All other expenses—shops, power plant, maintenance, coal, etc.	5,119,839	4,538,787
	$8,035,865	$6,524,396
Taxes	515,460	517,125
	$8,551,325	$7,041,521
Loss in actual operating (1919)	$ 522,737	
Net operating income (1918)		$1,130,882
Interest	1,868,387	1,569,901
Deficit	$2,391,115	$ 439,019

It will be noted that while the gross earnings from July 1, 1918, to June 30, 1919, decreased $143,806 over the corresponding period for 1917-1918, the wages and expenses in the transportation department increased $930,416.

New Hampshire Towns Take Over Roads

Exeter and Hampton, in New Hampshire, have taken over the Exeter & Hampton Street Railway, which serves those two towns and the town of Hampton Falls and runs from Exeter to Hampton Beach. The voters of Hampton have appropriated $60,000 to buy the franchise and rolling stock of the road and to operate it in conjunction with the other two towns. The voters of Exeter have adopted three propositions, a committee to determine which will go into effect.

One of the plans suggested appropriates enough money to buy one-fourth of the railroad and to operate it in co-operation with the other towns or to hire some private individual to operate it.

The second proposition which has been advanced is to let somebody operate the road and have the towns guarantee its operation against loss, Exeter appropriating $25,000 a year for the next five years to meet its share of a deficit in operation.

The third proposition is to operate the road municipally and each town pay a straight operating subsidy, the deficits to be met by taxation. The price fixed upon for the municipal purchase of the railway is the value of the equipment of the road as junk.

Financial News Notes

One-Year Notes Offered.—A syndicate headed by the Fidelity Trust Company, Baltimore, Md., is offering for subscription $550,000 of one-year 6 per cent collateral trust notes of the Hagerstown & Frederick Railway, Frederick, Md., operating 91 miles of road in Maryland and Pennsylvania.

Arranged to Pay Notes.—The Reading Transit & Light Company, Reading, Pa., announced recently that arrangements had been made to pay on Oct. 7, 1919, the two-year 6 per cent gold notes which matured on Aug. 1, together with interest thereon at the coupon rate to said date.

Interest Payment Announced.—It was recently announced that the semi-annual interest which became due on Aug. 1, 1919, on the $1,750,000 of first mortgage 5 per cent bonds of the City & Suburban Railway, Washington, D. C., of 1948 would be paid at the office of the Baltimore Trust Company on Nov. 1.

Washington Merger Postponed.—The *Financial Chronicle* says that the plan for the merger of the Washington Railway & Electric Company, Washington, D. C., and the Capitol Traction Company has been postponed "to see how the recent 25 per cent increase in fares will effect the financial status of the companies."

Not Earning Guaranteed Return.—The Dallas (Tex.) Railway has published its financial statement covering the month of August and the twenty-three months it has operated under the service-at-cost franchise, showing that the company has failed by $413,948 to earn the 7 per cent return on the agreed valuation of the property as permitted under the terms of the franchise.

United Railways, St. Louis, Mo.—Another improvement announced by the United Railways is a proposal to establish fifteen new substations at an approximate total cost of $450,000.

Interest Payment Deferred.—Powell Evans, president of the Schuylkill Railway, Girardville, Pa., recently sent notice to the bondholders that the interest due on Oct. 1, on the first consolidated 5's of 1939 (about $640,000 outstanding) and on the $500,000 of Schuylkill Traction Company first mortgage 5's of 1943 has been deferred. The company recently offered its road for purchase by the municipalities through which the line operates.

Debentures Hold.—In compliance with a decree of the Supreme Court of Connecticut, Judge Green of the Superior Court has entered final judgment in the $10,000,000 ouster suit of the Connecticut Company, New Haven, against the New York, New Haven & Hartford Railroad. The judgment prevents the electric railway from declaring null and void debentures purchased by the New York, New Haven & Hartford Railroad and secured on the property of the electric railway.

More Time Allowed for Payment.—According to terms of an order entered by Federal Judge George W. English of the Eastern Illinois District, H. D. Mepham will be allowed until Nov 15 to pay a balance of $325,000 on the $400,000 he recently bid at public auction for the holdings of the Southern Traction Company of Illinois. Under terms made at the sale the bid was to have been paid to the receivers of the road before Oct. 1. In extending the time limit Judge English ruled that $25,000 on Oct. 15, $25,000 on Nov. 1, and the balance by Nov. 15 would meet the requirements.

New Agreement Covering Road Taxes.—The Philadelphia (Pa.) Railways, under a new ordinance agreement with Councils of Philadelphia, is to pay $3,000 annually in lieu of road repairs. The agreement is expected to help the company's credit, which has suffered like many other electric roads. A similar agreement was approved by Council for the Frankford, Tacony & Holmesburg Street Railway. Chief Dunlap, of the Highway Bureau, declared at a hearing before the Public Utilities Commission that the new agreement with the Southwestern Line is equitable for both parties.

Calls for B. R. T. Deposits.—A committee of which Walter E. Frew is chairman is asking for the deposit of the 4 per cent first refunding mortgage bonds of the Brooklyn (N. Y.) Rapid Transit Company, interest on which is in default and on which an action is pending to foreclose the mortgage. The committee points out that through the efforts of the trustee of the mortgage the attempt has been defeated that was made to subordinate the lien of the refunding mortgage to nearly $20,000,000 of receiver's certificates and that the fact that the attempt was made and that foreclosure action is pending increases the need for united action.

Court Fixes Depreciation Reserve.—Judge Julius M. Mayer, in the United States District Court, has issued an order directing Job E. Hedges, as receiver for the New York (N. Y.) Railways, to have 38 per cent of the gross transportation revenue put aside as a reserve for maintenance and depreciation. This order was made after the submission to the court of a report by Stone & Webster to the effect that under present conditions, and with a 5-cent fare, it would take 37.4 per cent of the revenue to go as far in the way of maintenance work as was done with 20 per cent in the year 1914, which was the old figure.

Judgment Against New York Crosstown Line.—Judgments aggregating $231,188 were entered on Oct. 30 in the Supreme Court against the Mid-Crosstown Railway, New York, N. Y., which operates a storage-battery line through Twenty-eighth and Twenty-ninth Streets. The largest judgment, amounting to $162,889, was in favor of the Third Avenue Railway for power, materials, wages, etc. The others were in favor of these other subsidiary companies of the Third Avenue system. The debts have been accruing since December, 1914. Judgment in each case was confessed. The Mid-Crosstown Company found it impossible to operate successfully.

Pascagoula Road Resold.—E. J. Ford, the purchaser of the property of the Pascagoula Street Railway & Power Company, Pascagoula, Miss., sold recently under foreclosure by Special Commissioner C. A. Money under instructions from Federal Judge Holmes, has sold the property to A. B. Patterson and associates, Meridian, Miss., who, if satisfactory franchises can be arranged with the city, will immediately begin the work of repairing and improving the property and the operation of the water, ice and electric plants. No definite arrangements have been decided upon as to the electric railway system, but the electric current for residence and city lighting will be generated in connection with the other activities of the plant.

Committee in Interest of Interborough Holders.—Announcement was made recently that the following committee of bankers had been formed to look after the interests of the 5 per cent bonds and 7 per cent notes of the Interborough Rapid Transit Company, New York, N. Y.: J. P. Morgan, chairman; Frederic W. Allen, of Lee, Higginson & Company; George F. Baker, Jr., vice-president First National Bank of New York; Allen B. Forbes, of Harris, Forbes & Company; G. Herman Kinnicutt, of Kissel, Kinnicutt & Company; H. C. McEldowney, president Union Trust Company, Pittsburgh; John J. Mitchell, president Illinois Trust & Savings Bank, Chicago; Dwight W. Morrow, of J. P. Morgan & Company; F. H. Shipman, vice-president New York Life Insurance Company, and James A. Stillman, president National City Bank, New York.

Bondholders' Committee Purchases Collateral.—The committee representing the holders of the 6 per cent five-year collateral trust gold notes of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has notified the depositors that in accordance with the agreement the committee has purchased $1,941,000 of the first and refunding mortgage 5 per cent twenty-year gold bonds which were pledged as collateral security for the notes and that the notes have been deposited under the protective agreement. The holders of certificates of deposit are to surrender their certificates of deposit before Nov. 29 and are to pay the depository $22.85 for each $1000 of notes deposited to cover the expenses and indebtedness of the committee. The depositors will then receive pro rata certificates of deposit.

Hudson Tube's Net Income Decreases.—Total railway revenue of the Hudson & Manhattan Railroad, New York, N. Y., for the year ended Dec. 31, 1918, amounted to $5,078,422, according to the annual report issued on Oct. 29. This is an increase of $651,416 over 1917, or 14.71 per cent. The passenger fares totalled $4,715,119, which includes an arbitrary allocation of revenue by the Director General of Railroads of $183,588 in excess of the normal proportion of joint revenue accruing to the company under the existing contract with the Pennsylvania Railroad. The total operating expenses were $2,581,544, an increase of $670,079, or 35.05 per cent. The net income applicable to bond interest totalled $2,787,712, a decrease of $66,667, or 2.34 per cent. The balance of the net income shows a deficit of $40,822, as compared with a credit of $1,847 for the year 1917.

Oakland Note Issue Authorized.—In an order issued by the Railroad Commission of California on Oct. 29 the San Francisco-Oakland Terminal Railways is authorized to issue to the Realty Syndicate Company two notes, one for $247,000, the other for $33,630. To secure the payment of the larger note the company is to deposit 370 of its general lien mortgage bonds; as security for the smaller note fifty of the bonds are to be deposited. The notes are to refund notes authorized by the commission on June 23, 1914. The commission has also authorized the company to issue its 6 per cent demand notes, not to exceed the sum of $169,520, to renew notes for a balance of $169,520 due on notes amounting to $218,459, issued to various banks. The company reports that it has paid $48,939 of the original notes. These notes are to be secured by the deposit of $257,000 face value of its general lien mortgage bonds.

Buffalo Affairs Reviewed.—At the recent annual meeting of the stockholders of the International Traction Company, Buffalo, N. Y., E. G. Connette, president of the company, stated that the operating account showed a surplus for each of the last three months. Mr. Connette said that the settlement of the claims of the holders of the collateral trust 4's, interest on which was in default on Jan. 1, 1919, had not yet been reached. Since the indefinite postponement of the sale of the collateral the offer of the committee representing the bondholders to accept 50 per cent of par in cash for their holdings was answered by a counter proposal of the protective committee of the stockholders to give the bondholders preferred stock to the amount of 40 per cent of their holdings at par and cash to the amount of 20 per cent. This was rejected. Final adjustment is pending. Meanwhile the sale of the collateral has again been postponed.

Deficit in St. Louis in September.—Figures have been made public by the United Railways, St. Louis, Mo., showing that 53,795 fewer fares were collected daily between Sept. 20 and Sept. 30, when a 7-cent fare was in effect, than were collected between Aug. 20 and Aug. 30, when a 6-cent fare was in effect. This was despite the fact that 21,261 more fares a day were collected from Sept. 1 to Sept. 19 under a 6-cent fare than were collected from Aug. 1 to Aug. 20 under the same fare. The average number of passengers a day carried during the last eleven days of September was 703,766. The company's statement also shows a deficit for the month of September of $181,407. The total operating revenue was $1,405,856, and operating expenses and taxes, $1,374,719. The gross income was $39,770. This was insufficient to meet the interest and miscellaneous charges of $221,177.

Traffic and Transportation

Zones in Connecticut

New System Gives 70 Per Cent Efficiency in Schedules, Increasing after Three Days to 85 Per Cent

On Sunday Nov. 2, 1919, the Connecticut Company installed a zone system of fares on its entire system. This system differs somewhat from other zone systems in effect in that in all the large cities a zone limit is established at the center of the so-called central or metropolitan area and a minimum fare of 6 cents is established for a ride of two zones or less. Transfers good for a single zone are issued at intersecting points to connecting routes on payment of the 6-cent minimum zone fare; that is, when a passenger rides only a single zone on the first car and completes the second zone on a second car. However, if a passenger has ridden two or more zones on the first car and desires to ride only one or two on the second car he can get an identification check from the first conductor which, together with the actual zone fare will entitle him to ride one or two zones. It is of no benefit to passengers to get such a check if riding more than two zones on the second car.

MOTORMAN IDENTIFIES PASSENGER

Passengers board by the forward door and receive an identification boarding check from the motorman. All fares are collected on the pay-leave basis, the passenger handing the identification check to the conductor and depositing the proper fare in a Johnson registering fare box.

School children are carried at half rates. Special scrip books having 100 coupons are sold for $1, each coupon being good for a single zone ride and valued at 1 cent each.

The company will also displace all paper tickets now used by the public. In place of them metal tickets having a value of 6 cents will be substituted. The company believes these tokens will be of great convenience, since each one will be good for the ordinary ride and can be used as part payment for a ride of any distance. These metal tickets will be sold by conductors at 6 cents each or at the offices of the Connecticut Company in packages of seventeen for $1.

TRAFFIC DELAYED AT START

Due to the unfamiliarity of the car riders in general with the new system and also to the lack of experience by the trainmen, the time taken by passengers in boarding and alighting from cars was materially increased at the start, especially at heavy loading and unloading points, with the result that on the first day's operation cars on some suburban lines were far from being on schedule. However, as soon as people had ridden on the cars, found out how to board, what to expect to receive from the motorman and the fares to be paid, traffic conditions began to improve and it was reported that the rush hour service on Tuesday was a great improvement over that of Monday. The maximum amount of delay at the start seems to have been experienced in the city of Bridgeport.

There have been no reports of any disturbances except in Bridgeport where employees of one factory attempted to rush a conductor. In at least one case cars to heavy labor centers were operated under the pre-payment plan to do away with the incentive of rushing the conductor to avoid paying fare.

ATTITUDE OF TRAINMEN AND MUNICIPALITIES

The trainmen are using every effort to make the plan a success and to provide passengers with the exact change by going through the cars at intervals and making change. Passengers can thus leave the car with a minimum of delay. President Storrs of the company sent a letter to the employees on Tuesday morning thanking them for the spirit of co-operation which they have shown.

The New Haven Alderman have voted authority to Corporation Counsel William T. Bennett to file a protest against the zone system with the Public Utilities Commission and to ask that the commission take steps to revise the system. It is expected that Mr. Bennett will confer with civic authorities in other cities and towns affected.

H. F. Billings, secretary of the commission, has said that the commission could at any time now receive protests with respect to the zone system. Before such application is made he urged cities and towns affected to get together and advise with him as to what had best be said. The commission has power to reduce fares and to determine whether the service rendered is sufficient.

Orders Investigation of Omaha Service

The City Council of Omaha, Neb., has directed W. C. Lambert, corporation counsel, to file a formal complaint with the State Railway Commission asking that an investigation be made of the electric railway service in Omaha. This move has come as a climax to the recent order of the commission granting to the Omaha & Council Bluffs Street Railway the right to continue the skip-stop system indefinitely. The City Council feels that this order of the commission takes an important matter out of its hands and that the Omaha & Council Bluffs Street Railway is ignoring the rights of the Council.

Drops Investigation of Vancouver Fares

Owing to the discovery that the British Columbia Electric Railway, Vancouver, B. C., comes under the jurisdiction of the Railroad Board of Canada, Major J. L. Retallack, Public Service Commissioner for the Province of British Columbia, has dropped the investigation into the necessity for the 6-cent fare charged by the company. He based his action on an amendment to the Railway Act recently passed by the Canadian Parliament which declares that if any portion of any railway system comes under control of the board, the rest of that system shall be considered as coming within its jurisdiction also. The company has a Dominion charter for its Lulu Island branch, a fact which, in Major Retallack's view, takes the entire matter out of his hands.

New Instruction Method

Pacific Electric Railway, Los Angeles, Appoints Traveling Agents to Instruct Conductors

Traveling passenger agents have been assigned to each division of the Pacific Electric Railway, Los Angeles, Cal., whose duties are to explain anything pertaining to conductors' tariffs, application of fares, transfer rules or any general information that may be desired by conductors relative to matters coming within the province of the passenger department.

NEW APPOINTMENTS ANNOUNCED

F. E. Billhardt has been assigned to the western division, F. C. Patton to the southern division and J. A. Birmingham to the northern division. These men will travel over the different lines of the division to which they have been assigned or will meet conductors at division terminals, and discuss such matters for the purpose of arriving at a uniform understanding of all matters pertaining to the passenger department.

Conductors have been instructed to notify their terminal foreman if at any time everything is not clear, and one of the traveling passenger agents will make it a point to set things right.

As a matter of information and instruction for conductors, relative to proper handling of tickets, transfers, tariffs and various other matters pertaining to the duties of passenger conductors a very complete book has been compiled by the general passenger department and placed at all important terminals, where it may be studied by conductors. This, it is expected will be of great assistance to the new men, including those who have been taken on since the recent strike of the employees of the company.

These books contain an index calling attention to particular pages where information relative to certain matters may be located, and in addition to general information and miscellaneous questions and answers, each line is treated separately and also each division is segregated, so that a conductor desiring information regarding lines on the division upon which employed need not search through the entire book or lines of another division to obtain the necessary information.

SPECIAL INSTRUCTIONS NOTED CAREFULLY

Special pages have been devoted to most important questions relative to handling of war revenue tax, cash fare receipts, honoring annual card passes, government requests for transportation, employees emergency passes, honoring Southern Pacific tickets, Santa Fe and Salt Lake tickets, also steamship tickets. In the books are samples of practically all conductors' tickets, cash coupons, coupon passes, trip passes, cash fare receipts, transfers, receipt for fare paid, etc.

The book is arranged in the form of questions and answers.

New Five-Cent Service for Boston

The trustees of the Boston (Mass.) Elevated Railway have decided to discontinue the experimental 5-cent fare, non-transfer line which has been in operation for a number of weeks between the North Station and the retail business district. The line averaged only fifteen passengers per round trip. In its place a new experimental 5-cent fare, non-transfer line was inaugurated on Nov. 8 between Rowes Wharf and the South and North Station via Post Office Square.

Seven Cents in Milwaukee

Commission's Order Upholds Present Zone System—Six Tickets to Cost Thirty-Five Cents, Eighteen to Cost One Dollar

The Railroad Commission of Wisconsin, on Oct. 30 authorized the Milwaukee Electric Railway & Light Company to raise fares in the single fare zone area of Milwaukee from 5 cents to 7 cents. The company was ordered to sell tickets good in the central area at the rate of six for 35 cents or eighteen for $1. The commission reserves jurisdiction in the matter of tickets in the hope that the revenue produced under this scheme will be such that, within a short time, it will be able to order an increase in the number of tickets sold for $1. In the suburban area a cash fare of 3 cents for each zone, with a minimum of 6 cents is established. Suburban ticket rates are not changed. The company is ordered to submit within fifteen days a plan for the issuance of commutation tickets between South Milwaukee and the single fare area.

ZONE SYSTEM UPHELD

The commission ruled that the double transfer system be continued. It also stipulated that the wage scale, hours of service and working conditions provided for in the decision of the State Board of Conciliation should be complied with. The company was also directed to place in operation 100 additional cars and to introduce new methods of accounting which would more accurately reflect operating costs. The new rates became effective Nov. 2, 1919.

The commission's order in effect justifies the zone system in force in Milwaukee. A higher fare was found to be necessary to enable the company to earn a 7½ per cent return upon its railway investment. The commission supported the company's contention that the provisions of the new law regulating utilities could be carried out only by the principles of automatic regulation. Wisconsin is the only state that has tied wages of labor and rates of charge for service. The commission has power to order wage increases in the event of dispute, but is required to make changes in rates simultaneously if such changes are necessary in order to produce a reasonable return upon the company's investment.

The commission claims that the amounts charged by the company in the past for certain operating expenses exceed the reasonable allowance for these expenses. Even with this adjustment, after adding the increase anticipated by the wages which were ordered to be put into effect, it finds that $850,000 to $900,000 additional revenue will be needed for the coming year. The estimated increase in wages for the single fare and suburban area was $710,000.

EARNINGS NOT EXCESSIVE

The value of the railway property, exclusive of power plant equipment, in the single fare area was found to be $15,645,534 on July 31, 1919. The commission finds no excessive earnings under the rates of fare established by the Railroad Commission on Aug. 23, 1912. The excess amounts which it is claimed should be applied to make up the operating deficit at the present time, the commission finds were prior earnings under lawful rates provided by franchises and that these excessive earnings, if any, were legal earnings and are the property of the company to do with, as it sees fit. To deprive the company of this surplus, the commission held would not only be a violation of the Constitution of the United States, but would be establishing a principle against public policy and against the interests of the riding public. Such action could only result in crippling the company financially and making it impossible to carry out the provisions of the order.

The commission found that the working men living in the Bay View district and employed in the manufacturing plants at Cudahy had been discriminated against by the zone system, when the fares in this district were compared with those applicable to West Allis and some other territories. This situation in the commissions' view can be remedied by establishing a special rate between Cudahy depot and that territory south of Mitchell Street known as the Bay View district, applicable only on special cars and trains during rush hours. It therefore ordered put into effect for this special service the same rate of fare as applies to the single fare area.

The company was also directed to make a study of the economies that could be brought about through short routing and a development of traffic during the non-rush period with the idea of improving service conditions in the city. The commission's investigation showed a considerable shortage of cars on practically all lines in the city, over the number needed to comply with its service standards, and the railway was therefore ordered to provide at least 100 additional cars with a total seating capacity of 5000, the complete equipment to be in service before Nov. 1, 1920.

AUTOMATIC COST BASIS SUGGESTED

In a memorandum attached to the decision the commission discussed the advisibility of establishing an automatic cost basis of fares within the single and suburban fare areas of Milwaukee. The commission was of the opinion that many of the problems connected with electric railway operation could be solved more easily if the regulation of fares was put on an automatic basis.

Transportation News Notes

Six Cents in Attleboro.—Six-cent fares went into effect on Oct. 13 on the lines of the Attleboro Branch Railroad and the Interstate Consolidated Street Railway, Attleboro, Mass. The rate was formerly 5 cents.

Six-Cent Fares Stand.—The Public Utilities Commission of Illinois has issued an order continuing in effect until Dec. 31 next, the 6-cent fares on the lines of the Sterling, Dixon & Eastern Electric Railway in Sterling and Dixon.

Fares to Arsenal Raised.—The Tri-City Railway, Davenport, Ia., has adopted a change in fare to the government arsenal, at Rock Island, Ill. The rate of fare for officers, soldiers and employees of the arsenal will be 7 cents for a continuous trip to or from the arsenal, with monthly tickets sold for $2.80.

Six Cents in Saskatoon, Sask.—The City Council of Saskatoon, Sask., has voted to raise fares on the Saskatoon Municipal Railway from 5 cents to 6 cents. Tickets will be sold at the rate of five for 25 cents, while those purchased in the cars will be six of 35 cents. The object of the increase was to increase the sale of tickets at stated points, thus decreasing delays.

Ten-Cent Fares on Middlesex & Boston Lines.—Ten-cent fares were established on the Middlesex & Boston Street Railway, Newtonville, Mass., on Nov. 1 to continue for a period of three months, upon the authorization of the Public Service Commission of Massachusetts. The commission declined to allow the company to charge an additional 2 cents for transfers.

Pay-Leave Experiment Discontinued.—The "pay-as-you-leave" experiment on the Seattle (Wash.) Municipal Railway has been discontinued by Thomas F. Murphine, superintendent of utilities. The system has been tried out a month on the Eastlake lines and has not worked out successfully. Mr. Murphine states that the cars are not of the proper type and too much confusion results.

Again Suspends Ten-Cent Fare.—The Public Service Commission for the Second District has further suspended to Nov. 15 inclusive, the operation of the proposed 10-cent fare by the Westchester Electric Railroad, Mount Vernon, N. Y., between New Rochelle and Mount Vernon. The investigation as to the reasonableness of the proposed increase has not been completed. The original suspension order was until Oct. 15.

Transfer Charge Rescinded.—A 1-cent transfer charge imposed by the trustees of the Boston (Mass.) Elevated Railway at twelve points on the company's surface system has been withdrawn after a one-day trial. The charge was established to meet the requirements of the service-at-cost act, but it was not considered necessary to maintain it as the present rate of earnings of the Boston system covers the entire cost of the service.

One-Man Cars in Raleigh.—The Carolina Power & Light Company, Raleigh, N. C., has arranged to change over its railway equipment from two-man to one-man car operation. Fifteen Birney safety cars have been ordered. P. A. Tillery, vice-president and general manager of the railway, points out that these cars will be equipped with all safety features necessary for the satisfactory operation of a railway car in charge of one man.

Wants Seven-Cent Fare.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., whose application for a revision of its zoning system and a 1-cent charge for transfers is now before the Board of Public Utility Commissioners, has filed with the board a request for a straight 7-cent fare. The company says that the increase in wages recently granted its employees means an advance in operating expenses of $85,000 a year.

Eight-Cent Fares in Effect.—Beginning at 2 a. m. on Nov. 1, the United Railways, St. Louis, Mo., put into operation the 8-cent cash fare, collection which had been delayed until the company could put into circulation the 3,000,000 tokens, which should sell for 7 cents. The company called the attention of patrons to the increase by means of advertisements in the daily papers and gave a list of the retail merchants from whom the tokens could be bought.

Seven Cents in Oswego, N. Y.—The Public Service Commission of the Second District has granted the application of the New York State Railways for a 7-cent fare within the city limits of Oswego, N. Y. The higher rate, which has already gone into effect, is to continue until Dec. 31, 1921. The company has applied to the commission for an increase in fare on its Rome city lines. A previous petition asking for a 6-cent fare in Rome was refused last July.

Increase for Burlington Road.—The City Council of Burlington, Vt., has adopted a resolution permitting the Burlington Traction Company to charge a 7-cent fare on all lines within the city, including those to Winooski and Queen City Park, with the understanding that the line to the Union Station, which has been abandoned for some time, will be reopened. The resolution becomes effective if it is indorsed by the company ten days after the Mayor's signature.

Protest Use of One-Man Cars.—A protest against the use of the new one-man cars ordered by the Birmingham Railway Light & Power Company, Birmingham, Ala., several weeks ago has been made by Division 186, Order of Railway Conductors at a recent meeting. The protest was made on the grounds that both white people and negroes enter and leave the new cars by the same door. A formal letter of protest was sent to the City Commission on Oct. 28 by John R. T. Rives, secretary-treasurer of Division 186 of the Order of Railway Conductors.

Long Island Road Asks Increase.—The Long Island Electric Railway, New York, N. Y., has applied to the Public Service Commission for the First District for permission to increase rates on five days notice. W. O. Wood, vice-president and general manager of the company, declared in the application that without an increase in fares the road would have to go into the hands of a receiver. The company has several lines in Queens and Nassau Counties. It has never paid a dividend.

Holds Jitney Ordinance Valid.—The New Jersey Supreme Court in a recent opinion set aside three contentions made by the Public Service Railway, Newark, N. J., and upheld the validity of an ordinance adopted by the city of Newark, N. J., under which auto buses and jitneys are allowed to use certain routes in that municipality. The opinion was written by Justice Kalisch. The Central Omnibus Company of New Jersey and the city of Newark were the defendants in the proceedings.

Protest Against Fare Increase.—For the first time since electric railways in Pennsylvania have been filing notices of fare increases with the Public Service Commission, the allegation has been made that the new rates exceeded the maximum charge of 3 cents a mile allowed by the Interstate Commerce Commission. In a complaint filed by the Borough of Coaldale, Schuylkill County, it is charged that the new fare rates of the Eastern Pennsylvania Railways exceeds the Interstate Commerce Commission maximum. The Public Service Commission will hear the protest soon.

Six-Cent Fares to Continue.—Electric railway fares in East St. Louis, Ill., will remain at 6 cents, according to a recent decision of the Public Utilities Commission of Illinois. The ruling of the commission was made on a petition filed by the East St. Louis Railway and the Alton, Granite & St. Louis Traction Company for an 8-cent fare in East St. Louis, Brooklyn, Venice and Alton. The order of the commission includes these cities, where the present fares are to continue until Jan. 29, 1920. Under a petition filed more than a year ago by these companies the rate of 6 cents was inaugurated by the commission but was made temporary and was to have expired on Oct. 31.

Increase for Illinois Road.—Officials of the Coal Belt Electric Line, Marion, Ill., have been authorized by the Railroad Administration to raise the rates between Marion and Herrin, Marion and Carterville, and Herrin and Carterville, all in Illinois. The new rates are an increase of more than 50 per cent. Heretofore from Marion to either Harrin or Carterville the fare was 15 cents, divided into three zones of 5 cents each. Under the new order there will be four zones, and the fare will be 6 cents for each zone, or 24 cents for the trip. From Herrin to Carterville the trip now is 10 cents and two zones. The new fare will be 12 cents, in two zones of 6 cents each.

Hearing on Zones Begun.—The hearing on the application of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for permission to establish four new zones on the suburban lines was begun before the Public Utilities Commission on Oct. 28. Warden Samuel T. Atchley, of the State Hospital for the Insane, protested against the new zone on the Trenton Junction line, claiming that most of the travel on that division comes from his institution. There are 300 employees of the institution. W. H. Sofman, of the accounting department of the commission, said that the railway had spent $292,120 in nine years for construction work. The hearing was adjourned until Nov. 10.

Seven-Cent Fare Approved for Montreal.—The Public Utilities Commission of Quebec on Oct. 14 ratified the 7-cent cash fare recently granted the Montreal Tramways by the Montreal Tramways Commission. The Utilities Commission fixed Oct. 26 as the date on which the higher rates should become effective. The new rates are: single cash fare, 7 cents; five tickets for 30 cents, forty-four tickets for $2.50. The free transfer system is retained, but workingmen's tickets are abolished. The night rate remains the same as at present. The present cash fare is 6 cents. The provision that five tickets shall be sold for 30 cents means in effect a 6-cent fare, as most car riders are expected to avail themselves of the ticket rate.

Jitneys Would Reappear.—As soon as it appeared from the reports of engineers employed to make a valuation of the railway properties of the Houston (Tex.) Electric Company with a view to determining whether an increase in fares, as asked by the company, would be justified, that such an increase would likely be granted by the City Commission, scores of applications for jitney licenses to operate in all parts of the city were filed. The jitney men claim that they can operate at a profit by charging a fare of 5 cents and that if the railway is permitted to increase its fares, they will operate in opposition to the railway. With the railway seeking an increase in fares in order to increase its revenues, the City Council is faced by the problem of increasing fares to increase revenues and at the same time decrease revenues by permitting jitneys to operate in competition. It has been proposed that a city ordinance be passed fixing the jitney fare at 7 cents if the railway fare is raised to this level.

New Publications

Burning Steam Sizes of Anthracite

Prepared by the United States Fuel Administration in collaboration with the Bureau of Mines, Washington, D. C.

A leaflet based on an article by William B. Frey, fuel engineer, and issued in the campaign of the Bureau of Mines for more effective use of the coal resources of the United States.

The Electrification of the Metropolitan Railway System of Melbourne

By C. T. Stephenson, 376 Flanders Lane, Melbourne, Australia. 66 pages.

This booklet describes all phases of the electrification of the suburban railway system of Melbourne, including the power house, track, signals, transmission system, overhead construction and rolling stock equipment.

Joint Industrial Councils of Great Britain

Report of Committee on Relations Between Employers and Employed, and other officials documents of the Joint Industrial Councils of Great Britain. Bulletin No. 255 of the United States Bureau of Labor Statistics. Government Printing Office, Washington, D. C.

This bulletin is issued in the series on labor as affected by the war, under the auspices of the United States Bureau of Labor Statistics, of which Dr. Royal Meeker, a member of the Federal Electric Railways Commission, is commissioner.

Practical Helps for Electric Railway Men

Published by McGraw-Hill Book Company, Inc., from articles in the Mechanical and Engineering Edition of the ELECTRIC RAILWAY JOURNAL.

This furnishes a series of articles of a character particularly helpful to the men who are responsible for the maintenance of equipment of electric railways, such as overhead line construction, track building, power plants, substations, shops and rolling stock. Several specialists in the different branches of the electric railway field have written these articles, and all are qualified by practical experience and theoretical study to furnish the kind of material desired by workers in the engineering departments of the electric railways.

Report of United States Housing Corporation, Vol. 2. Houses, Planning, Utilities

United States Department of Labor, Bureau of Industrial Housing and Transportation. Government Printing Office, Washington, D. C.

This illustrated report of the Housing Corporation gives the details of numerous housing projects and installations, with voluminous data regarding the problems met and the solutions determined upon. The volume does not go into the subject of transportation, but it will be very valuable to transportation companies which have housing problems confronting them. The editor, Henry V. Hubbard, has succeeded in producing a very readable report, with segregation of statistics apart from the reading matter. An important feature is a selected bibliography of buildings and industrial housing in America and Great Britain during and after the war.

Personal Mention

Mr. Neal Resigns

Retires as President of Boston Elevated to Head New Financial Corporation at Boston

J. Henry Neal, president of the Boston (Mass.) Elevated Railway, has resigned. Mr. Neal will assume the presidency of a financial corporation now being organized in Boston. In a statement announcing the change in his plans he declared that his action was induced by the belief that greater opportunity awaited him in his new capacity. He pointed out that the time was opportune for him to give up the presidency of the Boston Elevated, since the company "is now evidently emerging from its period of greatest difficulty and from now on a constant and increasing improvement may be expected."

Mr. Neal has been connected with the company for more than thirty years. Before becoming president in November, 1918, he held the positions of vice-president and general manager. He had been acting as president since the resignation of Matthew C. Brush.

Mr. Neal was born in Boston in 1872. He was educated in the Boston public schools, later entering the employ of the Hinckley Locomotive Works, Boston, as a stenographer. When these works were purchased in 1898 by the West End Street Railway Mr. Neal became a clerk in one of the power stations of the latter company. In 1890 he joined the accounting department, being assigned to duty in the Barlett Street shops. He was appointed chief clerk of several consolidated mechanical and electrical departments in 1892. In 1907 he was made auditor of disbursements. In the following year he was appointed general auditor of the Boston Elevated Railway.

Mr. Neal has been active for many years in the affairs of the American Electric Railway Association. He has served as president of the Accountants' Association and on the executive committee of the American Electric Railway Association. He is a past president of the New England Street Railway Club. He was the inventor of the Neal electric headlight, one of the first devices of this kind to find extensive use on electric cars.

H. B. Flowers Promoted

Becomes General Manager of United Railways & Electric Company, Baltimore

Herbert B. Flowers, formerly assistant general manager of the United Railways & Electric Company, Baltimore, Md., has been elected general manager of the company. Mr. Flowers succeeds James R. Pratt, who continues as vice-president in charge of claims, as noted elsewhere in this issue.

Mr. Flowers was graduated from the Law School of the University of Michigan in 1903 and from the Engineering School two years later. He immediately thereafter entered the operating department of the Detroit (Mich.) United Railway, becoming assistant superintendent successively of the Orchard Lake and the Pontiac divisions. In these capacities he was a member of the staff of Sir Albert Stanley, at that time general superintendent, now head of the London (England) Underground Railway.

Mr. Flowers went to Baltimore in 1910 as assistant superintendent of transportation of the United Railways, retaining this position until his promotion to assistant general manager in 1917.

R. A. Leussler Manager

Becomes General Manager of Omaha & Council Bluffs Street Railway After Seventeen Years Service

R. A. Leussler, assistant general manager of the Omaha & Council Bluffs Street Railway, Omaha, Neb., has been promoted to be general manager of the company. Mr. Leussler succeeds W. A. Smith, who recently resigned, retaining the vice-presidency.

R. A. LEUSSLER

Mr. Leussler has been connected with the Omaha & Council Bluffs Street Railway for the last seventeen years. He joined the company at the time of the consolidation of the Omaha Street Railway, the Metropolitan Cable Railway and the Omaha & Council Bluffs Street Railway & Bridge Company. He served as secretary of the company for five years. For the last five years has acted as assistant general manager.

He entered the electric railway business in 1897 as an employee of the People's Railway, St. Louis, Mo. He left his position with that company to become connected with the St. Louis Transit Company, the operating company of the United Railways, St. Louis. He resigned in 1902 to join the Omaha & Council Bluffs Street Railway.

During the period of his service with the Omaha traction system the receipts and the number of cars operated have increased 100 per cent. The entire system has been rebuilt and a power plant and a car shop have been opened. The company now employs more than 1,000 men.

James R. Pratt has been relieved of the duties of general manager of the United Railways & Electric Company, Baltimore, Md., and as vice-president has been placed in charge of claims. Mr. Pratt has risen to the position of vice-president from that of conductor with the old Baltimore Traction Company.

E. Thomason, vice-president and general manager of the Piedmont & Northern Railway, Charlotte, N. C., has resigned, effective Nov. 1.

R. L. Miller, Galveston, Tex., formerly of Fort Worth, has been appointed general passenger agent of the Northern Texas Traction Company, which operates an interurban line between Dallas and Fort Worth, and the local lines in Fort Worth. Mr. Miller succeeds Tully Bostick, who resigned to enter the real estate business in Fort Worth. Mr. Miller has been assistant claim agent of the Galveston (Tex.) Electric Company for the last two years. Before going to Galveston he was connected with the claim department of the Northern Texas Traction Company at Fort Worth.

Obituary

Herbert L. Breneman, a director of the Cincinnati (Ohio) Street Railway, died at his home in Cincinnati on Sept. 21. Mr. Breneman was a retired capitalist. He had taken a prominent part in the business development of Cincinnati.

Frank T. Hamilton, president of the Omaha & Council Bluffs Street Railway, Omaha, Neb., is dead. He was actively engaged in business in Omaha for thirty-seven years, and at the time of his death was president of the local railway and the Omaha Gas Company and vice-president of the Merchants' National Bank. Mr. Hamilton succeeded Gurdon W. Wattles as head of the Omaha & Council Bluffs Street Railway on March 4 of this year. During the few months when Mr. Hamilton guided the affairs of the railway he averted a strike. He was president of the Omaha Gas Company for ten years. He was born in Omaha on Dec. 18, 1861, the son of a prominent pioneer family. His father was one of the first bankers of Omaha. Mr. Hamilton was stricken with heart disease in a Pullman car while journeying to the sandhills of Nebraska with companions who were bound for a hunting trip. He is survived by Mrs. Hamilton, who was Countess Luisa De Cistue before she met Mr. Hamilton in Paris. There are also two young sons.

William D. Weaver, formerly editor of the *Electrical World*, died suddenly at his home in Charlottesville, Va., during the night of Nov. 1. Mr. Weaver was graduated from the United States Naval Academy in 1876 and served in the navy for the twelve following consecutive years except for one year's leave of absence in 1884. During that year he studied electricity and conducted investigations in the electrical laboratory of the Sorbonne in Paris and in the School of Electrical Engineering in London. In 1883 he accompanied the first Greeley relief expedition to the Arctic. He resigned from the navy in 1892 and engaged in electrical manufacturing for a year, but in 1893 he became editor of the *Electrical World*, then published by the W. J. Johnston Company. In 1896 with the aid of James H. McGraw, he founded the *American Electrician*, but in 1899 when the *Electrical World* and the *Electrical Engineer* were consolidated by the McGraw Publishing Company, he became editor of the combined paper. He retired as editor of the *Electrical World* in April, 1912.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Coal Strike Conditions on Nov. 8

Non-Union Fields Mine More Than Usual Quota—Prices Fixed by Government to Prevent Profiteering

From the standpoint of production, the Pocahontas and New River districts were leading the field in the non-union districts at the time this account was written. There 10 to 15 per cent more coal was being mined than the normal rate, which is in the neighborhood of 50,000,000 tons a year. On account of the mines in other parts of West Virginia being closed, production for the State was about 50 per cent normal as was also the case in Kentucky. Less than 50 per cent of the men left their places in Pennsylvania, but in Illinois, Indiana and Ohio all mines were closed with few exceptions.

To prevent profiteering on the part of unscrupulous operators, and dealers, the government on Oct. 30, re-established the maximum prices of bituminous coal which prevailed prior to Feb. 1, 1919. It also again assumed control of distribution. In addition, an embargo was placed on coastwise and foreign coal shipments. It was expected that in case of the prolongation of the strike this would work out to the benefit of the so-called essential industries in this country whose reserve stocks were dwindling. No complaints of hardships as a direct result of the strike had come to hand up to the time of this writing except in one or two instances in the Middle or Central West.

As a result of the present situation, the demand for all grades of coal increased to such an extent that it was a virtual scramble for any coal that then remained in the market. Railway and utility companies were particularly active and have in a number of instances been enabled to get some quantities of coal although paying more for the same grade, or accepting a slightly different grade than that to which they have been accustomed in order to be able to have a surplus on hand.

Production of soft coal for the week ending Nov. 1, the latest statistics available, was estimated at 12,142,000 net tons, which is the second highest output in the present coal year. The exception was the preceding week, that of Oct. 25, which full reports confirm as the record in the history of coal mining in the United States.

Gear Makers Discuss Standardization

The semi-annual convention of the American Gear Manufacturers Association was held at Boston from Oct. 13 to 16, gear standardization and the labor situation being the principal subjects under discussion.

A general standardization committee and sub-committees were appointed and a number of sessions were held by these committees at which the technical and commercial considerations of standardization were discussed. President F. W. Sinran, made an address on "Association Progress." The association was also addressed by Roger W. Babson of Wellesley, Mass., on "The Labor Problem." Papers were presented by A. A. Alles, Jr., of the Fawcus Machine Company, on "Uniform Cost Accounting"; by H. Fleckenstein of the Hindley Gear Company, on "Hindley Worm Gears"; by S. L. Nicholson of the Westinghouse Electric & Manufacturing Company on "System and Organization as They Fit Commercial Activities"; and by A. F. Cooke of the Fawcus Machine Company, on "Herringbone Gears." H. D. Sayre, secretary of the National Metal Trades Association, Chicago, made an address on "The Individual and Associations." In addition to the above, F. D. Hamlin presented a report of the International Trade Conference by the Chamber of Commerce of the United States at Atlantic City.

Carbon-Brush Market Outlook is Promising

Prices Are Steady, and Even if Labor Troubles Develop No Large Advance in Price is Anticipated

The carbon-brush business is good. Sales are keeping up better than has been expected and are continuing to improve all the time. Brush sales, as a rule, are made up of about 80 per cent renewals and 20 per cent new business. The renewals, however, often run as high as 90 per cent. New business generally follows new building construction fairly closely, and although this has fallen off to some extent during the summer months, a renewal of activity in building lines has caused brush sales on new business to increase considerably. As the sales manager of one large manufacturing company recently said, "We hardly know the war is over."

Although nearly all manufacturers have some standard grades of brushes in stock, brushes are mostly made up to fill certain requirements. Stocks are in good shape, but owing to the special nature of orders brush users find that it is best policy to place orders three to four weeks ahead of the time desired for delivery. In emergency cases brushes are made up in from twelve hours to two days, depending upon the size and quality. This practice, it is stated, is not only dangerous where large machines are in operation, but tends to upset factory production schedules.

A considerable amount of business is being done with foreign countries, especially in South America. Moreover, this business is increasing from month to month. Carbon brushes that have been used in foreign countries have increased confidence there in American-made goods and a large export trade in brushes is looked forward to in the future.

Prices are steady under present conditions, and it is not believed that any immediate labor difficulties will be met, despite the fact that a considerable amount of work on carbon brushes must be done by hand. In short, manufacturing conditions are satisfactory, and a good increase in production is assured.

Car Equipment and Tool Deliveries Good

Lack of Orders Cuts Down Production by Manufacturers and Makes Shop Schedules Uncertain

According to several well-known manufacturers of car equipment and tools, the purchaser has everything at his disposal in the way of good deliveries. In many instances orders for car equipment, tools or small electrical repairs can be filled from stock. On account of slack production schedules, all orders receive prompt attention and are produced in good time.

BEARINGS IN DEMAND

There is a fairly good demand for armature bearings, but not nearly so great as in former seasons. A full supply of molds, dies and templets for making repairs on standard railway motors enables all of the most common types of repairs to be made quickly. The time required on armature bearings of a much-used type is one week, while on other types, ten days to two weeks is the average time. For bearings which require special work, quotations of three weeks are given.

The demand for minor electrical repairs, commutators, field coils, armature coils and bars is only fair. Some orders are being received, but not in sufficient volume to make business good. Some repair parts are being ordered, but no more than is usual for maintenance needs. Prices are firm and although there have been increases granted to labor, no price increases have been made recently. Quick delivery can be made on these products, although it is not possible to make an estimate now of what future deliveries may be.

The market for trolley poles is not very strong. The price of the raw material has gone up and the present unsettled conditions in the tube mills may cause further increases of raw material with poor deliveries. Prices, however, have not advanced as yet on this product.

The market for gear cases is quiet. It is expected orders will run up to about the same figures as during the fall of 1918.

Factory conditions are such that a large increase in production could be effected if orders should be received in sufficient volume. No estimate is made of what the volume of business may be between now and the first of the year, although no large increase in sales is looked for on account of the general condition of railway finances.

INQUIRIES FOR ARMATURE MACHINES

From inquiries being received from time to time, interest in car equipment in addition to emergency repairs and maintenance needs is confined mostly to labor-saving machinery and devices. There has been some little demand for armature banding machines and coil winding machines. On similar equipment the sales generally have been better than in the two previous seasons. All ordinary requirements can be met in regard to this class of equipment and good deliveries can be made.

Rolling Stock

Vincennes (Ind.) Traction Company, has filed a petition for permission to buy seven safety cars.

West Penn Railways, Pittsburgh, Pa., is expected to be in the market for safety cars in the near future.

St. Louis Car Company, St. Louis, Mo., is reported to be completing 100 safety cars for stock purposes.

Kansas City (Mo.) Railways expects delivery on the first lot of the sixty-five safety cars recently ordered by that company.

Manhattan Bridge Three-Cent Line, New York, N. Y., has placed an order for two double-truck cars with the Perley A. Thomas Car Works.

Orange County Traction Company, Newburgh, N. Y., is reported to have purchased three more safety cars from the Wason Manufacturing Company.

United Railways, St. Louis, Mo., through announcement by Receiver Wells, will purchase 100 or more double-truck cars for use on congested lines. It is expected the cars will cost in the neighborhood of $1,000,000.

Elmira Water, Light & Railroad Company, Elmira, N. Y., noted in a recent issue as having placed an order for eleven safety cars, has specified the following equipment and accessories:

Builder	Osgood Bradley
Type	Safety
Seating capacity	32
Weight car body	8000 lb.
Weight trucks	4000 lb.
Weight equipment	4000 lb.
Weight total	16,000 lb.
Length over all	27 ft. 10 in.
Truck wheelbase	8 ft.
Width over all	7 feet. 9¼ in.
Height	10 ft. 3¾ in.
Body	Semi-steel
Interior trim	Mahogany
Roof	Arch
Air brakes	Westinghouse
Armature bearings	Ball
Axles	A. E. R. A. No. E-2
Car trimmings	Enameled
Control (West.)	K-63-B
Couplers	Bar and pocket
Fixtures	Curtain supply No. 89
Curtains	Double-coated pantasote
Designation signs	Keystone
Door mechanism	Air-operated
Fare boxes	Johnson
Fenders	H. B.
Hand brakes	Osgood Bradley
Heaters	Consolidated truss plank
Headlights	Crouse-Hinds
Journal bearings	Friction
Journal boxes	Symington
Lightning arresters	Westinghouse
Motors	G. E. 258
Motors	Outside hung
Varnish	Anglo-American
Sanders	Ohio brass
Sash fixtures	J. L. Howard & Co.
Seats	Osgood Bradley
Seating material	Slat type
Slack adjuster	Anderson
Springs	Railway steel spring
Step treads	American mason
Trolley catchers	Keystone
Trolley base	U. S. No. 15
Trolley wheels or shoes	Wheels
Trucks	Osgood Bradley No. 25-96
Ventilators	Osgood Bradley
Wheels	Griffin 26 in. diam.
Special devices	Full equipment Safety Car Devices Company material

Trade Notes

Inquiry 30845.—An agency on a commission basis is desired by an engineer in Spain for the sale of rails, ties, screws, angle plates, and everything pertaining to railway tracks, tubular steel posts, and wheels and tires. Correspondence may be in English.

G. F. Wakeman, formerly assistant to the Pacific Coast manager of the Edison Storage Battery Company, has been promoted to be manager.

Franklin W. Gilman, combustion engineer with the Sanford Riley Stoker Company of Worcester, Mass., and the Murphy Iron Works of Detroit, Mich., sailed from Vancouver on Oct. 2 for Japan. He will remain in that country for about a year in connection with the installation and operation of stokers manufactured by the two companies.

H. D. Hawks, long connected with the General Electric Company, has been appointed general sales manager at Chicago of the Anaconda Copper Mining Company, rolling mills department. The officers of the company are at 110 South Dearborn Street. Mr. Hawks has been with the Anaconda Copper Company since leaving the General Electric Company some years ago.

Page & Hill Company, pole producer, Minneapolis, Minn., announces that S. E. Lynch has returned to the company and has taken over the management of the Chicago office. He served in France with the 311th Engineers. Sig. Norman has also returned after twenty months' service in France with the 20th Engineers. Mr. Norman was on board the Tuscania when it was sunk. He is assistant manager of the office at Newport, Wash.

G. P. Goodman, who for several years has represented the Hisey-Wolf Machine Company in the East, will join F. H. Niles & Company, Inc., on Oct. 1, to take charge of their portable-tool department. F. H. Niles & Company handles not only the Hisey-Wolf line of electric machine tools but the Canton pneumatic hammers and drills manufactured by the Pittsburgh Pneumatic Company in the East. Other changes in the Niles company are the appointment of F. H. Crawford as secretary and J. E. Haetten as sales manager.

Railway Track-Work Company, Philadelphia, Pa., by an agreement with the Atlas Railway Supply Company, Chicago, has taken over the manufacture and exclusive sale of the Atlas rail grinder. The former company will continue the manufacture and sale of its reciprocating track grinder. The latter company has been appointed sales agent for the Middle West for both the reciprocating and Atlas grinders. Sales of both machines in the New England States will be handled by the C. N. Wood Company, Boston, which has heretofore sold the reciprocating track grinder in that district.

Handy Supply & Manufacturing Company, Cleveland, Ohio, announces that E. H. Martindale, formerly sales engineer of the National Carbon Company, has been elected president and general manager of the company. He has been a frequent contributor to the technical press on the care and operation of motors and generators and for the past two years was chairman of the industrial and domestic power committee of the A. I. E. E. and is at present a member of the board of directors of that association. Mr. Martindale served during the war as a captain of engineers and was stationed one year in France.

Roller-Smith Company, 233 Broadway, New York City, announces the appointment of the General Machinery Company, 744-745 Brown-Marx Building, Birmingham, Ala., as its agent for Florida, Georgia, Alabama, Tennessee. B. A. Schroder is president of the General Machinery Company and W. H. Price is sales engineer. The company has been located in Birmingham for about ten years. In addition to representing the Roller-Smith Company, it also represents the following: Crocker-Wheeler Company, Goodman Manufacturing Company, Cutler-Hammer Manufacturing Company, Pittsburgh Transformer Company, and the Esterline Company.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., announces the following changes and appointments: W. H. Garrett has been appointed manager of the electrical as well as the steam contract division of the power sales department; G. T. Gilchrist of the research engineering department becomes acting manager of the porcelain section, with headquarters at Derry, Pa.; K. B. Hunter, manager of the engine and pump department of the Pittsburgh office of the Fairbanks-Morse Company, has resigned to become connected with the Cincinnati office of the Westinghouse company. J. C. Van Norman, manager of the electrical contract division of power sales, has been transferred to the Atlantic district office.

New Advertising Literature

International Nickel Company, New York, N. Y.: Booklet telling about its nickel products.

Breeze Manufacturing Company, Newark, N. J.: A thirty-six-page booklet on flexible metal hose, tubing and accessories.

Westinghouse, Church, Kerr & Company, Inc., New York, N. Y.: A pamphlet, "The Same Payroll the Year Round."

Schutte & Koerting Company, Philadelphia, Pa.: Revised edition of Catalog 8-B on stop, stop check and emergency valves. This company will be pleased to forward a copy to those interested.

Asbestos: There has recently come out a monthly market journal entitled Asbestos, published by Secretarial Service, 721 Bulletin Building, Philadelphia, devoted to the interests of the asbestos and magnesia industries.

Van Dorn Coupler Company, Chicago, Ill.: An illustrated pamphlet descriptive of automatic car couplers and draft gears for electric railway cars, with special reference to a late design of coupler with air connections in the coupler head.

Milliken Brothers Manufacturing Company, Inc., New York: Catalog No. 10 on transmission towers, radio towers, and pinlock poles in addition to Milliken buildings. Catalog No. 11. Erection handbook for steel buildings, including foundation plans, and erection diagrams.

Whiting Foundry Equipment Company, Harvey, Ill.: Catalog 149, twenty-four pages illustrated on cranes, foundry, and railway equipment, including screw-jack hoists, turntable tractors, and turntables, also catalog No. 150 superseding No. 129 on the Whiting converter.

O. M. Edwards Company, Inc., Syracuse, N. Y.: Catalog W-19. A sixty-four-page 8 x 11 in., illustrated booklet with drawings, designs, and cuts of everything descriptive of window fixtures, metal sash balancers, brackets, locks and racks, compression devices, metal stop casings, and weather strippings.

Electric Railway Journal

This is a delayed number of this paper and is issued on Nov. 26

Volume 54 New York, Saturday, November 1, 1919 *Number 18*

Company Section Activities Are Due to Begin

DURING the war period there was a necessary let-up in the work of the American Electric Railway Association company sections. Meetings were maintained against all kinds of opposing influences. As a result, comparatively few papers of conspicuous merit were presented, and there was a marked tendency to devote the meetings largely to social relaxation, presumably as an offset to the depressing effect of war. Now is the time to forget the past and to plan for an aggressive campaign for the winter season. We hope that, without neglecting the social features, the chief emphasis will be placed upon constructive and inspiring addresses and papers, with the object of conveying information that the hearers want rather than that which the speakers are most anxious to impart.

One trouble with the company section paper, speaking broadly, has been that it was either over the heads of the audience or outside of its range of interests. It requires a peculiar knack to tell a story in terms that the listeners will understand. We suggest that in inviting speakers for the coming season, the program committees ask them well in advance to study carefully the prospective audiences which they will later face.

Connecticut Company Zone Plan Seems to Be Working Smoothly

AS THIS editorial is written the zone system has been in operation on the lines of the Connecticut Company for nearly two weeks. As was explained in an earlier editorial, the plan was adopted only after very careful traffic study and analysis of all possible methods of increasing the company's revenue. Although there have been numerous protests against the increases in fare which accompanied the inauguration of the zone system, and although there will undoubtedly be requests for investigation which the Public Utilities Commission will be obliged to heed, on the whole the clientèle of the railway company has taken the situation reasonably. It will now be up to the public to show that the rates of fare are so high as to bring an undue financial reward to the company, or are discriminatory as among different classes of patrons. To do this will, in our opinion, be difficult because, obviously, the company has worked out its rate schedule on the basis of charging no more than is actually necessary to keep the property going and giving the needed service.

The minimum fare on the Connecticut Company's system is 6 cents, as compared with 5 cents on the Public Service Railway, but the Connecticut Company officials were convinced that they could not give service in what appeared to them to be the ideal zone layout for this fare, and in view of the fact that the 6-cent fare has been in use in Connecticut for two years it seemed best to give the maximum service that could be given for that fare.

Those who are convinced that the zone system is right in principle and can be made right in practice, the number of whom we believe is increasing, will be encouraged by the results so far achieved in Connecticut. While all may not agree as to the details of the plan used there, it must be conceded that as it is highly important to have a number of properties operating under this plan in order that the imperfections may be worked out and public confidence may be secured the Connecticut Company is to be commended for getting something started. The plan which was adopted seems to us to be fundamentally sound, and we hope that it may appeal to the sober judgment of our friends of the Nutmeg state, or as the people themselves prefer to call it, " The State of Steady Habits."

As far as one can judge from observation of the new plan in practice and from discussion with employees of the company, the Connecticut Company firmly believes that it is practicable on this property. Such conviction will go a long way towards convincing the public. Although a great deal of general educational work has been done by way of advertising, verbal explanation, etc., it will be up to the platform men of the company, largely, to " sell " the plan to the public. For example, its motormen can hand zone checks to incoming passengers in such a way as to make the passengers feel that they have been the recipient of courtesy, or the motormen can make the passengers feel that it is an imposition to bother them with zone checks. Again, the conductors can very greatly facilitate the payment of fare and the alighting passengers, or they can develop any incipient tendency that the passengers may have in the direction of a " grouch." In other words, if the company management cannot sell the zone plan to its employees, it cannot sell this plan to the public. In Connecticut every effort was made to show the employees, apparently with success, that if the plan is good for the company it is good for them. We feel that the demonstration will have been as much an achievement in good salesmanship as in giving good service if the Public Utilities Commission ultimately puts its stamp of approval on the zone plan.

Bus Facts Versus Bus Fancies

THERE is already a distressing amount of evidence that we are facing an era of bus-line promotion that threatens to repeat the worst features of the hey-day period of the electric railway. The undoubted utility of electric railways was exploited in the old days by more than one promoter whose enthusiasm lead to the building of the roads but not to the paying of the promised roseate dividends. So, too, the undoubted value of the motor bus is the starting point for a later generation of what *The Spectator* used to term "projectors."

These thoughts are prompted by an examination of recent financial literature on the motor bus. The results with new routes are predicated upon returns obtained elsewhere under far more favorable conditions and in a far more favorable period of costs. For example, the motor bus operations of London are quoted as being highly profitable, whereas the rate of return has been badly below bank interest in the last two years or more, while the operations of the current year show a deficit. Of course, the reason is that labor and material costs have gone up much faster than income. To offer bus stock as a good investment upon the basis of what some other company earned in pre-war times is as misleading as it would be to try to sell street railway stock on the same basis. Indeed, the bus has suffered even more than the electric railway through increases in the dominant item of wages because the number of passengers per bus operative is decidedly less than per car operative.

The bus promoter is also likely to be too sanguine about the item of depreciation and obsolescence. The latter, in these days of rapid development of vehicles, actually may lead to the scrapping of the bus before it is worn out because the public will always be making comparisons between the bus for which their patronage is solicited and the latest automobile. Such comparisons are more hurtful to the bus than to the street car, since the bus is primarily a vehicle which makes its appeal largely on the grounds of more luxurious and more direct service and on which a high fare should naturally and can properly be charged.

Just as the bus promoter overlooks the effect of the recent enormous increases in wages and underestimates depreciation and obsolescence, so does he err in estimates of bus mileage and bus earnings. One estimate calmly assumes a performance of 40,000 bus-miles per annum; yet the actual performance of the same type has under similar conditions in another city averaged only 27,000 miles. While we may grant that a bus can average or slightly exceed a schedule of 9 m.p.h., its over-all performance through the year will be less than that of electric cars for two reasons. First, the bus day is shorter because of the smaller amount of early morning traffic; second, the bus spends more time in the shop undergoing inspection and repairs. In view of the fact that 40,000 miles per annum is good electric car performance, we would hardly expect more than 30,000 to 32,000 miles from the more complex bus. So in this item alone, we see that the bus man expects to handle his business with but 80 per cent of the buses he readily needs, and his first costs, buildings, etc., are affected in proportion.

But most misleading of all can be the estimates of traffic. It is easy to multiply the estimated mileage by the estimated passengers per mile and rate of fare, and come through with a triumphant 20 per cent return upon the investment. Analysis shows, however, that the optimistic promoter expects to build up in one year against competition as much business as other bus lines have built up in ten years with every condition of non-competition, short riding, dense population, etc., in their favor!

Far be it from us to decry the many ways in which buses can be made an adjunct to and a part of the popular transit facilities of a community. The bus has a place, though a limited one, in city transportation, as we pointed out editorially in the issue of Sept. 20. But the present plight of the street railway is overwhelming proof that utility to the public and profit to the investor are by no means one and the same thing. Therefore would we say to the man who is asked to go into a bus company: There is no more financial magic about gasoline than there has proved to be about electric transportation. Don't put a dollar into the bus until you are satisfied that every lesson of electric railway experience—such as unchangeable routes, rising costs, the need for a service-at-cost basis, etc.—has been taken into consideration.

Referendums Usually a Failure in Deciding Economic Questions

THE failure of the Denver electorate to indorse either of the two plans submitted at the election on Oct. 22 to settle the railway franchise question in that city leaves the situation as it was. Two plans suggested were designed to put the transportation system on a permanent basis, and both involved certain elements of service at cost, although one was known officially by that name and the other as the "elastic 6-cent fare plan." The referendum was preceded by an extended publicity campaign on the merits of each plan by citizen committees, while the company remained neutral, asking only for some reasonable and permanent settlement. Yet in spite of this campaign, only 40 per cent of the registered voters took the trouble to go to the polls. In the vote cast, the "service-at-cost franchise," recommended by the committee of fifty-five, lost by only 244 votes according to the returns, while the elastic 6-cent fare ordinance was defeated by a vote of 10,884 to 4,577.

The election in Denver illustrates again the weakness of the referendum for settling the economic questions of a municipality. Such matters, especially where they involve the question of justice to others, should not be determined by popular vote. In the first place, the average citizen will not take the time and trouble to give them the consideration they deserve or often even to vote. But even if he should attempt to study the question carefully and decide impartially he is after all an interested party, and it is a maxim in jurisprudence that no man should act as judge in a case in which he is interested. Our greatest wonder, therefore, is not that the franchise was defeated but that it came within 244 votes of being carried.

If, then, such questions should not be referred to popular vote, who is to decide them, and is not a denial of the referendum in cases of this kind an imputation against the fairness of the American voter? By no means. The question of a proper fare should be settled by an expert and an impartial commission, assisted in its determination of legal matters by the courts. When this is done, the public, like any other good litigant, will accept an adverse decision if it is satisfied with the fairness of the judges, and such willingness is just as good evidence of good citizenship and far more reasonable to expect than that the public will decide against itself in a question of how much it should pay for a necessary commodity or service.

St. Paul's Cascade Electrification Will Soon Be in Full Operation

OWING to the war there has been some delay in the completion of the plan of the Chicago, Milwaukee & St. Paul Railway for electrifying its Cascade Division. In a very few weeks now, however, the new passenger locomotives will be hauling the famous "Columbian" and "Olympian" across the Cascade Range, and the stored energy in these trains will be flowing back into the companies lines or even possibly into the transmission lines of the Washington Water Power Company as the trains go down the grade. When the new passenger locomotives have been delivered for the Rocky Mountain Division and the present high-speed locomotives on that division have been regeared for freight operation, the St. Paul Railway will have two splendid electric zones, separated by a short steam division of which the early electrification would seem to be inevitable. The steam division will be in a sense isolated, and from the standpoint of operating economy it will be necessary to electrify it. A stretch of more than 1000 miles of electrified track would certainly furnish a fine demonstration of the possibilities of heavy electric traction.

At a recent gathering of railroad men and others an operator high in the motive power department of one of our principal railroads said that some years back he had been prejudiced against electrification, but observation of the results secured from the St. Paul had entirely converted him, and he is now an enthusiast for it. May his tribe rapidly increase! Results such as those secured on this road, on the Norfolk & Western Railway and others are convincing the "doubting Thomases" that at least for surmounting ranges of mountains, electrification is the thing. To be sure, they insist on reminding us that contemporaneously with the improvement of the electric locomotive the steam locomotive development has not been slow. On fairly level track where there are no long tunnels, the competition between the two types of locomotive is bound to be increasingly keen. Mounting cost of coal, however, is going more and more to force conservation of this precious mineral. Electrification of all power-consuming devices is bound to come, and heavy traction is intimately tied in with this development. The approaching completion of the electrification of the western end of the St. Paul system is a milestone in the path of progress.

Protect the Car Storage Yard Adequately From Fire

THE fire hazard in an electric railway car storage yard is one worthy of even more serious consideration than it has received. We occasionally read of a holocaust, but there are many minor fires which receive no publicity but which in the aggregate cause the loss of much greatly needed equipment. As it is not uncommon to have rolling stock to the value of $1,000,000 accumulated in one yard, the urgency of insuring suitable fire protection for this valuable equipment is obvious. The same principle applies in yards even where the possible loss is comparatively small.

Where conditions render it practicable, some such arrangement as that described by A. E. Harvey in an article appearing in the issue of this paper for Dec. 28, 1918, is highly desirable. In this article the writer explains why and how monitor towers were installed in a rearranged yard in Kansas City, so that any point in the yard could be reached without stringing hose across the tracks. In Mr. Harvey's yard the purpose in eliminating the hose was to obviate danger of interruption of the water supply by the cars which were being moved out of the danger zone. In the storage yards of lines which use third-rail there is an additional danger of electrical shock to firemen and others when hose is strung across the tracks. There are cases, however, where there are no fire hydrant connections of sufficient capacity in the immediate vicinity of a storage yard to permit the use of towers or hydrants, so that some other form of protection against fire must be resorted to.

An illustration of this last case was discussed in the issue of this paper for Oct. 18, namely, the practice of the Elevated Railways of Chicago, which has adopted cars equipped with chemical apparatus for the protection of yards not supplied with water. While these cars are not often called into service they have at times proved to be very effective means of protection. As the cars are not equipped with motors and control and were built by the company in its own shops, the investment cost was not large.

There is also very little maintenance expense, and the depreciation is practically negligible. The fact that the cars are not equipped with motors and control does not decrease their availability or flexibility, for whenever there are any cars lying idle in the yard one is always attached to a fire car. This motor will not be needed in service until all cars have been withdrawn from the yard, after which time there is no further use for the fire car.

These examples of recent progress in safeguarding equipment in the storage yard are cited simply by way of illustration of the general principle. While the insurance companies naturally exert all possible pressure on their policyholders to reduce fire hazard, it is a good thing for the electric railways themselves to exert their initiative in this direction. The question is not merely one of keeping down the danger of loss of property, but also one of preventing the possibility of the company being hampered in the giving of good service.

London's Tubes and Buses—II

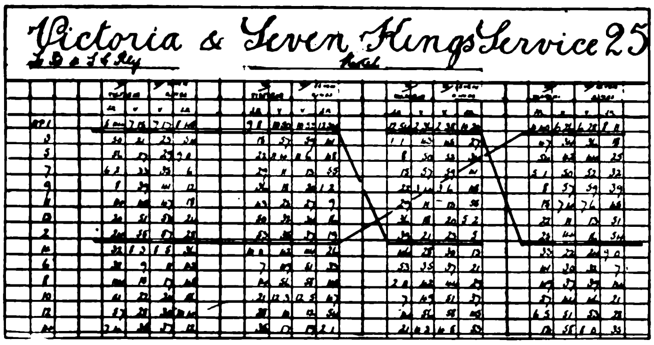
Bus Time-table Practices—Zone Fare Auditing—Methods of Payment—Bonus Systems—Training, Welfare Work and Other Features Relative to Employees on London's Tubes and Buses

By WALTER JACKSON

IN VIEW of the importance of bus service to the transportation facilities of London, a few particulars about time-table practice may not be out of place.

Bus drivers and conductors formerly were paid on a mileage basis, the rates per mile varying according to the character of the route. Thus, "C," the highest rate, was for operation through congested districts; "B," the lowest rate, was for operation through districts where higher speeds are possible, and "A" was the intermediate rate. An addition to the rate is also made according to the record and seniority of the employee; also an extra payment of 1s. per hour is granted if the spread-over exceeds twelve hours. Layovers, therefore, do not enter into the calculations of wages paid. At the in-town end, layovers are only two or three minutes; at the outer end, they are somewhat longer, to average say ten to twelve minutes per round trip. Under a new agreement drivers and conductors are paid by the hour.

In general, the time-tables are prepared upon the basis of three crews for every two buses, namely, early, late and relief spells. On the table, buses which go out of the garage first have an odd number and those which are started an hour or so later have an even number. Letters are used to identify the garage. The first spell of an odd-number bus is handled by the early crew which, after one hour's relief, take their second spell on an even-number bus. The second spell of the odd-number bus is taken by the late crew which, after one hour's relief, takes the third spell on the even-number bus. The relief crew begin by working during the relief period on the even-number bus, and after they have had their own relief, they take care of the third spell on the odd-number bus. To illustrate this more clearly, the following figures are quoted from the accompanying reproduction of part of a standard time-table:


Victoria & Seven Kings Service 25

PORTION OF STANDARD BUS TIME-TABLE SHOWING ALLOCATION OF WORKING TIME FOR DIFFERENT CREWS

Early crew on AP1 from 5.44 a. m. to 12.34 noon, then on AP2 from 1.39 p. m. to 5.05 p. m.

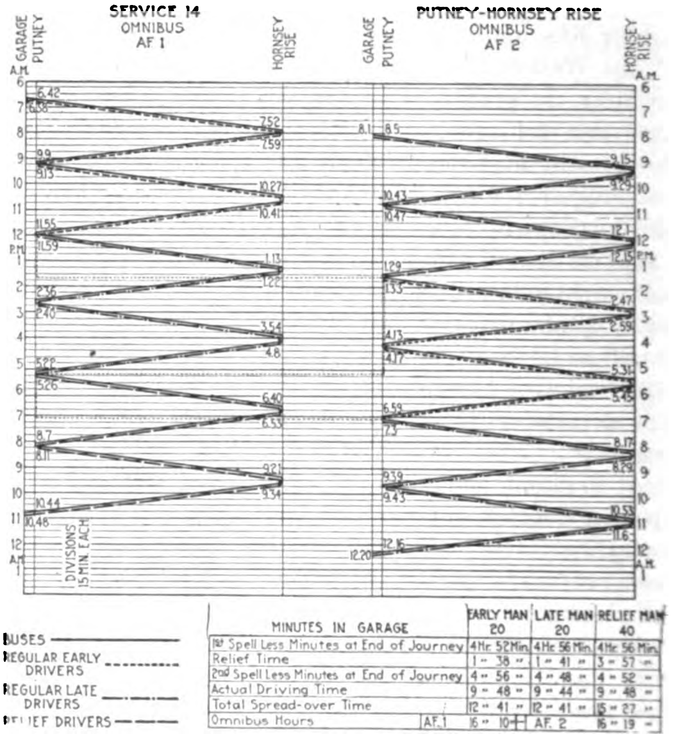
Late crew on AP1 from 12.54 noon to 4.20 p. m. and on AP2 from 5.25 p. m. to 8.54 p. m.

Relief crew on AP2 from 6.24 a. m. to 1.19 p. m. and on AP1 from 4.40 p. m. to 8.11 p. m.

In an accompanying illustration is shown a graphical representation of the division of crew times on an odd and even-number bus. In the original, red represents the early crews; green, the late crews, and yellow, the relief crews. The subdivision of spread-over time, etc., is tabulated at the bottom of the graph.

The schedule, previously shown, covered the work of the individual buses of a garage but did not designate the crews, the detail of their trips, their working periods, mileage made, spread-overs, etc. This character of data will be found on the "Drivers' and Conductors' Duty Schedule" reproduced. At the top of the table will be noted a tabulation of wages (under the old system) for drivers and conductors based upon classification "C," the intermediate group. Reference to the mileage column shows that ten-hour spreads give about 65 bus-miles and fourteen-hour spreads about 82 bus-miles. It is to be observed also that the wage calculation was prepared in advance.

In accordance with British practice, each bus carries a time-card, as illustrated, front and back. The front simply shows terminal times. The back of the card supplements these by a printed statement of the number of minutes allowed for point-to-point operation before 9 a. m., during the busy hours of week days and Saturdays and during the slack hours of week days and Saturdays, all detailed as shown in the accompanying reproduction of the Victoria—Seven Kings route. In this instance the difference between maximum and minimum running times is 9 per cent.

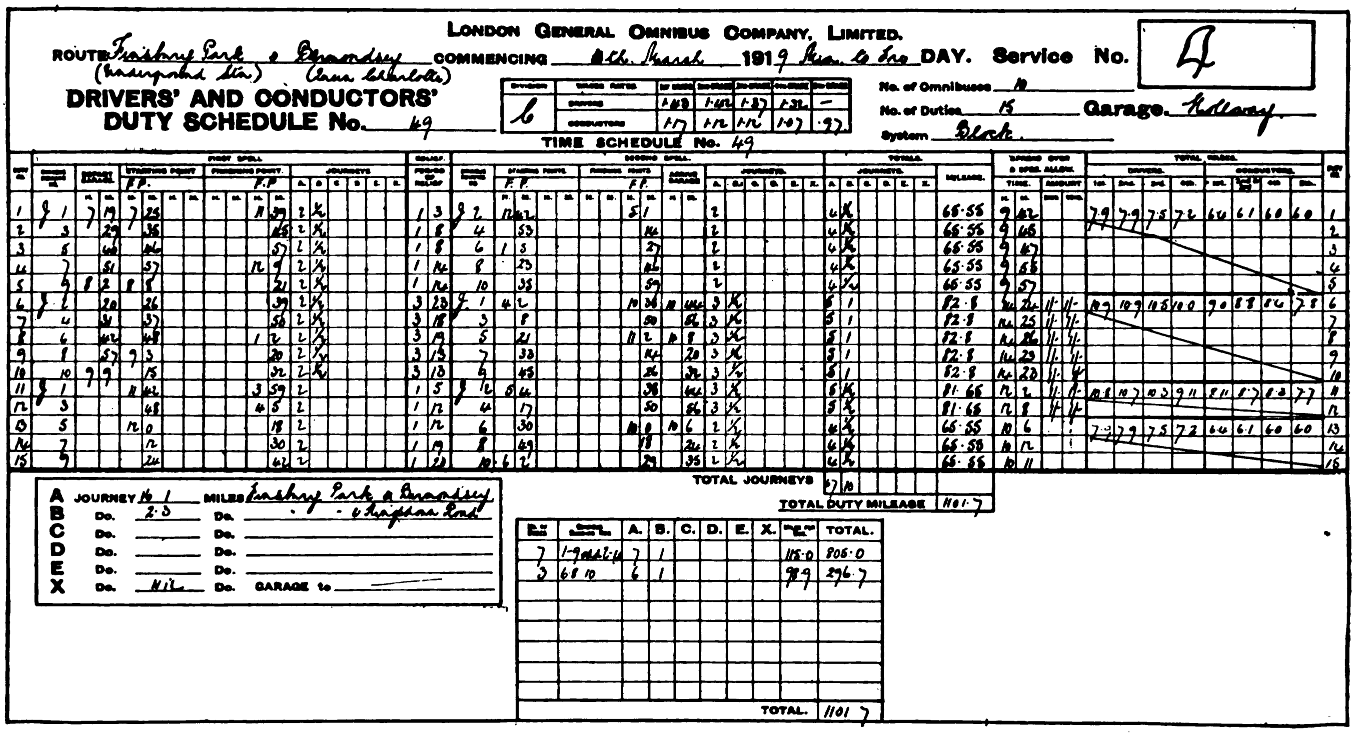


MINUTES IN GARAGE		EARLY MAN 20	LATE MAN 20	RELIEF MAN 40
1st Spell Less Minutes at End of Journey		4 Hr. 52 Min.	4 Hr. 56 Min.	4 Hr. 56 Min.
Relief Time		1 " 38 "	1 " 41 "	3 " 57 "
2nd Spell Less Minutes at End of Journey		4 " 56 "	4 " 48 "	4 " 52 "
Actual Driving Time		9 " 48 "	9 " 44 "	9 " 48 "
Total Spread-over Time		12 " 41 "	12 " 41 "	15 " 27 "
Omnibus Hours	AF. 1	16 " 10 "	AF. 2	16 " 19 "

GRAPHICAL REPRESENTATION OF THE DIVISION OF CREW TIME ON AN ODD AND EVEN NUMBERED BUS

In addition to run numbers, such as AP1, AP2 carried on the side of the buses, these vehicles must also show bonnet, police and license numbers.

When a transportation company is using 2,000,000 tickets a day on scores of routes and in denominations from 1d. to 1s. 6d. etc., it may be said to be constantly on its toes



LONDON GENERAL OMNIBUS COMPANY, LIMITED.

ROUTE Finsbury Park & Bermondsey (Underground Stn) (Crown Charlotte) COMMENCING 8th March 1919 Mon. to Fri. DAY. Service No. 4

DRIVERS' AND CONDUCTORS' DUTY SCHEDULE No. 49

Division 6

Drivers	1.48	1.42	1.37	1.32	–
Conductors	1.17	1.12	1.12	1.07	.97

TIME SCHEDULE No. 49

No. of Omnibuses 10

No. of Duties 15 Garage Holloway

System Block

TOTAL JOURNEYS 67 10

TOTAL DUTY MILEAGE 1101.7

A JOURNEY No. 1 MILES Finsbury Park & Bermondsey
B Do. 2.3 Do. " " & Shaftesbury Road
C Do. Do.
D Do. Do.
E Do. Do.
X Do. Nil Do. GARAGE to

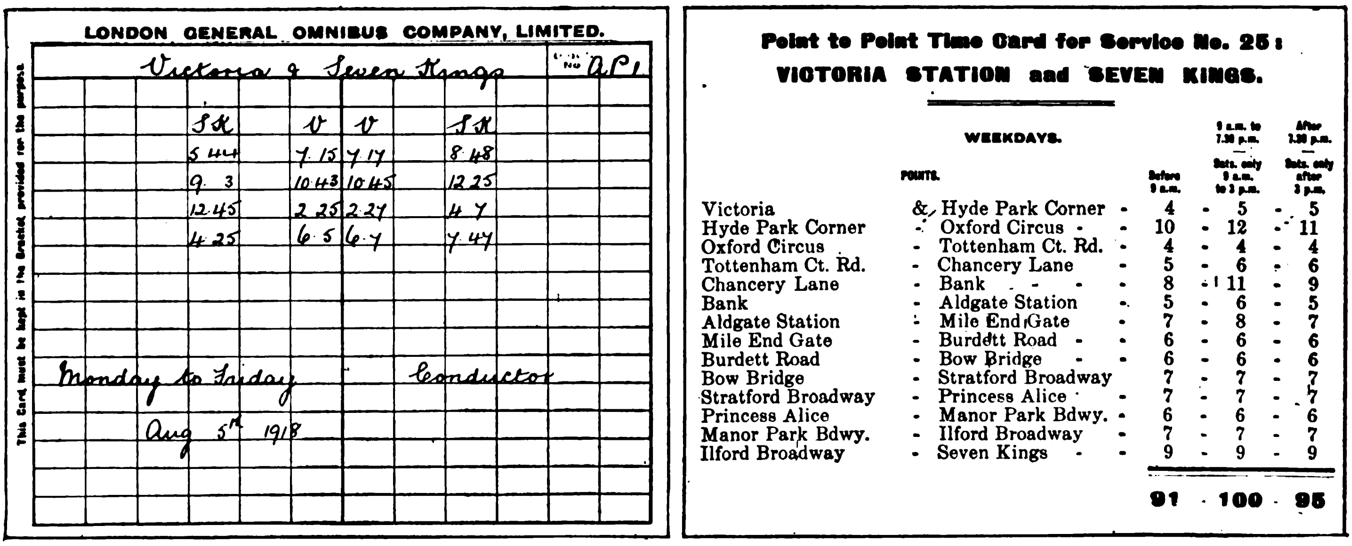
		A.	B.	C.	D.	E.	X.		TOTAL.
7	1-9 and 12-14	7	1					115.0	805.0
3	6 8 10	6	1					98.9	296.7
								TOTAL.	1101 7

DRIVERS' AND CONDUCTORS' DUTY SCHEDULE

to find ways and means of simplifying the ticket and reducing its cost. Here, too, as in other affairs, the spur of war necessity accelerated improvement. The order had gone forth to save paper, and save paper the company did. Tickets that were 4 to 5 in. long because they showed all the stages over a given route were shortened to 2½ in. by "splitting" the ticket, namely, issuing say a 1d. ticket for one-half the route and a second 1d. ticket on which the stages of the remaining half were shown. Of course as the denomination of a ticket rises, its stages cover greater distances and are therefore fewer in number. Hence, tickets from 4d. up are only 2½ in. x 1¼ in. and the cheapest tickets now do not exceed 3¾-in. length by 1¼-in. width.. All but the most popular or penny tickets are colored, and the price appears both in small black type and large red surprint. The higher rates are due to the long runs into the country. In fact, on a route like Golder's Green-St. Albans, the long-distance riders exceed the short riders, since the run is through open country in competition with the railways. Several tickets are reproduced on page 818.

In addition to the letter and serial numbering of the tickets, it is essential to make a further subdivision according to routes or "services." The service numbers are printed at the side of the tickets in some cases and at the top in others, according to space conditions. The ticket is also identifiable by the names of the stages on the particular route. For use in emergencies, there are printed at the bottom of the tickets a number of letters. These letters serve several purposes, such as for indicating rides between stages that have just been established and which will appear on the new ticket when the old type is exhausted; or they may be used for indicating rides between the stages temporarily established for the long pleasure rides, for sudden changes in the lengths of ride for a given fare, for special runs out of certain garages, etc. On the higher-priced tickets, these emergency letters embrace the entire alphabet, thereby giving these tickets great flexibility. Numbers are also used for emergency conditions, but not to show standard stages.

In standard tramway practice, it is customary for the



LONDON GENERAL OMNIBUS COMPANY, LIMITED.

Victoria & Seven Kings No. A.P.1

SK	V	V	SK
5 44	7.15	7.17	8.48
9. 3	10.43	10.45	12.25
12.45	2.25	2.27	4 7
4.25	6.5	6.7	7.47

Monday to Friday Conductor

Aug 5th 1918

This Card must be kept in the Bracket provided for the purpose.

Point to Point Time Card for Service No. 25:
VICTORIA STATION and SEVEN KINGS.

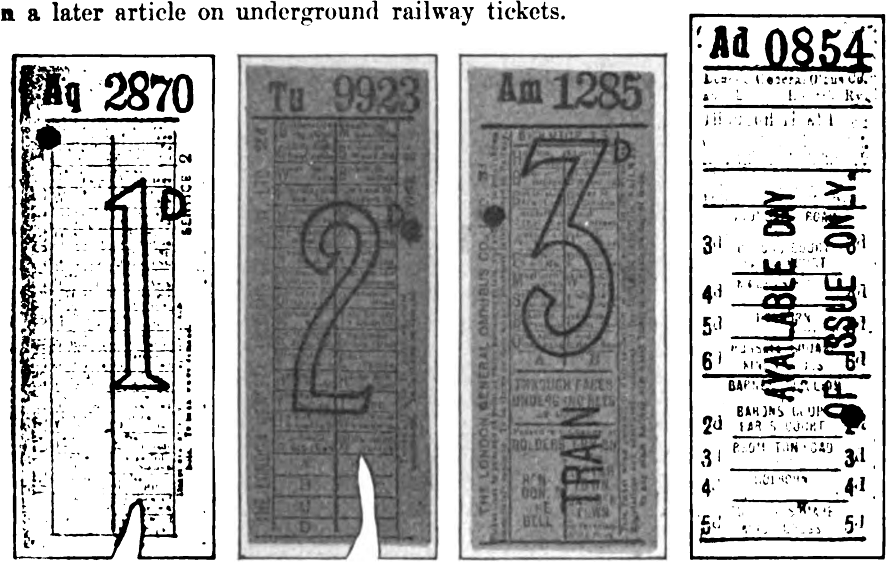
WEEKDAYS.

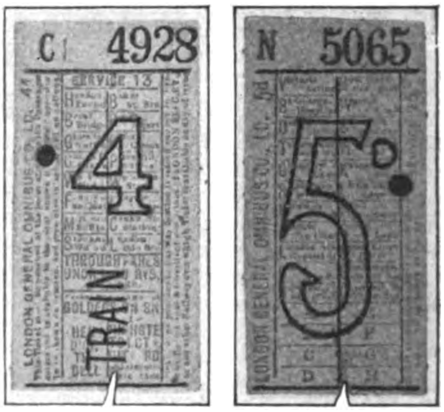
POINTS.		Before 9 a.m.	9 a.m. to 7.30 p.m. — Sats. only 9 a.m. to 3 p.m.	After 7.30 p.m. — Sats. only after 3 p.m.
Victoria	Hyde Park Corner	4	5	5
Hyde Park Corner	Oxford Circus	10	12	11
Oxford Circus	Tottenham Ct. Rd.	4	4	4
Tottenham Ct. Rd.	Chancery Lane	5	6	6
Chancery Lane	Bank	8	11	9
Bank	Aldgate Station	5	6	5
Aldgate Station	Mile End Gate	7	8	7
Mile End Gate	Burdett Road	6	6	6
Burdett Road	Bow Bridge	6	6	6
Bow Bridge	Stratford Broadway	7	7	7
Stratford Broadway	Princess Alice	7	7	7
Princess Alice	Manor Park Bdwy.	6	6	6
Manor Park Bdwy.	Ilford Broadway	7	7	7
Ilford Broadway	Seven Kings	9	9	9
		91	100	95

BOTH SIDES OF TIME-POINT CARD CARRIED IN BUS conductor to punch the destination stage. On the London General Omnibus tickets, however, the stages are so arranged that the punch mark shows both the entrance stage and, directly opposite, the destination stage.

For through booking with the Underground Electric Railways, the duplex type of ticket is being superseded by a single ticket of the general bus design in order to save work for the conductors. When a bus passenger buys such a ticket, it is punched in the entrance section as usual. On alighting at the underground station indicated on the ticket, he presents the ticket for a second punching which cancels it against reuse. He gives up the ticket on completing the underground ride exactly like any other subway rider. It should be added that the ticket also shows the names of the farthest stations to which he is entitled to ride, as for example: "Passengers change at Finsbury Park for Kings Cross (or) Russell Square, Holborn."

Passengers who book from the underground lines to the bus lines purchase a two-part ticket as will be described in a later article on underground railway tickets.





SPECIMENS OF LONDON BUS TICKETS

The tickets are supplied by the Bell Punch & Ticket Company of London. The lower rate tickets are stocked for six to eight weeks ahead and the higher rate tickets for longer periods. Advertising on the back of tickets is handled directly by the ticket printer.

TICKET CHECK WITHOUT AND WITHIN

It is obvious that in a city like London the enormous fluctuations in traffic and the large number of employees demand a greater proportion of supervisory personnel than in smaller cities where traffic changes are less violent and where there is a closer relationship between the platform employees and the management. This fact must be taken into account when it is stated that there are 650 inspectors for 3400 conductors.

However, only 30 per cent of the time of inspectors is charged against the ticket check account. These men begin the day's work as timekeepers at terminal points, and even during the hours when they are "jumping the buses" their duties cover the whole range of time and traffic supervision. In fact, sixty-nine so-called inspectors are women who are engaged exclusively as timekeepers. If due allowance is made for this, it will be found that the number of outside inspectors is 581 and that 30 per cent of their time is equivalent to the employment of 171 full-time ticket inspectors. These men board the buses at irregular intervals, examine the conductor's tickets and waybills to get the serial numbers, then visé the tickets of the passengers and finally initial the waybill as an indication of their inspection. Part of the inspectors constitute a flying squad for the intensive inspection of routes which appear to require it. In one week early in 1919 there were 10,930 ticket inspections on the entire system at a time when 198 men were on full time and 1439 men on part-time ticket checking.

The usual punch and ticket boxes supplied to conductors on graduated fare systems are furnished on this undertaking through garage clerks who are listed as "second assistant operating foremen." There are about twenty-five of these men. Their time is charged against the item "Running of depot staff" and not against the ticket system since the issuance of ticket boxes is no greater burden than handing out transfer pads to conductors in an American carhouse.

The tickets are put up in advance by the ticket department according to the estimated needs of each conductor. While one box is out in service another is being replenished. The boxes bear the usual identification of conductor's number, route number and station (garage) number. Five motor lorries are required for ticket-box distribution.

Conductors turn in their cash but once a day, not to the second assistant operating foremen but to depot cashiers who receipt therefor by signing the conductor's cash total sheet where designated, in red ink. The cashiers bank the money locally and forward the receipts for their deposits to the head cashier.

This cash total sheet is a record of the conductor's financial operations only. It is entirely independent of his trip sheet or waybill which is prepared for the transportation department. It is on the cash total sheet, which accompanies his box, that the ticket department makes the customary entries of tickets issued, etc., as shown on the form itself. Each cash total sheet is copied into a book record before it goes out with its box.

Of all the undertakings visited, none appears to go into the matter of ticket check to so great a degree of refinement. As the tickets taken from stock are entered on the cash total sheet and placed in the box, they are counterchecked fare for fare by a second girl instead of depending upon one clerk alone. In accordance with the usual practice, each conductor's supply comes from one bin so that the cheaper tickets at least are furnished to him in serial order. Although a conductor must always work off his own remainders these remainders are carefully inspected to see that no intermediate tickets have been withdrawn or lost. This check is especially important on the bus system because of the fact that the fares run up to such high denominations. It is quite possible, also, for the bottom ticket of a pad to drop off, in which event the conductor must turn in a special lost ticket memorandum if he wants the debit against him wiped out.

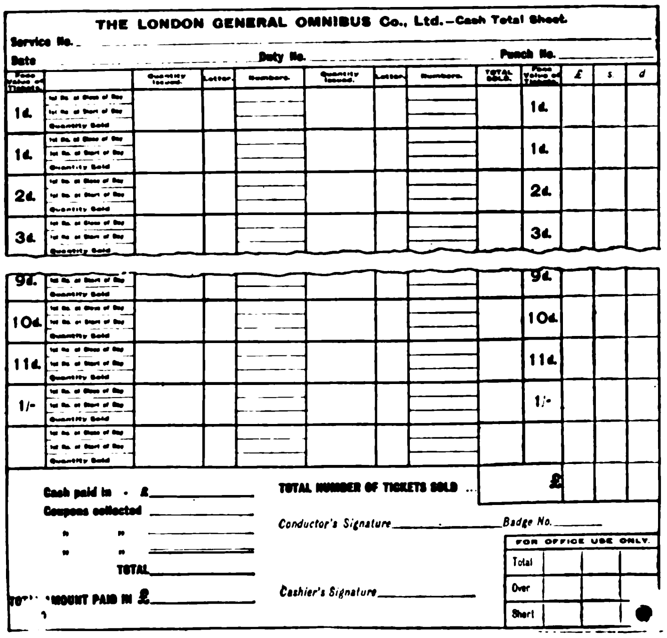
Following the ticket check, the register reading is tallied against the ticket total. As one girl calls out the number shown on the punch, her mate responds with the total shown on the cash total sheet. Ordinarily, the punchings are counted only in the case of discrepancies, no matter how small these may be, but if a conductor is under suspicion the punchings will be counted even if there are no apparent discrepancies. Due to these refinements something like 500 to 550 counts out of 3000 punches are made every day. After the punches have been opened and inspected, they are reset to zero and sealed for reissue.

The last step in the handling of the box returns is to convert all ticket values to pennies as a tally against the cash statement. These extensions are made without the help of calculating machines except following a holiday, when the work is doubled. The machines are comptometers and are borrowed from the comptometer department which is referred to in the next paragraph.

The purpose of the comptometer department is to derive from the cash total sheets such traffic data as the daily, weekly and monthly earnings of the individual routes according to the denominations of tickets sold. Incidentally, the calculations of the comptometer department serve to check the count of the ticket department against the cash earning sheets forwarded by the garage cashiers. The individual service or route statements of the comptometer department also includes the totalized shorts and overs. The garage cashiers restore overs to the individual conductors only upon the order of the chief cashier, following the movement of the conductors' cash total sheets through the ticket department and the counter-checking comptometer department.

For the handling of 2,000,000 tickets a day, the auditing and cash return of 3,000 conductors' cash total sheets and the posting of traffic and different classes of ticket sales on more than 100 routes, the following central office personnel was required as of March 10, 1919:

General clerical staff	16
Forewomen	5
Assistants to forewomen	3
Cash and register clerks	17
Punch clerks	17
Ticket clerks	79
Messroom staff (meals furnished on premises)	4
Porters (male)	9
Comptometer operators	8
Total	158



THE LONDON GENERAL OMNIBUS Co., Ltd.—Cash Total Sheet.

Service No.

Date Duty No. Punch No.

1d. 1d. 2d. 3d. 9d. 10d. 11d. 1/-

£ s. d

Cash paid in . £

Coupons collected

TOTAL

TOTAL NUMBER OF TICKETS SOLD ...

Conductor's Signature Badge No.

Cashier's Signature

FOR OFFICE USE ONLY.

Total

Over

Short

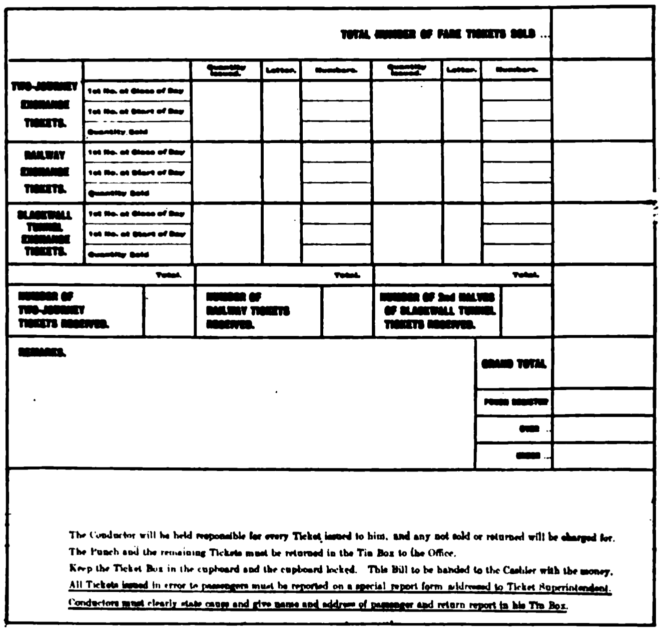
CONDUCTOR'S CASH TOTAL SHEET

INSPECTOR CHECKING TICKETS OF WOMAN CONDUCTOR

The general American impression, that Britons are physically deliberate would be quickly dispelled by observing the flying leaps to and from buses taken by both sexes and all ages of London's population. No marvel then that the London General Omnibus Company and its associated companies had to anticipate the wider campaign which the London Safety First Council has been carrying on for two years. The organization of this council of transportation companies, large employers, etc., along our own lines of co-operative safety work has, however, the merit of getting a better and wider hearing from the public than could the best possible campaign of individual concerns.

Two plans are used by the L. G. O. to enlist the co-operation of its employees; one is to reward the individual and the other is to maintain a spirit of emulation among the forces of the twenty-three garages. The conductors who have been free from accident receive 1d. a day bonus payable quarterly. The drivers receive not only this bonus but another 2s. 6d. to 15s. quarterly depending upon their number of working days and whether they had one, two, three or more mishaps during the period. For the quarter ended September, 1918, the total accident bonus amounted to £2,466 of which £482 was the penny-a-day increment for conductors.

In the case of garage competition, a safety first shield is displayed by the garage which can show the least number of accidents per 10,000 miles every calendar year. For the year 1917-1918 the rating was shown pictorially by a party of mountaineers, each climber representing the relative position of a garage. Those garages which fell back a bit



TOTAL NUMBER OF FARE TICKETS SOLD ...

TWO-JOURNEY EXCHANGE TICKETS.

RAILWAY EXCHANGE TICKETS.

BLACKWALL TUNNEL EXCHANGE TICKETS.

Total.

NUMBER OF TWO-JOURNEY TICKETS RECEIVED.

NUMBER OF RAILWAY TICKETS RECEIVED.

NUMBER OF 2nd HALVES OF BLACKWALL TUNNEL TICKETS RECEIVED.

REMARKS.

GRAND TOTAL

PUNCH REGISTER

OVER

SHORT

The Conductor will be held responsible for every Ticket issued to him, and any not sold or returned will be charged for.
The Punch and the remaining Tickets must be returned in the Tin Box to the Office.
Keep the Ticket Box in the cupboard and the cupboard locked. This Bill to be handed to the Cashier with the money.
All Tickets issued in error to passengers must be reported on a special report form addressed to Ticket Superintendent.
Conductors must clearly state cause and give name and address of passenger and return report in his Tin Box.

CONDUCTOR'S CLASSIFICATION OF TICKET SALES compared with last year are shown out of the perpendicular on the cartoon. In the preceding year, the relative performances were shown by means of the old-time sledgehammer and scale, as also reproduced.

Unfortunately, it is impossible to reproduce satisfactorily the most interesting stimulator of all, namely, the race course. At each garage there is mounted a model of a race course comprising an inner ellipse for the order of merit in the preceding year and an outer ellipse for the order of merit during the current year. Each "horse" is a wooden oval bearing the name of a garage and is placed in the same relative position as the order of merit in freedom from accidents for every 10,000 miles operated. The outer course is brought up to date every month. The best garage showed in 1918 a record of only 0.99 accident per 10,000 miles—a most remarkable achievement at any time, but all the more creditable because it was made during a year when lighting restrictions were still in force and in a city whose fogs are proverbial for density and frequency. Furthermore, it should be stated that the word "accident" includes even such trifling mishaps as a broken window.

In addition to the usual warning signs placed on the buses, the company's appeal to the public includes a variety of cartoons and posters issued independently and many like publications issued in co-operation with the London Safety First Council. Among the latter are the two posters "Tips and Cues for Pedestrians" and "Look Around Before Crossing," shown in accompanying illustrations.

Returning to the matter of emulation between garages, it may be added that an efficiency shield is displayed by that garage which during the preceding year ran the greatest number of consecutive days without loss of mileage. Further, the order of efficiency in the consumption of petrol in miles per gallon is posted on boards on a week to week basis.

Photographs of drivers, male and female, taken outside the Mansion House last April to receive "Freedom from Accident" competition badge and award of the London Safety First Council are shown in accompanying views.

CO-OPERATION BETWEEN COMPANY AND EMPLOYEES

The following are some other methods employed by the company in securing the co-operation of the staff, stimulating their interest and encouraging them to develop resource and initiative:

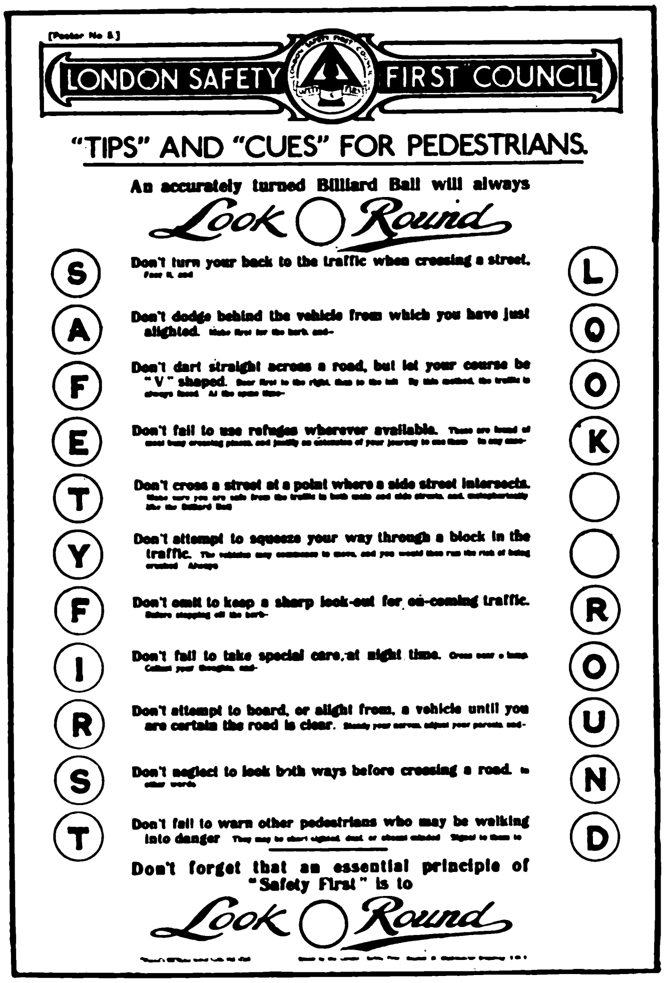
(a) *Suggestion Scheme*

Suggestions are invited from all members of the staff on every aspect of the work, and awards are made if the suggestion is approved. During 1917 and 1918, 1,000 suggestions were received from the staff and awards made number 230. The minimum award is 10s., as high a figure, however, as £50 has been paid for a suggestion.

(b) *Lost Mileage, Accidents*

The men at the garages are encouraged to discuss with the foreman matters relating to lost mileage, accidents, etc. two views on page 822 show a group of men looking at the daily Running Record, the figures of which have just been chalked in by the foreman, and details of the record board.

These figures for all garages are compared from time to time, and there is keen competitive interest as to the num-



LONDON SAFETY FIRST COUNCIL

"TIPS" AND "CUES" FOR PEDESTRIANS.

An accurately turned Billiard Ball will always

Look ○ Round

Ⓢ Don't turn your back to the traffic when crossing a street. Ⓛ

Ⓐ Don't dodge behind the vehicle from which you have just alighted. Ⓞ

Ⓕ Don't dart straight across a road, but let your course be "V" shaped. Ⓞ

Ⓔ Don't fail to use refuges wherever available. Ⓚ

Ⓣ Don't cross a street at a point where a side street intersects. ○

Ⓨ Don't attempt to squeeze your way through a block in the traffic. ○

Ⓕ Don't omit to keep a sharp look-out for on-coming traffic. Ⓡ

Ⓘ Don't fail to take special care at night time. Ⓞ

Ⓡ Don't attempt to board, or alight from, a vehicle until you are certain the road is clear. Ⓤ

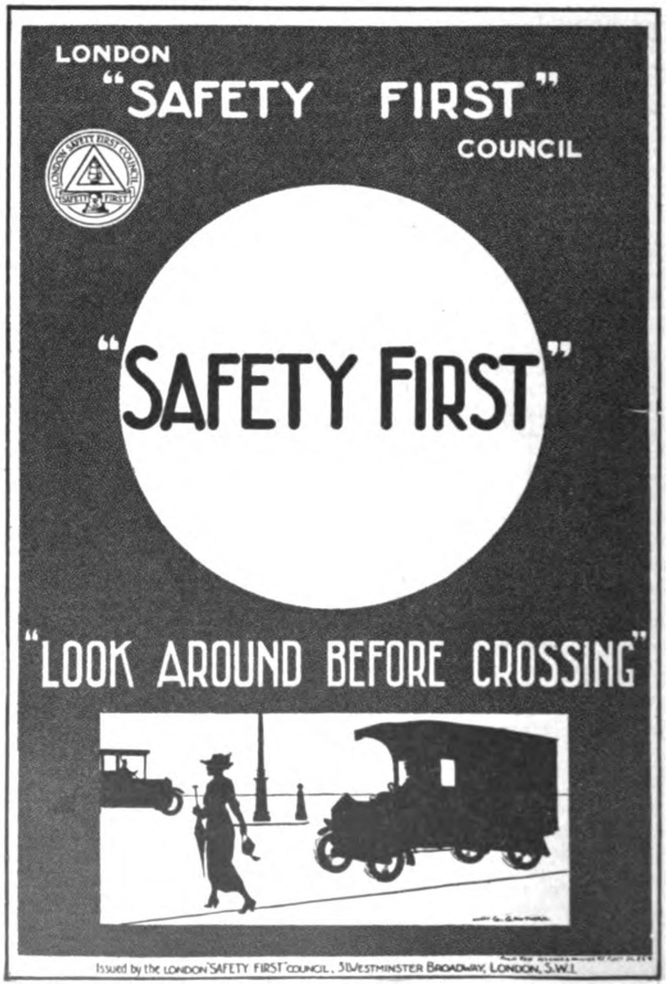
Ⓢ Don't neglect to look both ways before crossing a road. Ⓝ

Ⓣ Don't fail to warn other pedestrians who may be walking into danger Ⓓ

Don't forget that an essential principle of "Safety First" is to

Look ○ Round

BILLIARD LANGUAGE APPLIED TO ACCIDENT PREVENTION


LONDON
"SAFETY FIRST"
COUNCIL
"SAFETY FIRST"
"LOOK AROUND BEFORE CROSSING"
Issued by the LONDON "SAFETY FIRST" COUNCIL, 3 WESTMINSTER BROADWAY, LONDON, S.W.1.

A DANGER WARNING IN BLACK AND WHITE

ber of days which can be run without any miles being lost. Frequently the garages have run 200 days without losing any miles at all, which is a remarkable record considering the surface condition of the routes, during the war the maintenance of which had been set back.

(c) *Efficiency Meetings*

Efficiency meetings are held during the winter in the company's cinema hall at the training school, Chelsea. Between 300 and 400 of the control and inspecting staffs attend. Papers are read, followed by open discussion. These meetings have been held during the last four winters and the fifth series was begun in October, 1919 The following subjects were taken at the series of 1918-1919:

1. Cinema lecture "Some Topical Cinema Productions in Connection with the Underground Railways and L. G. O. Co."
2. Bus maintenance.
3. "Problems of My Official Life." (Seven short papers.)
4. "A Day in a Traffic Controller's Office." (Three papers by the three traffic controllers.)
5. Railway maintenance—civil engineering.
6. "Safety First"—the progress and possibilities of accident prevention work.

(d) *Records of Staff*

Individual attention is devoted to the records of service of the staff and entries are made thereon for special merit. Commendation received from the public is also carefully noted, and frequently the men are brought to the chief office for personal commendation by a higher official.

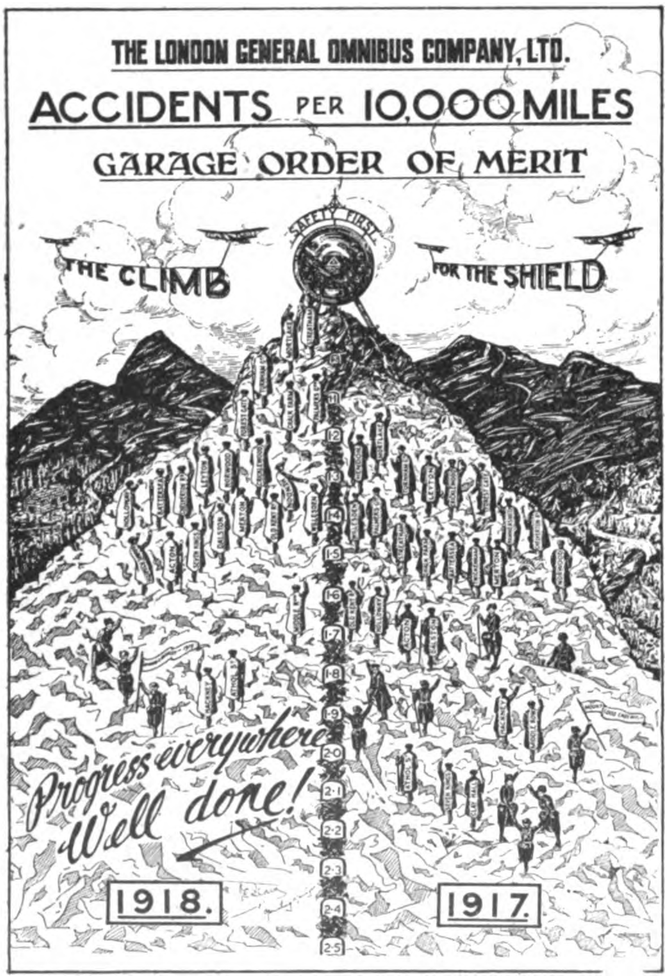
The Omnibus Athletic Club has a membership of over 1,000 and includes cricket, football, tennis, swimming, dances, whist drives, concerts, summer outings. A horticultural society was formed in 1918 and has a membership of 500.

Two shows have already been held, the entries numbering 500 produce exhibits and 100 rabbits. The rifle club, with a membership of 400, is a flourishing phase of the athletic side. Seven ranges in various parts of London are provided and keen interest is taken in the competitions and matches arranged internally and with outside clubs. The company has fifteen billiard rooms and facilities for other indoor games. A photograph of one of the billiard rooms is reproduced.

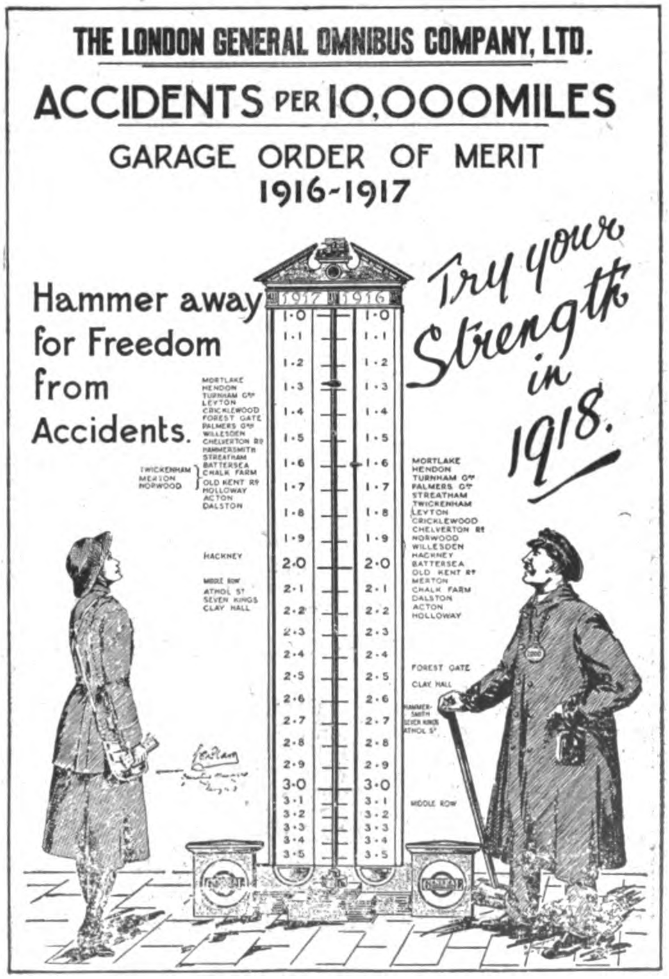
The Athletic & Social Institution issues monthly its *Athletic & Social News,* 10,000 copies of which are distributed among the staff.

SPECIAL CONSTABULARY

In 1914, a division of the Metropolitan Special Constabulary of London was formed, known as the "L. G. O. C. Division," consisting of 450 of the staff, all of whom were obliged to pass a proficiency drill examination. Their duties were mainly allocated to the protection of the company's property and of the public during the air raids. A detachment of fifty of the corps stood by at the company's chief office every night during 1917 and 1918 to take duty at a moment's warning. In addition to this, the remainder of the corps were available on all occasions of air raids, and, with the use of the company's omnibuses, were sent to the various points of London to control the street crowds


THE LONDON GENERAL OMNIBUS COMPANY, LTD.
ACCIDENTS PER 10,000 MILES
GARAGE ORDER OF MERIT
SAFETY FIRST
THE CLIMB
FOR THE SHIELD
Progress everywhere
Well done!
1918.
1917

THE ANNUAL CLIMB FOR THE "SAFETY FIRST" GARAGE SHIELD


THE LONDON GENERAL OMNIBUS COMPANY, LTD.
ACCIDENTS PER 10,000 MILES
GARAGE ORDER OF MERIT
1916-1917
Hammer away for Freedom from Accidents.
Try your Strength in 1918.
1917
1916
MORTLAKE
HENDON
TURNHAM GN
LEYTON
CRICKLEWOOD
FOREST GATE
PALMERS GN
WILLESDEN
CHELVERTON RD
HAMMERSMITH
STREATHAM
BATTERSEA
CHALK FARM
TWICKENHAM
MERTON
NORWOOD
OLD KENT RD
HOLLOWAY
ACTON
DALSTON
HACKNEY
MIDDLE ROW
ATHOL ST
SEVEN KINGS
CLAY HALL
MORTLAKE
HENDON
TURNHAM GN
PALMERS GN
STREATHAM
TWICKENHAM
LEYTON
CRICKLEWOOD
CHELVERTON RD
NORWOOD
WILLESDEN
HACKNEY
BATTERSEA
OLD KENT RD
MERTON
CHALK FARM
DALSTON
ACTON
HOLLOWAY
FOREST GATE
CLAY HALL
HAMMERSMITH
SEVEN KINGS
ATHOL ST
MIDDLE ROW
1·0
1·1
1·2
1·3
1·4
1·5
1·6
1·7
1·8
1·9
2·0
2·1
2·2
2·3
2·4
2·5
2·6
2·7
2·8
2·9
3·0
3·1
3·2
3·3
3·4
3·5

HAMMERING AT ACCIDENT PREVENTION IS A FAVORITE OCCUPATION

LIGHTLESS NIGHTS AND RUTFUL ROADS DID NOT PREVENT THESE BUS DRIVERS FROM RUNNING ACCIDENT FREE

during the time of air raids. They have also been called out for duty on occasions of processions, and the following is an extract of a letter received from the chief staff officer:

> I take advantage of the approaching official visit of the Inspector-General of Divisions to the L. G. O. C. Detachment of the Metropolitan Special Constabulary to express to the commander, his officers and men, my high appreciation of the valuable public service they have always given in the force.
>
> Every duty assigned to the detachment has been performed promptly, regularly and well, and I acknowledge with sincere thanks the time, effort and other contributions to the service.
>
> However exacting the duty, it has always been done with the utmost cheerfulness and good will.
>
> It is with very great pleasure that I congratulate the commander and all ranks serving under him upon the high parade efficiency of the L. G. O. Detachment.

OPERATING DEPARTMENT'S TRAINING SCHOOL (FROM AN L. G. O. SOUVENIR BOOKLET)

The training school and employment bureau of the London General Omnibus Company, Limited, is situated in Chelsea, S. W. The area site occupies some 31,050 sq. ft., 5,396 of which comprise an open yard, in which various hazards, such as dummy refugees, pedestals, etc., are placed, in connection with the training of drivers to avoid such obstacles, to reverse, etc.

The buildings comprise:

(*a*) Five class rooms, in which lectures are given. In the drivers' rooms, various parts of the bus chassis and an actual section through one of the engines are exhibited, so that learners may obtain a knowledge of the mechanical equipment and then be able to remedy small breakdown defects without having to send for assistance;

In the conductors' rooms, operation of the punch and tickets is taught, the fare stages explained and other parts of their duty discussed;

(*b*) The cinema hall, with seating accommodation for 400, where educational films of their work are shown to the men and women in training, actual conditions of service working, points in connection with avoidance of accidents, etc., being clearly discussed during the lectures;

(*c*) A mess room for the provision of food at practically cost price to learners;

(*d*) Small covered yard;

(*e*) Office accommodation;

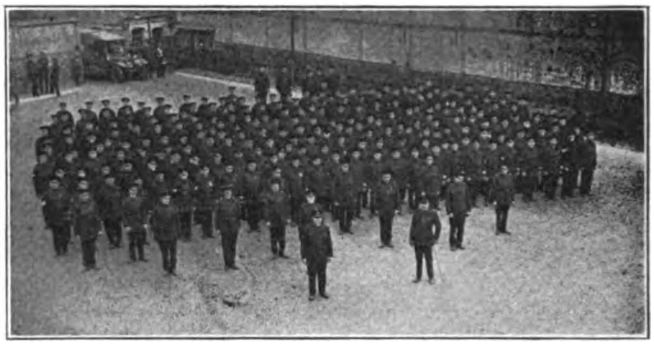
(*f*) Photography section;

Adjoining the actual training school premises, are:

(*g*) Chemical laboratory;

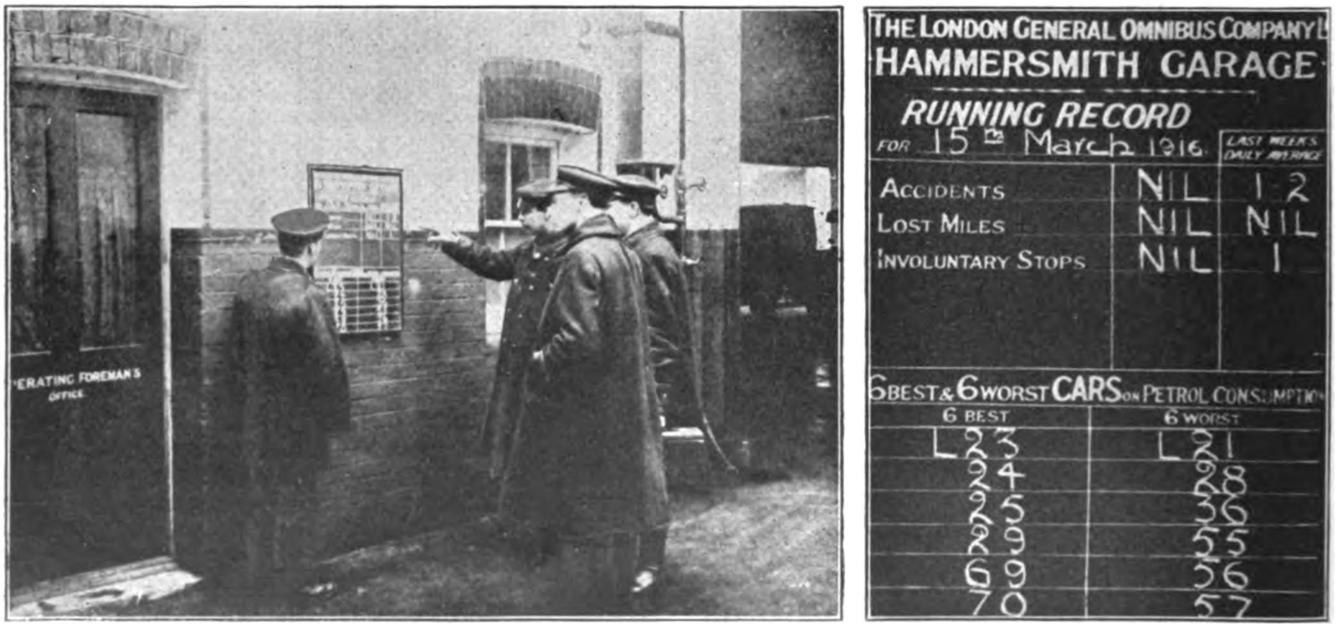
(*h*) The clothing store, the headquarters of the clothing department, which is also under the control of the superintendent of employment, a competent tailor being in charge of the section, assisted by a staff of six storekeepers, clerks and tailoresses. All uniform clothing necessary for the company's 10,000 drivers, conductors and inspectors is dealt with here, both in regard to receipt, storage, issue and record.

The tailor's shop is fitted with staff and machines for dealing with minor alterations to garments. The measurements of the staff have been co-ordinated into twenty stock sizes, thus doing away with the difficulties of individual measurement of so large a number. This has been of material assistance in cost, delivery and speed in fitting.



"WHEN CONSTABULARY DUTY'S TO BE DONE, TO BE DONE," THESE L. G. O. MEN MAKE GOOD

As many as 600 men have been supplied and fitted with well-tailored suits in one day, and out of a total issue to



ERATING FOREMAN'S OFFICE

THE LONDON GENERAL OMNIBUS COMPANY L

HAMMERSMITH GARAGE

RUNNING RECORD

FOR 15th March 1916.		LAST WEEK'S DAILY AVERAGE
ACCIDENTS	NIL	1 2
LOST MILES	NIL	NIL
INVOLUNTARY STOPS	NIL	1

6 BEST & 6 WORST CARS ON PETROL CONSUMPTIO

6 BEST	6 WORST
L23	L21
24	28
25	36
29	55
69	56
70	57

EXAMINING COMPARISONS OF LOST MILEAGE AND EFFICIENCY IN FUEL USE, AND A CLOSE-UP OF THE EFFICIENCY RECORD BOARD

NOR ARE GOOD LOOKS A BAR TOWARD WINNING MEDALS AS CAREFUL DRIVERS DESPITE AIR RAIDS APLENTY

the 10,000 men and women concerned, only twenty remained which required alteration.

The office accommodation includes the headquarters arrangements of the twenty-three mess rooms and institutes, which have been established in connection either with the garages or terminal points in different parts of London, where the employees have special arrangements made to enable them to purchase refreshments at practically cost price, the company bearing the expense of accommodation, lighting, etc. About 3,800,000 purchases were made by the employees during 1917.

TRAINING OF DRIVERS

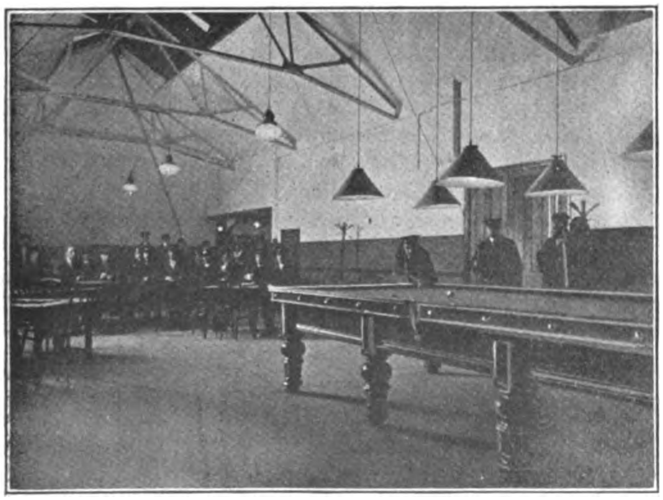
The following is an outline of the procedure in connection with the engaging and training of drivers:

The company does not accept new drivers for employment under twenty-five years of age, or over forty-five, and the minimum height measurement is 5 ft. 6 in. The medical examination is strict, particularly in regard to sight and hearing, and men who find it necessary to use spectacles are not accepted. The services of the most capable and experienced drivers in the employ of the company are utilized as instructors, and these, with special learners' buses, are attached to the various garages.

After men have been accepted for tuition, they are allocated to garages as near as possible to their homes, and are put through the first stages of their training at the training school, where, contemporaneously with lectures, practical lessons are given in gear changing and general control of the vehicle.

Driving instruction is first given on the school premises, and, subsequently, in quiet neighborhoods, where there is little or no traffic. Subject to satisfactory progress, learners are then taken into streets carrying heavier traffic. After being finally tested by one of the chief instructors, they submit to the Scotland Yard police test, which includes an examination in a short arm reverse and actual driving through the busiest West End thoroughfares.

The average time taken to train a driver to become fully competent is twenty-eight days.



THEY PLAY REAL BILLIARDS ON MAN-SIZE TABLES IN LONDON

TRAINING OF CONDUCTORS

Conductors are not employed under twenty years of age, or less than 5 ft. in height, this minimum height being fixed by the police. No man or woman is accepted for employment unless he or she is physically sound in all respects, but the medical test is not so severe as in the case of drivers. Learners are required to attend at the training school to hear lectures on tickets, avoidance of accidents, and on general traffic work, and to see the cinematograph films. They are allocated to garages and begin their service work with an experienced conductor, in order to obtain practice in the use of the punch, tickets, handling of cash and the general duties of a conductor in actual service conditions. The average time taken to train as conductor is fourteen days.

Learners, both drivers and conductors, receive a food allowance while under tuition, this being for a maximum period of twenty-eight days with drivers and fourteen days with conductors.

INSPECTOR OUTPUT OF SCHOOL

Inspectors are promoted from the staff and attend at the training school for instruction and examination in regard to their new and more important duties, particularly in connection with dealing with the public and the staff, and a knowledge of traffic observation.

The following are the numbers of men and women passed out from the training school for service with the company:

	Drivers				
	New	On duplicate types of bus.	Conductors		Inspectors
To Dec. 31, 1913..........	4	84	...		1
Year ending Dec. 31, 1914..	1,149	994	528		91
Year ending Dec. 31, 1915..	650	278	521		83
Year ending Dec. 31, 1916..	74	87	1,922		127
Year ending Dec. 31, 1917..	44	53	1,717		106
			Male	Female	
Year ending Dec. 31, 1918..	251	19	410	1,245	15
To date, 1919.............	659	161	884	...	12

Publicity Men Get Definite Organization

PRESIDENT PARDEE of the American Electric Railway Association has appointed the members of the executive board of the publicity men as elected at the Atlantic City convention, to be the members of a permanent standing committee of the parent association. This gives the publicity men a definite organization through which they can proceed to work out an instrumentality for the compilation and dissemination of data and information in a manner to amplify the value of the publicity men's work to the industry. Leake Carraway, Virginia Railway & Power Company, is chairman and the other members of the committee are E. R. Kelsay, Luke Grant, W. P. Strandborg and A. D. B. Van Zant.

A meeting of this committee of five men has been called by the chairman for Nov. 15 in the association office in New York for the purpose of laying plans for future activities. Then it is planned to have a meeting of the "committee of the whole," that is, of all publicity men, at the time and place of the mid-year meeting of the American Association. It is desired that all publicity men connected with the industry take membership in the committee of the whole and lend their support to the development of a system for the interchange of ideas and data.

Utilities Commissioners Discuss Railway Problem

Thirty-first Annual Convention Hears Many Committee Reports, Some of Which Are of Interest to Railway Men and Are Here Abstracted

THE thirty-first annual convention of the National Association of Railway and Utilities Commissioners, of which Charles E. Elmquist, of Minnesota, was president, was held in Indianapolis from Oct. 14 to 17. The convention was addressed in its opening session by President Elmquist and by Governor Goodrich of Indiana. At the close of his address, the president announced his resignation as a solicitor of the association and his intention to return to law practice in St. Paul. The closing session elected Walter A. Shaw of Illinois president of the association and James B. Walker of New York secretary for another term.

Of the twelve standing committees, six did not make any report. Abstracts of those made, which are of interest in the electric railway field, are presented herewith:

REPORT OF THE COMMITTEE ON PUBLIC OWNERSHIP AND OPERATION

The movement toward public ownership and operation has received succor from a wide variety of sources. The argument that the public should hold in its name the fee and title of those activities which serve the public and which the public regulates is an argument which many people accept as the last word on the subject. The argument that the public can do as it pleases with that which is its very own is in many quarters equally conclusive. One of the arguments that is seldom used, and never can be truthfully used, is that public ownership and operation is more efficient than private ownership and private operation. Instances do exist where a well-managed publicly-owned property is more efficient than a poorly-managed privately-owned property, but these are rare and do not in any way weaken the statement that the final desideratum in a public property is that degree of efficiency which is being obtained under private ownership and operation.

There has been considerably more agitation for public ownership during the past few years than ever before. The underlying reasons are many, and may perhaps all be traced back to the war and the conditions growing out of it. Local utilities have been affected fully as much as railroads and wire lines. The reasons for the impetus given to the movement for public ownership and operation may briefly be summarized as follows:

1. *The propaganda started by the governmental control of wire lines and railroads.* It was but natural that once the bigger utilities were taken over by the government, the movement should be reflected in the effort to municipalize water, gas and electric utilities.

2. *The failure of utility managements to meet the increased demands upon them.* This refers as much to service, depleted and depreciated, as to rates. It was no uncommon thing to find a gas or electric company, or even a water utility, unable to cope with the situations which arose, and too often the managements were prone to charge their own shortcomings against the regulatory body which had control over them. Inefficiencies in plant operation were brought to light which the general public never knew existed.

3. *The failure of regulatory bodies, either state or local, to sense the seriousness of the situations and to give utilities the needed assistance in time to avert disaster.* This is not meant as a reflection upon any commission, nor upon its policies, but the fact is that in the flood of applications for increases in rates which were necessary to keep utilities alive a regulatory body was not able to discriminate as it should.

4. *The inherent thought with many people that public ownership and operation is a panacea for all ills.* So without thought or examination of the possible effect, with the propaganda praise of it ringing in our ears, many people became adherents of, and shouters for, public ownership.

5. *Increased rates have had a great effect.* In the case of street railways, especially, people have come to believe that a municipally-owned transportation system would be able to continue to give the people a low fare. In many cases the companies have asked to be relieved of their paving obligation or some measure of taxes in order to be able to continue a 5-cent fare. These requests have led people to believe that were the system municipally owned the fares would continue low.

There has been considerable legislation enacted, and still more introduced, which tends to make the process of municipalization or public ownership easier. New Jersey, California, Montana, Nebraska, Washington, Oregon, Nevada, Wyoming, Iowa and Wisconsin have all passed such laws. In Pennsylvania, Governor Sproul vetoed a bill which granted municipalities the right to own and operate street railways beyond their municipal limits. In New York, Governor Smith vetoed a measure authorizing the city of Buffalo and the International Railway Company to enter into a contract providing for the operation of the street railroads in the city of Buffalo.

This report cannot attempt to go into all or even part of the proposed legislation. Suffice it to say that the tendency toward ownership or a supervision which cannot differentiate between regulation and management has been marked. While the figures obtainable show little or no increase in the number of utilities municipalized, and for some utilities a decrease is shown, there is no question but that there is a quite decided awakening of public interest in the matter. Whether this public interest is a flurry as a result of unsettled economic conditions only time can tell.

There is another phase of the public ownership question which we have but mentioned, and which is probably the most prominent of the whole situation. Municipalities must have transportation systems. The financial status of the great majority of urban railways has become such that they have been unable to make extensions or to better the service they are rendering. And the increase of fare does not always wholly alleviate the situation. The people dependent upon the street railways are those least able to pay an increased fare. The constantly mounting cost of living and the consequent raising of wages affect the street railway systems more than other utilities, because between 40 per cent and 50 per cent of the operating expenses of street railways are the labor costs.

The President deemed the situation serious enough to appoint a commission to investigate the subject and make recommendations. For some months now this commission has been hearing evidence from all sides,—from the operators, the bankers, the mayors of communities served, and from labor. No recommendations have yet been made. But the hearings developed that the street railway problem was of utmost importance. Communities now realize it, although heretofore they have been prone to feel that the companies were crying unnecessarily. Street railway securities are nearly a drug on the market. It is almost impossible to get new captial into the industry.

Many remedies have been suggested, and many have been tried without avail. The solution in many instances has not been found. We cannot junk the street railway as obsolescent. For the welfare of the community it serves it must live. How best to keep it alive and giving adequate service is not only the problem of its owners and operators today, but it is the problem of the community. The higher-fare solution is not working out to the best advantage. The additional expense of four or six cents a day to the average patron seems to be a matter for serious consideration. Rather than pay it he will walk to his labor, or will move to a neighborhood where it will not be necessary to ride to work. The result will be a congestion in certain districts which will react on the health and morals of a community. The so-called zone basis of rates has a tendency to bring about a like result.

Two new street car rates have recently been ordered by the Wisconsin Commission, the results of which are being watched with a great deal of interest. One is at Racine, and should be designated as entirely experimental. This is an optional rate of $1 per week to be paid by the holder of the ticket for unlimited riding. The ticket is transferable, and it is only necessary that the holder show it to the conductor as he boards the car. This has been in use less than two months and the company has been selling an average of about 1000 tickets each week. The results have not been as flattering as the company hoped, and it is doubtful as to whether they will care to continue it much longer. The other rate is in use at Oshkosh and Fond du Lac, and results reported are very satisfactory. It consists of a 7-cent cash fare, six tickets for 35 cents, and fifty tickets for $2.50. The manager of this property feels that he has very definite evidence that the rate is actually producing new traffic.

So the problem has become a social and economic one of which, reluctant though it may be to do so, the community must take heed. On every hand we see evidences of the cities awakening to the gravity of it. Already municipalities have discontinued paving charges, franchise and other taxes, but there are many instances where even these reliefs fail to help. The result is that many city authorities see no way out but to purchase. On the other hand, some of the operators see no other salvation. Other cities have hesitated in taking over the systems but have tried some sort of contract whereby the company is guaranteed a return on its investment in return for continuance of low fares. This latter proposal, however, is often but a preliminary step to acquisition.

However, we may view the reasonableness or the wisdom of municipal acquisition of public utilities, we cannot but feel that the situation affects intimately every regulatory body here represented. We are all more or less familiar with the troubles of street car operation. It is our duty to use our best offices in helping solve them. Whether or not we believe in public ownership and operation it is important that we lend our aid in framing legislation which will give the communities that measure of service which is essential to their welfare.

REPORT OF COMMITTEE ON GRADE CROSSINGS AND TRESPASSING ON RAILROADS

Your committee has no recommendation other than this —that the members of this organization as individuals and as members of regulatory bodies keep awake to the tendency and see to it that whatever legislation is perfected to help solve the problem be the result of experience and study. We do not believe that when a plant is taken over by a municipality it should be freed from the supervision now given privately-owned plants. Rather, we believe that we should pay greater attention to the newly acquired municipal utility than to one privately owned, that it may be able to render that degree of service which the people expect and to which they are entitled.

The recommendations of this committee in its 1916 report were seven in number. They were decided upon at a conference with a special committee of the American Railway Association which was held for the purpose of formulating some uniform method of protecting all crossings where railroads and public highways intersect. Because of their great importance and the desirability of carrying them into effect, the recommendations referred to are herewith reproduced, as follows:

1. That every grade crossing should be protected by an approach warning sign to be placed in the highway at a distance not less than 300 feet on each side of the railroad tracks, the sign to be a circular disc not less than 24 in. in diameter painted white with a black border and black cross lines with the letters "R. R." . . . Where deemed necessary this approach warning sign to be properly lighted at night.
2. That the railroad companies maintain, within the limits of their rights of way, proper cautionary signs such as are now in use or authorized by law, and where deemed necessary such sign shall be equipped with a red light at night.
3. That all lights displayed at night towards the highway at grade crossings shall be red.
4. That all crossing flagmen use during the day a uniform disc 16 inches in diameter painted white with a black border and the word "STOP" painted thereon in black letters about 5 in. high instead of the vari-colored flags which are now being used.
5. The uniform painting of all crossing gates with alternate diagonal stripes of black and white.
6. That the railroad companies, wherever practicable, be required to maintain their property at grade crossings free of all obstructions to vision; also that the highway approaches to crossings shall be so graded that the free passage of vehicles shall not be impeded.
7. That the National Association of Railway Commissioners, the American Railway Association and the American Automobile Association, consider the advisability of agreeing upon whatever legislation may be necessary in the several states to make thoroughly effective the protection of grade crossings; and that it is our opinion that a uniform law requiring vehicles approaching such a crossing to reduce speed to a safe limit at the warning approach sign is advisable.

Appropriate legislation has been enacted in several of the states putting into effect the uniform crossing protection regulations, but the majority of the states have taken no definite action in the matter.

In addition to the recommendations in 1916 which were endorsed by the association, this committee strongly urges the adoption of standard signs showing the hours on duty of crossing watchmen and stop signs which should be displayed when such crossings are left unprotected, similar to those approved by the Public Utilities Commission of Connecticut.

The automobile has revolutionized the travel on the public highways and by means of this instrumentality citizens travel from state to state and go into new surroundings where they have no knowledge of the presence of tracks and know nothing of the schedule of trains. Therefore, it is very essential that uniform warning signs be employed as a protection for grade crossings.

Within recent years considerable attention has been given to swinging or oscillating signals as a means of protecting crossings, which display a red banner or disk by day and a red light by night, thus conveying the universally danger signal. These automatic flagmen, as they are sometimes called, can be equipped with bell alarms which begin ringing when an approaching train starts the visual signal in motion and keep it up until the danger is past. A great many cities and towns have automatic devices of this kind as a protection of grade crossings and they have proved satisfactory in most instances.

It is contended by the advocates of the automatic flagmen that it is not only necessary to let people know they are approaching a railroad crossing, but what is more important, to tell them when a train is coming. However, as long as grade crossings exist, there will be accidents at such places in spite of every precautionary measure on the part of the railroad management, the state commissions or the local authorities. Fool-hardy motorists and drivers of horse-drawn vehicles will go across the tracks even when an approaching train is plainly visible and as so often happens will miscalculate the speed of the train with disastrous results.

Force-stop humps in the road or a pile of rocks in the center of the highway calling attention to the proximity of a grade crossing undoubtedly do a good job of abruptly checking the speed of an automobile bowling along toward the crossing at a lively clip, but they are at best crude devices and temporary expedients. It is questionable whether they are more of a menace than an aid to safety. Although they may be life-savers, as they were intended to be, nevertheless they are not infrequently provocative of wrath and profanity, and when a man gets swearing mad he generally throws caution to the winds and becomes careless of consequences.

The carriers in the opinion of this committee should spare no pains in making their crossings safe and at crossings in cuts there should be dugouts or yards to provide an avenue of escape in the event of an impending collision. It might be well to have all crossings at right-angles where possible as a further means of safety to give a motorist or driver an opportunity of getting out of a tight place should such an emergency arise.

Some of the states already have laws providing for the prorating of expenses incurred in the elimination of grade crossings for the removal of the old crossing and the establishment of a new roadway. The commissions of most states probably can apportion the expense between the railroad companies and the public when grade crossings are ordered eliminated or separated.

Probably the most pretentious program for the separation of grade crossings this year is being caried out in the city of Indianapolis in connection with the construction of new terminal facilities. Every grade crossing in the city will be eliminated, including those of interurban railways. Elevated tracks will be used.

REPORT OF THE COMMITTEE ON PUBLIC UTILITY RATES

The financial condition and outlook for electric railways may be described as bad in most localities, and in others, very much worse. They are not prosperous anywhere. In many sections they are in the hands of receivers, and in some sections they are being discontinued.

Rates have been increased in a great variety of ways, flat rates from the historical 5 cent fare to 6, 7, 8, and 10 cents, but it has not yet been determined what fare will produce the largest revenue. Very likely it will differ in different localities. As a business proposition the street railways must cease to carry passengers 5, 10, 15 or 20 miles for a single fare, as is done in many instances. The cost of conducting the business has become so great that it is no longer possible to fix a fare on the old basis of fare limits, or lack of fare limits, that will produce sufficient revenue to continue the operation of many if not most of our street railways. The lower the fare the larger the number of riders, especially short-distance riders, and the higher the fare the smaller the number of riders, especially the short distance riders, and short-distance riders are a most important factor in the success of the street railway.

Within city limits public policy may require a uniform fare to encourage a wide distribution of residences, but it is an important question then whether the losses on the long-distance riders should be made up by the short distance riders or by the general public by way of assistance to the railway through relief from street expenses, taxes, or otherwise.

In general there must be a close connection between cost and value of the service and the fare charged. Increases in flat rates from 5 to 6 or more cents have been disappointing in the small increases in revenue.

Some increase has been secured by reducing the length of the fare sections to 2 to 2½ miles in length and using a 5- or 6-cent fare, but there is a considerable element of dissatisfaction in the case of patrons who live a half mile or so from the fare limit and have to pay two fares to ride a mile or two, when neighbors living at the fare limit ride an equal or greater distance for one fare. This inequality is very much lessened by dividing the fare section into two zones. The Massachusetts Northeastern Street Railway has arranged its interurban lines in fare sections of from 2 to 2½ miles in length with two zones to a section, and sells tickets good for three consecutive zones at section rates, *e. g.*, if the fare is 6 cents, five-ride tickets are sold for 25 cents. The use of tickets simplifies fare collections and establishes approximately a workable mileage system over which officials of the company are just now enthusiastic.

From the standpoint of the traveler the straight mileage system is most satisfactory, but from the standpoint of the railway the terminal charge should be considered in some way.

By order of the Public Utilities Commission of New Jersey, the Public Service Railway prepared a plan whereby the method of charging might be revised by an equitable zoning system, proper consideration being given to all of the elements to more properly relate the cost of service with the length of haul and value of service. The report covering the study made, filed on March 5, 1919, adds very much to the available data on the subject.

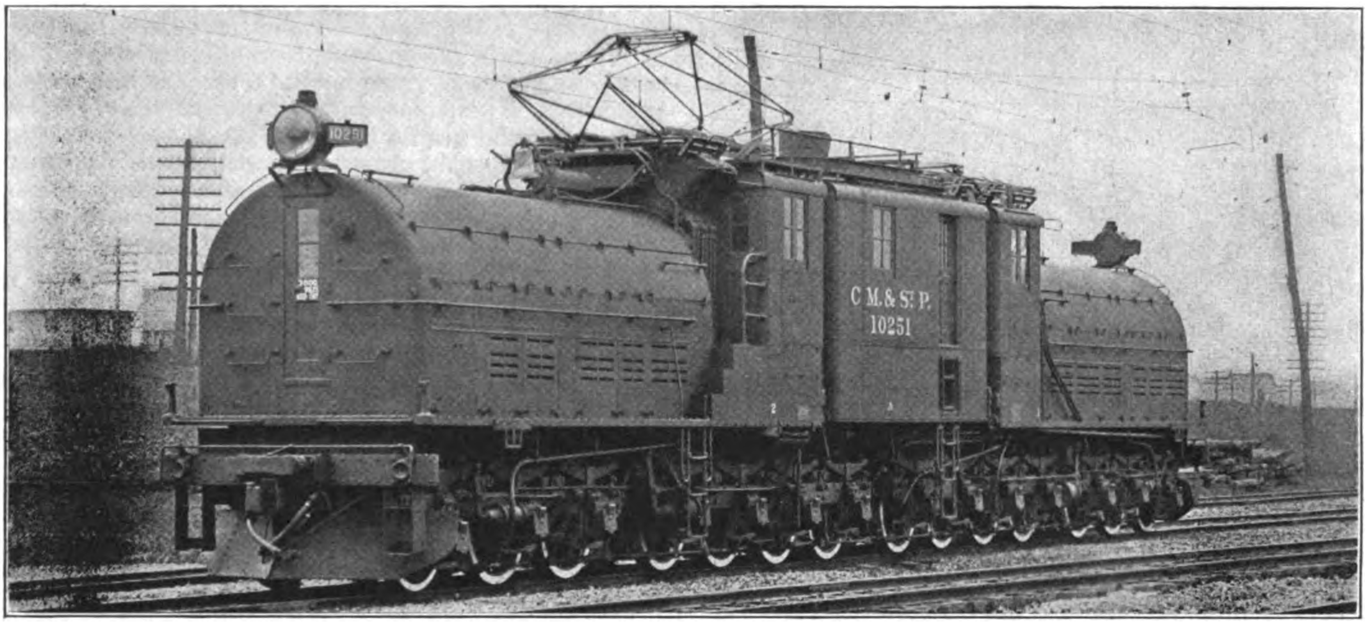
All urban electric railways must be continued for the welfare of the whole public, and the problem of securing sufficient revenue to continue service is likely to be solved in some cities by a single fare within city limits with such municipal assistance as may be necessary, and in others by a mile zone system with or without municipal assistance. When these methods fail, public ownership is inevitable, and it seems probable that in some cases that time is not far away.

Welding Society Begins Season's Activities

The American Welding Society held its first fall meeting on Oct. 24, at the Engineering Societies' Building, New York City. President C. A. Adams delivered an address, after which papers were presented describing a theory of metallic arc welding by R. G. Hudson; on the repairing of a lighthouse, by J. H. Deppeler, and on gas welding during the war by H. S. Smith. The Metal & Thermit Corporation also showed a moving-picture film illustrating the repairing of the steamship *Northern Pacific.*

Norwegian Electrification Progressing

The Norwegian government has accepted bids for the electrification of the railway from Christiania to Drammen. For this eighteen standard-gage electric locomotives will be constructed in Christiania. This is the first definite step to be taken in the plan for the electrification of the entire Norwegian railway system. The power is to be obtained from the Hakavik power station, which is located not far from Kongsberg, Norway, where about 25,000 hp. can be produced.



NEW 3000-VOLT DIRECT-CURRENT GEARLESS PASSENGER LOCOMOTIVE, WEIGHING 265 TONS, FOR THE ST. PAUL CASCADE ELECTRIFICATION

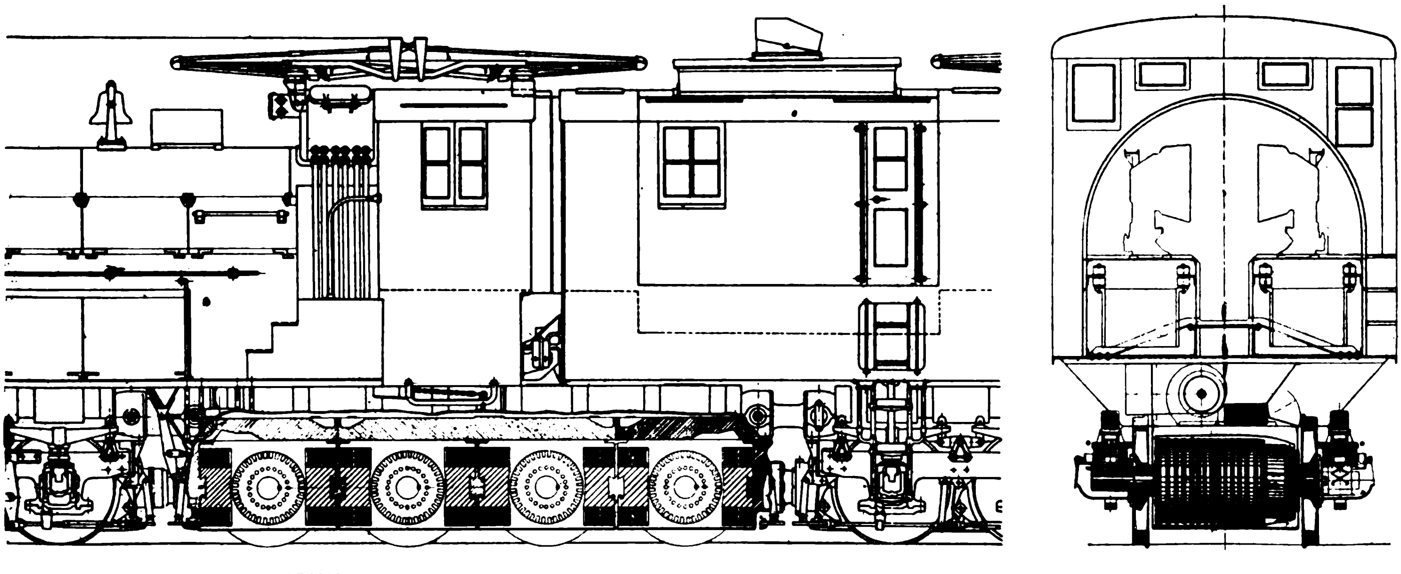
St. Paul Locomotive Tested at Erie

New Type of Machine with Bi-polar Motor Demonstrates Capability of Handling High-Speed Passenger Trains on Othello-Seattle-Tacoma Electric Zone

IN THE PRESENCE of railroad experts and others gathered at Erie, Pa., on Nov. 7 to witness the demonstration, the 3000-volt, direct-current locomotive built by the General Electric Company for the Chicago, Milwaukee & St. Paul Railway was given a series of operating tests. This machine is of the passenger type and is designed for use on the new Cascade electrification. It is equipped with bi-polar motors, gearless type, with motor armatures mounted directly upon the driving axles. In this fundamental feature the new locomotive follows the design of the gearless machines in use on the New York terminal of the New York Central Railroad. The five machines of this type ordered by the railway are now complete and will be delivered at the rate of about one a week, going into commission immediately.

The tests were carried out on a 3½-mile track owned by the manufacturing company and used largely for this purpose. A considerable part of the locomotive work of the company is now done at the Erie plant, making the possession of test facilities quite necessary. The program comprised a number of speed runs up to about 60 m.p.h., the limit for the length of track, a series of regenerative runs, and a "tug-of-war" against two powerful New York Central locomotives.

In the speed runs a couple of light passenger coaches only were attached, the purpose being to demonstrate the accelerating qualities of the machine, as well as its riding qualities. In regenerating, the electric locomotives was driven by the steam locomotives already referred to, and the regenerated current was held at such a valve as to maintain a speed of about 25 m.p.h. Under these conditions the ammeter in the substation, through which the



ARMATURE OF ST. PAUL LOCOMOTIVE MOUNTED BETWEEN WHEELS ON DRIVING AXLE

FRANK J. SPRAGUE, WHO HAS ALWAYS BEEN AN ARDENT ADVOCATE OF DIRECT-CURRENT TRACTION, IS AT THE LEFT. THE TWO AT THE RIGHT ARE OTTO G. HITCHCOCK AND J. B. COX

test track was supplied with power, showed a current of from 400 to 500 amp., at a voltage of 3000, indicating a return of 1200 kw. or more to the supply circuit.

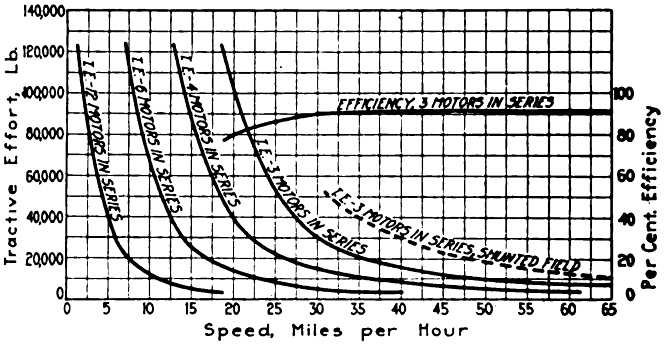
In the backing or "tug-of-war" test the steam locomotives were first allowed to push the electric machine for a short distance, when the latter was notched up in "reverse," gradually bringing the steam locomotives to rest and ultimately backing them up.

A preliminary account of the gearless locomotive for the St. Paul was given by A. H. Armstrong in a paper read before the New York Railroad Club last spring and printed in the issue of this paper for March 23, 1918, page 561. Additional details are now available. The locomotive weighs 265 tons, of which 229 tons are on the drivers. There are fourteen axles, twelve of which are driving axles and two guiding axles.

The gearless drive was adopted to give simplicity of mechanical design, eliminating gears, armature and suspension bearings, jackshafts, side rods, etc. The weight of the armature and wheels is the only dead weight on the track, amounting to approximately 9500 lb. per axle. This is about 25 per cent of the total weight per driving axle, which is 38,166 lb.

To show the position of the armature relative to the field poles a cross-section of some of the motors is reproduced. The cross-section of the locomotive in the vertical plane of the armature axis gives further information as to the motor mounting. These views appear at the foot of page 827.

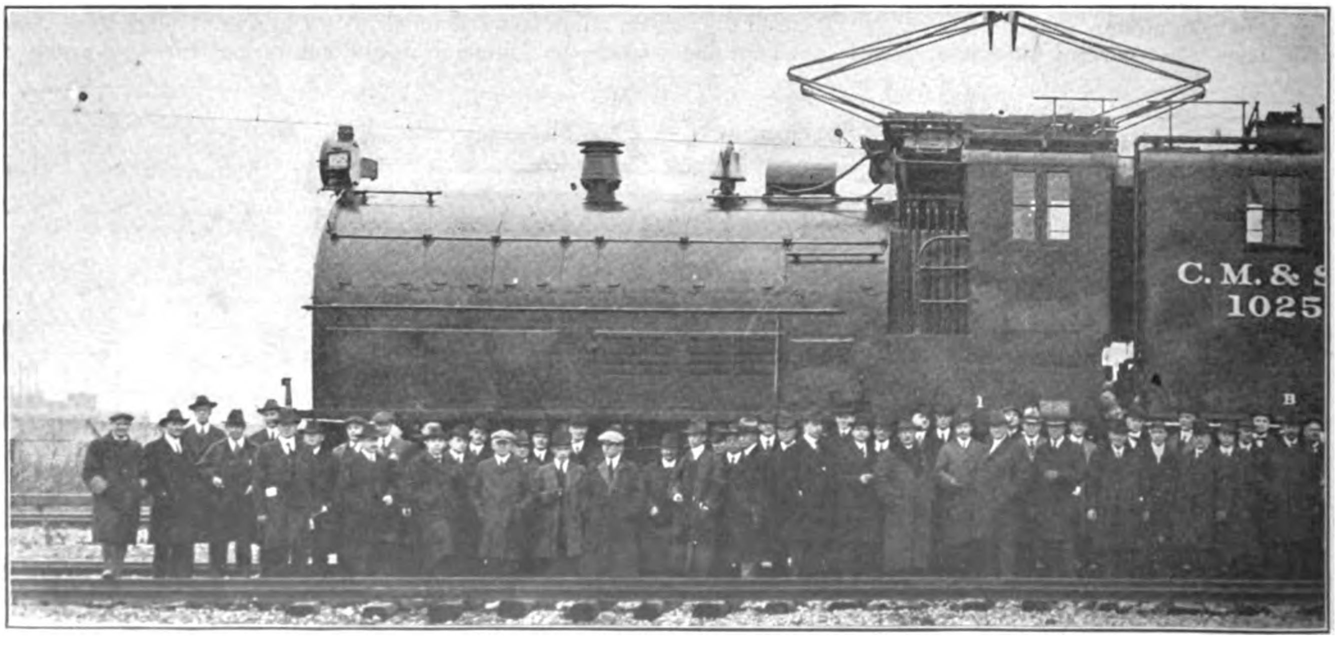
An important feature of the locomotive is the design of the leading and trailing trucks and the method of suspension of the cab weight upon them. The successive trucks are coupled together in such a way as to "dead-beat" or break up any lateral oscillation which may be caused by inequalities of the track. The weight of the main cab is so supported on the front and rear trucks that any lateral thrust or kick of the leading or trailing wheels against the track is cushioned by the movement of the main cab, which increases the weight bearing down on the wheels at the point where the thrust occurs and automatically reacts to prevent any distortion of the track. This design is said to result in very satisfactory riding qualities at high speeds.



CHARACTERISTIC CURVES OF GEARLESS LOCOMOTIVE FOR THE ST. PAUL

Exhaustive tests on the General Electric Company's test tracks at Erie, Pa., have demonstrated excellent riding qualities of the new locomotive at speed up to 65 m.p.h., the limit on the length of the test track available. The tests also indicate that the locomotive will operate at much higher speeds equally well.

The locomotive is designed for handling in normal service a twelve-car train weighing 960 tons trailing against a grade of 2 per cent at 25 m.p.h. To do so requires 56,500 lb. tractive effort, equivalent to a coefficient of adhesion of 12.3 per cent of the weight upon the driving



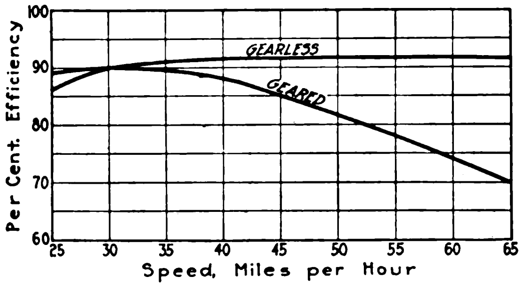
GROUP OF RAILROAD MEN GATHERED AT ERIE, PA., TO WITNESS DEMONSTRATION TESTS OF ELEC axles. This allows a margin between the operating tractive coefficient and the slipping point of the wheels sufficient to permit the locomotive to hold trains containing as many as fourteen cars in emergencies, and the motors have corresponding necessary extra capacity. For continuous operation the locomotive is designed to operate at 42,000 lb. tractive effort at a speed of 27 m.p.h.

The principal data for the new locomotive are given in the table on page 830.

PART OF THE MOTORS FURNISH EXCITATION DURING REGENERATION

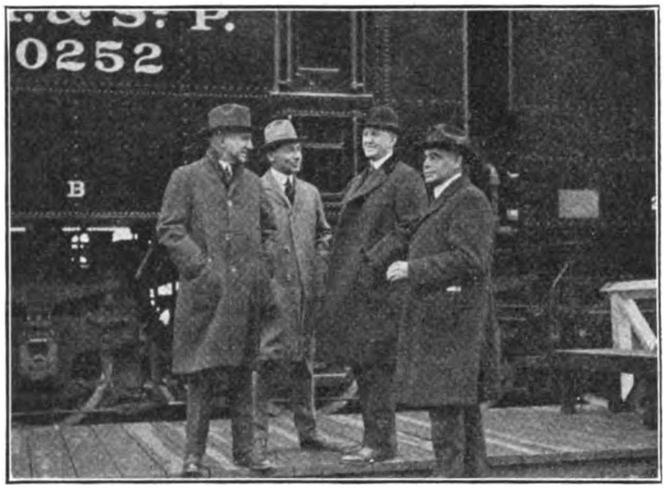
In most respects the control equipment of the new locomotive is similar to that in use on the locomotives which have been operating on the St. Paul for nearly four years. An important difference, however, is in the means used for exciting the motors which are acting as generators during regeneration. Four of the main motors are utilized for this purpose, which is possible because eight motors are ample to supply all of the generator capacity required on down grades.

By thus utilizing some of the traction motors it has been possible greatly to reduce the size of the motor-generator sets used for control, accessories and train lighting. An appreciable reduction in the weight of the control equipment is obtained and at the same time provision is made for effective regenerative electric braking on down grade.



COMPARISON OF EFFICIENCY CURVES OF GEARED AND GEARLESS LOCOMOTIVES FOR THE ST. PAUL

The motor-generator set furnishes control current for operating the contactors and for charging an 80-volt storage battery which supplies light as well as power for the accessory apparatus.

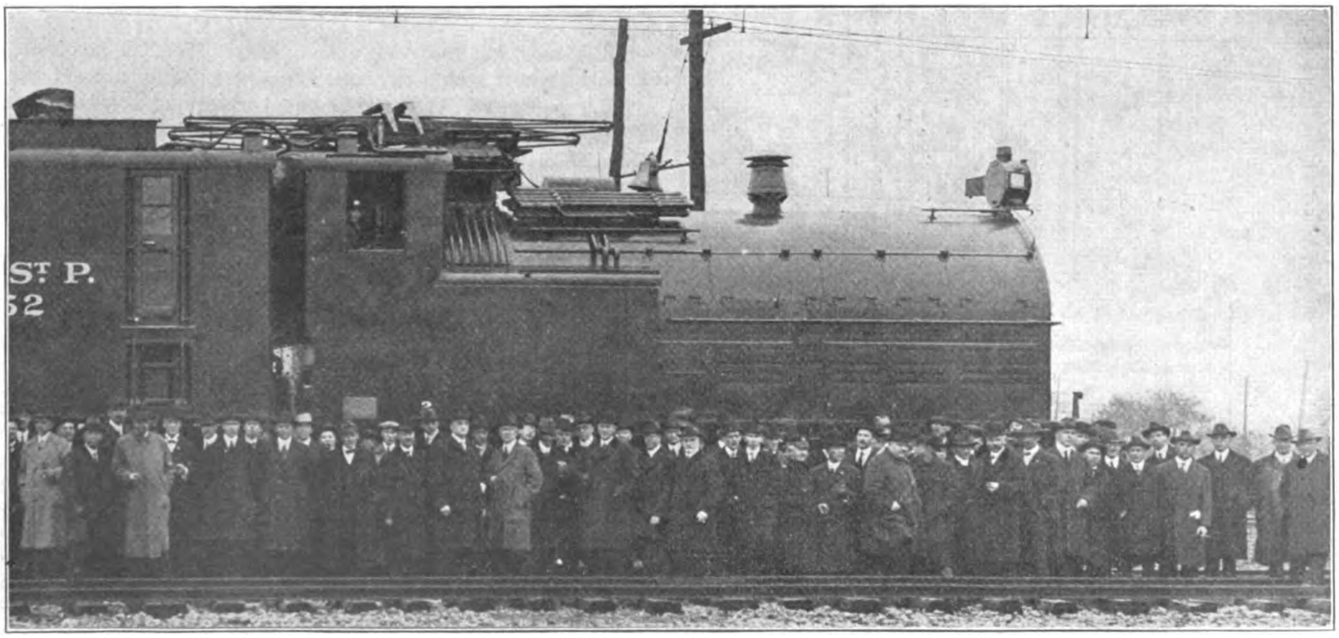


F. C. PRATT TALKING OVER THE FINE POINTS OF THE LOCOMOTIVES WITH H. F. F. ERBEN, J. M. SHERWIN AND M. GRISWOLD

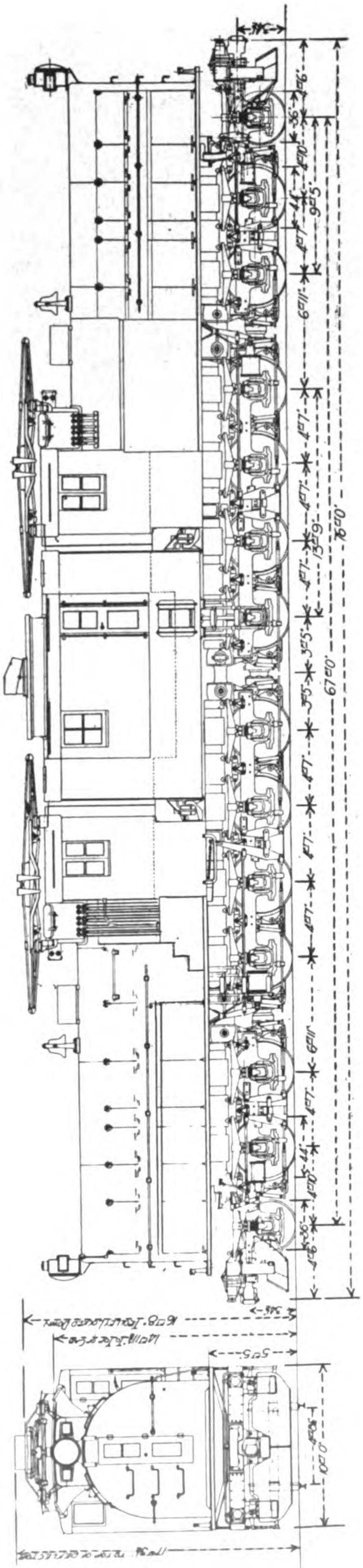
The master controller is constructed in three sections, arranged for both motoring and regenerating, all of the cylinders being suitably interlocked to prevent incorrect manipulation. For full-speed operation the twelve motors are connected three in series with 1000 volts per commutator. Control connections are also provided for operating four, six, or twelve motors in series. Additional speed variation is obtained by tapping the motor fields in all combinations. Cooling air for each pair of motors is supplied by a small motor-driven blower, an arrangement which was adopted to avoid the heavy duct losses encountered when a single large blower is used.

AUXILIARY APPARATUS IS WELL DISTRIBUTED

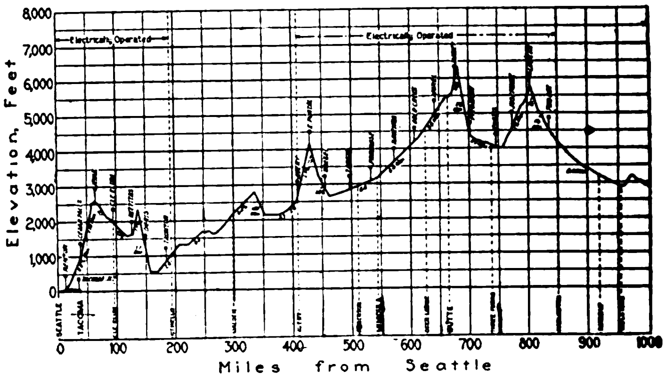
The 3000-volt contactors and resistors are mounted in the curved end cab at each end of the locomotive. In one of these cabs there is also the 3000-volt direct-current air compressor and storage battery. In the other is a small motor-generator set and the high-speed circuit breaker. The operating cabs contain the master controller, indicating instruments, and a small air compressor (in the No. 2 cab) operated from the battery circuit with sufficient capacity for raising the pantograph. Near the controller are the usual air-brake handles for standard braking equipment.



TRIC LOCOMOTIVES FOR THE CASCADE DIVISION OF THE CHICAGO, MILWAUKEE & ST. PAUL RAILWAY



END AND SIDE ELEVATIONS OF GEARLESS LOCOMOTIVE JUST COMPLETED FOR PASSENGER TRAFFIC ON THE CHICAGO, MILWAUKEE & ST. PAUL RAILWAY



PROFILE OF ST. PAUL RAILWAY OVER WHICH GEARLESS PASSENGER LOCOMOTIVES WILL OPERATE

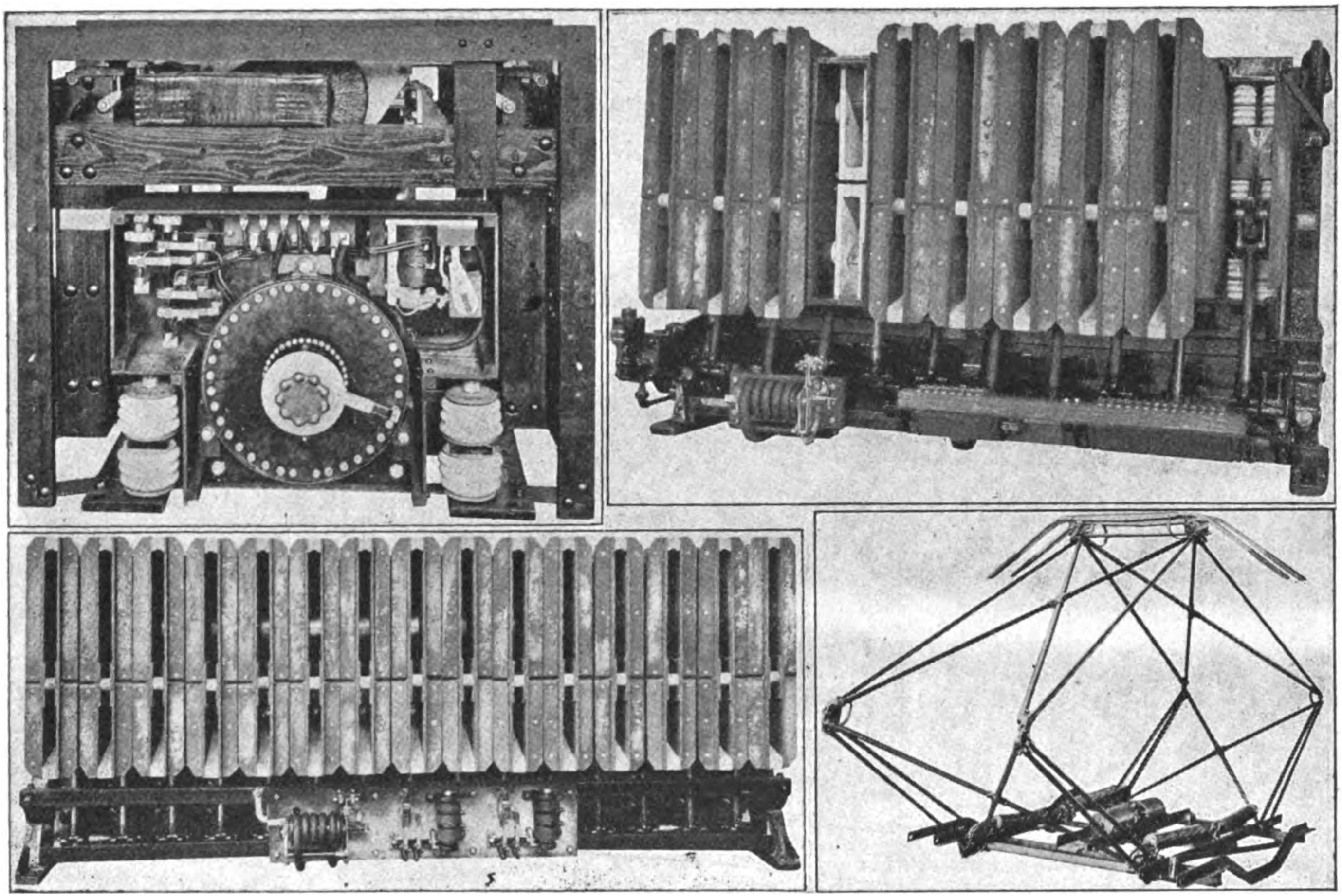
The center cab is occupied by the oil-fired steam boiler for heating passenger trains, with accessories including tanks for oil and water, circulating pumps, and a motor-driven blower to furnish forced draft. A slider pantograph similar in construction to those now in use is mounted on each end of the operating cab. This pantograph has two sliding contacts, giving a total of four points per slider with the double contact wires. The pantograph and flexible twin contact-wire construction enable the locomotives to collect current as high as 2000 amp. up to 60 m.p.h. without noticeable arcing at the contact points. The second pantograph is held in reserve. Sand boxes with pipes leading to each pair of driving wheels are located directly beneath the pantograph outside the operating cab.

PRINCIPAL DATA OF GEARLESS LOCOMOTIVE FOR C., M. & ST. P. RY.

Length inside knuckle	76 ft. 0 in.
Length over cab	68 ft. 0 in.
Total wheelbase	67 ft. 0 in.
Rigid wheelbase	13 ft. 11 in.
Diameter driving wheels	44 in.
Diameter guiding wheels	36 in.
Weight electrical equipment	235,000 lb.
Weight mechanical equipment	295,000 lb.
Weight complete locomotive	530,000 lb.
Weight on drivers	458,000 lb.
Weight on guiding axle	36,000 lb.
Weight on each driving axle	38,166 lb.
Number of motors	12
One-hour rating	3240 h. p.
Continuous rating	2760 h. p.
Tractive effort—one-hour rating	46,000 lb.
Tractive effort—continuous rating	42,000 lb.
Tractive effort—2 per cent ruling grade with 960-ton trans	56,500 lb.
Coefficient of adhesion ruling grade	12.3 per cent
Starting tractive effort—25 per cent coefficient of adhesion	115,000 lb.
Rate of acceleration starting 2 per cent ruling grade	0.48 m. p. h. p. s.

The new locomotives will operate over the section between Othello, Seattle and Tacoma, including 17 miles of 2.2 per cent grade from the Columbia River west and 19 miles of 1.7 per cent grade between Cedar Falls and the summit of the Cascades. The traffic over this division consists of the heavy main-line transcontinental passenger trains "Olympian" and "Columbian," carrying from eight

TWO POWERFUL STEAM LOCOMOTIVES PUSHING ELECTRIC LOCOMOTIVES IN REGULATION TESTS



TOP, AT LEFT, HIGH-SPEED CIRCUIT BREAKER, SIDE VIEW, WITH COVERS AND ARC CHUTE REMOVED. TOP, AT RIGHT, CONTACTOR GROUP WITH ARC CHUTES IN PLACE. BOTTOM, AT LEFT, GROUP OF AIR-OPERATED CONTACTORS. BOTTOM AT RIGHT, AIR-OPERATED PANTOGRAPH

to twelve steel passenger coaches which will be handled over the maximum grades without helpers. Freight pushers are already in operation on a 2.2 per cent grade, using two of the locomotives from the original electrification. It is expected that electrical operation during the coming winter will assist in overcoming many of the delays which are commonly met with during winter operation in this district.

Dr. Whitten on Zone Fares and City Planning

Zone Fares Would Tend Toward More Economical City Development and Avoid Highly Congested Centers

AMONG the witnesses for the League of Municipalities in the Public Service Railway's zone fare case last summer was Dr. Robert H. Whitten, technical advisor to the City Plan Commission of the City of Cleveland and formerly with the New York Public Service Commission of the First District.

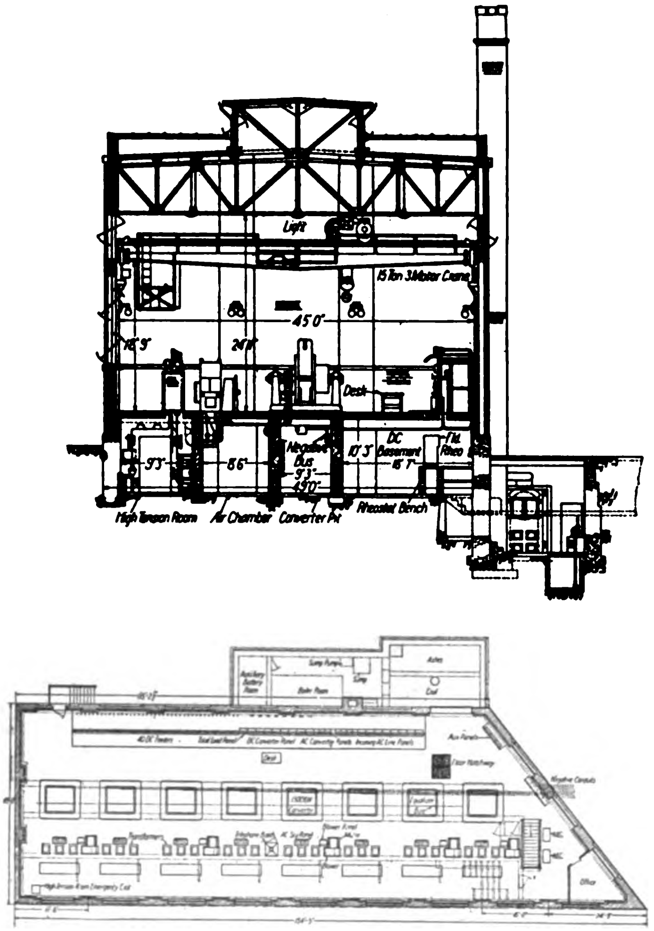
In discussing the comparative merits of the flat versus the zone fare from the city planning standpoint, Dr. Whitten said the flat fare was advantageous for wider spreading of the population and industry. A factory could locate anywhere and draw its labor supply from the entire city because the laborer could be carried for a single uniform fare from any place to any place. The physical development of the American city has been molded in very large measure by the flat fare system. Its development, compared with a European city, was distinctly scattered. The sprawling development of such American cities was, however, uneconomic from the city planning viewpoint. It called for more miles of track, water pipe, gas pipe, electric wiring, sewers, pavements, etc., thus increasing the cost of supplying the city with the necessary utilities.

The application of the zone fare would tend toward more compact development and also to develop sub-centers for local retail trade, amusement and social purposes. These centers would draw from a 1- to 2-mile radius and would be benefited if the initial fare was 3 instead of 5 cents.

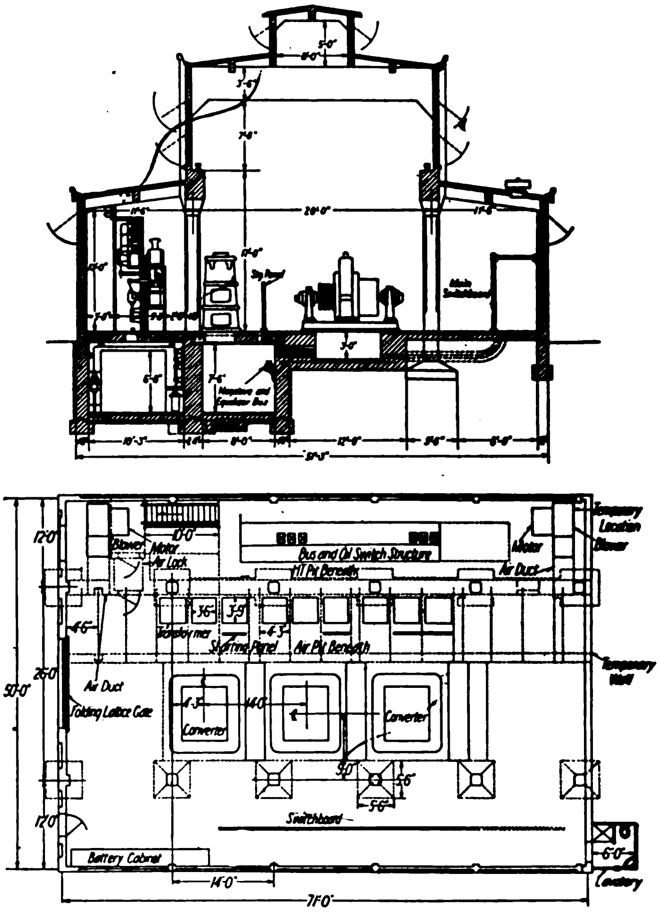
While the American city as a whole was less compactly developed than the British city, there was nevertheless in the largest American cities a compact or even congested central development that was sometimes even more pronounced than in British cities of like size. In spite of the effect of the transit lines in spreading out population, a large proportion of the people from choice or necessity lived close to the heart of the city. As far as the poorer class was concerned, this was largely due to a desire to live within working distance of the largest number of opportunities of employment. It was possible that this tendency toward congestion in the central area with its many light manufacturing plants has been accentuated by the flat fare. A zone fare plan with a low initial fare would probably tend to reduce congestion in the central areas as many families would be able to live a mile or two further out from the center than under a 5 or 7-cent flat rate.

The population spot maps shown by Dr. Whitten included New York, Philadelphia, Cleveland, Chicago, Newark, Boston, London, Manchester, Glasgow, Berlin and Paris. All were on a scale of 2 miles to the inch with one dot representing 1000 people. New York had a marked congestion on the lower east side of Manhattan Island. While central Philadelphia showed no such marked congestion as lower Manhattan, it was congested in comparison with central Paris or London.

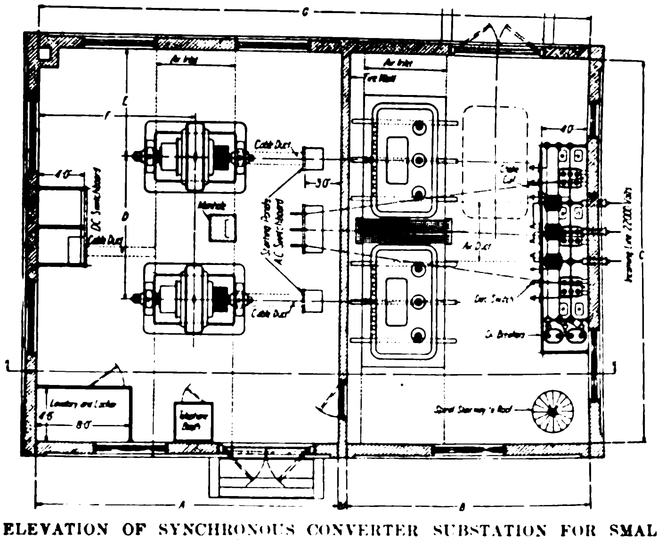
Plan Views Showing Substation, Structure and Position of Equipment


Light
15 Ton 3 Motor Crane
45'0"
16'9"
24'11"
Desk
DC Basement
Fld. Rheo
Negative Bus
10'3"
15'7"
9'3"
8'6"
9'3"
49'0"
High Tension Room
Air Chamber
Converter Pit
Rheostat Bench
Sump Pumps
Auxiliary Battery Room
Boiler Room
Sump
Ashes
Coal
Office

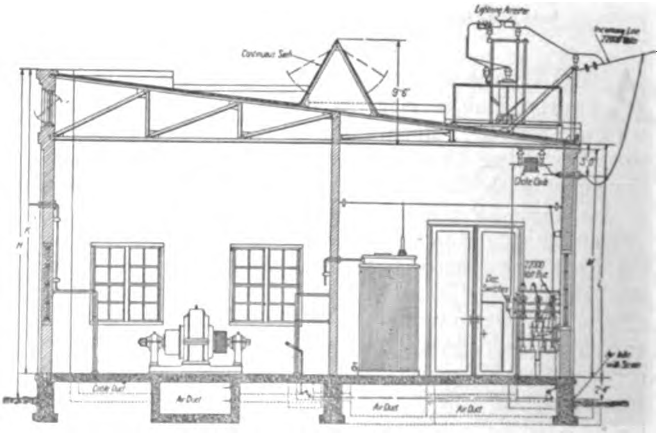
ELEVATION AND PLAN OF CEDAR AVENUE SUBSTATION, CLEVELAND (OHIO) RAILWAY


5'-0"
7'-6"
28'-6"
11'-6"
17'-0"
Main Switchboard
Negative and Equalizer Bus
10'-3"
8'-0"
12'-6"
51'-3"
12'0"
10'-0"
Blower
Motor
Air Lock
Bus and Oil Switch Structure
HT Pit Beneath
Motor
Temporary Location Blower
Air Duct
3'6"
3'9"
4'-3"
4'6"
Transformer
Starting Panel
Air Pit Beneath
Temporary Wall
26'0"
50'0"
Air Duct
Folding Lattice Gate
4'3"
14'0"
Converter
Converter
9'0"
5'6"
5'6"
Switchboard
12'0"
Battery Cabinet
14'0"
71'0"
6'0"
Lavatory

ELEVATION AND PLAN OF BELVEDERE SUBSTATION, UNITED RAILWAYS & ELECTRIC COMPANY, BALTIMORE, MD.


C
Air Inlet
Air Inlet
Fire Wall
Cable Duct
Cable Duct
Cable Duct
DC Switchboard
Manhole
Air Duct
Cir. Breakers
Lavatory and Locker
Spiral Stairway to Roof
A
B

ELEVATION OF SYNCHRONOUS CONVERTER SUBSTATION FOR SMALL UNITS (SEE TABLE I)


Lightning Arrester
Continuous Sash
5'6"
Choke Coil
Disc. Switches
Cable Duct
Air Duct
Air Duct
Air Duct

PLAN OF SYNCHRONOUS CONVERTER SUBSTATION FOR SMALL UNITS (SEE TABLE I)

A TYPICAL HIGH-GRADE SUBSTATION BUILDING—CEDAR AVENUE SUBSTATION, CLEVELAND (OHIO) RAILWAY

Some Elements in a Satisfactory Substation Building

BY C. F. LLOYD
Manager substation Section Power Department Westinghouse Electric & Manufacturing Company

IN DRAWING up plans for a substation building, there are a number of factors which should receive consideration in the design. Some of these are mentioned in the following paragraphs:

Arrangement of the apparatus should be made to economize space and reduce to a minimum the quantity of low-tension cable required. On the other hand, sufficient space must be allowed around the apparatus to prevent interchange of radiated heat, to provide for efficient cleaning and to permit the making of repairs.

Careful study of the ventilation problem should be made, and good ventilation can be had with but very slight increase in the cost of building. This will materially prolong the life and increase the output of the apparatus. Good ventilation increases the efficiency of the transforming and converting apparatus, since copper losses are lower at lower temperatures. Often conditions are such also, that the load factor can be improved. Good ventilation also improves the efficiency and alertness of the operator.

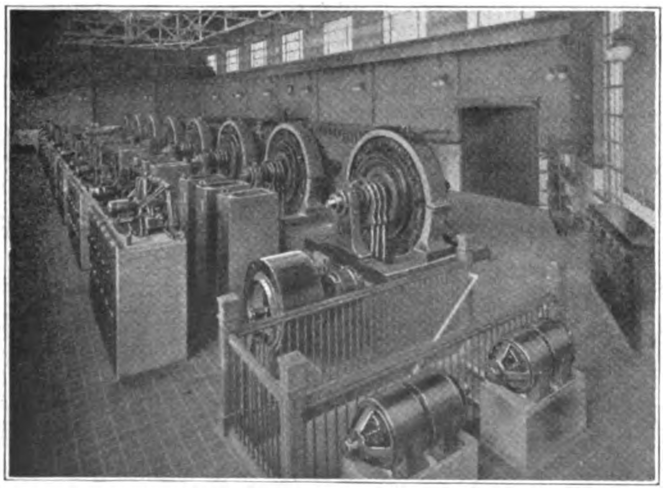
The ideal system of ventilation is to take the air in at the base of the machine or the transformer and allow it to pass out through the roof by means of monitor construction or metal ventilators. The height of the exit openings must provide for the circulation of air, although usually

TABLE I—SYNCHRONOUS CONVERTER SUBSTATIONS FOR SMALL UNITS *

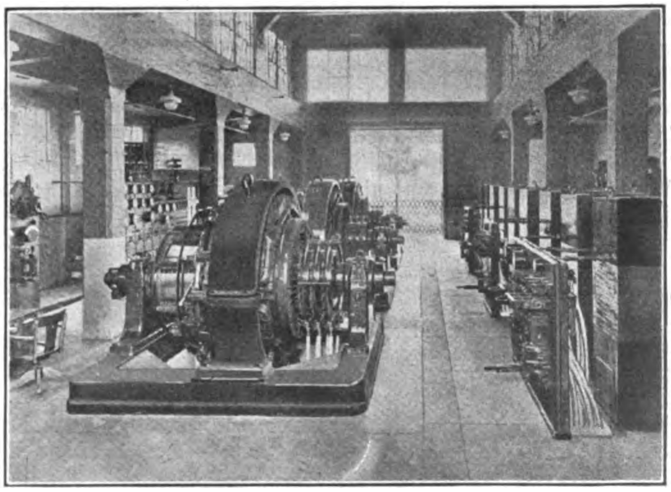
Table of Dimensions—600 Volts, D. C.—22000 Volts, 60 Cycle A. C.

Size, Kw.	A	B	C	D	E	F	G	H	L	M
300	17 ft.-0 in.	13 ft.-3½ in.	24 ft.	9 ft.	7 ft.-6 in.	11 ft.-9 in.	31 ft.	25 ft.	19 ft.	18 ft.-6 in.
500	18 ft.-3½ in.	15 ft.-0 in.	24 ft.	9 ft.	7 ft.-6 in.	12 ft.-0 in.	34 ft.	27 ft.	21 ft.	20 ft.-6 in.
750	22 ft.-0 in.	17 ft.-3½ in.	27 ft.	9 ft.	9 ft.-0 in.	12 ft.-9 in.	40 ft.	27 ft.	21 ft.	20 ft.-6 in.
1000	25 ft.-0 in.	20 ft.-3½ in.	33 ft.	12 ft.	9 ft.-0 in.	13 ft.-4 in.	46 ft.	28 ft.	22 ft.	21 ft.-6 in.

* Letters refer to dimensions indicated in plan and elevation.



INTERIOR OF CEDAR AVENUE SUBSTATION, CLEVELAND (OHIO) RAILWAY



INTERIOR OF BELVEDERE SUBSTATION, UNITED RAILWAYS & ELECTRIC COMPANY, BALTIMORE, MD.

the required head room will place these openings sufficiently high to produce the circulation. Unlike the window method of ventilation, this plan will operate during all kinds of weather.

Noise from the machines, especially where substations are located in residence sections, is the next consideration. A noisy substation may become a nuisance, rendering it possible for neighbors to obtain injunctions causing shutdowns. The method of ventilation mentioned above is particularly recommended from the noise standpoint.

While the window area should not be excessive, the building should be well lighted by day to facilitate repairs and inspection. The use of ribbed glass is very desirable, as it eliminates glare and thus facilitates the reading of instruments, gages, etc. Artificial illumination should approach natural lighting, as repairs often have to be made at night. Arrangement of the lighting units should be made with particular reference to the easy reading of switch-board meters, transformer and machine-bearing oil gages, thermometers, etc.

The building should be constructed throughout on a fireproof basis. In some cases it may be desirable either to secure reduction in insurance rates or to provide a greater insurance against interruption, to increase the cost of the building by installing a fire wall to isolate the transformers and oil switches from the converters and switchboards.

Every provision should be made for possible extension of the substation, even though at the time the design is made it appears that no future extension will be necessary. This refers to symmetrical arrangement of apparatus on the unit system and to the proper construction of roof framing.

The building should be simple and substantial, with just sufficient paneling on the exterior to relieve the monotony of a plain wall. An attractive building can be erected at the same cost as an unattractive and poorly designed one if sufficient attention is given to this point.

French Commission Returns

One Member Comments on American Electrifications and Compares Conditions with Those Which Are to Be Found in Europe

THE visit of a commission of French railway engineers to this country last spring to study American electrification installations and methods was mentioned in this paper at that time. The party was thirteen in number, and a greater part of the mission left Paris on April 15 and returned on July 22. The *Journal Official* on Aug. 13 contains a report of the trip by A. Mauduit, one of the members. A copy of this report appears in *Le Génie Civil* for Aug. 30. While an unofficial communication, the report says that the conclusions expressed are in general representative of those of the other members. All of the heavy electric traction installations were visited, including those in the neighborhood of New York; the Norfolk & Western; the Pennsylvania; the Baltimore, Washington & Annapolis; the Chicago, Lake Shore & South Bend, and the Chicago, Milwaukee & St. Paul.

One principal object of the trip was to learn whether there was any system of electric traction for trunk lines so superior to the others that it could be used for all of the proposed electrifications in central and southern France.

The studies of the commission were devoted to the single-phase, three-phase, single-phase-three-phase ("monotriphase") and high-voltage direct-current systems. The commission had examined the three-phase system in detail in Italy before coming to America. In that country it is used largely, but not to an appreciable extent elsewhere. The single-phase system, also, had been examined on the Midi Railway in France and the Loetschberg line in Switzerland, and is in immediate prospect on the Swiss Federal Railways, which have adopted it for the progressive electrification of their entire system and have the Gothard line under actual construction. The other systems mentioned exist only in America, hence were the principal objects of investigation by the commission. At the same time the opportunity was taken to study the 25-cycle single-phase system for sake of completeness, the French lines being 16 cycle.

The result of this study was in favor of high-voltage direct current after seeing what the writer called the "remarkable results" obtained by the Chicago, Milwaukee & St. Paul Railway. In fact, he says that he does not hesitate to express himself formally in favor of the adoption of this system, which he believes to be actually the only one suitable for trunk-line operation. It is possible, he concluded, that the single-phase system which presents at first sight the advantage of being adopted to a large variety of combinations, will reach one day a satisfactory condition, but without doubt this point has not yet been reached.

Direct current presents the disadvantage of being a little more expensive at the start on account of the rotary substations, although it ought to be said that to gain any economy in this respect with the single-phase it would be necessary to generate the latter at the low frequency of 16 cycles.

As regards the expenses of operation, only a carefully prepared comparison would determine this question exactly, but the writer does not think the difference would be so great as to determine the choice of system. The complete absence of telephonic and telegraphic interference, however, is a very great advantage possessed by the direct-current system.

Commenting on the different installations, Mr. Mauduit compliments the skill with which the difficulties of the early years on the New Haven were overcome. These difficulties consisted largely of short-circuits on the trolley line or feeders, and inductive interference with neighboring telephone and telegraph lines. The cost of doing so, however, has been great, maintenance cost is still high and the motors are delicate. This electrification was interesting because, save for frequency, it is analogous to the French Midi system.

After reviewing the means employed by the New Haven to mitigate inductive interference Mr. Mauduit says that these are complicated and difficult to maintain although they solve the problem. The arrangement of thirty auto-transformer compensators insures low voltage drop, an advantage as compared with the "suction transformers" (*transformateurs-suceurs*) used to confine return current to the rails on the Midi system.

The motors on the Pennsylvania Railroad are of a more modern type and of better commutation. Inductive interference has been overcome to a considerable extent though not entirely.

Taking the single-phase system as a whole Mr. Mauduit does not consider it as far advanced in America as in Europe, due to the higher frequency which must be employed here and to what he considers the less satisfactory development of the single-phase motor in this country. On the other hand, he praises the catenary contact wire suspension as used here and says that the struggle against inductive interference with telephone and telegraph lines has been pushed to a considerable degree. This last-named item would be considered very important in the selection of a system for France.

On the Norfolk & Western Railway the locomotives were found to be flexible and powerful, but the mechanical design of the locomotives was criticised. The transmission of power from the motors to the axles, by jackshaft and connecting rods, occasions rapid wear of the bearings, disalignment of the trucks or fractures of the crank pins, because of the enormous power transmitted. From the electrical standpoint the principal points criticised were that the phase converter did not give equally balanced phases and the water rheostat did not equally divide the load between the motors, thus causing high maintenance cost. Moreover, the phase converter because of its magnetizing current reduced the power factor. To overcome these troubles, excepting the inequality of load distribution among the motors, the designers are proposing the use of a synchronous converter, although its actual value for this purpose remains to be determined.

Summing up the situation regarding the single-phase-three-phase system, while he feels that the system has been somewhat of a disappointment, the principle at first sight is very interesting. It permits the use of single-phase locomotives or motor cars for use direct with light or high-speed trains, and the single-phase-three-phase locomotives with heavy and slow trains, all fed from the same contact wire.

Some of the comments made on the Milwaukee installation by Mr. Mauduit have already been mentioned. In emphasizing the freedom of neighboring telephone and telegraph lines from inductive disturbance, he says that telephonic communication is good without protective devices, although the telephone wires parallel the railway line for the entire distance. He also mentioned a test made with a multiple telegraph printing circuit normally operating between Spokane and Helena, a distance of 170 miles. The metal side of this circuit was switched over so as to be carried on an unused wire on the railway pole line while the other side of the circuit remained, as usual, an earth connection. Nevertheless, the telegraph circuit worked perfectly for eight days in spite of the fact that three short-circuits were made intentionally between the railway trolley wire and the rail, in the immediate neighborhood of the telegraph wire.

Commenting on other operating points of the Milwaukee system, the author says that with a double contact wire and double shoe (four contacts) it has been possible to collect by pantograph without difficulty 1500 to 2000 amp. at speeds of from 50 to 60 m. p. h. and 4000 amp. at 16 m. p. h.; also that, although the traffic is light—only two passenger and three or four freight trains each way a day—the consumption of energy at the substation amounts to 39.2 watt-hours per ton-mile. This corresponds to an over-all efficiency, from the point at which energy is purchased to the point where it is used, *i. e.,* at the locomotive drawbar, of 50 per cent.

Mr. Mauduit concludes his *Génie Civil* article with this summary of economic considerations with regard to electric traction: "From the economic point of view the information which we have brought back from America is much less complete and exact than the technical data.

"On the other hand, it is necessary in applying American experience to the future of European electric traction to make considerable modifications in the data on account of the two constant principles which differentiate the developments in the two countries:

"First, in America the couplers employed have a rupturing strength of about 149 tons (of 2000 lb.) and it is permissible to use tractive efforts up to 44 tons. In Europe the couplers are of two types, with rupturing strengths respectively of 38½ and 61 tons, and the tractive efforts are limited to 11 tons, although under exceptional circumstances 13 to 16½ tons drawbar pull is permitted in Switzerland.

"Second, in America all passenger and freight cars are equipped with air brakes.

"The result of the above is that in America locomotives are employed that are two or three times more powerful than those in Europe, the freight trains are correspondingly long and heavy and the crews are relatively larger. Exact calculations made by the companies, and above all the results of the pioneer electrifications carried out and the consideration of the actual cost of coal, alone will permit us to determine under what conditions electric traction will be more economical than steam. It is known, however, that the economy will be greatest on the lines with steep grades and heavy traffic and it is probable that on many lines where these conditions do not exist electric traction would be more burdensome than steam.

"Above all the increasing necessity for economizing coal and the great advantage of electric traction which are well known render necessary the most rapid prosecution of the electrification now under way in France, in view of the progressive electrification of the Paris-Lyons-Mediterranean and the Midi railways."

Association News

Chicago Section Resumes Work

ONE HUNDRED members attended the opening meeting of the Elevated Railways company section in Chicago on Sept. 16. The following diversified program was given: Dr. H. E. Fisher, chief surgeon, spoke on first-aid work with the aid of lantern slides; J. H. Mallon, general superintendent of transportation, followed with a brief talk on the necessity for keeping fire apparatus in proper working condition; E. J. Blair, organization engineer, gave an illustrated story of his army experiences in France, and finally there were, as entertainment features, some amusing songs and stories. A nominating committee was appointed to make recommendations to be acted upon at the October meeting.

Connecticut Company Section Considers New Zone System

THE program of the meeting of the Connecticut Company section, held on Oct. 21, was taken up practically entirely with a discussion of the details of the zone system of operation which is to be inaugurated on that property on Nov. 2. The speakers were L. S. Storrs, president of the company; J. K. Punderford, general manager; W. J. Flickenger, assistant to the president, and C. H. Chapman, chairman of the section. By means of diagrams the essential features of the new plan were explained. These will be covered in an article to be published in an early issue of this paper.

A personal feature of the meeting was the presentation of appropriate gifts to Harold Bates, assistant construction engineer, who is leaving the employ of the company to join the technical staff of the Winchester Repeating Arms Company. Charles R. Harte, construction engineer, described the fine work which Mr. Bates has done for the company during the more than ten years during which he has been connected with the engineering department.

As usual the meeting was preceded by a dinner, during the serving of which there was instrumental and vocal music. This meeting was held at New Haven.

News of the Electric Railways

FINANCIAL AND CORPORATE . TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

No Desire for Ownership

Norristown Men Won't Take Railway, Meet Obligations of Company and then Pay Themselves

The trainmen on the Norristown division of the Reading Transit & Light Company, Reading, Pa., are satisfied with the idea of a "fair day's work for a fair day's pay." They do not want to accept the offer of the company to turn the division over to them for operation. The company had offered the division to the men in lieu of an increase in pay of 4 cents an hour or $2.40 a week.

Before the war, the trainmen on the Norristown division, which takes in Chestnut Hill, Roxborough, Boyertown and Norristown, were getting a maximum wage of 26 cents an hour.

That was the wage paid the men who had been with the company for two and a half years or more. New men received 5 cents less per hour. Then the war came and wages went up to 46 cents for the two-and-a-half-year men and 41 cents for the beginners. Last August the men decided they wanted 4 cents an hour more, making the maximum wage 50 cents an hour.

In the meantime fares had been raised from 5 cents to 6 cents, and then to 7 cents and finally to 8 cents. And with each increase in fare, so company officials say, there was a falling off in the patronage, which was already no more than the economic law of existence calls for.

The company, through its president, E. L. West, told the men there could be no increase in wages. Mr. West told the men that the company then was holding on to the Norristown division with an annual loss, to the extent of $25,000 or $30,000.

"Boost the fares to ten cents and raise our wages!" cried the men.

"It can't be done!" retorted the company.

"Why not?" queried the men.

"The people will not pay it. They'll walk instead," came back the company.

But the men still persisted that they wanted that extra 4 cents an hour. So Mr. West wrote a letter to Joseph Piele, president of the union in Norristown, and offered the trainmen—not the 4 cents increase—but the whole railway included in the Norristown division. Mr. West told the men that because the company was losing money he would go to New York financiers for them and arrange that they be backed to the extent of $25,000 for one year, at least.

The men would not even consider the proposition. The Philadelphia *Ledger* quotes Mr. Piele, speaking for the union, as follows:

> We aren't in favor of fighting out things in the newspaper, but I'll tell you the men don't want the line. What would we do with it after we got it? I'm sure I don't know why they want to give it to us.
>
> We had a few real radical fellows here that were for going into the thing right off the bat. If they'd had their way, they'd have taken the line over in a minute. We had a pretty hard time keeping them in check.
>
> But we decided we wanted time to think it over, and we're still thinking.
>
> No, we never even took it up at any of our meetings and we never will. We don't want the line, and I think the company's just trying to get from under, and pass the buck to us. That's the way I look at it.

And Mr. Piele's views were backed up with talks by the men on the cars. One after the other they said they didn't want the line. In fact, they wanted to interview rather than be interviewed. As soon as they were asked what they thought of the proposition, they would come back with:

"What do you think of it?"

And there the matter stood. They all seemed to have a rather suspicious attitude.

"But the Socialists say the workingmen should own everything and get full return from their efforts," was the proposition put to one of them.

"Yes, but we ain't Socialists," came back the ready reply. "We're just plain, common, ordinary conductors and motormen, and we don't want to be capitalists either —just now, at least."

W. T. Burns, of the company, in the absence of President West, made the following statement:

> Of course, the men would have to take over all the company's obligations. You see, the Norristown division is made up of several underlying companies to which the Reading Company pays rentals, and these rentals would have to be met by the men just as we have to meet them.

Second Link in Rapid Transit Line

The Rapid Transit Commission of Cincinnati, Ohio, on October 3 instructed City Auditor George P. Carrell to advertise a bond issue of $600,000 to provide funds for the second link of the proposed rapid transit line. Bids for the work will be asked as soon as the funds are in the treasury. This section lies between Charles Street and Oliver Street and includes the station at Liberty Street.

Work on the first section will be begun as soon as a dam is built across the canal at Ludlow Avenue. The commission has ordered the canal diverted into Mill Creek on October 15. The John Reuble Construction Company was instructed to build the Ludlow Avenue dam immediately following the draining of the portion of the canal to be used.

City Engineer Frank S. Krug's estimate of the cost of the second section of the line is $513,500. Earth from the excavations will be used to raise several low streets in Camp Washington and this will reduce the cost somewhat, since other disposition of the earth would have been added otherwise.

Claims of those who had leases on the water rights of the canal have been compromised by the commission as follows: Pierce-Atkins Company, $22,500; Paul Fagin estate, $15,383; Kilgour estate, $22,000. Attorney John C. Rogers recently informed the commission that he would bring suits to enjoin payment of any amounts on these claims, as they were only for the surplus water and become void when the water is diverted. Frederick S. Spiegel, attorney for the commission, said the city's contract for the use of the canal bed provided that water leases must be taken care of by the city.

Power Contract Upheld

Agreement of St. Louis Company With Water Power Plant Decidedly Advantageous to Local Railway

The power contracts of the United Railways, St. Louis, Mo., which constitute one of the principle issues in the suit by the John W. Seaman, New York, a stockholder, which put the company in the hands of a receiver, are declared favorable to the United Railways in a report submitted to the receiver by the H. M. Byllesby & Company, Chicago.

The inquiry was started by Receiver Wells for the purpose of determining the wisdom and profit to the United Railways of contracts by which it receives hydroelectric energy from the Mississippi River Power Company (Keokuk Dam) through the Union Electric Light & Power Company. Byllesby & Company assigned W. B. Rittenhouse to pursue the investigation. In the opinion of the receiver he was a disinterested party.

Mr. Seaman alleged the contracts were made by an interlocking directorate for the benefit of the North American Company, which controls the United Railways through ownership of the common stock of the company. He asked that the receiver be instructed to inquire into the advisability of cancelling the present contract, and negotiating directly with the dam company.

Mr. Rittenhouse bases his conclusions on valuations of the properties in question, and, in summing up his report, enumerates three salient features of the contracts as follows:

> The Keokuk dam is entitled to approximately $430,850 more annually than it now receives for hydroelectric energy sent to St. Louis. This figure is $180,850 in excess of the amount the Keokuk Company has indicated it is willing to accept in a tentative agreement with the Union Electric.
>
> The Union Electric is entitled to $138,597 more annually than it now receives from the United Railways for the portion of Keokuk power it furnishes the railway. This amount is $40,153 less than the Union Electric now asks.
>
> The net added return suggested for the Union Company is $9,000 yearly. This amount is arrived at by subtracting the added cost to the Union Company of the power, which it furnishes the railways.
>
> Finally, the possession of the water-power contracts by the railway effects a yearly savings to the system of $436,918 over the cost of an equal amount of steam-generated power in the most improved plant that could be erected at this time.

With reference to the conclusion of the engineer that the railway pays $40,153 less than the Union asks, it is explained the result of the investigation was to disallow the claim of the Union Company for its transformer at Lewis Street. On the other hand the lines that connect it with the Page Avenue station, where the power is received, should be included in the valuation of the properties needed to serve the railways. In summing up, the report says:

> It is clear the Union Electric Light & Power Company has made a favorable contract the benefit of which will accrue to the United Railways, since the purchase price of the power constitutes by far the greatest item in the Union Company's charge to the United Railways.

Col. A. T. Perkins, manager for the receiver of the United Railways, believes the power contract one of the best assets of the United Railways, stating if the company was forced to furnish its own power, it would increase the operating costs 71 per cent.

Toledo a Tractionless Metropolis

Ohio City Which Baited Its Railway for Seven Years Hard Put by Withdrawal of Cars

After the withdrawal of electric railway service in Toledo, Ohio, by the Toledo Railways & Light Company, referred to in the ELECTRIC RAILWAY JOURNAL for Oct. 25, Henry L. Doherty, of H. L. Doherty & Company, operating managers for the company, left for Kansas City.

The cars and other equipment withdrawn were stored at Toledo Beach and points in Michigan and the current was turned off the trolley wires. As a result interurban cars cannot enter or leave the city. They are being turned at the city limits.

Mr. Doherty later wired from Kansas City to Toledo that he was willing to resume operation at any time the city requested it. He wanted assurances, however, that the city was willing to grant a fair franchise. Negotiations for the past seven years, he said, had come to nothing and the company could see no other step to take than comply with the decision of the voters which makes the ouster ordinance binding. The company had been ordered to remove its tracks from the street at once.

A statement by the company follows:

> We have given careful consideration to the situation that now confronts us all with the official announcement made that the ouster ordinance has been adopted by a vote of the people.
>
> We have concluded that to continue to operate in spite of this ordinance, which has been carefully considered and legally passed, is not a proper observance of law and order and subjects us to many grave dangers.
>
> We have, therefore, decided to cease operations.
>
> For seven long and trying years the present management has struggled with this problem and so far without success.
>
> We have done everything it has been possible to do to secure a settlement of this matter. We cannot again attempt to operate our cars until a permanent settlement has been reached, or is assured.
>
> We cannot believe this is a final verdict and therefore, have already started petitions to initiate the ordinance we submitted to the City Council last July.
>
> If citizens want the cars operated, we suggest that they have the City Council rescind the ouster ordinance and pass the franchise we have already submitted to them.
>
> If the ordinance submitted by us is not acceptable to the city, we suggest that they submit one which is acceptable and then provide for the earliest possible election.
>
> If we must salvage our property, we desire to do so now while second-hand material can readily be sold and at good prices.
>
> We regret that apparently we have not been able to satisfy even a majority of the voters of Toledo. We have done the best we could. We accept the verdict which has been rendered. If we cannot be winners, we want to be remembered as good losers.

Mayor Cornell Schreiber, at whose instance the ordinance was passed, made the following appeal to the citizens:

> The company's midnight removal of its cars without even a moment's warning to either the city or the public will not appeal to any one, not even to the company's friends. It was an act typical of the hour selected for its performance.
>
> My understanding with President Coates last Wednesday was that the cars should continue to operate until notification from the city that their operation should cease. The city has given no such notice. The action of the company is therefore a plain breach of faith.
>
> It will, in due time, receive the reward it merits.
>
> I presume that the company's object is to attempt to compel the Council to repeal the ouster ordinance which the people approved at the recent election. The method which the company selected in ths effort to bring about that result will not be graciously met in the public mind.
>
> The company's breach of faith will receive the public condemnation which it deserves.
>
> It is just such acts as this that have brought public service corporations into disfavor and caused the public to view with suspicion, whatever claims public utilities may advance.
>
> The last card, however, has not yet been played. The public is not helpless, and the rights of the public will be fully protected.
>
> In the meantime this is an appeal to all truck owners, jitney bus owners, auto owners, factory owners and every one to let a neighborly spirit prevail. If all these will lend aid in carrying the public, the emergency will be met.
>
> If the cars are still off the streets Monday morning the public will be surprised at the rapidity with which temporary arrangements have been advanced to meet the situation.
>
> The Council meets Monday night and it may be that I shall convene that body at even an earlier hour. I trust the public will not at all be swept off its feet. Whatever is best will be done, always in the public interest.

E. H. Mallory, of the Highways Transportation Company, has been appointed commissioner of transportation to have charge of automobiles and trucks that may haul passengers. An attempt will be made to keep charges down as low as possible, but it is said that charges of from 10 to 50 cents are being made for one-way trips.

The extended contention between the city and the company over the renewal of the franchise is familiar to readers of the ELECTRIC RAILWAY JOURNAL. Toledo played with fire for seven long years. Apparently it had come to think itself immune from burns. The city is scotched now and scotched badly. It was only through the exceeding good graces of the management of the railway that the day of reckoning which has now came was delayed so long. The fate that has now befallen the city was delayed in its coming last August only by the concerted efforts of the business men of the city. The company had been ordered by the Council to cease operating on July 31, but a referendum petition, initiated by the business men, resulted in the matter being put before the voters at the election on Nov. 4.

Citizen's Committee Acts in New York

Retains Charles E. Hughes to Seek Solution of Problems Confronting Electric Railways in New York City

The Merchants' Association of New York announced on Nov. 12 that a committee formed at its instance had secured the services of Charles E. Hughes, to make a thorough inquiry into the traction situation in the city with the view of finding some solution of the financial problems which threaten to destroy the transportation systems. Mr. Hughes, it was said, would have a free hand in the selection of his own assistants and of conducting the inquiry until every important fact bearing upon the situation was disclosed.

It was explained that the idea of instituting such an investigation grew out of correspondence between the association and Federal Judge Mayer who appointed the receivers of the Brooklyn Rapid Transit Company, the New York Railways Company and the Interborough Consolidated Company.

A letter to Judge Mayer from the association on Oct. 16 called attention to a statement of the judge that every facility would be accorded to both public officials and civic organizations to satisfy themselves in respect to the actual financial and other conditions confronting the railroad companies. The association gathered from statements by the court that the situation was crucial. Judge Mayer's reply confirmed this thought and suggested that the association could render service of a high value and aid the public and the court if it could carry out the following program:

> 1. Examine and report upon:
>
> (a) The estimated cost for the twelve months beginning Sept. 1, 1919, of operating each of the several transit systems now under the jurisdiction of the United States District Court, including in such cost, operating expenses and such other outlays as must necessarily be made to continue the operation of the several lines.
>
> (b) The estimated revenues for each of such systems during the same period.
>
> (c) The estimated net earnings or deficit from operation of each of such systems during the same period.
>
> 2. Through qualified engineers and accountants, check, test, verify, and report upon any valuations of the physical properties of the several traction systems which may be presented to the court, or affixed as a basis for equitably adjusting the future relations between transit corporations and the public.
>
> 3. Make a study of the transit field, with relation to existing franchise and contract rights; possible consolidation or consolidations of existing lines or systems; legal, financial, and operating conditions; and such other factors as may be germane, with a view to formulating a plan for the permanent, equitable, and beneficial readjustment of the relations between the public and the transit corporations which serve them.

Before proceeding further with the matter the Merchants' Association obtained the co-operation of other large commercial organizations in the city and a preliminary committee was formed consisting of the presidents of the Merchants' Association, Chamber of Commerce, New York Board of Trade and Transportation, Brooklyn Chamber of Commerce, Chamber of Commerce of Queens, and the Bronx Board of Trade. This committee sent an identical letter to more than 100 leading men in various walks, who were selected to form a citizens' transit committee. The letter set forth that the city was threatened with a condition of chaos in relation to its transit facilities; that railroads were not earning enough to pay proper operating costs, and that it was feared that some of the lines would have to cease operating. The letter from the committee said:

> The committee will make an adequate, unbiased and wholly dispassionate investigation fully to develop all the pertinent facts, and to form constructive plans for the reorganization of the city's traffic facilities on a basis which shall be substantially equitable to all interests.

An executive committee was named which will have charge of all of the details of the investigation.

The announcement of the Merchants' Association contained no information as to when the inquiry is to begin, but the presumption is that no time will be lost. The committee will have no power of subpoena, so that witnesses may be called and compelled to testify. It is presumed that all of the information gathered by Judge Mayer will be placed at the committee's disposal and any vital information needed which the committee cannot command may be produced through the assistance of the court. Investigation of the various companies has been made by the Public Service Commission, which will also, it was said, assist the committee in every possible way.

Winnipeg Award Announced

The so-called Mathers board of conciliation, which has been considering the matter of wages for the conductors and motormen in the employ of the Winnipeg (Man.) Electric Railway, has prescribed the following rates of pay: First six months, 46 cents an hour; second six months, 49 cents an hour; second year, 52 cents an hour; third year and thereafter, 55 cents an hour.

Massachusetts Program Nearing Completion

Forecast Made of Legislation in the Interest of Electric Railways Proposed by Special Committee of Legislature

The commission is reported to be fast completing its work which has been engaged during the past three months in an effort to agree upon legislation which will permit the transportation systems of Massachusetts to escape the financial difficulties against which they have been struggling for seme time. It consists of fifteen members, of whom five were appointed by Governor Coolidge, five by Speaker Warner of the House, and three by President McKnight of the Senate. Former Congressman Charles G. Wasburn, Worcester, is chairman of the commission.

WOULD PROHIBIT STRIKES

A sub-commitee has prepared a report, upon which the full commission is to act, but inasmuch as the subject matter was fully discussed before the sub-committee began its work, it is believed that this report will be adopted by the commission.

A bill to prohibit strikes by employees of electric railways is the outstanding feature of the report which is being considered by the commission. The antistrike bill makes it illegal for two or more persons engaged in electric railway service, by concerted action or agreement, to threaten or prevent the continuity of such service. It carefully safeguards the right of any employees to leave his employment if it is distasteful to him, but provides that he may not do so for the purpose of tying up service. Any person thus conspiring against continuity of service is to be held to have been discharged from his position, and his re-employment in any capacity in such service is to be prohibited for a period of one year, to be fixed by the Public Service Commission.

It provides that every electric railway shall enter into an agreement with each individual or group of its employees, stipulating that every dispute as to wages or compensation, hours of labor or working conditions, and every other dispute, shall be submitted to arbitration. In case of failure to agree upon a board of arbitration, the dispute is to be referred to the Public Service Commission for settlement.

The report recommends that every railway be permitted to initiate changes in fare without waiting for permission from the Public Service Commission. At present, whenever additional revenue becomes necessary, the Public Service Commission is required to approve an advance in fares.

EXTENSION OF CREDIT BY STATE

The report recommends that legislation be passed permitting the establishment of transportation areas in communities where existing companies find it unprofitable to operate. In such areas the Public Service Commission would control electric railway operation, through a local manager for each area. Fares would be fixed by the commission, and any deficit would be made up out of general taxation in the communities comprising the transportation area.

For the benefit of electric railway corporations whose credit has been exhausted, the commission recommends that the credit of the commonwealth or of its sub-divisions may be extended.

The commission advises that the present system of private ownership and control should be retained wherever adequate service can be maintained with a reasonable fare. For such companies as are unable to meet these requirements, it recommends private ownership and public control, as is now the policy with respect to the Boston Elevated Railway and the former Bay State systems; and only where this method proves ineffective does the commission favor public ownership. It urges, however, that if there is to be public ownership, it should be by the communities and not by the commonwealth.

Removal of all taxes upon electric railways, except the tax on real estate and machinery and the franchise tax, is recommended by the commission. Included in this recommendation are all charges for construction and repairs of streets and bridges.

CURB FOR JITNEYS

It is recommended that no jitneys be permitted to operate unless the Public Service Commission shall certify that their operation is a matter of public convenience and necessity.

With respect to the former Bay State Street Railway, the commission recommends that the excise tax, amounting in 1919 to about $277,000, be abolished; that the temporary immunity given the company from the payment of paving, bridge and certain other construction expenses, be made permanent; that the public trustees be given the right of eminent domain, in order that they may eliminate some of the curves which add to the depreciation of equipment, increase the running time and inconvenience passengers. It is also recommended that the amount which any city or town may contribute to offset any operating deficit be increased to the equivalent of $2 upon each $1,000 of valuation. At present, a city is restricted to an appropriation of 50 cents on each $1,000 of valuation, and each town to an appropriation of $1 on each $1,000 of valuation.

Detroit Apparently Doing Better

The report on the audit of the Detroit United Railway's accounts for August, by the city's auditors has just been received by the city officials. It is not expected that the figures for the month of September, the final month of the trial period, will be in the hands of the board of arbitration before November.

The audit for August shows the net return of the railway for the month was approximately 400 per cent greater than for the month of July. Of this amount, the company claims an allowance of $75,000 for depreciation. This, however, is not agreed to by the city.

The arbitration board will decide according to the results of the three months trial period, July to September inclusive, whether or not the company is receiving a fair return on the money invested, under the present system of fares. The company's contention for a charge of 1 cent for each transfer issued, which was advanced at the time of settling the strike in June, will probably be the first question to be taken up by the board of arbitration.

The City Council named Mayor James Couzens to represent the city on the board of arbitrators in place of William H. Maybury, who resigned because of other public duties. Mayor Couzens will act with John J. Stanley, Cleveland, the Detroit United Railway's representative, and Frank H. Goddard, who was chosen by the first two representatives appointed.

No More Women

New York Companies Forced to Replace Them With Men by Terms of Law Limiting Hours of Work

Women workers have disappeared from New York City's subway and elevated lines. The Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company have completed the discharge of women formerly employed as ticket agents and guards and have filled their places with men. This change was made necessary by the passage by the New York Legislature of the Lockwood-Caulfield act, aimed to improve the conditions under which women were employed.

This act, signed on March 15, 1919, provides that no woman shall be employed for more than nine consecutive hours or after 10 p. m. An attempt was made to eliminate the "swing" system under which hours of work are spread out over a considerably longer period, by requiring that women be paid from the time of reporting for work, regardless of the time at which they went on duty.

The law does not bar the employment of women on rapid transit lines, but merely limits the length of time during which they may work. This restriction, however, was sufficient to make the discharge of all the women, except those employed in clerical positions, unavoidable. The nature of the work made it impossible so to arrange schedules that women should not be employed after 10 p. m. or for more than nine hours at a stretch.

The companies employing women as ticket choppers, guards, conductorettes and elevator operators, began discharging these workers soon after the Lockwood act was passed. No attempt was made to discharge them all at once. The Brooklyn Rapid Transit Company, which had been employing women as ticket agents for a number of years, found itself compelled to discharge employees, some of whom had been with the company for more than twenty years. At the time the law was passed there were approximately 800 women in the company's employ. Every effort was made to find other positions for them. By October 1 only thirty-two women remained in the service.

The Interborough was in a somewhat different position. Unlike the Brooklyn Rapid Transit Company, it had begun employing women only as a war measure. Even had the Lockwood act not been passed, the company would have had to discharge some of these women workers, since the men who returned to their former positions after the armistice secured their former seniority ratings, thus forcing the discharge of many substitutes.

The company applied to the State Labor Bureau for a ruling as to the length of time allowed in which to replace its women workers. On September 5 the bureau ordered the company to comply with the conditions of the law forthwith. By that time the number of women employees had been reduced from 1100 to 500. At the end of the following week only 200 remained. These have since been dismissed. The company had no difficulty in replacing them with men.

Electrical Workers to Get More

The State Board of Conciliation of Oregon has handed down its decision in the case of the local electrical union workers versus the Portland Railway, Light & Power Company, in which a higher wage had been demanded by the union. The decision of the board will be binding and retroactive to Oct. 1.

Under the award the minimum wage for men engaged in electrical work for the company will be $5, instead of $3.60 as heretofore. The minimum asked by the union was $5.90. The highest paid employees will henceforth receive $9 a day instead of $7.15. The union in its proposed wage scale demanded $9.15 for these men.

The decision as rendered will mean an increase in daily wages paid by the company of about $350. The original demands of the union would have called for an increase of $440 a day.

In spite of the additional expense which the decision will place upon the company in the way of wages, the conciliation board held in its decision that no increase in rates will be justifiable on the part of the company, it being stated that investigation showed that the power and light branch of the business, in which these electrical workers are engaged, has been profitable.

The decision was reached after two weeks' consideration of the problem.

Progress of Electrification in Brazil

Early in the year 1919 the Minister of Communications of Brazil approved plans for the electrification of certain portions of the Central do Brazil Railway, owned by the Government. The estimate for the electrification of the trunk line from Barra to Pirahy has been definitely fixed at $4,675,000. The director of the Central do Brazil believes that this work can be completed in time for the centenary of Brazilian independence, in 1922. Plans are also being made to enlarge the railway shops, and estimates for this work will be included in the current year's appropriations.

Increase for Spokane Men

An increase of pay for conductors and motormen of the city lines of the Spokane & Inland Empire Railroad, Spokane, Wash., was one of the first steps taken by the new owners of the property, the bondholders' committee, represented by George H. Taylor, of Chicago. Mr. Taylor said:

> We have instructed Mr. Connor, the receiver, who will look after the property for us for the time being, to give the traction men the same increase given by the Washington Water Power Company to its men, 8 cents an hour. This increase is to date back to Nov. 1. We have also asked that improvements be made where needed and betterments in the service introduced at once. We mean to put the affairs of the Inland on a good footing, as I believe the outlook in Spokane justifies our efforts.

Reconstruction of Guelph Radial Proposed

At a special meeting of the City Council of Guelph, Ont., on Nov. 3, a report was presented by the Hydro-electric Power Commission covering the question of putting the road into good physical condition and improving the service. Sir Adam Beck accompanied by F. A. Gaby, chief engineer, was present. Sir Adam addressed the Council.

The report stated that $150,000 would be required to put the line into good running condition. Three different methods of operation were presented; in each case the net loss annually would be from $5000 to $7000.

Sir Adam told the Council that if the latter wanted the commission to operate the road on behalf of the city, the commission would be willing to do so, but the city would have to assume all financial obligations. Sir Adam stated that the line could be made to pay if it was operated in conjunction with the proposed system from Hamilton to Galt and Kitchener. He was assured by his engineers that such a line could be made to pay even if it had to parallel the tracks of the Grand Trunk Railway, which he did not think it would have to do.

The City Council ordered the report to be sent on to the railways and manufacturers' committee for consideration.

Pay Increase on Pacific Electric

Increases in the pay of employees connected with the operation of the road were announced recently by the Pacific Electric Railway, Los Angeles, Cal., to go into effect on Nov. 1. The strike was declared ended.

The new schedule of wages includes 42 cents an hour for the first year for city service. This is an increase of 2 cents over the pay for the first three months of service. The pay for the nine following months of the year remains the same.

On interurban service the company makes no change, paying as before 2½ cents more than for city service. On certain single track lines an increase of 2½ cents is made over the present rate. All men in the employ of the freight service receive an increase of 3 cents an hour. The twelve-day vacation each year and the pass privilege after five years' service are granted as heretofore.

The statement announcing the increase was signed by H. B. Titcomb, vice-president of the company. He said that all service was normal and the places of the striking employees had been filled.

Interurban Wages Adjusted

Danger of a strike on the Chicago, Ottawa & Peoria Railway, included in the Illinois Traction System, Peoria, Ill., has been averted. Ballots cast by the trainmen showed that they were in favor of accepting the company's offer of 55 cents an hour as a top wage instead of 58 cents as had been demanded.

The men had been paid 45 cents an hour and raised their demands to 75 cents an hour. The company agreed upon 55 cents an hour as a fair wage while the men scaled their demands down from 75 cents an hour to 58 cents. Australian ballots were used to determine how the men stood. The new wage scale will be as follows:

From Sept. 1, 1919, to Nov. 1, 1919, first-year men, 41 cents an hour; second-year men, 45 cents, and employees more than two years, 50 cents, with brakemen 37 cents. From Nov. 1, 1919 to Dec. 31, 1919, first-year men, 46 cents an hour; second-year men, 50 cents; more than two years, 55 cents, with brakemen, 42 cents. From Jan. 1, 1920, to Dec. 1, 1920, first-year men, 46 cents, more than one year, 55 cents, with brakemen 42 cents. Dispatchers will receive 58 cents an hour from Sept. 1, 1919. All employees will receive their back pay from Sept. 1 of this year.

News Notes

Suburban Line Increases Pay.—The motormen and conductors in the employ of the New Jersey-Pennsylvania Traction Company, Trenton, N. J., have been granted an increase in pay. The new rate is 46, 48 and 50 cents an hour. When the one-man cars are placed in operation the operators will receive 55 cents an hour.

Wage Increase in Yakima.—The trainmen of the Yakima Valley Transportation Company, Yakima, Wash., on Oct. 28 were awarded a wage increase by which the minimum salary becomes 45 cents an hour, and the maximum, reached after being in service eighteen months, 50 cents. Formerly the minimum was 40 cents and the maximum 47, requiring three years service. The raise was granted by the company without any request from the men. The company is operating on 10-cent fares.

New Company Paper in Norfolk, Va.—Leake Carraway, director of publicity of the Norfolk-Portsmouth Division of the Virginia Railway & Power Company, has begun the publication of a new leaflet for distribution on the cars. The first issue appeared without a name and offering $10 in gold to the person who suggested the most appropriate title. The 20,000 copies which were run disappeared in two days, and during the week about 250 suggestions regarding names were received. The first issue was an eight-page leaflet measuring about 2½ in. x 5 in., printed on fairly heavy paper. It was expected to issue semi-monthly, but the demand for the first number may lead to its publication every week.

Opponents of Railway Elected.—At the last election in Buffalo, N. Y., at which three aldermen of the city were elected, two of the men who have been fighting the International Railway's attempt to get a higher fare were elected by large majorities. One, a Socialist, was elected on the platform that he would appeal the fare case to the United States Supreme Court—and the other, Senator Ross Graves, has always opposed the railways at Albany. He is an advocate of municipal ownership. There is now a majority in the City Council opposed to the International Railway. The Mayor was elected on a platform of opposition to the company and he has opposed the International Railway for the last three years.

Engineering Section of Safety Council.—In accordance with the action of the annual meeting of the National Safety Council on Oct. 1, the executive committee of the Council has approved the organization of an engineering section whose purpose is to bring together the civil, mechanical, electrical, mining and chemical engineers in the council's membership, so that they may contribute more effectively towards the solution of the purely engineering problems so frequently encountered in safety work. The Engineering Section will help to meet the technical demands of the various industrial sections, perform technical services for the National Safety Council, and conduct meetings as part of the annual Safety Congress or otherwise.

Financial and Corporate

Montreal Short $1,364,111

Statement Made of Operations in Canadian City for Sixteen Months Under New City Contract

The directors of the Montreal (Que.) Tramways in submitting their eighth annual report, point out that for the first period of operations, under the new city contract, being from Feb. 10, 1918, to June 30, 1919, the revenue was insufficient to meet the requirements under the new contract, the shortage being $1,364,111, of which amount $692,694 is payable to the city of Montreal, when received.

EARNINGS UNDER NEW CONTRACT

The statement of operations of the company under the new contract for the period from Feb. 10, 1918, to June 30, 1919, is as follow:

Gross earnings		$11,572,210
Operating expenses and taxes	$6,640,715	
Operating profit	45,927	
Maintenance and renewals	2,098,120	
Total		8,784,763
Balance		$2,787,446
Allowances due company:		
6 per cent on capital value	$3,018,224	
6 per cent on working capital	40,645	
7 per cent on additions to capital	32,919	
Expenses of financing	251,353	
Total		3,343,142
Balance		$555,695
Payable when earned:		
City of Montreal rental	$692,694	
Contingent reserve	115,722	
Total		808,416
Balance		$1,364,111

The gross income accruing to the company from all sources for the year amounted to $2,303,783, and the expenses to $1,800,537, leaving a balance carried to the credit of the general surplus account of $503,246. This added to the amount of $536,571 at the credit of this account last year, after sundry deductions, makes a total of $1,039,817.

Under the authority of a resolution of the shareholders of the company, adopted on Sept. 30, 1911, the directors during the year authorized an issue of $4,000,000 of 5 per cent debenture stock of the company, to be disposed of from time to time as required. Of this amount, $1,000,000 was sold during the year.

The board expresses regret that the increase in the rates of fares during the past year did not provide sufficient revenue to meet the whole of the company's interest allowance. In consequence the regular quarterly dividends on the common stock for the year were deferred.

Last January the employees of the company made a general demand for an increase in wages to start from Feb. 1, but in view of the conditions of the franchise, under which the necessary allowances for expenditures are provided for yearly, this could not be entertained. Upon the demand of the employees a board of conciliation, as providing under the Industrial Disputes Act, 1907, was authorized. The board, after consideration, authorized a general increase in wages to all employees, effective from July 1, 1919, of approximately $1,100,000.

The Montreal Tramways Commission, after due consideration of the operations of the past year, and after taking into consideration the requirements for the forthcoming year, rendered its decision on Aug. 29, last, granting a further increase in the rates of fares, which decision has been appealed from to the Quebec Public Utilities Commission by the city of Montreal and some of the other municipalities, and this company.

Interborough Earnings Show Increase

The Interborough Rapid Transit Company, New York, N. Y., reports earnings for September and for the three months ended September as follows:

September	1919	1918
Gross operating revenue	$3,842,198	$3,176,577
Operating expenses	2,512,214	2,007,701
Net operating revenue	$1,329,984	$1,168,876
Total taxes	213,536	424,296
Income from operation	$1,116,447	$744,579
Non-operating income	42,985	43,399
Gross income	$1,159,433	$787,979
Interest, rentals, etc., including Manhattan guarantee	1,644,155	1,429,407
Net corporate income excluding accruals	*$484,722	*$641,427
Add accruals under contract No. 3 and related certificates	912,655	547,840
Net corporate income including accruals	$427,933	*$93,587

* Deficit.

Three months ended September		
Gross operating revenue	$10,964,269	$9,435,624
Operating expenses	7,031,204	5,613,625
Net operating revenue	$3,933,065	$3,821,998
Total taxes	640,609	1,081,042
Income from operation	$3,292,455	$2,740,956
Non-operating income	134,946	124,620
Gross income	$3,427,401	$2,865,576
Interest, rentals, etc., including Manhattan guarantee	4,951,608	4,198,557
Net corporate income excluding accruals	*$1,524,207	*$1,332,980
Add accruals under contract No. 3 and related certificates	2,807,601	1,456,661
Net corporate income including accruals	$1,283,394	$123,680

* Deficit.

The company explains that the comparative increase in earnings is due to abnormal conditions prevailing during this period last year, caused by the influenza epidemic and the peak of war activities.

Receiver for "Hay" Company

On appeal of the Northampton Trust Company trustee for the holders of first mortgage bonds of the Northampton Traction Company, Chester Snyder, president of the First National Bank, Easton, has been appointed receiver for the Northampton Traction Company, Easton, Pa., controlled by the Hay interests. The company owns the lines between Easton and Nazareth and Easton and Bangor. It has $400,000 of first mortgage bonds outstanding. The employees of the road have been on strike for a month.

Inland Empire Foreclosed

Property Purchased on Nov. 1 by the Representative of the Bondholders—Purchaser's Statement

George H. Taylor, Chicago, Ill., acting for bondholders, purchased the property of the Spokane & Inland Empire Railroad at receiver's sale in Spokane, Wash., on Nov. 1 for $3,600,000. The property was also sought by the Great Northern Railroad, a Spokane & Inland Empire creditor. Bidding against Mr. Taylor for this company was Judge F. V. Brown. He announced as his final offer for the property, $3,510,000.

During the early part of the bidding, Judge Brown made his first tender on the Coeur d'Alene and Palouse interurban lines, the Nine Mile power plant and the transmission lines. When he reached $2,900,000, he announced that he was bidding on the property as a whole.

PURCHASER ISSUES STATEMENT

Mr. Taylor made the following statement:

> The Inland sale was made as the result of proceedings to foreclose the first and refunding mortgage of the Spokane & Inland Empire Railroad, amounting to $3,680,000, of which the bondholders' committee represented all save $61,000. More than 1000 individual bondholders are represented by these holdings, located in all parts of the country and in Europe. To the amount of the mortgage has been added unpaid interest, bringing the total to around $3,900,000.
>
> There are $699,000 of underlying or prior mortgages on the Coeur d'Alene line, the Terminal Company and the Spokane Traction Company, which were not involved in the suit and are assumed by the purchaser. These underlying bonds are apportioned: $422,000 on the Coeur d'Alene line, $176,000 on the terminal property and $81,000 on the Traction lines.
>
> F. E. Connor, the receiver, will continue in charge of the property for the time being. He has given satisfactory service, for under his management the condition of the property was greatly improved.
>
> One traction system is enough in a city of this size. We realize that during the receivership the service on some of the city railway lines has not been all that people desired, but with the termination of the receivership we mean to improve conditions. While E. H. Rollins & Sons are not operators, but bond buyers, we propose to see that this property is put into first-class condition while we manage it.

EXTENT OF PROPERTY OUTLINED

Involved in the transaction on Nov. 1 were 212.5 miles of railroad, of which 182.3 is in Washington and 30.2 in Idaho. The main line trackage is 134.3, the remainder being distributed as follows: Second tracks 78.2 yard tracks, sidings and spurs, 48.1. The mileage in Washington is distributed as follows: Traction lines in city, 44 miles; terminal division, 1 mile; Coeur d'Alene division, 20 miles; Inland division, 115 miles. The mileage in Idaho is distributed in the following way: Coeur d'Alene division, 21 miles; Inland division, 9 miles.

In anticipation of the possible purchase of the property by the Great Northern Railroad the City Commissioners placed in the hands of Judge Brown, representing the Great Northern, a type-written schedule and a map of the city property of the Inland that the city would need in the event that the deal with the Great Northern was carried out. The properties listed by the city included the Nine-Mile power plant, the Bowl and Pitcher power site, the Spokane city lines, carhouses and other property.

Regardless of the outcome of the negotiations with the Great Northern, Mayor Fassett believed the proposed amendment authorizing the City Council to acquire a municipal lighting and power plant should be submitted to a vote on Nov. 4. The City Commissioners were practically agreed on this.

East St. Louis Fare Case Valuation

Testimony by Chicago Engineer Covers Appraisal Conclusions Based On Normal Price Trend and On Present Price Level

The East St. Louis (Ill.) Railway has asked the Illinois Public Utilities Commission for an increase in fares. The company wants a cash fare of 8 cents in order that it may be able to meet recent increases in wages and the higher cost of the materials. An extended hearing has been had in the matter in East St. Louis and further testimony will be taken before the case is ready for the commission's study and opinion.

MR. HAGENAH TESTIFIES

The testimony is being taken by H. M. Slater, transportation rate expert of the commission. Testimony covering the value of the railway property, its annual requirement for depreciation and the measure of a reasonable return was offered on behalf of the company by W. J. Hagenah, Hagenah & Erickson, public utility analysts and engineers of Chicago. Exhibits covering the earnings and operating expenses of the company, the effect of the increases in wages granted and the extent of increases in the prices of supplies were presented to the commission by G. W. Welsh an official of the company.

The East St. Louis Railway owns and operates an electric railway in the city of East St. Louis, serving an estimated population in excess of 75,000. The lines of the company consist of 35.8 miles of track, including track represented by curves and special work. The company does not own any power plants, carhouses or repair shops, such facilities being supplied by affiliated corporations. The company does, however, own a modern four-story office building. The rolling stock consists of ninety cars.

The inventory and appraisal of the property was made as of July 1, 1919. The inventory was made in detail from field measurements and inspection, supplemented by the records of the company, the items of property in each case being distributed and classified according to the classification of accounts prescribed by the Interstate Commerce Commission. In connection with the inventory of the property, an inspection was made of the various units and their component parts to determine the degree of maintenance or upkeep in service. An examination was also made to ascertain with respect to each item of property the extent of the wear and tear which had occurred and also the extent to which other factors existed which reduced the efficiency of the unit or affected its future usefulness in service.

WORKING CAPITAL AND GOING CONCERN

Two separate appraisal conclusions covering the physical property were presented to the commission, the first based on the so-called normal trend of prices, and the second based on the level of prices which has developed from conditions growing out of the war, modified to reflect the average level or prices as it is likely to be for some years in the future.

It developed at the hearing that the level of labor and material prices as adopted for the appraisal based on the normal trend of prices was less than the average of such prices for the last five year period and that the trend basis as used by the engineers did not reflect in any way the extreme prices of basic commodities occasioned by war conditions.

In addition to the appraisal of the physical property, Mr. Hagenah testified in regard to the working capital of the company and also its going concern value. Extended testimony was taken regarding the bases on which his estimates were founded and the data which had been compiled in the course of the investigations covering these two subjects.

The following table shows the reproduction cost of the property as testified to by Mr. Hagenah when the appraisal results are (1) based on the normal trend of prices, and (2) when based on the level of prices and wages in effect at the present time and as such prices and wages will probably be some years hereafter:

	Reproduction Cost on Trend Basis	Reproduction Cost on Present Level of Prices
Way and Structures:		
Engineering and superintendence	$61,666	$88,840
Other land used in electric railway operations	12,600	12,600
Grading	73,209	91,511
Ballast	306,129	446,082
Ties	71,866	79,806
Rails, rail fastenings and joints	251,499	485,915
Special work	109,134	196,441
Track and roadway labor	68,336	102,253
Paving	327,094	409,626
Roadway machinery and tools	6,969	9,050
Bridges, trestles and culverts	24,396	25,972
Crossings, fences and signs	94	272
Signals and interlocking apparatus	4,334	5,634
Poles and fixtures	30,235	39,278
Distribution system	97,909	115,988
General office building	129,198	190,898
Stations, miscellaneous buildings and structures	50	69
Total	$1,574,718	$2,300,235
Equipment:		
Passenger and combination cars	314,276	442,541
Service equipment	15,860	19,535
Electric equipment of cars	149,191	178,380
Miscellaneous equipment of cars	53,350	60,000
Furniture	30,495	41,337
Miscellaneous equipment	5,835	7,150
Surveying instruments	663	995
Total	$569,670	$749,938
General and Miscellaneous:		
Law expenditures	$21,172	$30,502
Interest during construction	133,510	192,344
Injuries and damages	31,758	45,753
Taxes	10,586	15,251
Miscellaneous	44,461	64,054
Total	$241,487	$347,904
Working capital	$55,000	$55,000
Going concern value	150,000	150,000
Grand total	$2,590,875	$3,603,077

Pessimistic Forecast of Baltimore Outlook

In the financial review which appeared in the Baltimore *Sun* of Nov. 8 there appeared the following comment on the attitude of traders toward the stock of the United Railways & Electric Company, Baltimore:

> Attention was attracted to the further sharp decline in the stock of the United Railways in the dealings at the Baltimore Stock Exchange. These shares fell to 12. This is the low record for many years. While 12 was bid at the close, there were additional offerings at 12½.
>
> This stock has been steadily declining ever since the financial position of the company became known and even before the application was made to the Public Service Commission for an increase in fare. The company has not been benefited apparently by the increases allowed, because few believe that even the higher rate gives any promise of a return of the shares to a dividend basis in the near future. In fact, from the later statements of the company of its financial needs and the requirement of the commission that it spend more in maintenance many have become convinced that a dividend may be some time off, unless the company is able to obtain still further relief.
>
> The actual results of the 6½-cent and 7-cent fares have hardly had time to show what the increased revenue will actually be, but from the efforts of the company to have some modifications made in the order handed down it is taken for granted that they are not more than meeting requirements as laid down by the commission.
>
> It is true the stock comes out sparingly, but the fact that even these small offerings can only find a buyer at marked concessions is a straw indicating the general feeling toward it as a dividend yielder. It is also thought that the banks may not now regard this stock as good collateral for loans. It is not known that any of it has been refused as collateral, but when accepted it has to be mixed with other securities to effect a loan. All these factors tend to timidity among the small holders and it seems to be this element which is seeking to sell. The fact that the big interests in the company are already carrying large blocks of the stocks may keep them out of the market as buyers. None of these interests is selling its shares, however, but they are sitting tight on the situation. It is difficult to interest the person of small means in a stock which is not paying dividends and most of the local traders and investors in and around Baltimore are already carrying some of it. It is believed to be more widely distributed than any of the other shares dealt in on the local board. This likewise tends to narrow the demand and makes it difficult to effect sales when forced, except at concessions, which some of the holders seem willing to grant.

Financial News Notes

Nominal Capital for Bay State.—The Bay State Street Railway, Boston, Mass., the predecessor of the Eastern Massachusetts Street Railway, has asked the Public Service Commission for authority to make a 99 per cent reduction in its outstanding capital stocks. It was explained to the commission by Artemus C. Townsend, as counsel for the company, that the company has ceased to be an operating company and all its interests have been disposed of. The proposed reduction of stock, he said, is merely for the purpose of aiding in the final dissolution of the company.

American Light & Traction Doing Better.—The American Light & Traction Company, New York, N. Y., has made a statement of earnings to shareholders for the year ended Sept. 30 last. While the earnings show a decrease of $832,579, as compared with the year ended Sept. 30, 1918, $689,968 of the loss occurred in the quarter ended Dec. 31 last, leaving a decrease for the first nine months of 1919 of only $142,611. In this latter period the increase in cost of materials, labor taxes and miscellaneous items, which were beyond the control of the management, amounted to $1,163,473. The usual dividends in stock and cash were declared.

Elevated Acts to Protect Stockholders.—It was announced following the annual meeting of the Manhattan (Elevated) Railway, New York, N. Y., on Nov. 12 that a new committee had been appointed to protect the interests of the company and its stockholders, in view of the fact that there is the possibility of a default by the Interborough Rapid Transit Company on the payment of the Manhattan Company dividend due Jan. 1, 1920. The members of the committee are: Alfred Skitt, chairman; W. A. Day, Alvin W. Krech, J. H. McClement, S. J. Murphy, and Frederick Strauss. The committee decided that it was not necessary at this time to call for a deposit of stock. Mr. Strauss and E. L. Ballard were elected as new members of the board of directors.

Traffic and Transportation

Chicago Rate Unchanged

Commission Refuses to Suspend Seven-Cent Fare Order Pending City's Appeal to Supreme Court

Supported in its conclusions by an opinion from the Attorney General of the State, the Illinois Public Utilities Commission on Nov. 10 refused to suspend its 7-cent fare order for the Chicago Surface Lines which has been in effect since Aug. 8. It also refused to heed the petition of the city authorities for reparation and impounding of excess fares. This action was based on the theory that the Illinois Supreme Court alone has authority to suspend the 7-cent fare owing to the pendency of the original case on appeal.

This decision of the commission came as a surprise to the city's lawyers because apparently authentic statements had been published to the effect that some reduction in the rate of fare would be made at once although hearings on the valuation and permanent rate have not been concluded. It was announced that the city would immediately file a bill in court to enjoin the collection of any fare above the 5-cent rate specified in the ordinance.

The commission in its decision held that the advance in rates allowed last August was necessary to meet the high wage scale following a strike and that the refusal of such assistance would have meant confiscation. It also held that the State through this commission had the right to cancel or modify the contract ordinance under which the Surface Lines operate. The city, according to this decision, had neglected its opportunity to ask the Supreme Court to suspend the 7-cent fare, and since the appeal was pending even the commission could not reinstate the old rate. It was, therefore announced that the taking of evidence would proceed.

ATTORNEY GENERAL UPHOLDS POWER OF COMMISSION

Attorney General Brundage, who had been asked by the commission to give his opinion on the case, took the stand that the commission, while it could not suspend its order, was free to proceed with the taking of evidence with a view to fixing a permanent rate. He held, however, that the commission's order was temporary in its nature and that there was nothing to prevent the issuance of a permanent order based on a thorough valuation of the company's property. At the same time he ruled that the Illinois Supreme Court had unquestioned authority to suspend the present rate.

Mr. Brundage said in his opinion:

> In the first question you ask whether the Supreme Court, during the pendency of the appeal, has authority to suspend the commission's order of Aug. 4, 1919, and thereby annul for the time being the schedules which authorize the collection of a 7-cent fare.
>
> I am clearly of the opinion that with the entire proceeding now pending in the Supreme Court of Illinois, said court has full authority and jurisdiction to entertain a motion by the city of Chicago to suspend the order of your commission during the pendency of the appeal, as provided in section 71 of the public utilities commission law.
>
> In your second question you desire my opinion as to whether, during the pendency of the appeal, the Supreme Court is the only tribunal which is authorized to suspend your commission's order.
>
> For the same reasons your commission is itself without authority to suspend, modify, alter or rescind the order which your commission entered on Aug. 4, 1919. The subject matter of that order has passed from your control, and is now vested in the Supreme Court of Illinois, and that tribunal is, in my opinion, vested with the sole jurisdiction upon the existing state of the record, to suspend the operation of your order, or to take such notion in respect to the same as shall seem proper in the discretion of the court.
>
> It is not my intention, however, by the foregoing opinion to indicate that your commission is without power and authority to say what fares shall now be charged and collected by the Chicago Surface Lines. It is my understanding that subsequent to the entry of said order of Aug. 4, 1919, additional testimony has been received by your commission as to the valuation of the companies' property and the receipts and disbursements of operation under the 7-cent fare, and it is respectfully suggested that upon showing being mad made of the existence of a new and different state of facts, not contemplated when your former order was entered, your commission may then, in the light of the more complete information before you enter a new order granting such relief to the public as all of the facts and circumstances may warrant.

CITY STILL WANTS TRANSPORTATION DISTRICT

On the same day that the commission refused to suspend the 7-cent fare, the City Council endorsed Mayor Thompson's traction plan. Although the Council will have no authority until next January to vote the required appropriation of $250,000, the Mayor announced that he would assume responsibility for employing engineers and others who are to make preliminary studies for carrying out his plan.

This plan, mentioned in previous issues of the ELECTRIC RAILWAY JOURNAL, contemplates the forming of the Chicago Transportation District and the election of five trustees to take charge of all electric railway matters. The question of payment for the properties and the securing of new enabling laws are expected to take considerable time.

The city authorities appeared to be embarrassed by the decision of the United States Supreme Court on the same day dismissing the city's appeal in the service case affecting the Chicago Surface Lines. This ruling appeared to sustain the State Supreme Court in holding that the contract ordinances are subject to modification by the Public Utilities Commission. This is the main point against which the city's lawyers have been arguing in the pending fare case.

Brooklyn Needs Eight Cents

The final report of Stone & Webster, the experts employed by direction of Federal Judge Mayer to investigate the financial condition of the various railroad properties in New York in the hands of receivers, has been completed so far as it relates to the surface lines of the Brooklyn Rapid Transit System. According to the figures compiled by the experts, nothing less than an 8-cent fare will suffice to restore the lines financially, and perhaps the fare would even have to be increased to 10 cents. Tables of figures in the report disclose the various additional earning power of a 6-, 7- and 8-cent fare.

An 8-cent fare, beginning Jan. 1, 1920, the report states, would leave the company with a deficit for its surface lines on June 30, 1922, at the rate of $1,262,000 a year. The deficit at a 7-cent rate would be $1,974,000. But if the fare remains at 5-cents the loss for the year ending June 30, 1922, is estimated at $5,326,000. At a 6-cent rate the estimated loss for the same period is fixed at $3,296,000. The report says:

> Neither 6-, 7-, nor 8-cent fare, will be sufficient in view of the recent 25 per cent wage increase, to pay expenses, taxes, and the fixed charges, including rentals on leased property, even with the transfer charge in effect and such additional economies as appear feasible.

Concerning the transfer situation the report says that the expected additional revenue coming from the elimination of the 15,000,000 tranfers between surface and rapid transit lines will amount to about $27,000, and that if all transfers between surface lines were eliminated, including those for which a charge of 2 cents is made, the estimated increase in revenue would be from $875,000 to $1,050,000. The introduction to the report explains that while the figures differ slightly from those in the preliminary report submitted to Judge Mayer in September the changes "do not alter but rather emphasize the conclusions of the earlier report."

Reference is also made for the need for the same rate of fare on the rapid transit lines as that obtained by the surface lines in Brooklyn.

Safety Car Problems Solved

Richmond Has No Difficulty With Segregation of Passengers—Little Cars Push 57,000-lb. Cars

The negro problem in relation to the installation of one-man cars has caused some concern to C. B. Buchanan, general manager of the Virginia Railway & Power Company, Richmond. The cars thus far installed in Norfolk and Richmond have been operated on lines on which the negro travel was light. Mr. Buchanan says that as long as the negroes constitute not more than 30 to 35 per cent of the total population, the ordinary method of segregation works out satisfactorily with the safety cars. On lines where the negro percentage is higher than this, he was of the opinion that it might be necessary to make every third car a "Jim Crow" car, or to resort to some plan of segregation.

In Petersburg, where the lines are also operated by the Virginia Railway & Power Company, twenty safety cars are giving practically 100 per cent of the service, only two trippers being operated morning and night for one trip each with double-truck cars. This town has a large negro population, but the distances are short and the negroes do not ride very much.

In Richmond, the eighteen safety cars in operation at present make up the complete equipment on two lines. For a distance of 1½ miles through the center of the city, these two lines run over the same tracks as five other lines on which the cars are all of the double-truck type, and there is also a very heavy grade. These conditions have presented no difficulties and the safety cars have not in any way delayed the double-truck cars.

In connection with this mixed service, Mr. Buchanan had some misgivings as to what might happen if one of the big cars (some of them weighing 57,000 lb.) should stall and a little safety car should be the next car to come along. This apprehension was completely dispelled by tests made at the shops and carhouses. It was found that one of the big cars stalled in the middle of a sharp curve could be coupled and moved with apparent ease by one of the safety cars. It is expected that by Dec. 1, there will be sixty safety cars in operation in Richmond.

Public Service Accepts New Zone Rates

Commission Again Rejects Railway's Appeal for a Return to the Flat Rate Fare

On Oct. 30, the Board of Public Utility Commissioners of New Jersey again rejected the Public Service Railway's second application for a return to the 7-cent flat-fare. The board instead demanded the acceptance of its recommendation for a fare of 5 cents for the first two zones with a 1-cent charge for a transfer and a 1-cent charge per zone after the second. The reasons given by the board for dismissing the application for the 7-cent fare were that no new facts had been brought out by the company since its first application had been passed upon and that the second application was not made in good faith because there could only result further applications for increases in flat fare.

OTHER FARE METHOD NEEDED

From the facts brought before the board, as to value, it is apparent that with the continued existence of the high costs of operation some other method than that of the flat rate must be considered. The board reiterates its conclusions contained in its former reports, that it is highly desirable that the zone plan be permitted to have a fair trial; that a fair trial would be more likely to be had under the schedule of rates recommended by the board than under any other rates proposed, and that said schedule of rates would yield to the company as much revenue as the 7-cent rate with 1 cent for a transfer would yield under existing conditions.

Continuing, the board said that in proposing various schedules of rates, the president of the railway stated at the hearing of Oct. 21, that the company was willing to try out any reasonable method that the board might suggest, but the day of experimentation with the railway is pretty nearly at an end. The rates now recommended by the board, in its opinion, will produce approximately as much revenue as the alternate flat rate last suggested by the company and will probably do much toward restoring normal traffic.

Commissioner Gaul filed a dissenting opinion, in which he said that "for the reasons heretofore expressed, I am of the opinion that the zone fare should be abrogated, and the 7-cent fare with 1-cent for a transfer should be put into effect."

On Nov. 11 the railway filed with the commissioners a temporary acceptance of the rates suggested by them.

The new zone fare rate—5 cents for the first two zone miles, 1 cent for each zone mile thereafter and 1 cent for a transfer—was to go into effect on Nov. 16 on all Public Service Railway lines.

COMPANY ACCEPTS PLAN

The company's acceptance of the order of the Board of Public Utility Commissioners is as follows:

> The Board of Public Utility Commissioners has expressed the opinion that the zone system of fares now in force on Public Service Railway has not had a fair trial, and has recommended a further trial of the system with a modification of the schedule of rates.
>
> The company filed a statement, showing the results of the operation of this plan, and expressed the opinion, based on these facts, that the zone system was a failure as applied to this property. This conclusion was stated with great reluctance because all concerned had hoped that the plan would furnish the basis of settlement of the street railway problem.
>
> The company, however, has no pride of opinion in the matter, and is willing, out of deference to the expressed opinion and recommendation of the board as set forth in its last two reports on the subject to continue the trial of the present zone plan for a limited time with the modified rates of fare recommended by the board. The company takes this position in the hope that the board, the public, and its employees will all co-operate with it in this further trial of the zone plan, so that there may be no difference of opinion about its success or failure.
>
> The company, therefore, states that on Sunday next, Nov. 16, 1919, the present zone rates charged will be modified as recommended by the board, so that on and after that date the rates will be 5 cents for the first 2 zone miles or fraction thereof traveled on one car, and 1 cent for each additional zone mile or fraction thereof traveled, with an additional charge of 1 cent for a transfer to be used only in connection with a continuous trip, upon the payment of the rate of 1 cent for each zone mile or fraction thereof traveled; school tickets to remain as at present; children under seven years of age when accompanied by an adult paying fare, to be carried free; superimposed service and continuation tickets to be continued in operation wherever now effective.
>
> The company agrees to this plan and these rates in accordance with its understanding of the board's intention, only as a trial for a limited period, and accepts the conditions set forth in the report of the board dated July 30, 1919. The result of this further trial under the new rates will be carefully noted by the company and placed before the board, and every facility and opportunity to study and check up this trial will be furnished by the company to the board and its representatives.
>
> The company, in accepting this recommendation of the board, and the conditions as stated above, reserves to itself all and every one of its legal rights, including the right to apply for further or other relief.

Fare Decision in Abeyance

Wisconsin Commission Withholds Racine Increase Pending Trial of Safety Cars—City's Attitude Undetermined

In September, 1918, the Railroad Commission of Wisconsin rendered a decision on a petition of the Milwaukee Light, Heat & Traction Company, a subsidiary of the Milwaukee Electric Railway & Light Company, for an increase in fares in Racine. It granted a cash fare of 6 cents, children's fares of 3 cents, with five tickets for 30 cents good for transportation in all hours and with ten tickets for 55 cents good for transportation between the hours of 6 a. m. and 8 a. m. and 5 p. m. and 7 p. m. On a subsequent application of the company the commission authorized the issuance of dollar tickets permitting unlimited riding within the period of one week. The latter aspect of the situation was referred to in the ELECTRIC RAILWAY JOURNAL for Sept. 6, page 502.

Since that time a dispute has arisen in the transportation department of the company in regard to wages. This dispute was decided by the Board of Conciliation which filed its report with the commission. According to the laws of the state it remains with the commission to approve or reject the decision of the board and issue an order accordingly.

The fare situation in the city of Racine is not satisfactory. The present fares are unsatisfactory to the city, while the company insists that the revenues are insufficient to pay a reasonable return. The company has taken the position that it will insist upon compliance with the provisions of Chapter 530 of the laws of the state, and will not grant the wage increases found reasonable by the Board of Conciliation unless granted an order giving relief provided by said chapter.

The hope of cheaper service rested upon the possibility of using one-man cars, and a committee appointed by the Common Council of Racine has made a study of this question, but does not feel ready to pass upon it at the present time. The city has asked for an extension of time for consideration of the use of the safety car, its position being that the rates when adjusted should be such as would insure the company a reasonable return; that, in the meantime, in view of the negotiations, and the strong probability that the city would co-operate with the company along the lines desired, it was reasonable to request the company to put in effect the wage scale fixed by the Board of Conciliation and to hold the matter of fares open for a short period, pending final settlement and adjustment. The company contends that it has been losing money and not getting a reasonable return, and will be still farther from a reasonable return when the wage scale goes into effect, and that it is unreasonable to request it to continue the present fares pending such negotiations.

In judging of the necessity of providing increased revenues to enable the company to pay the wages established by the Board of Conciliation, the commission said:

> In some cases which we have studied there appear to have been cycles in maintenance work which makes the use of the maintenance expenses as of any particular period decidedly unfair. There are periods when maintenance is unusually low. It would be unfair to the utility to base rates for the future upon such low maintenance costs, and there are times when maintenance is unusually high, and it would be equally unfair to the public.

REDUCES MAINTENANCE ALLOWANCE

From studies which it has made in the Milwaukee system of the same company the commission has deemed a fair allowance for maintenance expenses for equipment and way and structures to be 5.15 cents per car mile. Figures submitted by the company for the eight months ending Aug. 31 show this amount to have been 9.6 cents per car mile. The commission has therefore considered itself justified in reducing the company's figures by $37,204.

In the recent Milwaukee case the commission also made an allowance of 2.78 cents per car mile for general and undistributed expenses. The figures submitted by the company for the first eights months of 1919 showed this figure to be 4.17 cents per car mile. The commission therefore considered itself justified in reducing the company's figure by $11,647.70.

The commission said:

> It does not appear to us that it is unreasonable to the company to base the allowances for the Racine city system on the allowances made in the recent Milwaukee case. The allowances made for the Racine city system are even higher in proportion to the indicated value of the property than the allowances made for the Milwaukee system. They are the same allowances per car mile as those made for the Milwaukee system, and the number of car miles per year per dollar of property value is higher in Racine than for the Milwaukee city system.

With the adjustments made accordingly the return on the total utility capital as reported by the company would be 6.1 per cent for eight months or at the rate of a little more than 9 per cent a year.

APPROVES ONE-MAN CARS

The commission stated that just what the saving from the operation of one-man cars will amount to cannot be foretold, but that there seems to be no question that the saving will be very material and in the opinion of the commission will be at least sufficient to offset the increased wages resulting from the award of the Board of Conciliation. The commission states that were it in a position to make a definite order in regard to the use of one-man cars in the city of Racine, it is certain that no modification of the present rates of fare in the nature of an increase would be warranted.

Continuing, the commission said:

> In this order, however, we shall in the first instance act on the assumption that when the city has made this investigation it will deem it to be wise public policy to agree to the use of one-man cars in the city of Racine with supplementary service to take care of the heavy traffic during rush hours. On the assumption that this will be the final decision of the city of Racine we find at this time no reason to provide for increased rates of fares in the city of Racine. That the time intervening before the one-man cars may be installed may be made as brief as possible, a final decision on this question should be reached within about two weeks from the date hereof. If it shall be the judgment of the city that it does not desire the use of one-man cars in the city of Racine the city will notify this commission to that effect on or before Nov. 17. In that case the commission will establishe a revised schedule of fares if such shall be found necessary.

The commission confirmed the report of the Board of Conciliation fixing the fair, equitable and just wages in the transportation department of the Racine city railway system, and the company was ordered to make such wages, hours of labor and working conditions effective.

Relief in Sight For San Antonio

Judge Duval West of the United States District Court on Nov. 3 issued an injunction restraining the city of San Antonio, Tex., from interfering with the collection by the San Antonio Public Service Corporation of fares in excess of 5 cents. Judge West held that the revenue derived from the present 5-cent rate is insufficient to provide a fair return upon the company's investment. City Attorney R. J. McMillan has announced that he will appeal from the court's decision if the company installs a 7-cent fare.

The injunction came as the climax to a long-drawn-out legal battle between the city authorities and the company. The latter more than a year ago applied to the City Commission for permission to charge a 6-cent fare. The request was refused, as was a second appeal to the commission. The company then brought suit to have the city restrained from enforcing ordinances which provided that the fare should not be raised above the 5-cent rate stipulated in the franchise agreement of 1899. The case was heard before Frank H. Booth, master in chancery, who recommended that it be dismissed for lack of jurisdiction.

Judge West held that under articles 5 and 14 of the Federal Constitution the court had jurisdiction. He therefore overruled Mr. Booth's finding as to jurisdiction, and accepting the master's estimate of revenue derived by the company under the 5-cent fare, ruled that the fare was insufficient and that the company was entitied to relief.

First Mortality Among Buses

G. A. Whalen, Commissioner of Plant and Structures of New York, has explained that the bus line known as the Bay Ridge-Fort Hamilton line, had gone out of business because of lack of patronage. It was the first failure of one of Mayor Hylan's lines, and the commissioner said the line had been started at the request of the people of the Bay Ridge section. He said if individual owners of buses could not earn enough to support themselves and their conveyances they would have to quit. Other bus lines being operated by the city, he said, had been financially successful.

Transportation News Notes

Six-Cent Fare Continued.—The State Public Utilities Commission has authorized the Kankakee (Ill.) Electric Railway to continue in effect until Jan. 7, 1920, the present 6-cent fare in that city. Nineteen tickets will continue to be sold for $1.

Reserves Decision on Fare Increase.—The Public Service Commission for the Second District has reserved decision on the application of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., for an increased fare and cancellation of the transfer privilege with the International Railway. The application for increased fare is based on a physical valuation of $1,143,553.

Fare Case Carried to I. C. C.—Leroy Browning, Corporation Counsel, of East St. Louis, Ill., following the rejection of a petition to reopen a hearing on an injunction granted by Federal Judge George W. English of the Eastern Illinois District permitting the East St. Louis & Suburban Railway, East St. Louis, Ill., to increase its fares, proceeded at once to Washington to present a protest against the increased rates before the Interstate Commerce Commission.

Cites New York Decision in St. Louis.—The Civic League of St. Louis, Mo., which has declared that the Public Service Commission exceeded its authority in increasing fares in St. Louis while the city has a contract for 5-cent service, has called the attention of City Counsellor Daues to the order issued by Justice Finch of the New York Supreme Court restraining Public Service Commissioner Nixon from giving New York surface lines relief in higher fares on a similar theory.

Seven Cents in Wilmington.—The Wilmington & Philadelphia Traction Company, Wilmington, Del., has installed 7-cent cash fares on its Wilmington local lines under authority granted by the Wilmington Board of Public Utility Commissioners. The company had asked for an 8-cent fare. Under the commission's ruling metal tokens are sold at the rate of four for 25 cents, and free transfers are given. The higher fare was made necessary by a wage advance of 10 cents an hour made to trainmen some time ago.

Jitneys and Higher Fares.—Addressing the Board of Trade of Abington, Mass., recently, P. F. Sheehan of the Brockton division of the Eastern Massachusetts Street Railway, stated that jitney competition was taking $4,600 a week from the company's earnings in Brockton, $1,600 at Whitman and several hundred dollars in other communities. Mr. Sheehan said that lower fares could be put into effect if jitney competition were eliminated, probably 6-cent or 7-cent fares in place of the present 10-cent rate.

Fare Increases in Bay State.—The East Taunton (Mass.) Street Railway has adopted a 7-cent fare on its lines under authority recently granted by the State Public Service Commission. The company had asked for an 8-cent fare. The new rate will remain in effect for three months. The commission has also approved the petition of the Milford & Uxbridge Street Railway for authority to charge 8-cent fares. The Eastern Massachusetts Street Railway has filed with the commission a supplementary rate between Stone Bridge and the state line under which it proposes to issue five tickets for 35 cents.

Bloomsburg Seven-Cent Fare Stands.—The Public Service Commission of Pennsylvania has dismissed a complaint against charging of a 7-cent fare by the North Branch Transit Company, Bloomsburg. The company, which operates lines between Danville, Berwick, Bloomsburg and Catawissa, some time ago increased fares from 5 cents to 7 cents. Even under the higher rates there was a deficit for the first six months of 1919 of $3,817. The company has paid no dividend, on its capital stock of $525,000 and has defaulted on interest on its $532,000 bond issue since Jan. 1, 1915. It is now in the hands of a receiver.

Traveling Agent Will Investigate Service.—The Monongahela Valley Traction Company, Fairmont, W. Va., has created the position of traveling passenger and express agent and has appointed C. H. Hardesty to the post. His duties will be to travel over the entire system with a view to ascertaining the character of the service. He is to investigate complaints of insufficient or poor service and to recommend improvements. He will also arrange for transportation in connection with conventions and will investigate the company's express service. The traveling agent will have access to all operating records. He will report directly to the general manager.

New Transfer System for Seattle.—The Seattle (Wash.) Municipal Street Railway will put in effect a new system of transfers, which it is believed will save the city about $500 daily. The new transfers will be about the size of a theater ticket, of a different color for each day of the week, and will be stamped with the hour. To support his claim that the passengers on the municipal lines have been riding too far for a nickel, Thomas F. Murphine, superintendent, recently sent a man out with instructions to see how far he could ride on one fare. Starting at 9 a. m., he was still riding at 4 p. m., without having stopped for lunch. It is said that he could have continued longer.

A Profit to all Merchants Handling Tokens.—Letters announcing the additional delivery of fare tokens before Nov. 1 were received by every merchant in St. Louis, Mo. The merchants were asked whether they would handle the tokens and sell them to the public. As an inducement to the merchants the United Railways promised to supply tokens in lots of fifty at 7 cents each, and not to require any payment until the tokens had been disposed of by the dealer. Consequently any dealer who sells two tokens at the rate set by the Public Service Commission, two for 15 cents or seven for 50 cents, will clear a profit. It is thought by railway officials that this inducement will widen the distribution of the tokens among the merchants.

Another Increase Asked.—The Washington-Virginia Railway, Washington, D. C., which was recently allowed to increase fares on its interurban lines by the Interstate Commerce Commission, has petitioned that body for a still further increase in rates. The commission on Oct. 15 authorized an advance in fares amounting to approximately 10 per cent. The company, which operates lines in the

District of Columbia and Virginia, now asks that the cash fare between Washington and Alexandria, Va., be increased from 15 cents to 20 cents and that rates between other points be increased proportionately. To eliminate delays caused by the payment of cash fares, the company has suggested to the commission that a penalty of 5 cents be imposed on such fares.

Cars Unheated, Coal Saved.—The East St. Louis (Ill.) Railway is sending out all of its cars without heat until the present coal crisis is over. An average of six carloads of coal is consumed at the plant daily and it is hoped to reduce this consumption to four carloads daily by economy. Much of the power used by the company is supplied by the Keokuk Power Company, but it is impossible to secure all that is needed from this source and some must be supplied by the local plants.

Service Soon Over St. Louis Bridge.—The Municipal Bridge Commission of St. Louis, Mo., has decided to place in immediate operation the city-owned cars over the Free Bridge. Director of Public Utilities Hooke has been directed to establish the system. He said it would be in complete operation inside of twenty days. The operation of the line will follow a delay of nearly eighteen months, while the city has been waging a legal fight in the Illinois courts to prevent the city of East St. Louis from collecting an $18,000 tax on the part of the bridge extending over East St. Louis property. Under the schedule prepared by Chief Engineer Butts of the Bridge Commission it is planned to establish car service over the bridge between 6 a. m. and midnight. There will be no "owl service." The fare will be 5 cents each way for adults and 2 cents for children under twelve years.

Jitney Service Attacked.—James W. Synan, of the Massachusetts Highway Commission, recently addressed an extended letter to the North Adams *Transcript*, pointing out the value of the service recently resumed by the Berkshire Street Railway and stating that no jitney service could be compared with it, figured on any basis of eighteen hours a day and 365 days a year, and usually at a thirty-minute or at most an hour's service between communities. Commissioner Synan declared that by no possibility can jitney and electric railway service be maintained in competition in the Berkshire district, and urged the public to eliminate at once jitney competition with the company in Berkshire County. He stated that if it became necessary to again shut down the Berkshire Street Railway, the county would be set back thirty years in its development.

Ten Cents Asked in Augusta.—The Augusta-Aiken Railway & Electric Corporation of South Carolina, Augusta, Ga., has filed with the Railroad Commission of Georgia a petition for an increase on car fares from 6 cents to 10 cents on its Augusta city lines. The company proposes to sell ten tickets for 75 cents. An increase in power and light rates is also asked. The petition was the answer of the company to the recent complaint of the city of Augusta, filed before the commission, in which the city declared that the rates for light, power and fare in Augusta were varied and haphazard and were not fixed on scientific calculation. In its answer the company admits that in some measure the city's complaint is true, but declares that the present high costs of operation require an increase in fares. A hearing has been set by the commission for Nov. 25.

Personal Mention

W. L. McCloy, Jr., formerly general superintendent of the Philadelphia Company, Pittsburgh, Pa., has been promoted to the position of general manager of the company. Mr. McCloy succeeds Carroll Miller, resigned. He has been connected with the company for many years.

R. L. Warner, formerly vice-president of the United Railways, St. Louis, Mo., has been elected vice-president and treasurer of The North American Company, New York City. Mr. Warner has for twenty years been actively identified with the development and financing of public utility properties and railroads, more particularly in New England and the South.

F. S. Chamberlain, who for the last six years has been district engineer of electric operation for Henry L. Doherty & Company, has been appointed general manager of the Mansfield Public Service & Utility Company, Mansfield, Ohio. Before joining Henry L. Doherty & Company, Mr. Chamberlain was connected with the American Gas & Electric Company.

J. Sigfried Edstrom, president of the General Electric Company of Sweden, is in this country to attend the International Labor Conference as a delegate of his government. Mr. Edstrom was at one time connected with the General Electric and Westinghouse Companies in this country. He also took an active part in the construction of the tramway systems in Zurich and Gotenburg.

James G. Nellis has resigned as manager of the Quincy division of the Eastern Massachusetts Street Railway, Boston, Mass., and will engage in other business. Mr. Nellis joined the company at the time of its recent reorganization. Previous to his appointment as manager of the Quincy division, he was for ten years superintendent of the Amsterdam division of the Fonda, Johnstown & Gloversville Railway, Fonda, N. Y.

Maurice E. McCormick, who resigned last July as assistant general manager of the New Brunswick Power Company, St. John, N. B., has been appointed manager of the Quincy division of the Eastern Massachusetts Street Railway, Boston, Mass. Mr. McCormick succeeds James G. Nellis, whose resignation is noted elsewhere in this column. He was formerly assistant general manager of the Bangor Railway & Electric Company, Bangor, Me. He entered the employ of that company in 1896 as an apprentice.

L. H. Bean, who has been general manager of the Tacoma Railway & Power Company, Tacoma, Wash., for the last nine years, has resigned. Mr. Bean has joined the staff of Dwight P. Robinson & Company, New York City, as a construction engineer. Before becoming connected with the Tacoma Railway & Power Company, a Stone & Webster property, he had represented the latter organization at Baltimore, Seattle and Bellingham, Wash. He has been acting as the chairman of the board of trustees of the Tacoma Employees' Association.

H. Brobeck, who has been appointed superintendent for the Eastern district of the San Francisco-Oakland Terminal Railways, joined the company in 1902, when it was known as the Oakland Traction Company. In 1905 he was transferred to the Key division as motorman, and in 1906 was appointed inspector on all lines of the Oakland Traction Company. In 1908 he was appointed assistant superintendent of the Key division, which position he filled until 1915, at which time he was appointed chief clerk to George H. Harris, general superintendent.

F. H. Dewey has resigned as president of the New England Investment & Security Company, Worcester, Mass., and its subsidiaries. The electric railway system of which Mr. Dewey was formerly the head includes the Worcester Consolidated Street Railway, the Milford, Attleboro & Woonsocket Street Railroad, the Interstate Consolidated Street Railway, and the Attleboro Branch Railroad. He will retain an interest in the corporations. Mr. Dewey was elected president of the Worcester Consolidated Street Railway in 1898, and of the New England Investment & Security Company in 1915.

Clark V. Wood, president of the Springfield (Mass.) Street Railway and of the New England Investment & Security Company, Worcester, Mass., has been elected president of the Worcester Consolidated Street Railway, a subsidiary of the latter corporation. Mr. Wood has also been chosen president of the Milford, Attleboro & Woonsocket Street Railroad, the Interstate Consolidated Street Railway, and the Attleboro Branch Railroad, all subsidiaries of the New England Investment & Security Company. He succeeds F. H. Dewey, Worcester, who has resigned. Mr. Wood became head of the New England Investment & Security Company last July, following Mr. Dewey's resignation from that office.

Elbert G. Allen, who has been appointed advisory engineer of the Stone & Webster organization, was educated at the Massachusetts Institute of Technology. He received the degree of B. S. in mechanical engineering in 1900 and E. E. in 1901. From 1901 to 1907 he was employed by Stone & Webster on various kinds of engineering work. He was superintendent of construction for Stone & Webster at Dallas, Tex., in 1907 and then returned to the Boston office, where he has since had charge of much of the important steam and electrical work done by the company. In 1918 he was made assistant engineering manager. His new appointment as advisory engineer will leave him free from routine matter so that he can devote himself to consultation and special problems.

Obituary

A. M. Moore, superintendent of equipment of the Georgia Railway & Power Company, Atlanta, Ga., died at his home in Atlanta on Sept. 28 after an illness of several weeks. Mr. Moore, who was fifty years of age at the time of his death, had been connected with the company for many years. He was formerly its master mechanic, and was appointed superintendent of equipment in 1916.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Varnished Insulations Show Advance in Price

Increased Costs Send Cotton and Silk Products Up from 10 to 20 Per Cent Under Good Buying

Several kinds of insulation materials increased in price about Nov. 7. The rise of 2 cents a pound on friction tape was individual rather than general, but the expression was not individual that a further rise might be expected before the end of the year. Jobbing houses of electrical supplies are as a rule well supplied with tape, and many will not be in the market for new stocks until the end of the first quarter of the new year.

Varnished cambric in sheet and tape form has advanced in the neighborhood of 10 per cent, with about a 2 point higher rate on the tape because of the additional labor necessary to get it into that form. Cotton in the raw state has advanced to around 40 cents a pound, and this increase plus the added cost of labor to get it woven has been given as the cause for the advance in the finished insulation. White cotton tapes, on the other hand, have not advanced, as far as could be learned.

Silk insulation has taken a much higher jump; in fact, the supply for this purpose is so limited that more often than not it is necessary to get a price according to the amount of stock which can be secured to fill a definite order. The most recent advance on silk tape is that of about 20 per cent on Nov. 7. The silk cloth, varnished, is somewhat lower. Prices are extremely uncertain, however, and likely to increase at any time.

Good Sales Recorded in Portable Track Grinders

Production Is Gradually Catching Up to Normal—Deliveries Are Made in One to Two Weeks

The amount of business being transacted in portable track grinders is good and has been improving right along for several months past. Grinder stocks are in good shape, and are sufficient to meet normal demands for a period of four weeks. Production has fallen behind from a number of different causes, but is gradually catching up and will be sufficient to take care of all demands unless some unforeseen obstacle arises. Recent sales show considerable improvement and the prospects are promising for an increase in sales for the next three months. Sales for the past six months are double those for the corresponding period of last year. The buying appears to be regular, and no advance in prices has been made recently. Furthermore, no advances are looked for this year.

Present stocks are in such shape that deliveries on track grinders can be made in ten days of receipt of order. One company advises that one to three machines are available for immediate delivery. Although large individual orders are scarce, a manufacturer has recently sold six to one company. Manufacturing conditions are good at the present time and no troubles from labor sources are looked for at the present time. With one or two exceptions, railways are meeting their bills a little more promptly than has been the custom in the past year.

Steel Rail Prices May Advance

First Quarter Quotations are Withdrawn by a Large Producer—The Pig Iron Situation Is Unsettled

On the strength of a possible increase in the price of pig iron, at least one large producer is holding back quotations on first and second quarter delivery of standard rail sections.

At the present writing there is no information available to the effect that the steel interests will advance prices, although several large sales of pig and foundry iron have been made at increases of from $2 to $3 a ton over the old prices. T-rails and girder rails are holding firm. No present manufacturing conditions are satisfactory and a production close to normal is assured. Good quotations for delivery can be made on certain types of special work, although all orders are subject to mill conditions.

The general trend in rails is upward, and it is believed that on account of heavy steel requirements of the first and later, a congestion will result such as was experienced during the early part of 1918, when unfilled orders ran up as high as 9,500,000 tons. The production of rails, which in 1918 amounted to more than 2,500,000 tons, is expected to show a great increase in 1919. This is on account of the small amount of rails purchased in the past five years. Present indications are that higher prices and longer deliveries than at present may be the rule next year, and that those companies which are able to place their requirements should make every effort to do so now in order to be assured of deliveries later.

Pole-Handling Tool and Supply Prices Higher

Heavy Buying of Peavys, Pikes, Climbers, Pliers, Etc., Reduce Local Stocks—Shipments Good

Advances have just been reported in the price of representative lines of pole-handling equipment and tools used in connection with pole construction. The advance amounted to 20 to 25 per cent and was applied to such equipment as peavys, cant hooks, pikes, etc., and climbers, pliers and kindred tools. Orders have been heavy this fall for construction equipment, and local stocks are low. Nevertheless, manufacturers can make almost immediate shipment from factory stocks.

Pole hardware buying has been particularly heavy, and in some quarters stocks are virtually gone. Shipments which are in transit from manufacturers should soon relieve the local shortage. Factories are shipping in from two to three weeks. Prices show no change but there is an apparent tendency upward before the year closes.

Thirty Days Best Delivery on Snow Plows

Two Months Quoted on Certain Types—Some Fair Sales Made—Old Equipment Being Repaired

The volume of business in snow sweepers and plows has failed so far to come up to the mark set by last year's business or of the previous year. While there have been orders from different companies in Northern and Northeastern states, the majority of railways are not purchasing the additional snow-clearing equipment which they need. A number of large companies have placed inquiries on fairly heavy requirements, and it is expected that some of these will materialize within the next few weeks.

For a limited number of equipments in one of several types, such as a combination nose plow and sweeper or with nose plows or sweeper on both ends, deliveries can be made by the first of the year or shortly thereafter. If prospective purchasers order certain equipment now in stock, delivery in as quick time as thirty days can be made. These are the best delivery dates available, although some manufacturers are quoting delivery of two to three months, and longer. Another large manufacturing company advises that owing to a large amount of work going through the shops, it will be unable to build the sweepers and plows for this year's delivery.

Orders for repair parts on snow sweepers have been light so far this season. Old equipments are being put into shape, but the repairing is of the home-made variety. Some orders for long brooms and for broom materials have been placed, but in small volume.

Davis Steel Wheel Sales Show Improvement

No Price Increases Recently—Sales for First Half Show Slight Decrease—Deliveries Good

Sales of Davis steel wheels for August, September and October show considerable improvement over previous months, although the buying is still of an irregular nature. Sales for the first half of this year, according to reports, are less than for the corresponding period of last year. This period of slackness was naturally expected, however, coming as it did after the heavy war orders were filled.

Prices have not advanced in the past three months, but there is no telling what may be expected during the first quarter on account of advanced quotations on pig iron for future delivery and the present situation in the steel industry. Present reports indicate that the situation is gradually becoming better, and that the end of the trouble may come within the present month.

There is no decline in the raw material market. Manufacturing conditions are good and have not held up deliveries as might be expected. Deliveries at the present time are being made in from six to eight weeks.

Rolling Stock

Sacramento (Cal.) Northern Railroad, has ordered two 60-ton electric locomotives.

Capital Traction Company, Washington, D. C., expects to purchase forty new double-truck cars to cost $500,000, and to reconstruct and repair its tracks and provide additional power-house equipment, totaling in all an expenditure of approximately $1,100,000.

Recent Incorporations

San Francisco & Sacramento Railroad, Oakland, Cal.—The San Francisco & Sacramento Railroad has been incorporated as the successor to the Oakland, Antioch & Eastern, the Oakland & Eastern and the San Ramon Valley Railroads. The new company is capitalized at $5,500,000.

Spotsylvania Railroad, Richmond, Va.—The Spotsylvania Railroad has been chartered to build an electric line three miles long in Spotsylvania County, Va. The officers of the company are: C. B. Lathrop, president: J. D. Patton, Jr., secretary, Joseph Baker, Edward McAuley, Clarence Stutz, E. I. Dunkman, M. Davis and Lewis Durham are directors.

Franchises

Pacific Electric Railway, Los Angeles, Cal.—The City Council of Los Angeles, Cal., has passed an ordinance permitting the Pacific Electric Railway to construct a single-open track upon and across Central Avenue.

Pacific Electric Railway, Los Angeles, Cal.—The City Council of Long Beach, Cal., has passed a franchise ordinance empowering the Pacific Electric Railway to construct double and single tracks adjacent to the Los Angeles County flood-control district in the city of Long Beach.

Stephensville, Tex.—Construction of a railway line from Stephenville to Desdemona, a distance of about 30 miles in the west Texas oil fields, is proposed by a company now being organized by business men of the two towns. The line will be electrified as soon as a power plant and transmission line can be built, but in the meantime the road will be operated as a steam line. Engineers are now in the field making surveys for the line.

Track and Roadway

Pacific Electric Railway, Los Angeles, Cal.—The Pacific Electric Railway has applied to the Railroad Commission of California for authority to construct a second track at grade at three points across the Wilmington-San Pedro Road and across Harbor Boulevard, San Pedro.

Sacramento Northern Railroad, Sacramento, Cal.—The Sacramento Northern Railroad plans to extend its tracks from Sacramento for a distance of five miles down the Sacramento River.

San Francisco, Cal.—The Board of Supervisors of San Francisco has granted John A. Fears a spur track permit to switch electric cars across Mission Street at Twelfth Street.

Connecticut Company, New Haven, Conn.—The Connecticut Company has relaid its tracks from North Main Street, Southington, to Buckland Street, Plainville.

Connecticut Company, New Haven, Conn.—The Connecticut Company has begun laying the rails for its new track across the Plaza, Bridgeport, Conn.

Carolina Beach Electric Railway, Wilmington, Del.—Ground will be broken about Dec. 1 for the construction of the Carolina Beach Electric Railway from Wilmington to Carolina Beach, a distance of 13 miles. The road will be ready for operation before the next summer season. The authorized capital of the company is $650,000.

Greenview Electric Light & Power Company, Sweetwater, Ill.—The construction of an electric railway in Sweetwater, is contemplated by the Greenview Electric Light & Power Company.

Binghamton (N. Y.) Railway.—The Public Service Commission for the Second District, has issued an order approving construction by William G. Phelps, receiver for the Binghamton Railway, of an extension of the company's Port Dickinson line to the plant of the Hire's Condensed Milk Company in the town of Fenton.

Brooklyn (N. Y.) Rapid Transit Company.—An order has been issued by Transit Construction Commissioner John H. Delaney, directing the receiver of the Brooklyn Rapid Transit Company to proceed with the construction of the last section of the Culver Line, involving the right-of-way from Sheepshead Bay to the Coney Island terminal.

Eastern Massachusetts Street Railway, Boston, Mass.—The Eastern Massachusetts Street Railway is laying new rails on its Maltapan line in Randolph, Mass.

Eastern Massachusetts Street Railway, Boston, Mass.—The Eastern Massachusetts Street Railway plans to relay its tracks in Market Street, Boston.

Eastern Massachusetts Street Railway, Boston, Mass.—The Eastern Massachusetts Street Railway has reconstructed the tracks in Winter Street, Lynn, Mass., at a cost of $15,000.

Detroit (Mich.) United Railway.—The Detroit United Railway is rerouting its Hamilton line cars preparatory to abandoning its tracks in Ledyard Street and Cass Avenue.

Detroit (Mich.) United Railway.—A delegation of one hundred persons, representing the section of Detroit east of the present Warren Avenue terminus, recently requested the Detroit City Council to make an agreement with the Detroit United Railway whereby the car line proposed for their section of the city could be built without delay.

Northern Ohio Traction Company, Akron, Ohio.—The Northern Ohio Traction & Light Company has accepted a twenty-five-year franchise on the Canton-Massillon road. It must now be approved by the Stark County commissioners and by the property owners along the line.

Cincinnati (Ohio) Traction Company.—Street Railway Director Calkins of Cincinnati, Ohio, has addressed a communication to the City Council asking for an investigation of the engineering and financial feasibility of replacing the present double trolley system with the standard single system in connection with the possible adoption of single-truck, one-man cars on certain lines.

Cincinnati (Ohio) Traction Company.—It was decided at a meeting of the Cincinnati Rapid Transit Commission on Oct. 3 that work on the construction of the rapid transit loop should commence on Oct. 15, by turning off the canal waters.

Lake Shore Electric Railway, Cleveland, Ohio.—During the present year the Lake Shore Electric Railway has spent approximately $225,000 on repairs and extensions to its Lorain city line. Tracks have been extended to the Cromwell steel plant and the main line has been improved. Work on the elimination of the loop at Erie Avenue and Broadway has been completed.

Harrisburg (Pa.) Railways.—The Harrisburg Railways has finished the relaying of its tracks in Second Street between North and Reilly Streets at a cost of $44,904.

Power Houses, Shops and Buildings

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—The Chicago, North Shore & Milwaukee Railroad has leased the two-story building at 209 South Wabash Avenue, Chicago, for use as a passenger waiting room.

Toledo Railways & Light Company, Toledo, Ohio.—The Toledo Railways & Light Company has put off opening its new building at Superior Street and Jefferson Avenue. The structure, which contains nearly two acres of floor space, will be used for offices.

Trade Notes

Joseph H. Towle formerly with the Railway Improvement Company, New York City, severed his connection with this company on Sept. 1. He was formerly with the People's Railway, Dayton, Ohio, and the Springfield (Ohio) Railway. Mr. Towle has now formed a new company with T. A. Calhoun known as Towle & Calhoun, which will be located at Grand Rapids, Mich., and will act as the distributer of the Willys farm light throughout western Michigan.

Belgian Purchasing Agencies.—Co-operative purchasing bureaus have been established in Belgium under the auspices of the Belgian Ministry of Reconstruction. For supplying iron, steel or metal-working equipment, manufacturers should address the Société Co-operative, Association des Vicinaux de Belgique, 32 rue Eloy, Bruxelles, for interviews; Société Co-operative, Federation des Centrales d'Electricité de Belgique, 158 rue Royale, Bruxelles, for power plants, and Société Co-operative, Association des Tramways Electriques des Belgique, 15 Avenue de la Toison d'or, Bruxelles.

Western Electric Company, New York, N. Y., announces that Frank Gill, who started in the telephone business in 1882 and has performed important work in many different countries, has been appointed chief engineer in Europe for the company, J. P. McQuaide, after about twenty years of continuous service at

Philadelphia, has been transferred to Cincinnati as stores manager. F. H. Van Gorder, a power apparatus specialist, has been appointed manager of the Newark store. A. H. Ashford is in charge of company's branch at Jacksonville, Fla.

E. L. Sullivan has been appointed to represent the Green Engineering Company in the Pittsburgh district, including western Pennsylvania, eastern Ohio and western West Virginia. Mr. Sullivan has been a special representative for the McDonough Regulator Company for the past ten years in Chicago and Pittsburgh. He has devoted all of his time to special investigations pertaining to the securing of more efficient boiler and furnace operation. Mr. Sullivan will maintain the company's present offices at 2545 Oliver Building, Pittsburgh, where he will serve in all matters pertaining to the sale of Green chain-grate stokers, sealflex arches, steam-jet ash conveyors, cast-iron ash tanks and replacements for the same.

S. A. Redding, mechanical and electrical engineer, who has been with the Georgia Railway & Power Company, Atlanta, Ga., for fifteen and a half years, has established a special technical service in South American countries and will make commercial, industrial and financial reports. As general superintendent of the Georgia Railway & Power Company, he had general supervision over the steam and water power production, transmission lines, and all operating and maintenance in the electrical department as well as all engineering and construction. He will represent the following companies: Ohio Brass Company, Delta-Star Electric Company, Crouse-Hinds Company, Cheatham Electric Switching Device Company, Nachod Signal Company, G & W Electric Specialty Company and the Columbia Machine & Malleable Iron Company.

E. M. Cutting, formerly Western manager of the Edison Storage Battery Company, has been appointed manager of the railway department with headquarters at the factory, Orange, N. J. In 1888 he commenced working for the Southern Pacific Company in its signal department and in 1897 was promoted to be supervisor of the Western division of the road. In 1905 he received charge of the electric lighting of the passenger-train cars of the system, still retaining the position of Signal Supervisor. Three years later he was appointed engineer of train lighting, heating and ventilation of the entire system. He resigned from the Southern Pacific Company Dec. 31, 1912, to become manager of the newly created Western branch of the Edison Storage Battery Company.

Economy Electric Devices Company, Chicago, Ill., announces the recent sale of Economy power-saving watt-hour meters to an electric railway company in Arequipa, Peru, South America, to the Eastern Texas Electric Company, Beaumont, Tex.; to the Eastern Massachusetts Street Railway, Boston, Mass., and to the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill. The twenty-eight meters furnished the Eastern Massachusetts Street Railway included special features designed to serve in measuring energy transmitted between the various parts of the d. c. distribution system. The power department similarly with other departments of the company has been divided into twelve units and these are tied together through the Economy meters.

John Kelly, who for a number of years was New York district manager of the Edison Storage Battery Company, has been appointed general sales manager of the Edison Storage Battery Company, with headquarters at Orange, N. J. This promotion for Mr. Kelly follows closely upon his previous promotion, on July 1 of this year, to the position of assistant general sales manager. Mr. Kelly brings to his new position the experience of a long and varied career in the storage-battery, electric vehicle and accessory business. For nine and one-half years he was district manager of the New York office of the Edison Company. Before that he had been a salesman for the Westinghouse Storage Battery Company, for the Swineheart Tire & Rubber Company, for the Firestone Tire & Rubber Company and for the New York Edison Company.

Electrolytic Oxy-Hydrogen Laboratories, Inc., New York City, announce the formation of a sales and manufacturing company under the name of the Electrolabs Company. This will give them an opportunity to increase their organization to meet the increasing demand of their business. Electrolytic Oxy-Hydrogen Laboratories, Inc., will continue in charge of the laboratories and maintain a technical supervision over the work of the new company. The general offices and works of both companies have been moved from Dayton, Ohio, into larger quarters at 2635 Penn Avenue, Pittsburgh, Pa. The facilities for production of the new plant will be many times greater than the old plant and will make possible even better deliveries than in the past. The general sales offices are being continued at 15 William Street, New York City, and branch sales offices have been opened in Morris Building, Philadelphia, and the Merchants' Exchange Building, San Francisco. I. H. Levin continues in charge of technical and research work and D. J. Tonkonogy in general charge of sales.

New Advertising Literature

R. V. Hubbell, Bridgeport, Conn.: Circular No. 184 on its reflectors.

W. N. Matthews & Brothers, St. Louis, Mo.: A mailing folder on its Holdfast lamp guard.

Dictograph Products Corporation, New York, N. Y.: An illustrated folder on office telephones.

Vaile-Kimes Company, Dayton, Ohio: Catalog F on electrically operated water supply systems.

Blaw-Knox Company, Pittsburgh, Pa.: A folder about its single-line clam shell automatic buckets.

Brenkert Light Projection Company, Detroit, Mich.: Folder on its "Crescent B" spot floodlamp.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Bulletin No. 1104 on "Steam Turbine Blading."

M. W. Dunton Company, Providence, R. I.: Fourth edition of "Soldering Kinks," a 116-page booklet.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis.: Booklet "J" describing its rectangular magnets.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis.: Booklet on "Electrical Operation of Gate Valves."

Bailey Meter Company, Cleveland, Ohio: Bulletin No. 30 on "Fluid Meters for Low Pressure Gas and Air."

National Carbon Company, Inc., Cleveland, Ohio: Brush Bulletins 11 and 12 dealing with carbon brush setting and friction.

Thompson Electric Company, Cleveland, O.: Pamphlet "How to Make Reflectors Reflect" on safety disconnecting hangers.

United Smelting & Aluminum Company, New Haven, Conn.: A 150-page book on "Side Lights on Aluminum and Non-Ferrous Metals."

Jeffrey Manufacturing Company, Columbus, Ohio: Bulletin No. 273 supplementing catalog No. 244 and covering Jeffrey standard bucket elevators.

Toledo Pipe Threading Machine Company, Toledo, Ohio: An illustrated circular about its portable motor for operating pipe threading and cutting tools.

Trumbull Electric Manufacturing Company, Plainville, Conn.: Circular No. 46 on its "Circle T" externally operated engine switches and meter protective trim.

Herman H. Sticht & Company, New York, N. Y.: A leaflet on "Standco" hand tachoscopes and "Standco" hand tachometers.

J. H. Williams & Company, Brooklyn, N. Y.: Seventeenth edition catalog, on its Vulcan, Agrippa and Falcon brands of drop forgings and drop forged tools.

British Aluminum Company, W. Toronto, Can.: A 12-page pamphlet on the use of aluminum sheet, describing its manufacture, finishing and applications.

Bennage Company, Cleveland, Ohio: A bulletin describing the Sepco system made by the Steam Electric Products Company of generating steam for heating devices, by electricity.

Stow Manufacturing Company, Binghamton, N. Y.: Bulletins 103 on motor-driven tools of every type and description. Bulletin 104, portable tools, drills and flexible shaft grinders.

Condit Electrical Manufacturing Company, South Boston, Mass.: Bulletin No. 414-2 on type E-4 oil switches and circuit breakers whose maximum ampere capacity has recently been increased to 800.

Under-Feed Stoker Company of America, Detroit, Mich.: A thirty-one page booklet containing much interesting information regarding coal from various geographical sections of the country.

Belden Manufacturing Company, Chicago, Ill.: Bulletin No. 1208 on "Beldenmold," descriptive of material, terms and conditions covering quotations, orders and production of synthetic molded insulation.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Bulletin No. 1091 on its "Type OB-4 Governor" for automatic regulation of pressure for air brake equipment and stationary or portable air compressors.

General Electric Company, Schenectady, N. Y.: The Geco resistor for incandescent headlights for 500 to 600 volt circuits, giving lamp data, weight, dimensions, description of mounting, and diagram of connections.

Metal & Thermit Corporation, New York, N. Y.: A folder entitled "How Thermit Cured My Diseased Neck," illustrating a repair on the 16-in. diameter neck of a large roughing-mill pinion used by the Universal Rolling Mill Company, Bridgeville, Pa.

Issued on December 5

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Vol. 54, No. 19 Baltimore and New York November 8, 1919

Speak the Speech of the People

OBSOLESCENCE, depreciation, amortization, reproduction cost new and fair rate of return are soundful and ponderous expressions, but they are as clear as mud to the individual who painfully spells out with one finger any word longer than a syllable. This is a fact not taken into account often enough in preparing publicity copy on the reasons for an increased fare or a reduction in taxing burdens. The language of finance is a long remove from the speech of the people and from their experience in daily life. Householders who buy gas stoves are not in the habit of putting by 10 per cent of the cost of the stoves annually for a replacement fund, and they know nothing about the possibility of obsolescence due to the coming of the superior electric range. But this they do understand: That they can't borrow new money unless they pay the old debt first. That fact lies within the experience of almost everybody. It is true that the average man can't see how it is possible to take in so vast a sum as a million dollars and yet fail to make both ends meet. However, when the fact is set forth that millions of new dollars are *needed* and can be obtained only by making good on past borrowings, the element of bigness is seen from a new angle.

The best form of such publicity as this will take into account both the limited vocabulary and the limited financial experience of the average man. Furthermore, such publicity will deal with neighborhood problems as closely as possible, since that is the only way to arouse that large class of people with whom: "Co-operation (like charity) begins at home."

Rifts Through the Cloud Rack

THE clouds of adversity still lie thick and heavy over the electric railway field, but here and there one notes a rift of sunshine that gives promise of the return of fairer weather. A conversation that we were fortunate enough to hear at the Atlantic City Convention was illuminated by just such rays of cheer. One of the speakers said that he had always enjoyed good relations with his public, his property being a small one and the management homebred. Nevertheless, said he, it had never been possible for him to avoid heavy charges for paving, changes in grade, etc., because such assessments were considered a matter of course. There came a day, finally, when he had to say bluntly: "Gentlemen of the Council, we would certainly like to pay the amount you have assessed against us, but we simply haven't got the money. You have asked for $5,000. Will you call it square if we give you $500?" To his surprise, the councilors did agree to call it square.

"Now that's pretty good," said the second manager, "But I think my public has treated us still better. So long as our lines were part of a great consolidation, the people in this town wouldn't abate a mustard seed from the assessments possible under the franchise. They said they had been neglected and ignored too long a time by a remote-control management to come forward with the Good Samaritan stuff. But, oh what a difference when the lines of their city were taken out of the big system and restored to the old name and the old owners. After we had opened the books and showed the red glow of bankruptcy with which the figures were suffused, the townfolk O. K.'d the passage of a resolution which exempts us from paying taxes for three years. And, say, it's a New England town, too!"

While it is a pity that so important and necessary a utility as the electric railway should have to be thankful for crumbs like these, the hopeful side of the picture is that in each case the public gave the railways a square deal once they clearly understood that their cry of: "Wolf, wolf" was justified. In securing such aid, a small property is likely to have better luck than a big one because of the possibility of appealing to local pride.

Inform the Public Through Its Representatives

RECENTLY, in discussing the various ways of getting new ideas before the public, we had occasion to point out that while the commercial clubs of a community were important centers of influence the fact remained that most of their members were not street car riders personally. Therefore, it was necessary to seek the larger audience of actual car riders, especially through the use of the moving-picture theaters.

Another way of getting at the problem of informing the public is indicated by the successful practice of a Western manager who had found that it was not sufficient to be a good mixer. Realizing this, he set himself the problem of putting all the cards on the table before the board of aldermen of his town. These men, elected directly by the people, are given a frank and full statement in that detail which would be impossible in direct publicity for the masses. The aldermen have every opportunity to raise any question of information they see fit, so that they will not be at a loss if questioned by constituents. One would suppose that labor partisans, for example, would prove skeptics if not utterly indifferent or unfair. On the contrary, our manager has found that most of these men are honestly anxious to get at the facts. It is different with those who want public ownership at any cost, but these latter are not in sufficient number to prevent judgment on the basis of the facts in the local situation. One fruit of this policy of "nothing to hide" has been the passage of so risky (from a political viewpoint) a measure as an increase in fare and of another which permits the operation of one-man cars. When railways made, or rather thought they made, inordinate profits there may have been wisdom in concealment; today, silence or partial silence is too futile a policy to deserve consideration.

Delayed Issues of This Paper Are By No Means Back Numbers

OWING to the unprecedented conditions in the printing industry in New York City, the ELECTRIC RAILWAY JOURNAL is still being printed in Baltimore, Md., and at this writing it is impossible to make any reasonable prediction as to when the publication will be back on a normal basis. Even if the strike should end immediately, it would take several weeks to bring the printing schedules in the McGraw-Hill Company's plant back to normal.

In order to preserve the sequence of numbers and paging in conformity with the requirements of the post-office department, the delayed numbers will be issued in serial order, catching up with the calendar as rapidly as possible, although for some weeks still there will be discrepancy between the date printed of each number and the actual date on which it is mailed. It must be understood, however, that the news in every issue is brought as nearly up to date of that issue as the facilities of the temporary printing office will permit. The office is nearly 200 miles from New York, and as the editorial organizations must be divided between the Baltimore and New York offices, the news service may not be quite as "snappy" and as fresh as the paper prides itself on giving under more favorable conditions. On the other hand, no expense is being spared to overcome all of these handicaps We are publishing no "back numbers," and shall not do so. At times there may be amusing inconsistencies in statement due to the very rapid progress which is being made in certain electric railway lines at present, and to the fact it takes now from six to ten days to get a paper out after it has been prepared editorially, whereas in New York it takes only two days.

The publishers and job printers in New York City are standing together in an effort to bring the essential printing industry back to a condition where a spirit of reasonableness will characterize the relation of employers and employees in this business. They desire to pay fair wages for good work, but maintain that the reasonableness of wages and working conditions must be determined with regard to all factors involved. They believe that the principles which are to determine the conduct of the business had better be determined now, once and for all, rather than to have interminable dissension and hard feeling.

At present the printing industry in New York is suffering from the lack of harmony among the pressmen and associated workers. Before peace can be established permanently the relations of the "locals" and their international unions must be harmonized, so that when the employing printers negotiate with a responsible organization they will know that the contracts which are made will be respected, and that a spirit of reasonableness will be met in the drawing up of contracts.

Workers in the printing industry are highly paid for the class of work which they do and are among the most fortunate of all industrial workers. Their work is steady, it is inherently interesting, they are comfortably housed, and they receive ample compensation for overtime. The employers are willing to pay even more than at present and to make reasonable arrangements in regard to working hours, but they resent extortionate demands and they ask for stability of conditions and sufficient time to adjust their own contracts with customers to prospective increases in manufacturing costs.

This is the first time in its long history that the ELECTRIC RAILWAY JOURNAL has been seriously hampered in its work by manufacturing conditions. As has been explained, every effort is being made to surmount the present obstacles to prompt publication. We have been greatly encouraged by the assurances of support from our readers, appreciation of which will be shown in the only practicable way, namely, by giving the best service of which we are capable.

Too Many Toonerville Trolleys

ONE series in the widely-syndicated cartoons of Fontaine Fox has become almost a household word; and that, we grieve to say, is: "The Toonerville Trolley." These graphic quips at disheveled, unkempt trolley lines have so much basis in fact that the cartoonist seems never at a loss for ideas. We may laugh at these pictures, but if we think seriously about them the laugh will carry the same ache that surely afflicted Socrates when he applauded Aristophanes' cruel burlesque of himself. We must realize that the effect of cartoons like these is to give the public a poorer opinion of the electric railways as a class; to think of them as something belonging to the past and not to be mentioned in the same breath with the gas wagon. Yet where is the bus that can be run at anything like the cost, the speed or the passenger-pleasing qualities of an up-to-date electric railway? We are not talking about the kind of transport to adopt where there is no established traffic, but of what is possible on existing lines where the question is either improvement or elimination of the electric railway.

Why should not the owners of these down-at-the-heel electric railways make one clear-cut invoice and then offer the public the alternative of shutting up shop or of being financed to a level that will make them the pride instead of the mock of the community? It is not hard to demonstrate today that it pays to rehabilitate almost any line that has at least 20 cents worth of gross per car-mile. If it has not, or is not likely to get even that minimum through higher fares, the owners of the electric railway had better shut up shop and allow the populace to enjoy the merciful ministrations of go-as-we-please jitney or the double-fare bus. Better an honorable demise than a friendless struggle for existence that can only injure those who have got a fair chance to rise out of the Toonerville class.

Comparisons Based on Insufficient Data Are Worse than Useless

WE REFERRED in our issue of Oct. 25 to the misinterpretation being given in many parts of the country to the fact that the Philadelphia Rapid Transit Company is paying dividends although only 5 cents is charged for a car ride in that city. It is perhaps not surprising that the general public and many daily newspaper men in other cities cannot understand why the railways there should say that they cannot get along with a 5-cent fare, when in Philadelphia people are carried for that sum. Where this question is raised the facts should be given by the railway management. Thus, in our issue of Oct. 25, we published an article on the subject of fares in Philadelphia and Chicago by President Busby of the Chicago Surface Lines, which showed that consideration should be given not only to the minimum fare but to the average fare, length of ride, taxes paid and other salient facts, before final conclusions are drawn. Viewed in this light, the comparison was not unfavorable to Chicago.

There are other cities where incorrect deductions have been drawn from the existence of a 5-cent fare in Philadelphia. An instance at point is an extended editorial in the New York *Evening World* for Nov. 17, in which the Philadelphia example is quoted to show the lack of necessity for any fare higher than 5 cents on the New York railways.

An instructive comparison proving the necessity for a knowledge of all the facts is given in a report recently made public by Alfred M. Barrett, deputy public service commissioner of New York. This report cites the following four fundamental unit figures in which the operations of the companies in Philadelphia and New York differ:

	New York	Philadelphia
Gross earnings per passenger, cents	3.736	3.98
Average speed, miles per hour	6.95	9.06
Cost of maintenance per car-mile, cents	11.85	5.58
Taxes paid, in per cent of gross	10.05	5.91

It then points out that if the Philadelphia Rapid Transit Company during the calendar year of 1918 had received an average of only 3.736 cents instead of 3.98 cents per passenger, its gross earnings would have been reduced approximately by $1,975,000. In the same way, if its cost of operating cars had been increased in the ratio of the speeds of the cars in the two cities, namely 6.95 and 9.06 m.p.h., and if the track maintenance had been increased in the ratio of 5.58 cents to 11.85 cents, the operating expenses in Philadelphia would have been increased from $18,498,386 to approximately $26,449,000. Similarly, if the taxes in Philadelphia, instead of being 5.91 per cent of the company's gross, had been 10.05 per cent as they are in New York, they would have reached the sum of approximately $3,000,000.

To sum up, the results of operation in Philadelphia for the calendar year 1918 would then have been as follows:

	Actual Showing Calendar Year 1918	What 1918 Would Have Been
Gross earnings	$31,704,427	$29,829,000
Operating expenses	18,498,386	26,449,000
Balance	$13,206,041	$ 3,380,000
Taxes	1,871,185	3,000,000
Net earnings	$11,334,856	$ 380,000
Fixed charges	9,800,040	9,800,000
Balance for reserves, replacements and dividends	$ 1,534,816	(*d*)$9,420,000

d signifies deficit.

Continuing the comparison the report estimates what the New York Railways would have done if its figures in the four points mentioned had been the same as those in Philadelphia. That is to say, it assumes gross earnings per passenger of 3.98 cents instead of 3.736 cents; that its cars were able to operate during the year at the speed of those in Philadelphia; that its maintenance, instead of being on underground conduits 11.85 cents per car mile, was only 5.58 cents, and that its taxes were 5.91 per cent instead of 10.05 per cent, of its gross receipts as at present. Then the comparison would be as follows:

	Actual Showings Fiscal Year 1919	What Fiscal Year 1919 Would Have Been
Gross earnings	$12,417,679	$13,176,000
Operating expenses	9,921,411	7,296,000
Balance	2,496,268	5,880,000
Taxes	1,248,197	779,000
Net earnings	1,248,071	5,101,000
Fixed charges	3,423,029	3,423,000
Balance for reserves, replacements and income bonds	(*d*)$2,174,958	$1,678,000

d signifies deficit.

The comparison in the report illustrates the danger of a superficial inference that the correct standard of fare for all cases is the minimum price at which a ride can be given anywhere. This seems to be the idea behind at least some of the suggestions that have been made by advocates of a prohibitively low fare.

We shall not attempt here to consider whether 11.85 cents per car mile for a road equipped with the underground conduit system and 5.58 cents for a trolley line are too high or too low, whether higher speeds could be made in New York's congested streets, the reasonableness of the taxes assessed in each case or the best way of increasing the average fare in New York. But we do want to emphasize the necessity for full consideration of all facts in comparisons of fares charged in different cities. In this particular case, as shown by the report mentioned, Philadelphia conditions in New York would have meant a surplus of more than a million-and-a-half dollars for the New York Railways, while New York conditions in Philadelphia would have meant a very large deficit.

As Mr. Mitten himself said in his testimony presented in writing at the Washington hearings of the Federal Electric Railways Commission: "Every situation has its own difficulties to overcome."

The Connecticut Company Goes to Zone Plan

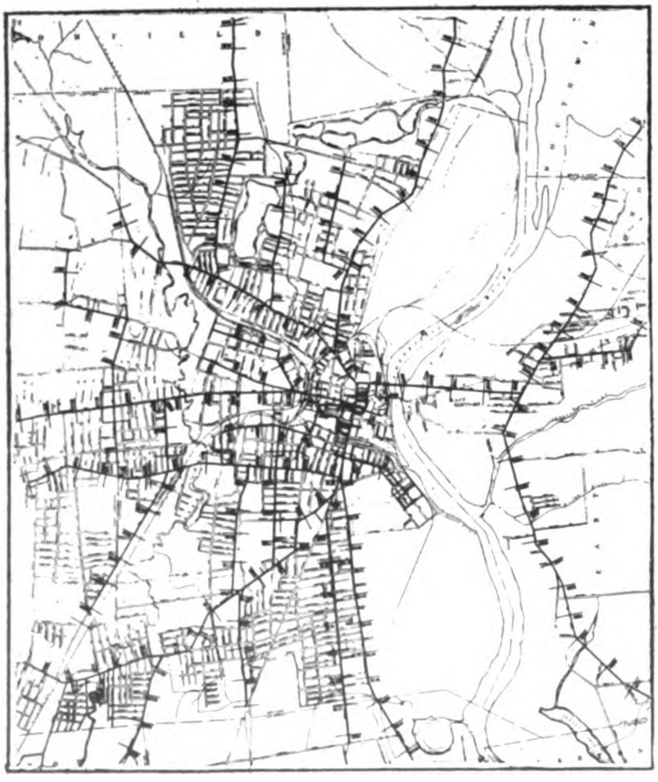
On Nov. 2 a System of Distance Charges Was Inaugurated on Lines in New Haven, Waterbury, Hartford, Bridgeport and Other Cities Comprising the Connecticut Company System, as Well as On the Connecting Lines—It Differs in Some Essentials from the Public Service Railway Plan

AFTER a very elaborate traffic study and analysis of the possibility of increasing its income without placing undue burden upon any one class of its patrons, the Connecticut Company on Nov. 2 inaugurated a zone system of charges. For some time it had been operating on the 6-cent flat-fare basis, and this amount is retained as the basic or minimum fare. For this fare a passenger may go from a point in one zone to a point in an adjacent zone, transferring from car to car without extra charge, if necessary. For each additional zone, or part of a zone, a charge of 2 cents is made.

The zones were laid out with the central points in New Haven, Hartford, Bridgeport and Waterbury as the starting points, the length of the first zone from each of these points being about 1½ miles. The second zone measured from each center is in general about 1 mile long, and on some lines within the metropolitan areas there are several sections each 1 mile long. When the sparsely-settled districts are reached, the sections are 0.8 mile long. The sections are of such length that the average rate of fare is 2 cents a mile for rides in congested areas and 2½ cents in less thickly-settled areas.

In the business center of each of the cities mentioned "neutral" areas are provided to permit passengers to ride beyond the geographical center in order to reach the stores in the central business region without paying an extra fare.

The "pay-leave" system of fare collection is used, the passenger on entering at the front of the car being given a zone ticket by the motorman. Samples are reproduced showing typical "in" and "out" checks. In addition, special zone tickets are used for shop trips, and for extra service on cars which are especially routed.


PRINCIPAL PORTION OF HARTFORD WITH DIVISION OF LINES INTO SECTIONS FOR STUDY OF TRAFFIC CONDITIONS

On leaving the car passenger deposits his fare in a Johnson fare box and surrenders the zone check. If he desires to continue his ride by transferring to another car, the conductor hands him a transfer or "continuing-trip" ticket like that reproduced, enabling him to complete the ride for which he has paid and serving as an identification to prevent his having to pay the basic charge a second time.

Under the new system school children are carried at half rate as before. Special books containing 100 tickets are sold for $1. When a school child presents a zone check to a conductor, the latter simply takes out tickets to one-half the value of the regular fare. These books are on sale at the company's offices. Formerly paper tickets were used very largely to simplify payment of the 6-cent fare. In place of these metal tokens have been issued, each having a value of 6 cents. These are sold by the conductors in any quantity desired, or they can be purchased in packages of seventeen for $1, at all points where ticket books were formerly sold.

There are now no reduced rates of any kind in force on the system, although previously monthly commutation tickets were issued on several divisions.

PREPARING THE PUBLIC FOR THE ZONE SYSTEM

On Oct. 1, 1917, the company went to a 6-cent fare. Protests were received by the Public Utilities Commission, particularly from citizens in Hartford. In connection with the Hartford protests the plan of making a distance charge was suggested by representatives of the public appearing before the commission at that time.

Soon after the hearings before the commission, a traffic survey was undertaken by the company, and an explanation was made to the public of the fact that the industry in Connecticut was in a very serious plight. The company stated that at the time it could announce no definite plan for increasing its revenue, but that in due course a plan would be prepared and explained.

While the traffic studies were being made, the company took every opportunity to put before the public and the employees the facts regarding the condition of the industry in general. In this connection liberal use was made of the reports of the hearings before the Federal Electric Railways Commission, which were being held at the time at Washington. On Oct. 6, 1919, a statement was distributed to the press explaining that a zone plan of operation and fare collection would be inaugurated, but a definite date for its inauguration was not mentioned at the time. This announcement brought out editorial comment, for and against the plan, showing the general effect of the educational work which had been done during the previous two years. In the discussion the preponderance of editorial opinion seemed to be favorable to the plan.

On Oct. 20 a definite statement was made that the plan would be inaugurated on Nov. 2. Advertising was then carried out on a broad scale, using large space in all newspapers published in the company's territory. The president of the company, Lucius S. Storrs, also addressed gatherings of citizens in all of the large cities served by its

TYPICAL STREET SCENE ON CONNECTICUT COMPANY'S SYSTEM, SHOWING ZONE BOUNDARY MARKERS FOR FOUR LINES

lines, explaining the workings of the proposed system and the necessity for some such plan in meeting the current emergency.

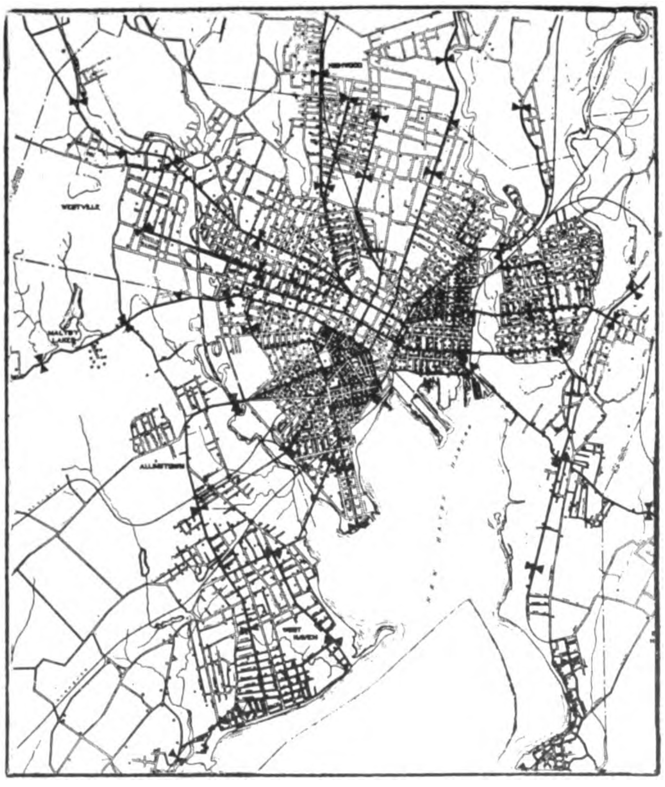
Samples of some of the printed matter used in the publicity campaign are reproduced in connection with this article.

The results of the advance educational work were evident even before the system was actually put into operation. For example, manufacturers and business firms announced that for indefinite periods they would absorb the extra cost of the transportation for their employees under the new plan, some even going so far as to state that they wished the benefits of the increased fare to be reaped by the railway company rather than by the jitneys. As an example of this the following quotation from a statement made to the employees of the Hartford Electric Light Company by S. Ferguson, vice-president, is of interest:

> **As it is impossible for employees, especially those living in suburban towns, suddenly to absorb in their weekly budget of expenditure the increase in transportation charges announced today, the company will absorb the increases for a period of six months as follows (details to be announced later).**
>
> **After Nov. 2 employees whose fares have been increased may purchase weekly, of the company, car tickets sufficient for their use to and from the office at the schedule of charges of the trolley company now in force. The above method rather than a cash reimbursement is adopted in order to insure that the money so expended shall go toward increasing the trolley revenue rather than the revenue of jitneys or steam lines, as it is obvious that reduced transportation rates in Hartford and vicinity cannot be obtained until the trolley revenue exceeds the cost of operating the cars.**

Again, comment in every newspaper in the territory showed that the editors realized that something had to be done to preserve electric railway service for the public. This attitude was radically different from that in evidence two years earlier when the fare was increased to 6 cents. Furthermore, that the publicity work made clear to the employees the fact that more revenue was needed was evidenced from the hearty co-operation with which they assisted in putting the new scheme into effect. This was later officially recognized by the company in a letter from President L. S. Storrs to the employees, commending them for their share in making the introduction of the zone plan a success.

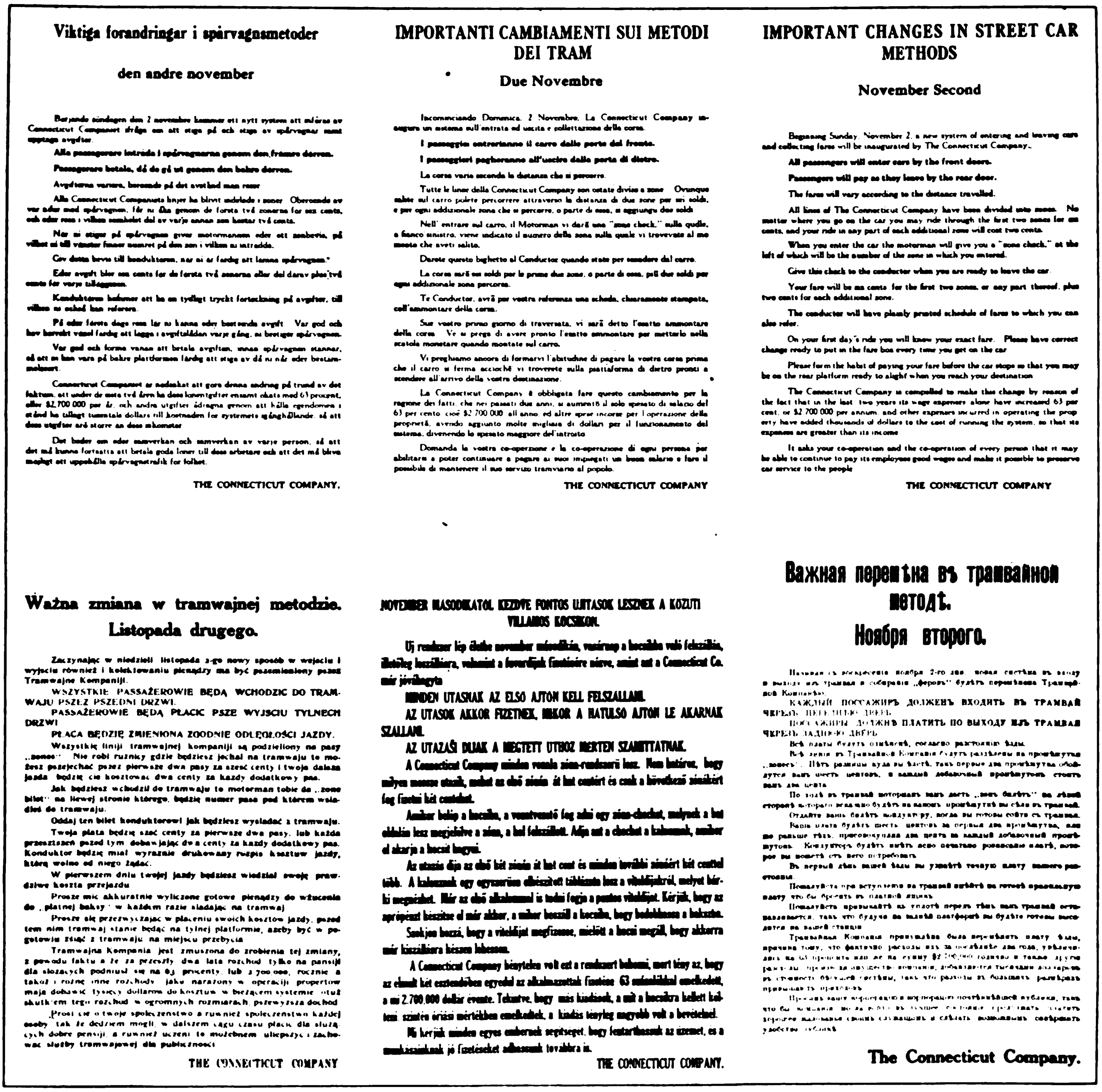
In addition to the general preparation of the employees, already referred to, a comprehensive plan of training was carried out. Meetings of managers and superintendents were addressed by J. K. Punderford, vice-president and



BUSINESS AND RESIDENCE DISTRICTS OF NEW HAVEN WITH DISTRIBUTION OF POPULATION AND ZONE BOUNDARIES general manager of the company, and others, at which all questions that might arise later were taken up and decided.

Then came meetings with foremen, dispatchers, accountants, cashiers, etc., who would be in positions of authority, and who would be required to instruct others in the workings of the zone scheme. A meeting of all of those who had met previously, together with inspectors and others who would later instruct the platform men, was held next, in order that every detail of operation might be gone over. This was followed by a gathering of the general office force and a meeting of the American Electric Railway Association company section, at which the zone system was the topic of discussion.

The platform men were divided into small groups of classes for detailed instruction. Motormen were given actual experience in preparing zone checks, operating doors, etc. Conductors were shown how to collect fares, operate the zone indicator cards, fill out new day cards, envelopes, etc.



Viktiga forandringar i spårvagnsmetoder

den andre november

THE CONNECTICUT COMPANY.

IMPORTANTI CAMBIAMENTI SUI METODI DEI TRAM

Due Novembre

Incominciando Domenica, 2 Novembre, La Connecticut Company inaugura un sistema sull'entrata ed uscita e collettazione delle corse.

I passeggieri entreranno il carro dalla porta del fronte.

I passeggieri pagheranno all'uscire dalla porta di dietro.

La corsa varia secondo la distanza che si percorre.

Tutte le linee della Connecticut Company son estate divise a zone. Ovunque salite sul carro potete percorrere attraverso la distanza di due zone per sei soldi, e per ogni addizionale zona che si percorre, o parte di essa, si aggiunge due soldi.

Nell' entrare sul carro, il Motorman vi darà una "zone check," sulla quale, a fianco sinistro, viene indicato il numero della zona sulla quale vi trovevate al momento che aveti salito.

Darete questo biglietto al Conductor quando state per scendere dal carro.

La corsa sarà sei soldi per le prime due zone, o parte di essa, più due soldi per ogni addizionale zona percorsa.

Te Conductor, avrà per vostra referenza una scheda, chiaramente stampata, coll'ammontare della corsa.

Sue vostro primo giorno di traversata, vi sarà detto l'esatto ammontare della corsa. Ve si prega di avere pronto l'esatto ammontare per metterlo nella scatola monetare quando montate sul carro.

Vi preghiamo ancora di formarvi l'abitudine di pagare la vostra corsa prima che il carro si ferma acciochè vi troverete sulla piattaforma di dietro pronti a scendere all'arrivo della vostra destinazione.

La Connecticut Company è obbligata fare questo cambiamento per la ragione dei fatti, che nei passati due anni, si aumentò il solo spesato di salario del 63 per cento, cioè $2,700,000 all'anno, ed altre spese incorse per l'operazione della proprietà, avendo aggiunto molte migliaia di dollari per il funzionamento del sistema, divenendo lo spesato maggiore dell'introito.

Domanda la vostra co-operazione e la co-operazione di ogni persona per abilitarsi a poter continuare a pagare ai suoi impiegati un buon salario e fare il possibile di mantenere il suo servizio tramviario al popolo.

THE CONNECTICUT COMPANY

IMPORTANT CHANGES IN STREET CAR METHODS

November Second

Beginning Sunday, November 2, a new system of entering and leaving cars and collecting fares will be inaugurated by The Connecticut Company.

All passengers will enter cars by the front doors.

Passengers will pay as they leave by the rear door.

The fares will vary according to the distance travelled.

All lines of The Connecticut Company have been divided into zones. No matter where you go on the car you may ride through the first two zones for six cents, and your ride in any part of each additional zone will cost two cents.

When you enter the car the motorman will give you a "zone check," at the left of which will be the number of the zone in which you entered.

Give this check to the conductor when you are ready to leave the car.

Your fare will be six cents for the first two zones, or any part thereof, plus two cents for each additional zone.

The conductor will have plainly printed schedule of fares to which you can also refer.

On your first day's ride you will know your exact fare. Please have correct change ready to put in the fare box every time you get on the car.

Please form the habit of paying your fare before the car stops so that you may be on the rear platform ready to alight when you reach your destination.

The Connecticut Company is compelled to make this change by reason of the fact that in the last two years its wage expenses alone have increased 63 per cent, or $2,700,000 per annum, and other expenses incurred in operating the property have added thousands of dollars to the cost of running the system, so that its expenses are greater than its income.

It asks your co-operation and the co-operation of every person that it may be able to continue to pay its employees good wages and make it possible to preserve car service to the people.

THE CONNECTICUT COMPANY

Ważna zmiana w tramwajnej metodzie.

Listopada drugego.

THE CONNECTICUT COMPANY

NOVEMBER MASODIKATOL KEZDVE FONTOS UJITASOK LESZNEK A KOZUTI VILLAMOS KOCSIKON.

THE CONNECTICUT COMPANY.

Важная перемѣна въ трамвайной методѣ.

Ноября второго.

The Connecticut Company.

POLYGLOT POSTER USED IN EDUCATIONAL CAMPAIGN, INDICATING DIVERSITY OF NATIONALITIES

The men were paid for their time while learning, to the extent of three hours, so that there would be ample time for the instruction.

In preparing the rolling stock for the zone-fare operation, it was necessary to inclose all cars. The company had a number of pay-enter cars that required no change, but on the other hand there were several hundred cars with bulkheads that had to be made over. Some had no outside doors, and some that had doors were not equipped for their mechanical operation.

The bulkheads were removed from a number of cars, and in all cases the bulkhead doors were taken off. This was done to promote free interchange of the passengers and to contribute to the comfort of the platform men. The vestibule doors were equipped for manual operation. Pipe stanchions were also installed to support the registering fare boxes, the door operating levers being mounted on the stanchions also.

EDGEWOOD AV
Q

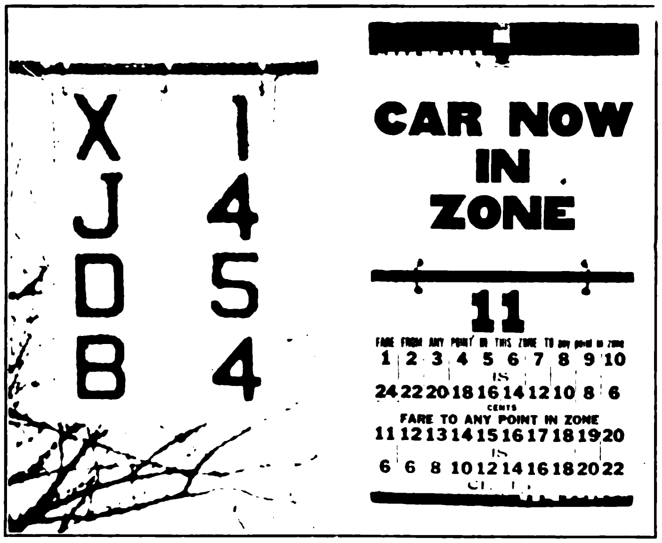
CONSPICUOUS DASHER SIGNS TELL PASSENGERS WHAT TO DO

On many of the cars, change boards like those described in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 16, 1919, page 342, were installed. These previously had been used only on one-man and pay-enter cars.

A zone indicator was developed by the company for use on the cars and built in its own shops. This has the following characteristics: It consists of a board back 10½ in. x 21 in. in size, with a set of 8½-in. x 10½-in. cards, showing on the face the zone numbers and a table of fares to any point in this zone from any other zone on the line. On the back of the cards above is the lettering "Car now in zone." The cards are eyeletted and mounted on removable brass wire arches, so that they can be "flopped over" in passing from zone to zone. The upper set of cards is held in place by a spring-mounted, knurled brass roller, and the cards are protected at the point where they come in contact with the roller by thin sheet metal guards. Metal tabs project from the cards to permit them to be changed readily.

Zone indicators are installed at both ends of the car, but the one at the motorman's end is not used. The indicators are hung on the same kind of keystone lock as that used to support the fare boxes.

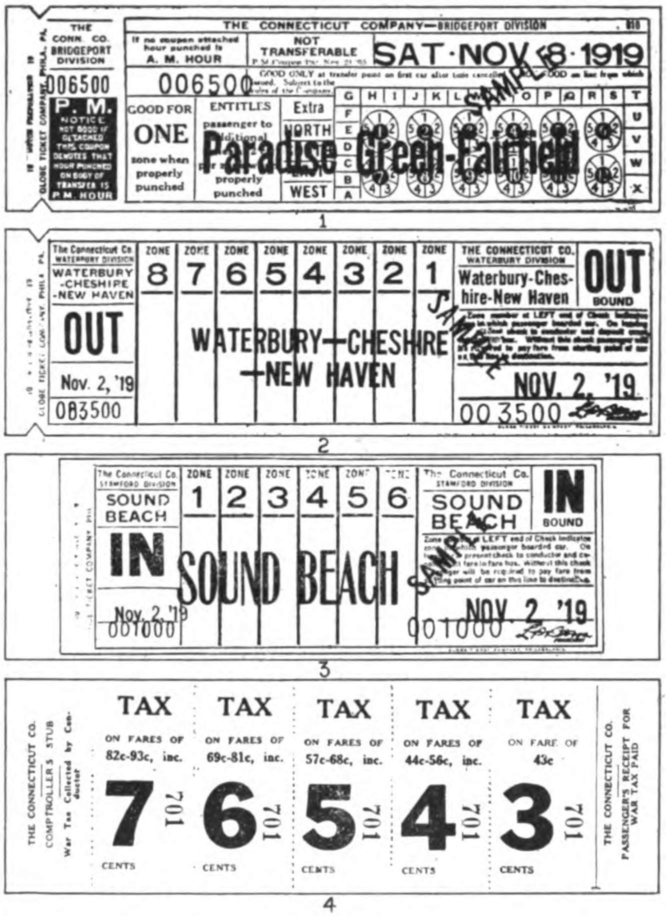
Zone boundaries as finally set were determined from data obtained in an elaborate traffic study extending over several months. This was conducted under the supervision of Dr. Thomas Conway, Jr., of the faculty of the University of Pennsylvania. A census of riders was taken on each line on an average day, showing the origin and destination of each ride. At the same time surveys of distribution of population throughout the territory were made. These included not only the populations along the line but all residents tributary thereto. For the purpose of study, the lines were divided into quarter-mile sections, as shown on one of the accompanying maps.


X 1
J 4
D 5
B 4
CAR NOW IN ZONE
11
FARE FROM ANY POINT IN THIS ZONE TO any point in zone
1 2 3 4 5 6 7 8 9 10
IS
24 22 20 18 16 14 12 10 8 6
CENTS
FARE TO ANY POINT IN ZONE
11 12 13 14 15 16 17 18 19 20
IS
6 6 8 10 12 14 16 18 20 22

AT LEFT, ZONE MARKERS SHOWN IN LARGER VIEW. AT RIGHT, ZONE INDICATOR USED ON CARS

From the data compiled the riding habits of the patrons were determined and the zone boundaries were established by the company. A chart of population distribution density for New Haven, together with the zone boundaries, is reproduced herewith.

The zone boundaries are indicated by signs hung from the wires, no pole markings being used. The sign carries simply the line letter and the zone number. The lettering is in black on an aluminum background, this combination having been shown by experiment to be most legible, especially at night.


THE CONNECTICUT COMPANY—BRIDGEPORT DIVISION
THE CONN. CO. BRIDGEPORT DIVISION
NOT TRANSFERABLE
A. M. HOUR
SAT·NOV·8·1919
006500
P. M.
GOOD FOR ONE
ENTITLES
Extra
NORTH
WEST
Paradise Green-Fairfield
SAMPLE
1
The Connecticut Co. WATERBURY DIVISION
WATERBURY-CHESHIRE-NEW HAVEN
ZONE 8 7 6 5 4 3 2 1
OUT
Nov. 2, '19
083500
WATERBURY—CHESHIRE—NEW HAVEN
THE CONNECTICUT CO.
Waterbury-Cheshire-New Haven
OUT BOUND
NOV. 2, '19
003500
SAMPLE
2
The Connecticut Co. STAMFORD DIVISION
SOUND BEACH
IN
ZONE 1 2 3 4 5 6
SOUND BEACH
IN BOUND
Nov. 2, '19
001000
NOV. 2, '19
001000
SAMPLE
3
THE CONNECTICUT CO. COMPTROLLER'S STUB
TAX ON FARES OF 82c-93c, inc. 7 CENTS
TAX ON FARES OF 69c-81c, inc. 6 CENTS
TAX ON FARES OF 57c-68c, inc. 5 CENTS
TAX ON FARES OF 44c-56c, inc. 4 CENTS
TAX ON FARE OF 43c 3 CENTS
701
THE CONNECTICUT CO. PASSENGER'S RECEIPT FOR WAR TAX PAID
4

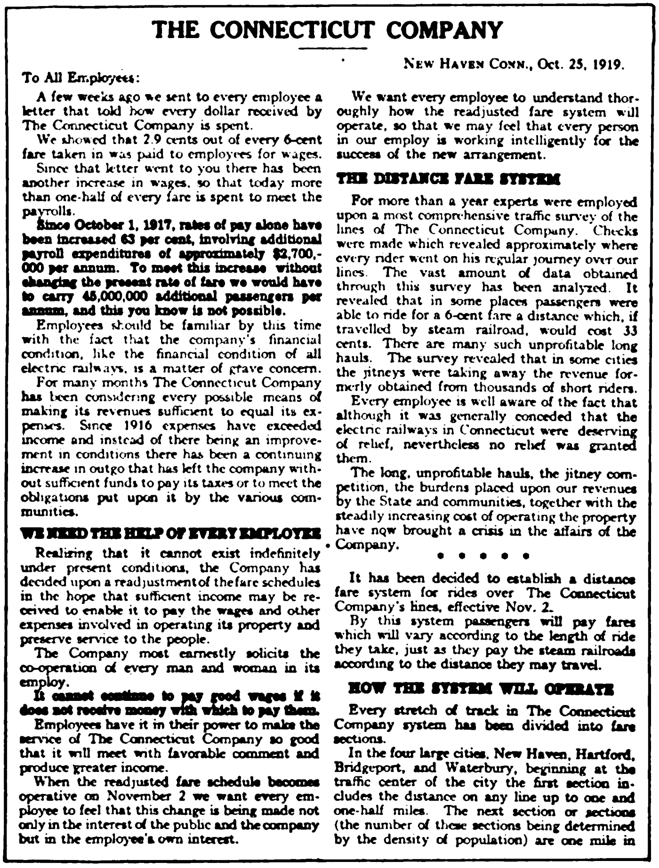
ZONE CHECKS AND RECEIPTS USED IN CONNECTION WITH THE ZONE SYSTEM

1. Transfer and continuing-trip ticket, the nature of the ticket being indicated by punching.
2. Typical "out" zone check for an eight-zone line.
3. An "in" zone check for a six-zone line.
4. War-tax receipt used with interurban fares of 43 cents or more.

Where there is but one marker, the sign is 16 in. wide and 8 in. deep, the lettering being 7 in. high. For two lines the sign is 16 in. square. The deepest sign used contains four lines, with 4-in. letters, the sign being 24 in. deep.

No markers are used in the center of the city, as the center of each city is a zone limit on all lines and surrounding each center is a neutral area. The company did not consider it necessary to indicate the limits of the neutral area by markers, but concluded that such markers might prove an unnecessary complication.

In the accounting system used by the Connecticut Company only the simplest records are required of the motor-



THE CONNECTICUT COMPANY

NEW HAVEN CONN., Oct. 25, 1919.

To All Employees:

A few weeks ago we sent to every employee a letter that told how every dollar received by The Connecticut Company is spent.

We showed that 2.9 cents out of every 6-cent fare taken in was paid to employees for wages.

Since that letter went to you there has been another increase in wages, so that today more than one-half of every fare is spent to meet the payrolls.

Since October 1, 1917, rates of pay alone have been increased 63 per cent, involving additional payroll expenditures of approximately $2,700,000 per annum. To meet this increase without changing the present rate of fare we would have to carry 45,000,000 additional passengers per annum, and this you know is not possible.

Employees should be familiar by this time with the fact that the company's financial condition, like the financial condition of all electric railways, is a matter of grave concern.

For many months The Connecticut Company has been considering every possible means of making its revenues sufficient to equal its expenses. Since 1916 expenses have exceeded income and instead of there being an improvement in conditions there has been a continuing increase in outgo that has left the company without sufficient funds to pay its taxes or to meet the obligations put upon it by the various communities.

WE NEED THE HELP OF EVERY EMPLOYEE

Realizing that it cannot exist indefinitely under present conditions, the Company has decided upon a readjustment of the fare schedules in the hope that sufficient income may be received to enable it to pay the wages and other expenses involved in operating its property and preserve service to the people.

The Company most earnestly solicits the co-operation of every man and woman in its employ.

It cannot continue to pay good wages if it does not receive money with which to pay them.

Employees have it in their power to make the service of The Connecticut Company so good that it will meet with favorable comment and produce greater income.

When the readjusted fare schedule becomes operative on November 2 we want every employee to feel that this change is being made not only in the interest of the public and the company but in the employee's own interest.

We want every employee to understand thoroughly how the readjusted fare system will operate, so that we may feel that every person in our employ is working intelligently for the success of the new arrangement.

THE DISTANCE FARE SYSTEM

For more than a year experts were employed upon a most comprehensive traffic survey of the lines of The Connecticut Company. Checks were made which revealed approximately where every rider went on his regular journey over our lines. The vast amount of data obtained through this survey has been analyzed. It revealed that in some places passengers were able to ride for a 6-cent fare a distance which, if travelled by steam railroad, would cost 33 cents. There are many such unprofitable long hauls. The survey revealed that in some cities the jitneys were taking away the revenue formerly obtained from thousands of short riders.

Every employee is well aware of the fact that although it was generally conceded that the electric railways in Connecticut were deserving of relief, nevertheless no relief was granted them.

The long, unprofitable hauls, the jitney competition, the burdens placed upon our revenues by the State and communities, together with the steadily increasing cost of operating the property have now brought a crisis in the affairs of the Company.

* * * * *

It has been decided to establish a distance fare system for rides over The Connecticut Company's lines, effective Nov. 2.

By this system passengers will pay fares which will vary according to the length of ride they take, just as they pay the steam railroads according to the distance they may travel.

HOW THE SYSTEM WILL OPERATE

Every stretch of track in The Connecticut Company system has been divided into fare sections.

In the four large cities, New Haven, Hartford, Bridgeport, and Waterbury, beginning at the traffic center of the city the first section includes the distance on any line up to one and one-half miles. The next section or sections (the number of these sections being determined by the density of population) are one mile in

SAMPLE PAGE FROM LEAFLET OF EXPLANATION TO EMPLOYEES

man. He makes a report to the comptroller for each run, to show the number of zone checks issued. In the morning when the car pulls out from the carhouse, the motorman is handed a tin box (to be kept on the car during the run) containing the supply of zone checks for the day. All motormen on this car use the zone checks from this box.

When a motorman takes a run he enters the reading of the zone pads on his report form and does the same on finishing the run. He simply makes these entries and does no subtracting. He also enters his pad readings at the end of each half trip.

The last motorman on a run turns in a large report envelope containing the stubs of issued zone checks and the whole or partly used pads of unissued zone checks. The tin box is turned in empty.

The conductor's day card requires, as did the one previously used, the date, route and punch mark. This information is placed in the upper righthand corner to facilitate sorting and handling. The names and badge numbers of the motormen with whom the conductor has worked are shown, as well as the times between which he has worked with each. For each half trip he enters the car number, the origin and destination of the half trip, with time of starting and arriving, the total of zone checks collected, the revenue tickets and passes, the cash and tokens as recorded on the fare box and the transfers collected and issued. Totals for the several items are entered, including the war tax collected. The transfers collected are recorded so as to show the number of identification checks and transfers respectively.

A day card is required for each run and suitable envelopes are provided for inclosing the corresponding tickets, stubs, etc., as follows: (1) For zone checks, one for each trip; (2) for transfers, one for each trip; (3) for transfer trip envelopes for the run; (4) for passes and tickets for the run; (5) for war tax receipts; (6) a "report" envelope for zone-check envelopes, transfer trip envelopes and unissued transfers.

As in the case of the motorman, the conductor gets his supplies in a tin box at the beginning of the day's run, and the last conductor turns in this tin box with the remaining supplies at the end of the run.

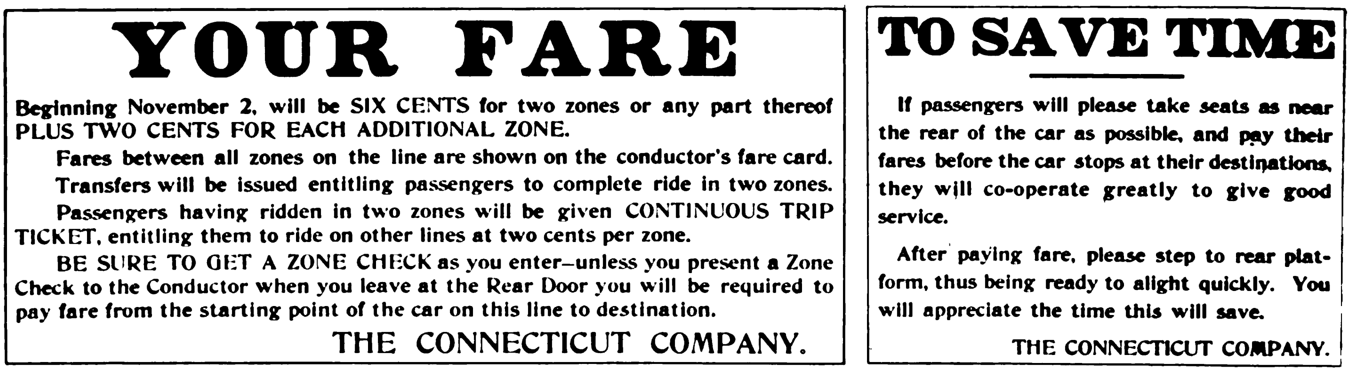
The carhouse clerks are responsible for stocking the platform men's boxes with supplies and for keeping track of serial numbers of transfers and zone checks issued to conductors and motormen respectively. From this point on the handling of the records takes the usual course in the comptroller's central office.

THE PLAN HAS WORKED WITH REASONABLE SMOOTHNESS SO FAR

The company has been highly gratified at the way in which the new plan has worked out. A memorandum given on Nov. 10 to the Associated Press contains the statement that after ten days' trial the zone system had proved to be an unqualified success. While it is yet too early to give details regarding the financial results, the income has increased. As far as riding is concerned, the elimination of commutation tickets resulted in protests being made in some quarters, and there was a diversion of some traffic to the steam trains. For the most part there was no loss of riding that could be considered serious.

In Bridgeport particularly, where the jitney fare is 5 cents, the buses did a greatly increased business, but not enough to reduce the income of the company. On the system as a whole the riding did not fall off materially.

On Nov. 8 and Nov. 15, when thousands of strangers flocked to New Haven to attend the football games at "Yale Bowl," the company operated 120 extra cars between the railroad station and the Bowl, collecting 6-cent fares in the old way from passengers going to or from the Bowl. The Bowl is just outside the 6-cent zone-fare limit from the railroad station, but within the 6-cent limit from Church and Chapel Streets, the center of the city. The "extras" were all open cars, and fares were registered on overhead



YOUR FARE

Beginning November 2, will be SIX CENTS for two zones or any part thereof PLUS TWO CENTS FOR EACH ADDITIONAL ZONE.

Fares between all zones on the line are shown on the conductor's fare card.

Transfers will be issued entitling passengers to complete ride in two zones.

Passengers having ridden in two zones will be given CONTINUOUS TRIP TICKET, entitling them to ride on other lines at two cents per zone.

BE SURE TO GET A ZONE CHECK as you enter—unless you present a Zone Check to the Conductor when you leave at the Rear Door you will be required to pay fare from the starting point of the car on this line to destination.

THE CONNECTICUT COMPANY.

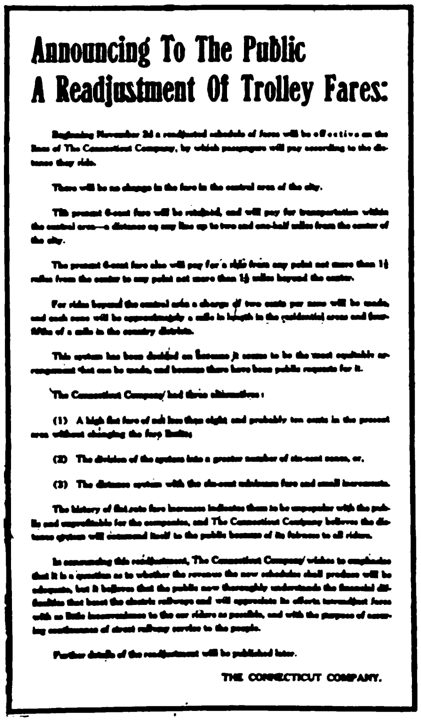
TO SAVE TIME

If passengers will please take seats as near the rear of the car as possible, and pay their fares before the car stops at their destinations, they will co-operate greatly to give good service.

After paying fare, please step to rear platform, thus being ready to alight quickly. You will appreciate the time this will save.

THE CONNECTICUT COMPANY.

CAR CARDS USED TO EXPLAIN PLAN TO PUBLIC



Announcing To The Public
A Readjustment Of Trolley Fares:

THE CONNECTICUT COMPANY.

TYPICAL FOUR-COLUMN ADVERTISEMENT FROM DAILY NEWSPAPERS

registers. Any transfer or continuous trip ticket was accepted in payment of fare on the "football" cars.

Special arrangements to handle impatient shipworkers in Bridgeport were successfully carried out. Many of these workers come from distant parts of the city and have been riding to the shipyard in specially routed cars. They were looking for trouble, and care was taken that there should be none. The extra cars were short-routed, and the men transferred at the railroad station to cars going to the ship yard. In this way pay-leave zone fares were collected in the center of the city, and when the cars reached the shipyard the men had given up their transfers or continuous-trip tickets and there was no delay in unloading. There has not been any trouble anywhere on the system, even where the least-educated foreign-speaking workers are predominant.

EMPLOYEES HAVE COOPERATED WITH COMPANY

As far as the employees were concerned, the men appear to prefer the zone system to the old one. They consider that the conductor is relieved of the necessity for moving about the car, and the motorman's extra duty causes him to take more interest in his work.

The excellent team work which has been contributed by both motormen and conductors played an important part in the successful establishment of the system. This was so apparent that the trustees of the company, on Nov. 8, adopted a resolution of appreciation of the co-operation given by all employees. At the same time appreciation of the attitude of the public was expressed.

Obviously the success of the plan lies with the platform men. Indications are that in Connecticut they feel that while there are some new duties to be performed under the zone plan, it offers an opportunity for the company to make more money, and ultimately this will react favorably upon themselves. As examples of the way in which the men are contributing to the success of the system, the care with which the motormen call out the zone boundaries at night so that the conductors may set their indicators, the good humor with which the conductors circulate through the cars, asking passengers if they have proper change, desire transfers, etc., may be cited.

While the system has not as yet been in use long enough to demonstrate all of its qualities, the results so far are very encouraging. While some slight modifications may have to be made, in general the possible difficulties have been anticipated. A few protests have, of course, been made and in due time the Public Utilities Commission will consider all of the complaints. In the meantime every effort will be made to give service that is worth the increased fare and to show the public the reasonableness of this increase.

Electrification of French Railways

M. CLAVEILLE, Minister of Public Works and Transports of France, in a report on the future development of French railways, states that it is highly important for France to make the most of its vast resources in water power for generating electricity particularly at a time when its supplies of coal are not going to be sufficient to meet the need of its industries. With this end in view, he had an inventory made, at the end of 1916, of the available hydraulic power of the public water courses, and later, reports were requested for each region, showing exactly the quantity of hydraulic energy which could be used by the public services. A particular study was made of the economical use of electricity for motive power on railroads.,

On this subject a special committee of the Railroad Service has recommended the electrification of 5220 miles of track as follows:

Paris-Orleans	1,926 miles out of a total of 4,839 miles.
Paris, Lyons & Mediterranean	1,367 miles out of a total of 6,040 miles.
Midi	1,926 miles out of a total of 2,525 miles.

With the traffic of 1913 the kw.-hr. consumption would have reached:

Paris-Orleans	280,000,000 kw.-hr.
Paris, Lyons & Mediterranean	550,000,000 kw.-hr.
Midi	330,000,000 kw.-hr.
Total	1,600,000,000 kw.-hr.

With the estimated traffic in the immediate future the consumption is estimated at:

Paris-Orleans	560,000,000 kw.hr.
Paris, Lyons & Mediterranean	1,110,000,000 kw.-hr.
Midi	600,000,000 kw.-hr.
Total	2,260,000,000 kw.-hr.

In determining upon lines to be electrified, the Midi and the Paris-Orleans considered the relation of the cost of electric power as compared with the cost of power with steam locomotives, and the comparison showed that mountain lines with sufficient traffic should be among the first to be electrified. They also considered the location of the source of hydro-electric energy in relation to the lines, and the importance of this power to other industries.

On the Paris, Lyons & Mediterranean, however, the possibilty has been considered of using electricity on lines of low grade where there is a heavy traffic, even before putting it on mountain lines where the traffic of these lines is very small.

The proposed sources of electric power are the following:

For the Paris-Orleans—The Upper Dordogne River and its branches.

For the Midi—The Pyrénées.

For the Paris, Lyons & Mediterranean—Certain waterfalls in the Central Plateau and in the Alps, and the enormous reservoir of energy formed by the great plants at present existing or going to be constructed in the region.

The probable cost is estimated as follows, based on prices before the war:

Paris-Orleans	$94,000,000
Paris, Lyons & Mediterranean	93,000,000
Midi	148,000,000
Total	$335,000,000

With the traffic of 1913, electrification would save 1,500,000 metric tons of coal, and in the near future the economy should be less than 3,000,000 metric tons.

A special committee has been formed for the purpose of studying the use of electric energy. It at first obtained all the information possible from the principal electric companies, and it will use this as a basis for improving the present legislation, if necessary, in order to promote the development of the distribution of power. Members of the committee have already visited America to study conditions there.

Simplification of Corporate Structures

A Co-operative Plan is Outlined for the Relief of Large Street Railway Systems Through Reconstruction of the Underlying Corporate and Financial Structure—By a Special Increase in Fare a Sinking Fund Is Provided by which Underlying Securities Are Retired, the Equity Therefrom Being Taken by the City

By CHARLES B. COOKE, Jr.

Of Kelly, Cooke & Company, Engineers, Philadelphia, also Assistant Manager, Division of Passenger Transportation and Housing, United States Shipping Board, Emergency Fleet Corporation, in Charge of Street Railway Operations

IN REVIEWING the various aspects of the situation which today confronts the operators and owners of those street railway properties which are the outgrowth of successive mergers of smaller underlying properties the fact must be faced that the one factor which, as much as or more than any other, creates sentiment adverse to the partial relief of such companies obtainable through higher fares, is their underlying corporate and financial structures.

Such considerations as may exist in obligations to underlying companies, and these are many and diverse, do not appear to have been of weight in shaping the public attitude which has developed on this question. The popular mind conceives the large street railway company as fattening, through some magical process, upon the rentals it has agreed, and is obliged, to pay to underlying companies. This feeling on the part of the public will doubtless continue to exist, with consequent injurious effects, so long as this particular phase of the situation is available as a bone of contention.

There can be no doubt, therefore, of the beneficial effect on the status of the street railway business, as a whole, if some workable plan could be applied to the situations calling for such treatment, which would enable the operating company and the riding public to provide, once and for all, for ultimate and permanent elimination of the underlying obligations as such, and which would at the same time furnish a solution of the future financing problem.

An appreciation of economic conditions responsible for the heavy burden of increased expenses carried by operating companies discourages any hope that some avenue of escape will open up by which the consequences of exorbitant costs of operation may be avoided. Lacking permanent relief through the channels of sufficient revenue or less expense, it is not unreasonable to expect that successful attempts may be made by public, or semi-public, agencies to enforce measures of inequitable relief through the dangerous process of arbitrarily scaling down underlying obligations.

The evil effects of such a possibility turned into a probability or certainty, in undermining and wrecking established standards of value and credit, can hardly be overestimated. It would involve not only confiscation of the assets of individual holders of securities bought on the basis of such established values, but also those of life insurance companies, savings banks and trust companies. It would undermine the value and integrity of the great volume of collateral trust obligations issued upon the pledge of such securities. These far-reaching and disastrous results would be the certain outcome of any attempt to relieve street railway finances through attack on underlying obligations or commitments. They would not be avoided or softened, however just and true contentions might be that such obligations came about through manipulation by promoters of early street railway enterprises. Such manipulation did, of course, occur in many cases, but while I am not an apologist in any sense for practices economically and ethically wrong, it may as well be recognized that this particular milk has been spilt. It cannot be recovered through practices similarly wrong on the part of the public, damaging alike to the present security holder, who is the innocent third party, and to the best interests of the community served by the street railways whose securities would thus arbitrarily be depreciated.

"WATER" OFTEN COUNTERBALANCED BY SUSPENSION OF DIVIDENDS ON CASH INVESTMENTS

It has become the custom among the misinformed generally to regard securities outstanding in excess of visible physical investment as "water" representing nothing of value, and therefore to be eliminated as a factor in the fixation of utility earnings. This is false doctrine. It is as oppressive and hurtful to public utilities as it would be to industrial enterprises if the latter were required to fix the prices of their products on the basis of investment in their present manufacturing plants. While it is true that these types of investment enterprises bear different economic relations to the local and general public, yet it is equally true that the investor looks coldly upon such academic distinctions in choosing where to place his money.

In considering situations which, in the past, may have been subject to excessive security issues, there are many factors of which full account must be taken before it can be determined if those situations are today overcapitalized. It is not proposed to discuss such factors herein, but for illustration brief mention might be made of one. Where underlying companies have issued unjustified securities, a frequent result has been that subsequent operating companies, which leased them subject to their fixed charge commitments, have been unable, for a period of years, to pay even a fair rate of interest on bona fide cash paid in on the stock of the operating company. This applies to the operating company now on the premises as well as to former operating companies during their periods of active life. The aggregate of the interest or dividend money thus not paid clearly and logically replaces an equal amount of such unjustified securities as may have been issued, with actual though intangible cash investment. The necessity for considering such questions as early investments in facilities which became obsolete over night and scrapped need hardly be mentioned in view of the wide-spread attention given to this subject.

If the original promoters took unjustified profits, it was done under then existing laws and could have been stopped at the time through proper restrictive legislation. If the early development of public utility enterprises had been hedged about with present-day safeguards, such abuses as occurred could certainly have been diminished, if not entirely prevented. It was, however, the prospect of large profits quickly made that brought the needed large volumes of capital into this field for the development of what was then an infant enterprise, the future of which was conjectural. Lacking such an attraction, it is difficult to believe that transportation facilities would have developed with that rapidity which marked the early days of the electric railway, and which was required by and essential to the expanding industrial and social needs of the community.

Such factors as these have weight and demand consideration in the development of any plan for establishing permanent means of relief for the street railway with its financial intercorporate structure, as at present constituted. It appears to be axiomatic that any such plan, to be workable, must not contain features prejudicial to the ultimate best interests of the parties in the premises, nor countenance any violation of the fundamental and sound principles of equity which underlies the present economic system.

Remedy Must Be Equitable to Capital

The riding public must recognize that its primary requirement from the railway company is service, adequate in all respects to its needs. To provide adequate and satisfactory service, new capital must be continually invested in the facilities needed to give the car rider what he wants. The general investing public constitutes the only continuous source of supply of new capital, and so long as there was assurance of satisfactory returns to such new capital, it flowed freely into street railway investment. Under existing conditions, broadly speaking, there is no assurance to the investing public of fixed and permanent returns on investments in street railway securities, and these are consequently passed by in favor of other more reliable and productive opportunities for investment. The investing public in effect says to the riding public that if it is unwilling to pay the investor for the use of his capital in obtaining that which is wanted, *i. e.*, service, then it must be satisfied without service of the required kind, or participate in some plan for raising new capital which is not based on sale of securities to the investing public.

There exist contracts and agreements between holding or operating companies and underlying companies which are unbreakable under present laws. The terms of these cannot be modified to the detriment of any of the parties having a direct interest, at the request of those who have no such interest. Any action with this end in view on the part of public of semi-public organizations or individuals for ulterior motives would not only further undermine confidence in railway investments but would constitute nothing less than an attack on the very foundations supporting the present social and economic order. These will remain sound and secure so long as contractual agreements made in good faith are sustained by accepted law, and no longer.

No equitable, and therefore no successful, solution of the street railway problem can be sought through any method based upon the scaling down, or elimination of, underlying security issues without equivalent compensation to the holders for the established values of their securties. The investing public will not provide the means to make this compensation and for this reason the operating company cannot. The question then immediately arises as to how such compensation shall be made, if it is considered essential by the three major parties at interest to eliminate the underlying corporate structure and to change the character of the obligations arising therefrom, as a factor in a given street railway situation. Such elimination would be, without question, desirable from the standpoints of the several parties at interest, providing it can be done in a way that is fair and equitable to all concerned and interested in the stabilization and improvement of the street railway industry as to adequacy of service, as to an attractive field for investment, and as to the elimination of the underlying security, which is the skeleton in the street railway closet. It always offers an inviting point of attack which may not always be as invulnerable as it is under existing legislation and recognized principles of equity.

The situation clearly calls for the development of some sort of co-operative financial plan involving participation on the part of the holding or operating company, the underlying companies, the car-riding public and the bankers who have assumed, in whole or in part, the responsibility of financing street railway properties.

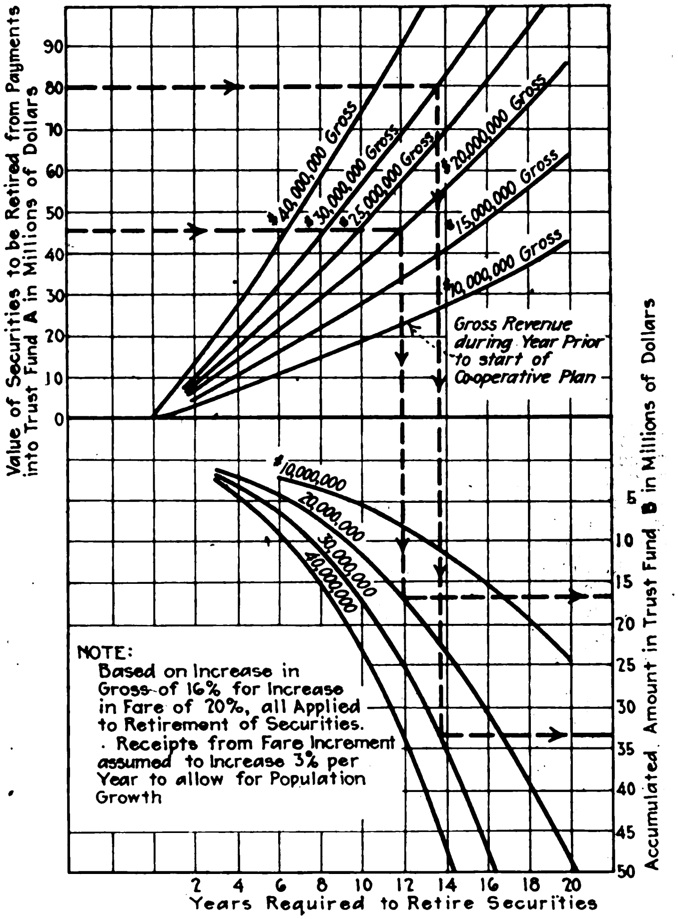


CHART SHOWING RATE OF ACCUMULATION OF TRUST FUND UNDER PLAN OUTLINED

Before proceeding to the consideration of such a plan, it would be well to crystalize the primary objects which its execution must accomplish. These appear to be as follows:

1. It must provide a perpetual guarantee that the riding public will get new and additional transportation facilities as and when needed to serve existing territory, as well as new districts developed by changing centers of population. The riding public has not at present, and will not have so long as the present situation continues, any such guarantee or assurance. The guarantee of adequate service facilities at ultimately lower cost represents consideration to the riding public for its participation in a co-operative plan such as later outlined.

2. The holders of underlying securities must be compensated for their holdings upon the basis of the value conferred thereon by underlying contractual agreements and guarantees. This in conjunction with the removal of the possibility of wholesale depreciation of these securities resulting from either a receivership or from some inequitable form of adjustment of underlying obligations, constitutes consideration to the underlying companies for their participation.

3. It must stabilize the street railway security and furnish a direct means for financing the construction and operation of facilities required for service of the riding public. Such provision for new capital requirements and insurance against operating deficits represent consideration to the operating company, the public and the banker.

4. It must simplify the underlying financial structure for the operating company, changing the form and ultimately the amount of underlying fixed charge obligations. The benefits and advantages so derived under a co-operative plan may be distributed equitably between the operating company and the riding public, and constitute additional consideration to both of these.

In presenting the following suggestions of what might comprise the main features of a co-operative financial plan, designed to accomplish these objects, it is appreciated that its successful application would call for departure from established precedent in street railway financial operations, as well as for courageous and far visioned recognition, by regulatory bodies, of their duties in the premises. Many difficult questions of law, finance and equity would have been solved, and these would be of a character to engage the abilities of the keenest minds now struggling with the financial, legal and economic operating phases of the street railway problem. The following central ideas, around which an effective plan might be devolped, are put forward as constructive suggestions to meet a situation in which these are needed:

1. A board of traction fund trustees to be established, with a permanent membership of five trustees to be selected through a system of balanced non-political appointments representing supervision of the state utility commission, the city and the operating company. An auxiliary temporary membership to be organized which shall be composed of representatives elected by protective committees for each class of underlying security.

2. The operating company to secure an increase in fare under an agreement to devote all or such part of the net proceeds therefrom, as may be practicable, to certain uses hereinafter defined.

3. The traction fund trustees shall establish two separate and distinct trust funds, which may be called "Trust Fund A" and "Trust Fund B," and shall have absolute jurisdiction over the receipts of and disbursements from these funds.

4. The amounts collected from the riding public through the fare increase provided in Paragraph 2 above are to be paid by the operating company, in whole or in part as may be agreed upon, into Trust Fund A. The amounts so paid in are to be used by the trustees for the purpose of buying in underlying securities at an equitable price in accordance with a plan to be developed by them, based possibly upon the order of the priority of the lien of such securities on the earnings of the operating company, or on those of holding companies in the underlying structure. The fare increase authorized for sinking fund purposes is to be applied thereto exclusively and is not to be regarded in any way as an increase to provide for current operating requirements, which is a problem separate and distinct from that herein considered.

5. All questions concerning the equity of the settlement made for each class of security shall be heard before the board, shall be investigated and reported on by a committee of trustees appointed for that purpose, and shall be decided finally by general vote of the board after full and complete consideration of all factors of weight in reaching a balanced and equitable settlement.

6. As such securities are so acquired by the trustees, the operating company shall then immediately cease paying interest charges or dividends thereon as such, but instead, shall pay an exactly equivalent amount into Trust Fund B during an initial period to be agreed upon. Provision to be made that during a period subsequent to the initial period, there shall be a gradual reduction of amounts paid into Trust Fund B in lieu of the retired underlying obligations.

7. Ultimately, all underlying securities will be in the possession of the trustees, and as and when this occurs the fare increment authorized for this purpose shall be eliminated and no further amounts shall be collected for Trust Fund A. As each class of security is retired the auxiliary trustee representing that security shall be retired automatically from the board.

8. The payments made by the company into Trust Fund B in lieu of interest and dividends or underlying securities are to be used for the benefit of the riding public, either in increased and improved service facilities, or paid back through the medium of lower fares, or through a balanced combination of both methods. As consideration for this use of Trust Fund B, it shall also be made available to the operating company as protection against extraordinary obsolescense and as a buffer fund out of which may be made up such operating deficits as may occur, due to lowering the rate of fare below that justified by the cost of service.

9. Fair value of the property upon which the operating company shall be allowed to earn, to be determined and used as a basis for future property accounting. The company to be allowed a fixed return on such fair value, plus a share in the profits above the fixed return, the balance of the profits to be paid into Trust Fund B.

10. Depending upon the size of Trust Fund B, the operating company could either depend upon it entirely as a source of new capital, or use it in conjunction with capital raised by sale of securities. These, owing to the margin of safety introduced by the existence of the trust fund, and the elimination of underlying obligations, would be rated accordingly and salable on a low interest basis.

11. New and covering franchises to be obtained, designed to meet modern conditions and requirements.

12. The board of trustees to conduct an educational campaign to inform the public as to the purposes of its operations, the results thereof from time to time and the benefits accruing to the riding public.

AN EXAMPLE IS GIVEN

To illustrate the principal of operation of the proposed plan with specific figures, an assumed case of a company with a present gross on a 5-cent fare of $20,000,000 and underlying securities outstanding in the value of $45,346,000, has been worked out in Table I. It has been further assumed, simply for illustration, that the net increase with gross from a fare increase of 1 cent, after allowing for decreased riding, would amount to $3,200,000 in the first year of operation of the co-operative plan, and that thereafter there would be an annual growth of receipts from fare increase, following growth of population, of say 3 per cent per annum. Based upon these figures, the underlying securities would be retired out of Trust Fund A in approximately twelve years. In this period Trust Fund B, available to the company as a source of new capital and for other purposes, would have increased from $192,000 in the first year to $16,746,660 in the twelfth year, these amounts being in the form either of cash or of interest-bearing obligations of character and amount approved by the traction fund trustees.

TABLE I—ASSUMED CASE SHOWING PRINCIPLE OF OPERATION OF TRUST FUNDS A AND B

Value of underlying securities....................................	$45,376,000
Present gross revenue of operating company with 5-cent fare.......	20,000,000
Assumed increase of gross with 6-cent fare........................	3,200,000

		Additional Receipts from Fare Increase Paid Into Trust Fund A		Amounts Paid into Trust Fund B in Lieu of Interest and Dividends, on Retired Underlying Securities	
		Each Year	Accumulated Value of Retired Securities	Each Year	Accumulated Amount Available for Capital Requirements and Other Purposes
One	year	$3,200,000	$3,200,000	$192,000	$192,000
Two	years	3,296,000	6,496,000	389,760	581,760
Three	years	3,395,000	9,891,000	593,460	1,175,220
Four	years	3,495,000	13,386,000	803,160	1,978,380
Five	years	3,600,000	16,986,000	1,019,160	2,997,540
Six	years	3,710,000	20,696,000	1,241,760	4,239,300
Seven	years	3,820,000	24,516,000	1,470,960	5,710,260
Eight	years	3,920,000	28,446,000	1,706,760	7,417,020
Nine	years	4,050,000	32,496,000	1,949,760	9,366,780
Ten	years	4,170,000	36,666,000	2,199,960	11,566,740
Eleven	years	4,290,000	40,956,000	2,457,360	14,024,100
Twelve	years	4,420,000	45,376,000	2,722,560	16,746,660

The accompanying chart shows an estimate of the rate of accumulation of Trust Funds A and B for companies of present gross revenues of $10,000,000 to $40,000,000, and with underlying security values up to $100,000,000. The directional line indicates the method of reading the chart. Starting at the upper scale on the left, representing total value of securities to be retired out of the fare increase, project horizontally to the intersection with gross revenue curve, thence downward to the horizontal scale of years required to affect retirement. Project therefrom downward to the intersection with the gross revenue curve in the lower quadrant, and thence horizontally to the scale showing the accumulated amount in Trust Fund B for given conditions at to security values retired and present gross revenue.

The administration of Trust Fund B may be handled by such means as will constitute simple and powerful financial machinery, through which the riding public may secure to itself such service facilities as may be required, and through which the operating company may be protected if the cost of operating such service facilities proves to be excessive.

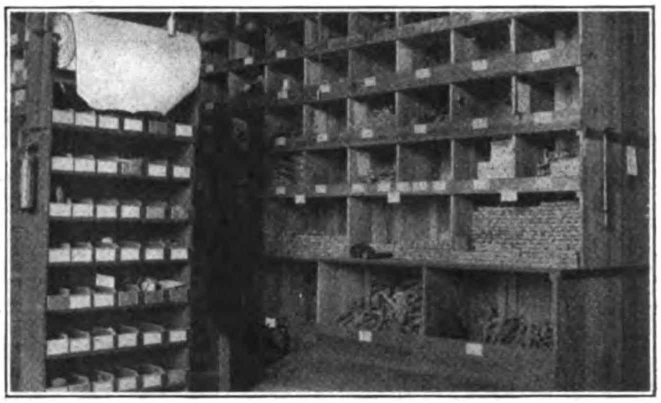
The central idea is that instead of earnings from railway operation being paid out in the shape of interest to underlying security holders, who in turn divert it to other uses foreign to industry, this interest money will be retained, either in liquid or equivalent form, as a permanent and gradually increasing fund for the betterment and intensive development of transportation facilities for the riding public which has contributed thereto. The perils arising from participation of the municipality in either ownership or operation of transportation facilities would thus be permanently avoided, with advantage to all interests concerned.

Probably no other course of action or policy which could be adopted by regulatory bodies, street railway management and holders of its underlying obligations would have such an immediate effect in building up public confidence in street railway investments as the inauguration of a determined effort gradually to release the industry from a situation which will continue to threaten and impede its development so long as it is passively accepted by the parties at interest. Certainly, the needs of the times require that the financial foundations of the industry be reconstructed along clean cut lines that will function positively and effectively to the end that the street railway may fulfill its destiny as the real backbone of the community it serves.

SIMPLIFICATION OF CORPORATE STRUCTURES IS DESIRABLE

The industry as a whole is at the threshold of a new era in which conditions affecting its welfare will be of different order from those heretofore encountered. The new course cannot be steered boldly and effectively by looking back at the old landmarks, nor by passive adherence to the heritage from such past corporate practices are now generally appreciated as economically unsound. These practices, under the circumstances of their origin and present-day conditions, must of necessity be broadly considered as in the nature of a passing phase of the development of the street railway to its present place as the admitted keystone of the community arch, and corrected once and for all, without prejudice from that standpoint.

The riding public, the general public, the industrial community and the operating companies are, in kind, equally and vitally interested in placing the industry, as a safe and sound business proposition, on the broad highway of permanent and ever increasing usefulness to the population at large. It is not clear how this can be done in the premises, except through action based on real and constructive co-operation between the parties having a direct and important interest at stake.



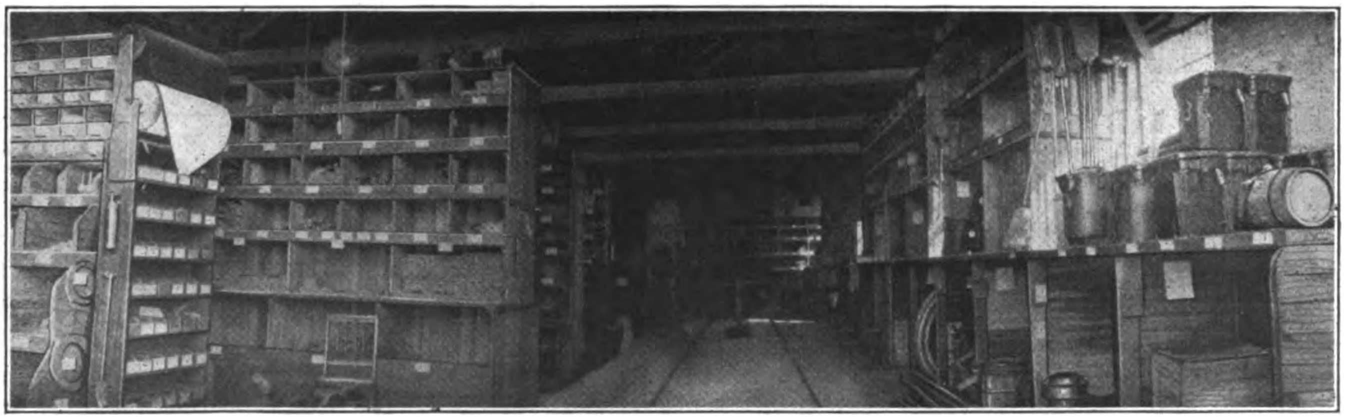
A PLACE FOR EVERYTHING AND EVERYTHING IN ITS PLACE

Stockroom Records and Practice

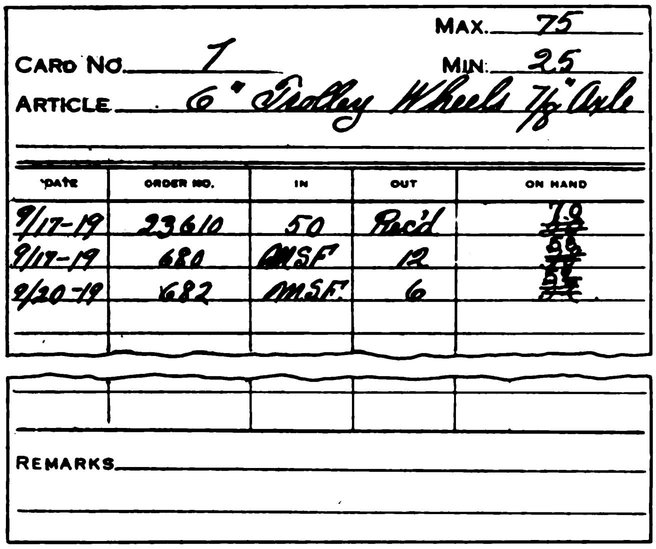
Indiana Company Rehabilitates Its Stockroom and Adopts Motto "A Place for Everything and Everything in Its Place"

THE Indiana Railways & Light Company has recently combined under one roof its stockrooms for the lighting, steam heating, interurban and city railway departments. The building which is being utilized stands on the shop and track storage yard premises and was formerly used as a car storage house. Prior to that time it was part of a manufacturing plant acquired some years ago by the company. The building was not, therefore, built primarily for a stock department, but has been adapted for this purpose by the construction of bins, shelves, racks, etc., and an office 10 ft. x 16 ft. in one corner. The stockroom is 100 ft. deep by 35 ft. wide with a concrete floor, and one track remains extending the full length of the room. This permits direct loading and unloading of heavy supplies.

All small materials such as crossarm pins, bolts, insulators, washers, nails, pinions, pipe fittings, trolley wheels, springs, etc., are stacked in bins varying in size from 36 in. x 36 in. to 7 in. x 11 in. These tiers of bins reach a height of 9 ft. Smaller articles such as carbon brushes, contacts, controller fingers, contact springs, trolley axles, etc., are stored in box compartments, 7 in. x 7½ in., and such articles as wood screws, rivets, ball bearings, etc., are kept in small drawer compartments. Large articles, such as crossarms, gear cases, meters, journal boxes, brakeshoes, lightning arresters, etc., are kept in sections, 52 in. x 64 in. on the opposite side of the room, while brooms, shovels, pails, etc., are hung conveniently on racks. Piping, trolley wire, etc., are stored on racks at the back of the room. Rolls of tar paper, asbestos paper and wrapping paper are held in convenient racks on the sides of the bins, and fire extinguishers are distributed in prominent places throughout the room.



THERE IS AMPLE SPACE TO PERMIT ALL SUPPLIES TO BE NEATLY ARRANGED



CARD NO. 7 MAX. 75

MIN. 25

ARTICLE 6" Trolley Wheels 7/8" Axle

DATE	ORDER NO.	IN	OUT	ON HAND
9/17-19	23610	50	Rec'd	70
9/17-19	680	MSF	12	58
9/20-19	682	MSF	6	52

REMARKS

STOCK CARD WHICH MAINTAINS PERMANENT INVENTORY OF ALL ARTICLES

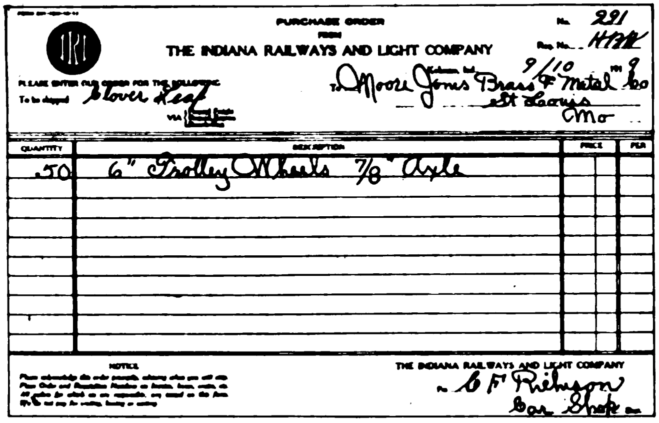
Every bin, compartment, section, drawer and other storage place is plainly marked with an identification card in a neat metal slide. This card bears the bin number and complete identification of the article therein. If there is a possibility that the article is one with which an employee is not familiar enough to know the correct name, or of which there are several kinds very similar and the bin is so high that the contents are not in plain view, a sample of the article is fastened beside the identification card.

Corresponding to every bin identification card there is retained in the stockroom office a stock card such as is reproduced. This bears the same number as the identification card and a similar description of the article. The stock cards are indexed alphabetically according to the names of the articles recorded. The sample shown indicates that on Sept. 17, fifty 6-in. trolley wheels were received by the stockroom on purchase order No. 23610 and that this made a total of seventy on hand. On Sept. 17, by interdepartment order No. 680, twelve of these wheels were taken out of stock, leaving fifty-eight on hand, etc. The figures in the upper right-hand corner of the card indicate that seventy-five wheels are as many as should be on hand at any one time, while the supply should never be allowed to fall below twenty-five. By means of this card a permanent inventory is on file at all times.

When the supply of any article reaches the minimum shown on the card, a requisition for supplies, is made on the purchasing department in duplicate. The carbon copy remains in the requisition book. The purchasing agent then makes out in triplicate a purchase order. One copy is, of course, retained by the purchasing department, while the second goes to the storekeeper to be used in checking up the materials when they arrive. Any material received at the stockroom, checked against the purchasing order as "O. K." and not kept in bins, is identified by means of a yellow tag. This indicates that the material has been placed in stock. To any material received but checked and placed in stock, a similar tag in red is attached. This insures that articles will not be given out for use until they are checked as "O. K." and recorded on the stock card.

At the end of every month the storekeeper fills out a material and supply sheet, showing all articles taken from the stockroom during the month. This is sent to the purchasing department where the prices are filled in and the record is used to ascertain the cost of operation of each department. The personnel of the stockroom comprises a storekeeper and one helper.

A railway to Kongozan, the celebrated mountain in Korea, is projected by a group of Japanese financiers. It is proposed to obtain power from the Kanko River. The length of the proposed line will be about 63 miles.



PURCHASE ORDER
FROM
THE INDIANA RAILWAYS AND LIGHT COMPANY

No. 291

Req. No. [illegible]

9/10 1919

PLEASE ENTER OUR ORDER FOR THE FOLLOWING

To be shipped [illegible]

To Moore Jones Brass & Metal Co
St Louis
Mo

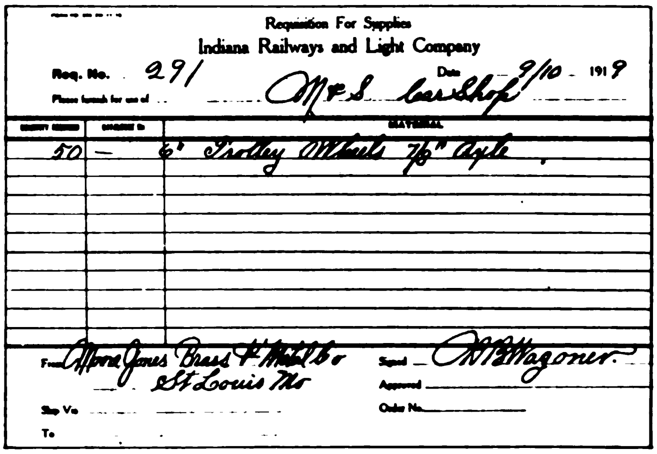
QUANTITY	DESCRIPTION	PRICE	PER
50	6" Trolley Wheels 7/8" Axle		

NOTICE

THE INDIANA RAILWAYS AND LIGHT COMPANY

Per C F Richeson
Car Shop

PURCHASING ORDER FOR SUPPLIES MADE IN TRIPLICATE. ORIGINAL AND THAT SENT TO STOREKEEPER SHOWN



Requisition For Supplies
Indiana Railways and Light Company

Req. No. 291 Date 9/10 1919

Please furnish for use of M & S Car Shop

		MATERIAL
50	—	6" Trolley Wheels 7/8" Axle

From Moore Jones Brass & Metal Co
St Louis Mo

Signed M B Wagoner

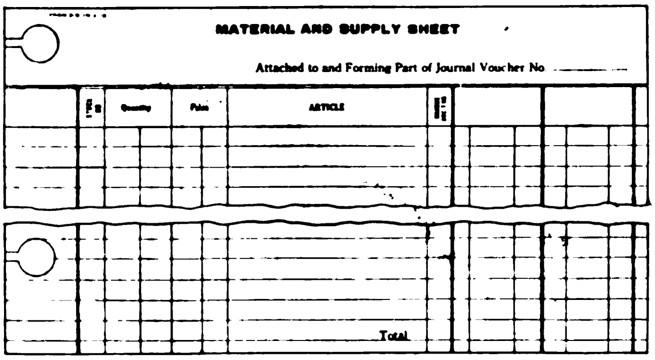
Approved

Order No.

Ship Via

To

REQUISITION FOR SUPPLIES MADE ON PURCHASING DEPARTMENT BY STOREKEEPER



MATERIAL AND SUPPLY SHEET

Attached to and Forming Part of Journal Voucher No.

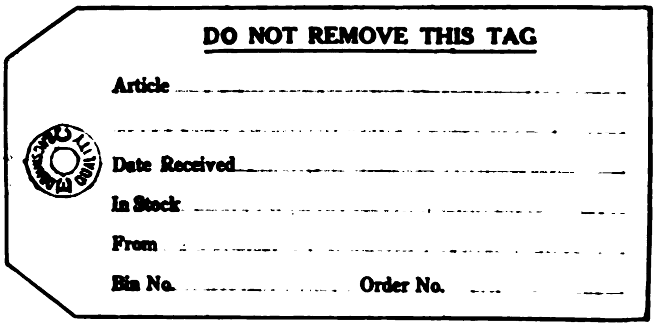
Quantity

Price

ARTICLE

Total

MONTHLY RECORD OF MATERIALS TAKEN FROM STOCKROOM



DO NOT REMOVE THIS TAG

Article

Date Received

In Stock

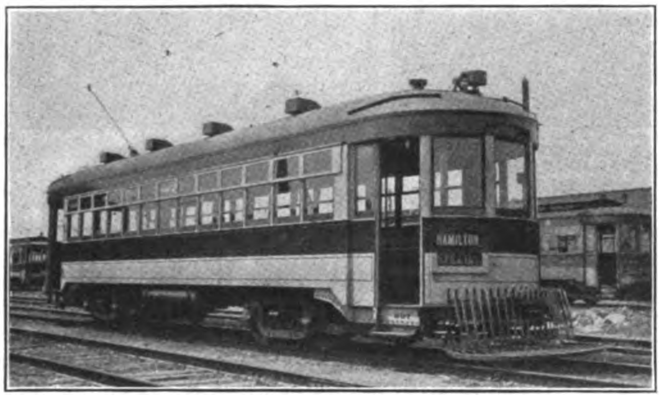
From

Bin No. Order No.

TAG WHICH IDENTIFIES MATERIAL AS BEING IN OR NOT IN STOCK

Construction Features of New Cars Now Building at Detroit

Special Members Are Used in the Floor and Side Frame, and There Are No Bulkheads—The Arch Roof Is in Three Units Without Headlining—A Special Lighting System and Ample Ventilation Have Been Provided


NEW DETROIT MOTOR CAR BUILT IN COMPANY SHOPS

THE Detroit United Railway has entered upon an extensive car building program by which it expects to complete at the present status of labor an average of six or seven cars per month for an indefinite period. This work is being done in its spacious new shops at Highland Park which were especially erected with the idea of building cars for the company. It is assured that 100 city motor cars and 100 trailers will be built and as many more than this as seem to be necessary to meet the steadily increasing business of the company resulting from the rapid growth of Detroit. Twenty-five motor cars will be completed first and then fifty trailers, following which seventy-five more trailers will be built. At the present time several motor cars have been completed and placed in service and others are passing through the shops on the schedule mentioned. In addition to the above program the company is now arranging details for the construction of interurban passenger cars.

In connection with this extensive car construction program there are several features of interest concerning the construction details of the car. The various parts are built as units on templates and later assembled. The methods of construction will be explained in an article which will appear in a later issue of this paper.

The body bolsters are built up in truss type from ⅞-in. x 9-in. material as the top plate and 1-in. x 9-in. as the bottom plate. In the floor the end sills consist of two 3-in. channels bolted together 12 in. apart and separated by a plate. These are reinforced by a No. 10 gage steel plate 26 in. wide, bent to a right angle and riveted to the side sills which are 5-in. x 3½-in. x ⅜-in. angles. The first three cross-sills back of the bolster consist of two 3-in. channels riveted back to back, while the three center cross-sills are 3-in. I-beams. All parts in the construction of the sides are riveted with 5/16-in. rivets; while all joints in sash and letterboard are acetylene welded and each post is welded at top and bottom to the letterboard and sash rest respectively.

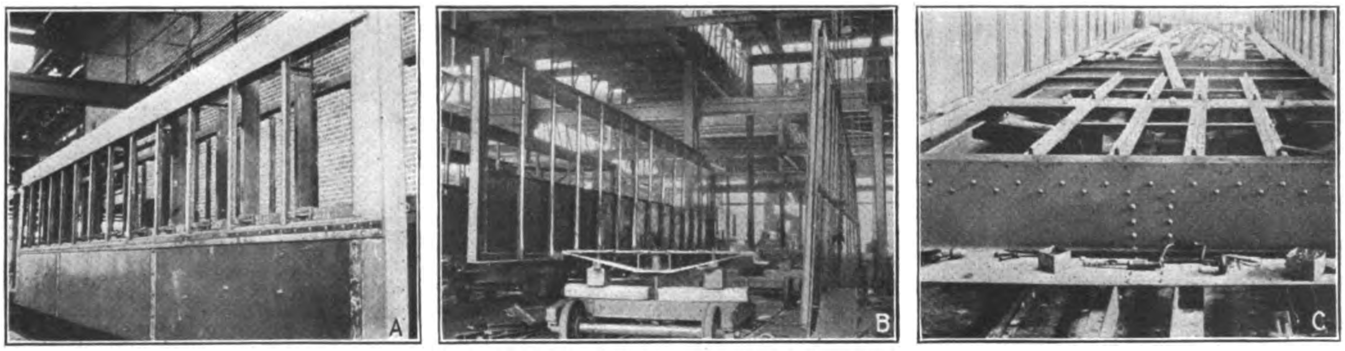
All vertical posts are of 2-in. x 2-in. T-iron and the side sheathing is No. 13 gage sheet steel. An angle, 3-in. x 3-in. x 5/16 in. is used at the top of the letterboard as a support for the roof.

The top and bottom vestibule supports are 3½-in. x 3-in. x 5/16-in. and 4-in. x 3½-in. x 5/16-in. angles respectively and the bumper is a 5-in. channel. The drop platforms are supported by knees built up from two 3-in. x 3-in. x ⅜-in. angles reinforced with a ¼-in. plate and the drawbar guide is formed by 4-in. x 4-in. x ½-in. angles.

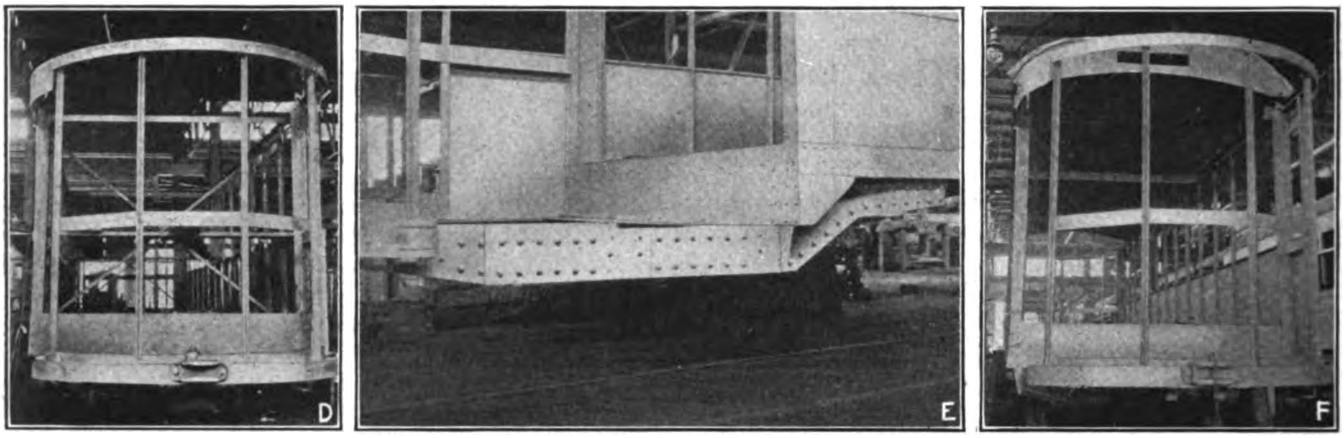
THE CONSTRUCTION OF THE ROOF PERMITS INTERCHANGEABILITY

The arch roof consists of three sections, the hoods being separate units from the main roof. It is apparent that this permits quick and easy replacement from stock in case of damage. The longitudinal angles of the main roof are 2-in. x 2-in. x 5/16-in. and there is a ⅜-in. x 1½-in. steel carline over each vertical post in the side frame. Onto each of these are bolted a pair of wooden carlines and there are two intermediate wooden carlines between adjacent combinations of steel and wood. Poplar roofing ⅜-in. x 2-in. is used and covered with No. 6 canvas duck.

The flooring of the car is 13/16-in. x 3¼-in. yellow pine, double thickness, separated by tar paper except at the center and ends where matting strips are placed. The furring of the posts above the window coping is 2¾ in. x 1½ in., and below 2 in. x 1½ in. and this fits over the leg of the T-iron post. The lining below the window is No. 16 gage steel. No headlining is installed and the entire car is finished in quarter-sawed oak, natural finish. All motor and resistance wires are placed in conduit. Railway Utility ventilators are installed in a large intake located in the front vestibule and in four exhaust openings in each side of the roof. Hunter illuminated destination signs are used, and



A—DETAILS OF SIDE CONSTRUCTION ON THE TEMPLATE WITH RIVETING PARTLY COMPLETED. B—METHOD OF ASSEMBLING SIDE FRAMES ON BODY BOLSTERS. C—THE FLOOR CONSTRUCTION INCLUDES SOME SPECIALLY DESIGNED MEMBERS



D—DETAILS OF VESTIBULE CONSTRUCTION. E—THE DROP PLATFORMS ARE SUPPORTED BY KNEES BUILT UP FROM ANGLES AND PLATES. F—THE VESTIBULE HOODS ARE SEPARATE UNITS FROM THE MAIN ROOF

the signal system includes a push button on each post. The heating system is of the Peter Smith hot-air type.

The upper sash of all windows is stationary while the lower sash raises. Pantasote curtains are used. Double folding doors for entrance and exit are provided at the rear, with a single, folding exit door at the front. All doors have wireglass in the lower panel and plain glass in the upper panel. Doors and steps are manually operated as a unit. There are seven transverse Hale & Kilburn hinge-type seats on each side. These are 35 in. wide, leaving an aisle space of 22 in. Each seat is supported by a single pedestal, the opposite end being screwed to the seat rail which is fastened to the side of the car. There are four longitudinal seats, those at the front of the car being each 7 ft. 6 in. long and those at the rear, 6 ft. 2 in. This gives a seating capacity of forty-six passengers. Leather handstraps with sanitary covering are provided for standing passengers.

A feature of these cars is the absence of bulkheads. The rear bulkhead is done away with entirely and the front bulkhead has been replaced by pipe stanchions at the back of the motorman. On these stanchions are curtains so arranged that the motorman can draw them, to prevent the light from the interior of the car from interfering with his vision at night.

LIGHTING SYSTEM INCLUDES FIVE INDIVIDUAL FIVE-LIGHT SERIES

The lighting system includes 23-watt tungsten lamps without reflectors along each side of the ceiling, one on the back platform over the door, one outside over the front door, a five-light cluster over the fare box, one lamp in the Hunter destination sign and one Golden Glow headlight. These twenty-five lamps are arranged in five individual five-light series, each on a separate switch. This arrangement has been made as a means of saving energy during such a crisis as was experienced last winter. One switch controls four alternate lights on one side of the ceiling and one in the cluster, a second the other four and one in the cluster, a third and fourth similarly for the other side of the car. Thus the fifth switch controls the headlight, the light over each door, that in the destination sign and one over the fare box. All switches are located on the front platform.

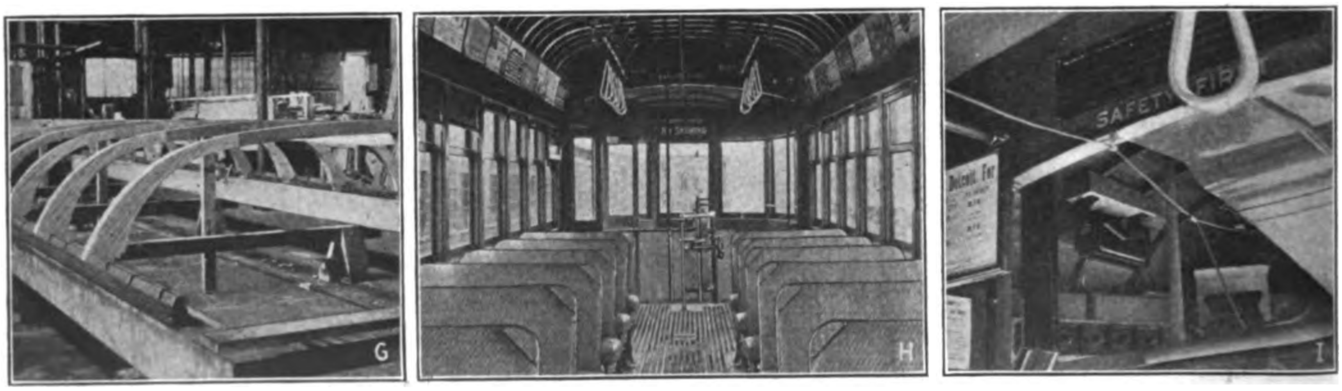
GENERAL DATA ON DETROIT UNITED DOUBLE-TRUCK CARS

Length of body over all	46 ft. 8½ in.
Length of body over corner posts	32 ft. 4 in.
Width of body over all	8 ft. 2 in.
Height from rail over trolley board	11 ft. 8⅝ in.
Height from rail to first step	14 in.
Height from first step to platform	18¾ in.
Height from platform to car floor	11¼ in.
Total weight	46,800 lb.

The car bodies are mounted on Standard 0-50 trucks equipped with four GE-203 motors. The motors are geared 15 to 69 and the control is K35G. Westinghouse semi-automatic air brakes are used with Peacock hand brakes as auxiliary equipment. The wheelbase is 5 ft., with 21 ft. 2 in. truck centers and 33 in. diameter cast-steel wheels on 4½-in. x 5½-in. axles.

Other equipment besides that already mentioned includes the Cleveland fare box, Tomlinson air and electric coupler, special life guards and Trolley Supply Company Ideal trolley catchers. Dimensions of the car not already given in the account of construction details are included in the accompanying table.

A description of the methods of constructing these cars will appear in a later issue.



G—STEEL CARLINE BOLTED BETWEEN TWO WOODEN CARLINES WITH PLACE FOR TWO SINGLE WOODEN CARLINES BETWEEN ADJACENT COMBINATIONS. H—INTERIOR OF COMPLETED CAR LOOKING TOWARD REAR. I—A SPECIAL FEATURE OF THE CARS IS THE VENTILATION INTAKE IN THE FRONT VESTIBULE. NOTE ALSO THE LIGHTING CONTROL SWITCHES

A Successful Traffic Count on the Beaver Valley

Publicity Literature and Forms Used to Secure the Co-operation of the Public and the Platform Men

AS A NECESSARY basis for proposed alterations in fares, W. H. Boyce, superintendent Beaver Valley Traction Company, New Brighton, Pa., undertook a traffic check on Oct. 2, 1919. The co-operation of the public proved all that could be desired despite the fact that this district contains a large proportion of foreigners. Of all the passengers who were handed slips by the checkers, one curtly informed the checker that he had left his slip sticking in the window while the only other recalcitrant rolled up his slip and threw it out of the window. The success of the survey was due in part to the excellent public relations which this company has long enjoyed and in part to effective publicity and co-operation of the trainmen.

As a preliminary, the public was notified through newspaper advertisements and car-posted copies thereof. These notices stated frankly that more revenue was imperative but that, if possible, the company wanted to get this increased revenue through lower short-haul fares. A sample advertisement is reproduced.

Where Are You Going?

Do not be surprised if you are asked that question on the street cars

WEDNESDAY OR THURSDAY
October 1st or 2nd

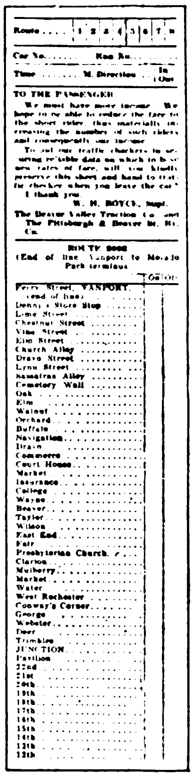
When Traffic-Checkers will be at work determining where patrons of these lines board and alight from the cars.

We want to reduce the fares, if we can, to the patron who rides but a few blocks. We must have more income. We must have more riders or we will be compelled to decrease our present service and abandon a portion of our lines entirely

What Will It Mean to You If the Street Cars Are Discontinued?

Please Help the Traffic-Checkers Obtain the Information Desired

THE BEAVER VALLEY TRACTION COMPANY and PITTSBURGH & BEAVER COMPANY
W. H. BOYCE, Superintendent



Route 1 2 3 4 5 6 7 8

Car No. . . . . Run No. . . . .

Time . . . . M. Direction . . In / Out

TO THE PASSENGER

We must have more income. We hope to be able to reduce the fare to the short rider, thus materially increasing the number of such riders and consequently our income.

To aid our traffic checkers in securing reliable data on which to base new rates of fare, will you kindly preserve this sheet and hand to traffic checker when you leave the car?

I thank you.

W. H. BOYCE, Supt.

The Beaver Valley Traction Co. and The Pittsburgh & Beaver St. Ry. Co.

ROUTE 2008
(End of line Vanport to Morado Park terminus)

	On	Off
Ferry Street, VANPORT, (end of line)		
Denny's Store Stop		
Lime Street		
Chestnut Street		
Vine Street		
Elm Street		
Church Alley		
Dravo Street		
Lyon Street		
Sassafras Alley		
Cemetery Wall		
Oak		
Elm		
Walnut		
Orchard		
Buffalo		
Navigation		
Dravo		
Commerce		
Court House		
Market		
Insurance		
College		
Wayne		
Beaver		
Taylor		
Wilson		
East End		
Fair		
Presbyterian Church		
Clarion		
Mulberry		
Market		
Water		
West Rochester		
Conway's Corner		
George		
Webster		
Deer		
Trimble		
JUNCTION		
Pavilion		
22nd		
21st		
20th		
19th		
18th		
17th		
16th		
15th		
14th		
13th		
12th		

ADVERTISEMENT AND PART OF TRAFFIC RECORD

On Sept. 30, all trainmen were advised how to co-operate with the traffic checkers through the medium of Bulletin No. 345 as follows:

NOTICE TO TRAINMEN:

On Thursday, Oct. 2, a check of traffic will be made on all cars on all routes. A special checker will be placed on each car. He will work under the instructions which follow and you will be expected to aid in every way possible to carry out these instructions:

If possible, permit no person to leave by the front door unless the checker can get to the door and collect passenger's check slip On these slips, sample of which is attached, the route number and direction in or outbound will be checked, and the car number, run number and time of leaving the end of the line will be written.

As the passenger boards the car, the checker (if it is possible for conductor to assist him, he will do so) will issue to the passenger one of these slips, having checked in the "on" column the point at which the passenger boarded the car.

The passenger will be requested to keep this slip until he leaves the car. When he does so the slip will be lifted and the point at which he leaves the car will be checked in the "off" column.

These slips will be used as transfers on this day only. When a passenger approaching a transfer point requests that a transfer be issued, inform him that this slip wil be good for transfer.

When a passenger boards the car at a transfer point with one of these slips, the conductor will honor same as a transfer but will not lift it at the time of making the general collection, for the traffic checker will lift the same when the passenger leaves the car. Try to prevent persons from leaving the car by the front door unless the motorman or traffic checker can receive the slip and check thereon the point of debarkation.

These slips are to be turned in by the traffic checker or conductor on each trip passing the Junction, and on routes 2001, 2002, 2003 and 2004, they will be lifted by special traffic checker at Monaca Corner. On route 2005 these slips will be lifted at intervals throughout the day. The same will apply to routes 2006, 2007 and 2008. Special traffic checkers, when lifting these slips at the above mentioned point, will band same and place thereon a slip showing the following information; route number; car number; time; direction.

The traffic checker's slip, as handed to each passenger, is reproduced in part. This slip was made out so that the passenger could readily indicate the length of his ride by checking off the "on and off" corners.

A final happy touch to the survey was an advertisement "Thanks to you" in which Mr. Boyce thanked the local public for their co-operation.

Results of Motor Omnibus Service in Sheffield

IN A PAPER read at the recent eighteenth annual conference of the Municipal Tramways Association, Inc., of Great Britain, A. R. Fearnley, general manager Sheffield Corporation Tramways and Motors, gave the results of his experience with motor buses as adjuncts to tramway service.

He said that the motor bus is an excellent vehicle as a feeder for tramway lines and as a connecting link between such lines, but is an unsuitable vehicle for dealing satisfactorily with heavy town traffic. It has proved quite inadequate for handling peak loads and is a financial impossibility for workman's traffic at reduced fares. As to average speed maintained throughout the day, it possesses no advantage over the electric tramcar.

The *Electric Railway & Tramway Journal* quotes an abstract of Mr. Fearnley's paper in part as follows:

"Alluding to the new type of bus of the London General Omnibus Company, he said the great difficulty was that only twenty-two passengers are provided with cover or a comfortable seat under inclement weather conditions which prevail during eight months of the year, whereas the whole of the seventy-six tramcar passengers are under cover and traveling under reasonably comfortable conditions whatever the weather may be. As to peak traffic he cited the case of the 5 to 6 o'clock traffic in the Tinsley district, where each evening eighty-two cars per hour, carrying 5576 passengers, have to be provided for. This traffic would need double the number of buses, and in bad weather even that number would not be adequate.

"Mr. Fearnley than made some comparisons which showed that the revenue expense of running the motor bus is 44½ per cent more than the tramcar; the revenue expense per passenger is 198 per cent more, and the revenue expense per seat provided is 131.3 per cent more. In conclusion he said that the motor bus is not going to supersede the electric tramcar, but it can serve a most useful purpose for connecting up tramway routes for crosstown traffic which cannot be served by tramcars; for relieving congested tramway routes, and for connecting up the villages and rural districts with the tramways and railways."

Heavy Freight Service on a Single-Track, High-Speed Passenger Line

Dispatch, Merchandise and Steam Road Interchange Freight Service Interspersed with Frequent Multiple-Unit Passenger Trains—Road is Member of American Railroad Association

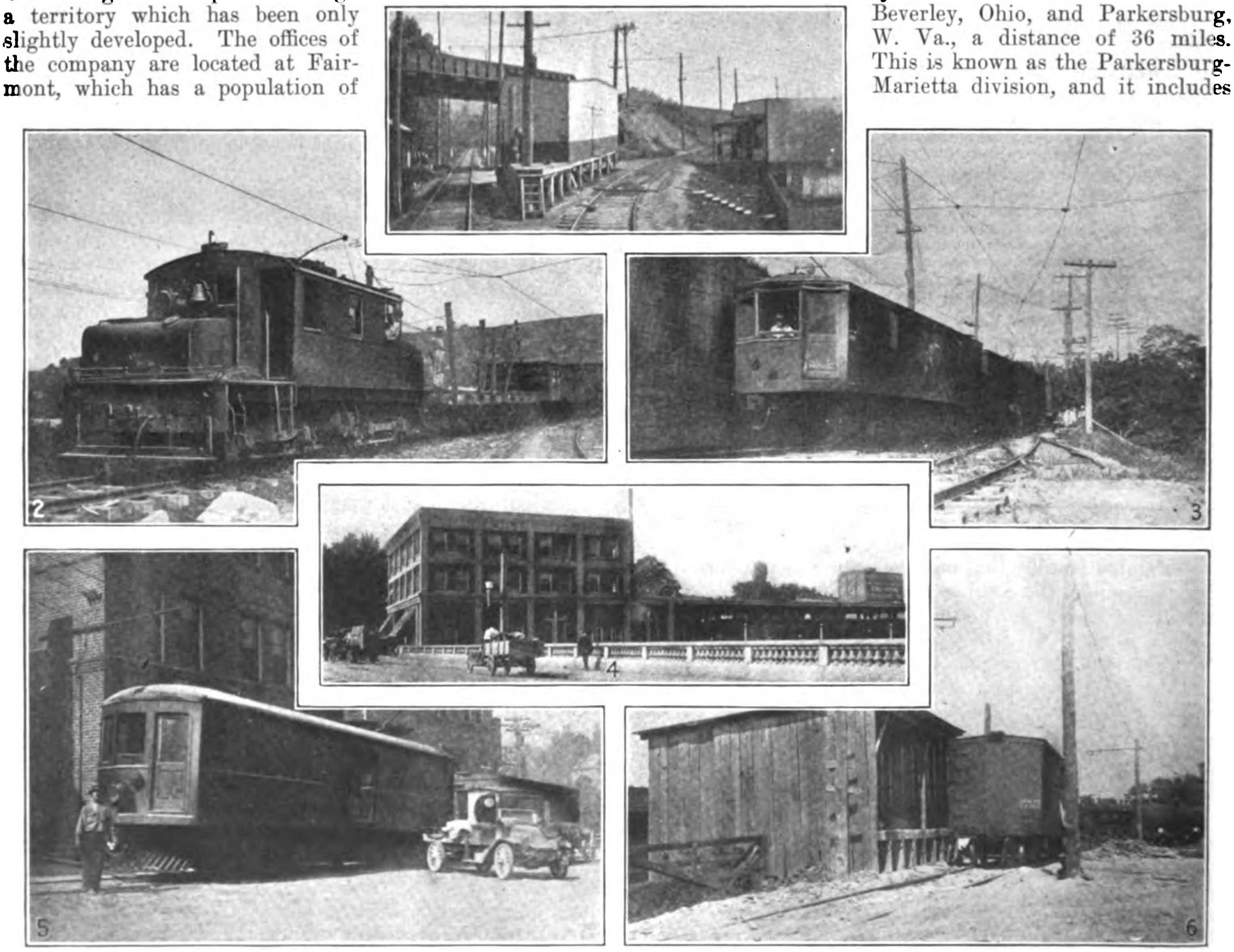
By A. B. COLE

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

MANY electric railway operators have contended that freight operation is impracticable on single-track heavy interurban passenger lines. As evidence of what can be done under these conditions, the practice of the Monongahela Valley Traction Company, Fairmont, W. Va., affords an interesting example. This company is not only enjoying a very heavy passenger business, requiring the use of two-car multiple-unit trains all day on its main line, but is also earning a substantial revenue from hauling carload and less-than-carload freight in motor cars and trailers, and also from steam road interchange.

This company is fortunately located in the heart of the famous coal regions of West Virginia. The Fairmont-Clarksburg division passes through a territory which has been only slightly developed. The offices of the company are located at Fairmont, which has a population of about 18,000, with more than 25,000 people within a mile radius of its business center. Fairmont is not only in the heart of the coal and natural gas supply, but it also enjoys low rate electric power, developed from the inexhaustible water power and natural gas of the region. These facilities have attracted a number of large industrial plants to the district, which contribute largely to the passenger and freight business of the traction company. Branching out from this Fairmont-Clarksburg division, which is 25 miles long, are branch lines reaching Fairview, Mannington, Lumberport, Wolf Summit, Bridgeport, Weston, and other towns.

In addition to the above division and its branches, the system includes the line between Beverley, Ohio, and Parkersburg, W. Va., a distance of 36 miles. This is known as the Parkersburg-Marietta division, and it includes

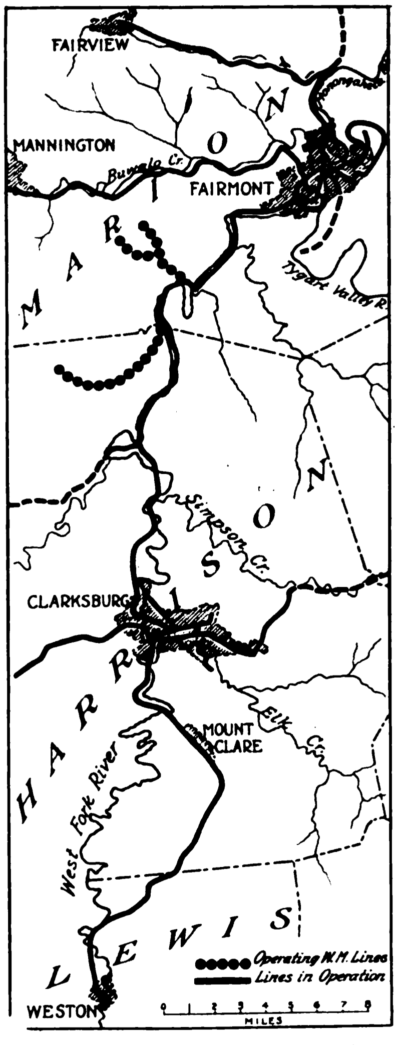


TERMINAL FACILITIES AND EQUIPMENT CONTRIBUTING TO THE PROSPEROUS PASSENGER AND FREIGHT BUSINESS OF THE MONONGAHELA VALLEY TRACTION COMPANY the city lines in Parkersburg, W. Va., and Marietta, Ohio, making a total mileage for this divison of 60.84.

The Monongahela Valley Traction Company also operates two electrified divisions of the Western Maryland Railroad, one extending from Hutchinson on the main line of the traction company to Wyatt, and the other from Everson up to Helen's Run. Both passengers traffic and merchandise freight are handled over these lines, both of which are heavy coal carriers. Naturally with the large number of mines located along these lines, there are many people to be served with transportation as well as a means of getting their food supplies.

Owing to the extensive operation of the Consolidated Coal Company in the valley of the Monongahela River, rapid transportation is essential, for there is an extensive movement of people between trading centers, and of freight from the larger cities to the mining communities.

From the foregoing general outline of the system and the territory served, it can readily be seen that the Monongahela Traction Company is admirably located for doing both a heavy passenger and freight business. In visualizing this business, it should be borne in mind that the entire property is made up of single-track line, and that altogether provision has been made for only 4 miles of siding track.



MAP OF THE MONONGAHELA VALLEY TRACTION COMPANY SYSTEM

FREIGHT OPERATION

Three distinct classes of freight service are rendered:

1. Dispatch freight handled in the baggage compartment of passenger cars.
2. Merchandise freight handled in motor cars and box-car trailers.
3. Carload interchange freight handled between steam roads and industries along the line.

The organization which handles the freight service comprises a general freight agent, whose office is at Fairmont, and additional local personnel as follows: At the Fairmont freight station there are an agent and three helpers and an equal force at the Clarksburg station. At the latter station, the crew on the western division car assists with the loading of cars in the morning. It will be noted from the schedule below that this car does not leave Clarksburg until 12.20 p. m.

In addition to the Fairmont and Clarksburg depots there are three other agency stations—at Fairview, Mannington and Weston. There are no agencies at the other towns along the line. At these non-agency points freight must be shipped prepaid. There is not much pick-up freight at any of these non-agency points, but whenever there is any the shipper meets the car. Also freight received at such points is received at the risk of consignees.

Most of the stations at the non-agency points consist of a platform and a small shelter roof. At some of the towns there is a small storehouse belonging to one of the mining companies, which has a door on the track side locked with a switchlock. Supplies are placed in such storehouses by the freight crew and the door locked, the representatives of the mining company then obtaining the freight from the wagon side of the building by unlocking another door. This arrangement eliminates the necessity of an agent at these mining town stations.

One of the significant practices in connection with the operation of fast freight service on the lines of the Monongahela Company is the use of four men on each train, which usually consists of a motor car and one or more trailers. Very often these cars are "set out" at some point, and then there are times when a large amount of less-than-carload freight must be handled on and off a train and yet keep in the clear of passenger traffic. This necessitates quick action. The company has found that the use of four men is a great expedient under these conditions.

The manner in which the freight service is handled on regular schedule is indicated by the following table of the four runs:

RUN No. 1

Name of Town	Arrive	Leave
Fairmont	....	8.15 a.m.
Clarksburg	10.20 a.m.	11.15 a.m.
Fairmont	1.30 p.m.	2.30 p.m.
Fairview	3.40 p.m.	4.10 p.m.
Fairmont	5.30 p.m.	....

RUN No. 2

Clarksburg	....	8.15 a.m.
Fairmont	10.30 a.m.	....
Mannington	12.50 p.m.	1.20 p.m.
Fairmont	2.45 p.m.	3.20 p.m.
Clarksburg	5.20 p.m.	....

RUN No. 3

Fairmont	....	10.15 a.m.
Clarksburg	12.20 p.m.	2.15 p.m.
Lumberport	3.15 p.m.	3.30 p.m.
Fairmont	5.15 p.m.	....

RUN No. 4

Clarksburg	....	12.25 p.m.
Weston	2.35 p.m.	3.15 p.m.
Clarksburg	5.17 p.m.	....

The traction company has steam railroad interchange facilities with the Baltimore & Ohio and the Western Maryland Railroads at seven different junction points. The following table gives an idea of the interchange business which the company handled during the first seven months of 1919:

Month	Locomotive No. 1000	Locomotive No. 2000	Total
January	43	32	75
February	33	106	139
March	49	107	156
April	98	152	250
May	276	122	398
June	229	91	320
July	171	142	313
Total (7 months)	899	752	1,651

In addition to many cars of mine supplies handled at the various interchange points, the traction company handles a number of tank cars to and from gasoline filling stations, located at Jackson Mills and at Hays. A construction company building a large plant besides the traction line has also contributed heavily to the interchange business.

EQUIPMENT USED IN FREIGHT SERVICE

The freight motive power rolling stock consists of five 20-ton capacity motor cars equipped with Westinghouse motors and HL multiple-unit control, and two 50-ton Baldwin-Westinghouse electric locomotives of the regenerative type which are used for handling the steam railroad interchange business. In addition to the above, there is one motor flat car which is used for handling rough freight and at other times is operated by the way department. In connection with the operation of the five motor cars, six 20-ton box-car railers are used. These have been found to be invaluable as they have added great flexibility to the handling of freight, in addition to the advantage they afford when used for carload movements.

As a member of the American Railroad Association the Monongahela Valley Traction Company enjoys the benefits of the per diem operation, accruing from steamroad interchange, as it owns, in addition to the electric railway rolling stock, 300 coal cars which are not supposed to be used for any other purpose than direct shipment of coal from its own mines to distant points and return.

A significant feature of the freight service of the Monongahela Company is that the freight claims have amounted to only one-half of 1 per cent.

How the Electric Railway's Dollar Has Depreciated

Testimony in Public Service Railway Fare Hearing Before the New Jersey Commission Brings Out Some Interesting Figures

MUCH interesting information on a variety of subjects has been presented in the course of the hearings before the Board of Public Utility Commissioners of New Jersey on the Public Service Railway fare cases. Among other things, Mortimer E. Cooley, dean of the College of Engineering, University of Michigan, in his testimony relative to his valuation of the physical property of the railway, presented some valuable cost data. These data were designed to show the change in the purchasing power of a dollar and, in view of the large number of fare petitions now pending over the country and the need of publicity on the subject of railway costs, are of special interest at this time. In the accompanying table the items under the column headed "1910" represent the costs in 1910 of that amount of the several materials which could be purchased for $100 in 1918.

Item	1910	Item	1910
Poles and ties	$41.50	Galvanized sheets	$56.00
Steel rails, heavy Bessemer	51.00	Electrolytic copper	52.50
Steel rails, light	41.00	Copper wire	55.00
Soft steel bars	52.00	Lead	62.00
Steel beams	51.00	Tin	38.00
Structral beams	58,00	Cedar poles, New York	48.00
Pig iron, Lake Superior charcoal	52.00	Cedar poles, 6-in. top, Michigan	26.00
Pig iron, foundry	58.00	Ties, white oak, St. Louis	54.00
Cast iron pipe, 6 in	45.00	Ties, yellow pine, New York	57.00
Wire nails	53.00	Machinists' wages	64.00
Wire rods	57.00	Common labor	68.00
Galvanized iron wire	49.00	Carpenters' wages	72.00

In the following table the cost of lumber at the mills is compared on the same basis as the materials in the previous tables.

Kind of Lumber	1910	Kind of Lumber	1910
Oak	$61.50	Douglas fir	$55.00
Maple	62.50	Hemlock	57.00
Ash	62.50	Yellow pine	48.00
Beech	54.25	Spruce	60.00

A little study of the table shows, as was brought out in the testimony, that the American dollar of 1918 "had a purchasing power about equal to the Mexican dollar of 1910."

The effect of the higher unit costs now prevailing on the reproduction cost of the Public Service Railway's property was also shown. On the basis of unit costs secured by averaging prices for the five-year period 1911-1915 inclusive, the reproduction cost of the property as of Dec. 31, 1915, was $79,318,040. Using the average prices for the five-year period, 1914-1918 inclusive, the reproduction cost was $91,424,350. For the prices, prevailing during 1918, however, it was $117,890,529. These figures do not include development costs, which records show to be $16,247,369 for the period of 1903 to the date of the hearing. Book records also show that $7,993,092 has been put into the property since Dec. 31, 1918. This sum added to the reproduction cost, exclusive of development charges, on the 1914-1918 unit cost basis amounts to $99,417,442, or in round figures to $117,000 per mile of track. In the course of the hearing this cost was compared with per mile cost of $138,000 for the San Francisco Municipal Railway and the Detroit United Railway valuation of $110,734 per mile of track. It was also shown that 600 miles of the company's total mileage of 850 passes through paved streets involving 2,654,412 sq. yd. of paving. The reproduction cost of this paving amounted to $5,572,000, which with other paving required by municipalities totals up to a grand total of $6,105,000. This gives an average of $7200 per mile of track.

Overhead percentages used in the appraisal were 7½ per cent for contingencies, 5 per cent for engineering and superintendence on way and structures and 2 per cent on equipment, and 2½ per cent for legal and administrative expenses.

Prof. H. C. Anderson, also of the University of Michigan and Dean Cooley's assistant in the valuation work, in his testimony presented the following overhead expense data on trolley wire:

Labor of erection	$28 per mile.
Purchasing expense	1 per cent of material cost.
Material yard expense	½ per cent of material cost.
Insurance	4 per cent of labor cost.
Time keeping and accounting	½ per cent of labor and materials cost
Commissions	5 per cent of labor and materials cost.

He also estimated that the reproduction cost would have been $5000 per mile of track greater had it been necessary to include power-house costs.

Letter to the Editors

Zone Fares vs. Multi-Fares in New York

BROOKYLN, N. Y. Nov. 8, 1919.

To the Editors:

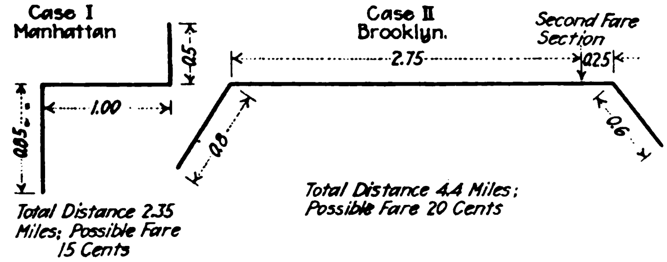
Those who have been declaiming loudly that the zone fare will never have a chance in Greater New York are asked to contemplate a couple of sample results that have followed the splitting up of the great consolidations into their intermediate or even original constitutents. In the two instances which are presented, names are purposely omitted but the distances given are approximately correct.

The writer had some business to transact on Broadway, Manhattan, then wished to proceed north to the theatrical district, then east across town and then north. The length of the first lap was 0.85 mile; of the second, 1 mile, and of the third 0.5 mile. Each lap was served by a car route so that walking was unnecessary.

In the old days, the total fare for this trip would have been just 5 cents, because a double transfer was granted to a destination in the same general direction—in this case north. Today, this trip would cost 5 cents per lap or a total of 15 cents. A 6-cent flat fare would make this 2.35 miles cost 18 cents and a 7-cent flat fare, 21 cents. Obviously, none of the three fares given would appear reasonable to the public. In this case, the writer rode two of the laps and walked the third, his decision in each case depending upon the frequency of service. If others were swayed by the same motive of saving time, it would be fair to assume a return of 10 cents but no more from this particular combination.

If a zone fare with a 3-cent minimum for 1 mile or less was applied to this case, the total fare possible would be only 9 cents; but there would be far less boycotting of lines by prospects for two or more laps, so that the net result would be at least as good as getting two 5-cent fares from a smaller number of riders. No allowance is made here for the traffic that would be created by inaugurating a lower minimum fare in this densely-populated portion of the Borough of Manhattan.

The second case, which was in Brooklyn, illustrates a still more painful result of the break up of the holding company there. In that case, too, a three-lap journey was undertaken. The first stretch was 0.8 mile long, the second 3 miles long, the third, 0.6 mile long. An interesting complication was that the intermediate stretch is a double-fare line, a second fare being charged at the old city boundary. At first, even, it was necessary for passengers to pay this second fare on a second car, but now a through service is given and the second nickel is collected en route. The former fare for the entire journey was 5 cents, but the present fare for the entire distance would have been 20 cents. As a matter of fact, it proved faster to walk the 0.75-mile and 0.6-mile laps than to wait for a car, nor did it seem good sense to pay 5 cents to ride over the 0.25-mile section. Hence, the actual ride was over the 2.75-mile section and the fare spent was 5 cents. With a base zone of 3 cents a mile thereafter, the cost of the ride actually taken (2.75 miles) would have been 9 cents and of the whole ride would have been 15 cents, against the illogical and actually non-collectible multiple fare of 20 cents.


Case I
Manhattan
0.5
0.85
1.00
Total Distance 2.35 Miles; Possible Fare 15 Cents
Case II
Brooklyn.
Second Fare Section
2.75
0.25
0.8
0.6
Total Distance 4.4 Miles; Possible Fare 20 Cents

SAMPLE RIDES AND FARES IN NEW YORK

In making these comparisons, of course, the writer is offering no criticism of any of the operating companies inasmuch as they are not at liberty to institute a genuine zone fare. The parallels are drawn to show how absurd and unjust such multiple fares are in comparison with the zone fare that begins low enough to catch the walker.

BROOKLYNITE.

National Research Council Expands Activities

THE Division of Industrial Research of the National Research Council is arranging for the formation of a co-operative association to plan and support fundamental researches in alloys. Although much valuable work has been done in this field by scattered investigators there is no doubt that a well-planned and co-ordinated effort by a co-operative association working under the general guidance of the National Research Council and composed of specialists representing both the manufacturers and the more extensive users of alloys can produce additional results of great importance.

It is planned to create a special scientific staff composed of a director and assistant director of research and a group of scientific investigators and technical experts who shall give their whole time to the work. To finance the organization each member of the co-operative association will pay $1,000 a year, and all contributing members, who may be either alloy manufacturing or using individuals, firms or companies, are to benefit alike by the results of the researches.

Association News

1920 Mid-Year Conference

Cleveland, Ohio, the Place, Jan. 8, 1920, the Date —Tentative Program Announced

THE committee on location and date, of which J. J. Stanley is chairman and S. M. Curwen and Lucius S. Storrs are members, have selected Cleveland for the location of the annual mid-year conference of the American Electric Railway Association on Thursday, Jan. 8, 1920. No selection has as yet been made as to the hotel or hall where the meetings are to be held.

The dinner will be in charge of a special committee, which will arrange all details including the program. Secretary Burritt advises that the personnel of this committee will be announced next week.

The tentative program for the meeting, which will be in two sessions, includes subjects of vital importance to the electric railways. At the morning session Williston Fish of Pittsburgh will present a resolution on depreciation and speak for it. This will be followed by three papers, each of which will discuss the resolution, after which discussion from the floor will be allowed.

At the afternoon session the main speaker will be Edwin Gruhl, of New York, who will address the conference on "What a labor contract should contain." This subject will likewise be discussed by others.

Other subjects that will be presented include reports from the committees on revision of dues, and changes in the constitution and by-laws. Due to the fact that in the past there have been numerous inquiries as to why more frequent conferences have not been held by the Association, a part of the afternoon session will be devoted to a discussion of this question, including the matter of speakers and subjects that will be of interest to the industry.

Toledo Men Entertain at Sylvania

ON OCT. 15 the "Rail-Light" orchestra, the company section glee club, and other members of the Toledo Joint company section went from Toledo to Sylvania on two special cars and gave an entertainment for the benefit of the employees of the Toledo & Western Railway.

Besides musical selections and recitations, the program included talks by members of the section on the benefit to be derived from membership, and Chairman Sommerville gave an account of his trip as section delegate to the Atlantic City convention of the American Association.

Chicago Section Elects Officers

AT the meeting of company section No. 6, consisting of employees of the Elevated Railroads of Chicago, held on Oct. 21, Charles H. Jones, recently appointed to be electrical engineer of the company, was elected president of the section. Other officers elected were as follows: Vice-President, W. C. Kelly; secretary-treasurer, M. W. Bridges; librarian, W. J. Boucher, and director for a two-year term, B. P. Rourke. With the exception of a talk by Miss Esther Burkett, of the "Loop" transportation department, on her work with the Red Cross and the Y. M. C. A. in Europe during the war, the program was entirely of an entertainment character. Luke Grant, manager publicity department, proved to be a very successful story teller.

Unanimous Report on Railway Relief

Special Massachusetts Commission Reports Against Public Ownership—Many Important Recommendations

The final report of the Massachusetts Street Railway Commission was filed with the clerk of the Senate on Nov. 15. It recommends sixteen legislative measures. An outstanding feature of this report is the fact that it is a unanimous one, signed by all the thirteen members of the commission. There are two supplemental statements only, in which a minority state a difference of opinion on certain points.

PERSONNEL OF COMMISSION

Charles G. Washburn is chairman of the commission, John D. Wright, secretary. The other members of the commission are, R. W. Boyden, Charles Giddings, David A. Belden, Charles S. Ashley, Leonard F. Hardy, Frank G. Allen, William H. McDonnell, David J. Maloney, William A. Kneeland, Benjamin L. Young and John J. Walsh.

The most important act proposed, provides for the establishment of transportation areas and the operation of electric railways under so-called public managers similar to measures in the Public Control Acts under which the Boston Elevated Railway and the Eastern Massachusetts Street Railway operate.

The bill contains twenty-three sections and under its provisions a town or city by vote of its citizens may petition the Public Service Commission of the State to establish a transportation area. If this petition is granted, the Public Service Commission is authorized to contract with any electric railway for the lease and use of its property within the limits of the transportation area. Upon the execution of the contract, and the acceptance by a majority of the holders of the common stock, and by the cities and towns petitioning and included within the proposed transportation area, the act becomes effective. Public control for a period of ten years from the time the act takes effect is provided for. Local managers, charged with supervision and direction of operation, are to be appointed by the Public Service Commission, subject to the approval of the Governor and Council of the State.

Provision is made for special assessment upon towns and cities within the transportation area in case of a deficit in operation. Where expense must be incurred for the rehabilitation of railways within the proposed area, provision is made for the railway to issue preferred stock at 6 per cent per annum to meet the maturing obligations. The bill also authorizes the State to exercise an option of purchase on the property at any time during the continuance of the contract.

CITIES SHOULD ASSUME SUBWAY RENTALS

Another important measure is an act to provide the assumption of subway rentals by the communities served. This act recommends that during the period of public control a sum equal to the amount of subway rental, including the amount to be paid by rental or otherwise for the use of the Cambridge Subway, be assessed upon the cities and towns in which the company operates.

An amendment to the Public Control Act under which the Boston Elevated Railway operates provides greater freedom for the trustees in fixing rates of fare and includes a provision whereby communities served in order to secure lower fare, may petition the Public Service Commission for the right to contribute to the cost of operation to an amount not to exceed two dollars per $1,000 on their assessed valuations.

An act providing for the regulation of jitneys recommends making them common carriers and as such subject to public control. The commission has placed on record the opinion "that jitneys should be subject to the same control as that exercised over other classes of common carriers. It should be understood, too, that jitneys cannot at present replace the electric railway. We are satisfied that the unregulated jitney and the electric railways cannot exist as competitors in the same territory. The public must choose one or the other..... The jitney has run absolutely wild in many cities, often unregulated and irresponsible. As railways are regulated by the Public Service Commission, so should jitney service be supervised by public authorities. Unless this is done, service by trolley must be abandoned in much of the territory that is now served."

Among other important measures recommended by the Street Railway Commission are an act authorizing the State to purchase the Cambridge Subway; a bill which provides for the use of public credit to secure additional capital for the Boston Elevated Railway; special acts as amendments to the Public Control Act granting relief to the Boston Elevated Railway; an act for the relief of the Eastern Massachusetts Street Railway wherein the excise tax, amounting to $277,000 shall be abolished and giving the towns and cities the right to contribute to the cost of operation in order to avoid the necessity of abandonment of certain of the existing lines of the company and to make possible lower fares.

The passage of legislation is recommended to provide for continuity of service on publically controlled electric railways. This bill if enacted into law would make it unlawful for any officers, employees, agents or other persons in service of any railway publically managed or controlled, to obstruct or prevent the operation of street railways by concerted action, combination or agreement. Provision is made in this bill for bargaining by the submission of any disputes relating to wages, hours of labor or working conditions, to a representative board whose decision shall be final. The bill also provides that in case any person in the employ of the publically controlled railway violates the provisions of the bill he shall be discharged from the service and thereupon shall become ineligible to re-employment or re-appointment in any capacity in that service for a period not exceeding one year.

PUBLIC OWNERSHIP NOT FAVORED

The majority of the Street Railway Commission does not favor public ownership. As regards the Boston Elevated Railway the report states that the majority believes it wise to give the present experiment of public management a longer trial. It says: "The Public Control Act has been in operation for a little over a year under the most unsettled business conditions. Already the revenue derived from the 10-cent fare is deemed by the trustees adequate to meet the obligations of the road. Further experience may make it clear that a readjustment of fares, through the creation of a zone system, will make possible a materially lower basic fare. The effect of removing some of the burdens now imposed through taxation and otherwise if our recommendations be adopted, is yet to be determined. The State of Massachusetts now has public control which could not be made more effective by public ownership."

Respite Granted Denver

Mayor Signs Six-Cent Fare Ordinance—Wage Question to be Submitted to Arbitration

Mayor Bailey of Denver, Col., on Nov. 12 signed an ordinance authorizing the Denver Tramway to charge 6-cent fares on its Denver City lines. The ordinance had been passed by the City Council on Nov. 10 in an effort to prevent a strike of the company's employees, who had threatened to walk out unless they were granted an increase in pay. The 6-cent fare became effective at midnight on Nov. 14.

Mayor Bailey approved the ordinance following the signing of an agreement between company officials and employees in which both sides undertook to abide by the award of a board of arbitration as provided in the contract now existing between the company and the union. The suggestion for such an agreement came from the Mayor, who had refused to sign the ordinance unless the company first came to an understanding with its employees.

Negotiations looking to the settlement of the wage controversy were scheduled to begin on Nov. 14 on the understanding that there should be no suspension of operation. The men are now receiving 48 cents an hour and are demanding 70 cents an hour. Any increase awarded by the board of arbitration is to take effect on Dec. 1. The company contends that it cannot raise wages above the present level, even under a 6-cent fare.

The Denver City Council took action to relieve the tramway situation caused by the rejection of both the cost-of-service and the elastic 6-cent fare plans at the poles at a special election on Oct. 22. The company had insisted that it must have relief in the shape of higher fares. The action of the voters in denying its appeal was announced in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 11, page 730.

Following defeat of both plans by popular vote, the company took steps to secure relief in some other way. The carmen, who were demanding further wage increases, were told that, unless fares were advanced, their pay would be lowered instead of being raised. The strike threat followed.

Confronted with the prospects of an immediate strike of its carmen, the company on Oct. 27 began circulating petitions for an initiated ordinance which would permit it to charge 6-cent fares under practically the same conditions as those provided in the temporary ordinance passed at the time of the strike threat last July and due to expire on Oct. 29. On the same day Mayor Bailey issued a statement with reference to the tramway situation, in which he said:

> At the election held Oct. 22 last the people voted down both propositions presented for the settlement

> of the tramway question. Therefore, on Oct. 29 the tramway fare reverts to 5 cents. There is much said in the public press and much talk outside of it about a strike of tramway employees and an interruption in the tramway service.
>
> Under the state law thirty days' notice is required to be given before there is a change made in wage conditions—that is, before a reduction can be made in wages by the tramway company. I believe the tramway company will comply with this law and that, therefore, no strike is imminent.
>
> I shall use every effort to see that the law is enforced whatever may occur and every endeavor to see that there is no interruption in transportation service.
>
> It is impossible at this time to say what will be necessary to be done. I am watching developments carefully and am giving them full consideration and at the proper time will take such steps as may be necessary fully to protect the citizens of Denver in obtaining adequate transportation facilities.

To bring an initiated ordinance before the City Council required the signatures of 5 per cent of the registration at the last mayoralty election. On this basis the company had to secure 2700 signatures to initiate the proposed ordinance. Even if the plan worked according to schedule there would necessarily be a lapse of twelve days between the expiration of the temporary ordinance and the earliest date on which the permanent one could go into effect.

The ordinance as passed by the Council on Nov. 12 and later signed by the Mayor, provided that the company shall be allowed to collect a 6-cent fare with a 3-cent fare for children and free transfers. The right to repeal or change the provisions of the ordinance is specifically reserved to the city. Section 6 states that the passage of the ordinance was necessary for the preservation of the public health and public safety. Provision was made that it should become effective immediately after its signing and publication.

MAYOR STATES HIS CASE

Before signing the ordinance Mayor Bailey demanded that the tramway officials consent to examination of the company's books from time to time to ascertain the financial results of the 6-cent fare. To this proposition the company consented. The examinations are to be made by the city auditor, assisted by two other certified public accountants appointed by the Mayor.

In a statement issued at the time of approving the ordinance Mayor Bailey called attention to the fact that the law was subject to repeal by the Council or the voters at any time. He declared that if examination of the company's books revealed that a return to a 5-cent fare was warranted at any future time, he would take steps for the repeal of the ordinance.

He explained, in reference to his campaign pledge for a 5-cent fare, that, under existing conditions, the people would rather pay a flat 6-cent fare than to submit to the inconvenience of a strike.

Mayor Bailey's statement follows:

> I have this day approved an ordinance passed by the City Council providing a 6-cent fare for the Tramway Company. I think the people are entitled to know my reason for this action. The employees recently demanded an increase in wages from 48 cents to 75 cents per hour, and a few days ago, by a vote of 832 to 2, voted to strike unless they could obtain some satisfactory adjustment of wages with the company.
>
> During the campaign at which I was elected I promised the people that I would repeal the 6-cent fare ordinance, then in effect; and promptly kept my promise. After the 5-cent fare went into effect a dispute arose between the Tramway Company and the employees over wages and a strike resulted. In order to settle this strike and get the cars running a temporary arrangement was made by which a 6-cent fare was continued for a period of ninety days.
>
> During that time there was submitted to the people, at a special election, two propositions for a settlement of the question, both of which were defeated because under the operation of either plan it was possible for the fare to go above 6 cents.
>
> In view of the previous strike, and the demand of the employees for a second increase in wages, now pending, and the inconvenience to the people of the city which would result from a failure to have street car transportation, I believe if a flat 6-cent fare plan had been submitted to the people that it would have been carried by the people.
>
> Since the temporary 6-cent fare, which was granted after the strike, expired on Oct. 29, last, the Tramway Company has been operating on a 5-cent fare. The problem has been an extremely difficult one to handle. It is one that has caused much grief, distress and discord in many other cities of the United States. I have been anxious that Denver should not suffer as other cities have suffered, and are suffering, from strife and bloodshed; and that serious inconvenience should not result from interrupted street car transportation during the severe weather which is now approaching. In view of these various circumstances, and especially the strike which has now been voted by the employees, and the likelihood that it will be necessary for the Tramway Company to pay a further increase in wages to its employees, and an agreement which I have this day obtained between the company and representatives of the employees to arbitrate the wage dispute, I deem it to be in the best interest of the people of the city that the 6-cent ordinance be approved by me.
>
> Under all of the circumstances, many of which have arisen since I have taken office, I believe the people of the city would rather have a flat 6-cent fare than suffer the hardships of a long strike, which would undoubtedly result if the 5-cent fare remained in effect.
>
> In the action I have taken I have been guided solely and only in the interest of justice and what I conceive to be for the best interest of the people whom I represent.
>
> The ordinance granting a 6-cent fare is subject to repeal by the Council or the people at any time, and I have the right to appoint a committee to examine the books and records of the Tramway Company as often as I deem it necessary so to do, and if by an examination of the financial affairs of the Tramway Company I find the financial condition warrants the restoration of a 5-cent fare I shall unhesitatingly make such a recommendation to the Council, or the people, as the case may be.

Detroit Rejects the Tayler Plan

After Tie Vote in Council Railway Commission, Which Had Recommended Tayler Proposal, Resigns

At a recent joint session attended by the Street Railway Commission of Detroit, Mich., Mayor Couzens and the members of the Council, the commission resigned in a body. The resignations were accepted, after the Council by a tie vote turned down a resolution favoring the adoption of the report of the commission recommending the Tayler plan of railway operation for Detroit. An amendment to the resolution was offered to the effect that the city would build all new lines and replace old ones when necessary with the ultimate result that the city would own the entire system.

COUNCIL DIVIDED

The Council was about evenly divided, part of the members standing with Mayor Couzens, who wants to bond the city for $15,000,000 to build extensions. The plan on which cars would be run or who would operate them was not discussed by the Mayor further than to state that he did not favor any negotiation with the Detroit United Railway.

The break in the deadlock in the Council forestalled action by the committee of business men formed to take the railway situation out of the hands of the officials of the city. An ordinance was introduced by one of the Councilmen acting for the Mayor, and was ordered printed and laid on the table as required by the City Charter. It calls for an advisory vote on the Tayler plan on April 5, 1920.

It has been agreed by some of the contending parties that the Street Railway Commission should negotiate with the Detroit United Railway and report back to the Council the results of its negotiations. Then if their efforts resulted in a reasonable proposition, this proposition should be submitted to the people at the earliest possible moment.

OUTLINE OF MAYOR'S PLAN

In answer to the charge that he was blocking developments in the railway situation, the Mayor stated that under his plan the Department of Public Works would start digging and laying tracks on April 6, 1920, if the people on April 5, adopted the $15,000,000 bond issue for new extensions, while if the Tayler plan were put up in the form of an ordinance and adopted, the Detroit United Railway would have to negotiate for the money before starting construction. Under his plan the Mayor also claims a saving of $1,000,000 annually in interest charges. It is held that advocates of the Tayler plan believe that if that plan were submitted in the form of an ordinance the people would adopt it, thinking to end the turmoil.

The Mayor's plan is to start negotiations immediately with the Detroit United Railway to get the best possible agreement, if the people vote for the Tayler plan April 5, this agreement to be submitted to the voters the following November. In the meantime tracks could be laid.

The Corporation Counsel has expressed his opinion that the charter makes it mandatory on the Mayor to acquire, and failing in that to construct, own, maintain and operate a railway system. The Mayor says the mere fact that a portion of the citizens say the people have twice refused to acquire the railway system does not release him from his instructions in the charter to construct a system.

The incomplete returns from a referendum vote conducted by the Board of Commerce to obtain an expression of sentiment among business men show a large majority in favor of the Tayler plan. Abner Larned, former president of the Street Railway Commission, stated that unless the Council and Mayor give the people a chance to vote on the Tayler plan at the April election it is almost certain to be placed on the ballot as an initiated ordinance. The Mayor has announced that should the Council pass a resolution calling for the adoption of the report of the resigned commission, he would veto it. A two-thirds majority would be necessary in the Council to carry the resolution over the Mayor's veto.

Employees Appeal to Commission

The employees of the Utah Light & Traction Company, Salt Lake City, Utah, have filed with the Public Utility Commission of that State a petition urging that body "to hear and consider the financial condition of the company and the condition of the employees, and allow, if it finds the exigencies justify it, such raise in fares as will induce the company to permit some relief to the employees and at the same time increase the efficiency of the service."

A considerable part of the communication is devoted to a review of the needs of the men. In conclusion they say:

> Your petitioners are anxious to avoid, if possible, the continuance of such conditions as may force the employees of the traction company to the desperation of seeking relief against the terms of the contract by quitting and interrupting service. We desire that conditions may be such that every contractual obligation of the present employees may be fulfilled, and we are appealing to you to assist us in the matter. We realize that without the consent of the company the existing contract cannot be reopened and that it is necessary, in order to secure such consent, that the Public Utilities Commission shall hear and consider the financial condition of the company and the conditions of the employees, and allow, if it finds the exigencies such as to justify it, such raise in street car fare charges as will induce the traction company to open the contract and permit some relief to the employees and at the same time increase the efficiency of the service.

Bill Against Strikes

Provisions of Measure Urged for Enactment by the Special Commission in Massachusetts

In the account which appears on page 871 of this issue of the ELECTRIC RAILWAY JOURNAL dealing with the report of the special legislative commission on electric railways in Massachusetts, reference is made to the labor legislation suggested. The bill to prevent strikes, included in the labor legislation program, follows:

Sec. 1. It shall be unlawful for any officers, employees, agents or other persons in the service of any street railway in this Commonwealth, publicly managed or controlled, by concerted action, combination or agreement, to hinder, obstruct or prevent the continuity of service of such street railway, or to threaten such hindrance, obstruction or prevention.

Sec. 2. The duly constituted operating officers of any street railway system and every person or association of persons in its service, shall, by written instrument or instruments, agree to submit to arbitration by a board or boards, whose decision shall be final, to be selected as therein provided, every difference or dispute relating to wages or compensation, hours of labor or working conditions, and any disputes or differences that may arise in the course of the operation or management of such system, and to abide by the findings, determination or award of such board. Copies of all such written instruments shall be filed with the Public Service Commission.

Sec. 3. The board shall hear the parties or their representatives and determine all matters in dispute, and such determination shall be in force for such a period of time as the board may fix. To the extent that the matters in issue are controlled by statute or may require legislation the board may make recommendations to the General Court, with drafts of such proposed legislation as may be necessary to carry the findings or recommendations into effect.

Sec. 4. In case of the failure of the parties to complete the selection of an arbitration board in accordance with said agreement or to make provision therefor, within sixty days of a request by either party, or by the governor, for the selection of such a board, the Public Service Commission shall serve as such a board and shall exercise all the powers set forth in the preceding section.

Sec. 5. Any person violating the provisions of Sec. 1 shall thereupon be discharged from the service, and his continuance in such service, or his re-employment or re-appointment in any capacity therein for a period not exceeding one year, as the Public Service Commission may determine, shall be unlawful.

Municipalization Arranged

Canadian Border Cities Approved the Plan to Take Over Suburban Lines of the Detroit United

Delegates representing Windsor, Ont., and eight other border municipalities have unanimously approved plans for the purchase of the Sandwich, Windsor & Amherstburg Railway, a subsidiary of the Detroit United Railway, at a cost of $2,100,000. Sir Adam Beck, chairman of the Ontario Hydro-electric Commission submitted plans, and as a result the project will be sent to the ratepayers for decision thereon, in an election to be held at an early date.

ANOTHER FARE QUESTION

It is understood that the taking over of the electric light and power plant owned by the company and valued by the commission at $190,000, will be voted on by Windsor taxpayers only as a separate by-law, since the plant is located in Windsor and furnishes light and power for the Windsor consumers.

In explaining the proposed method for financing the purchase, Sir Adam Beck stated that the commission had been authorized to issue forty-year bonds, the only obligation incurred by the municipalities being the guaranteeing of the bonds. All expense, both original cost and maintenance charge, will be supplied by the earnings of the lines and paid by the car riders.

It is believed by the commission that the present rate of fare is sufficient to make the railway a paying proposition, but in event it is not, a 5-cent fare will be charged, which it is believed will be equitable in view of the fact that extensions to the system will be made as soon as possible, to give adequate service to the people in need of it.

The cost of the system, which will be apportioned among the nine municipalities, also includes an item of $250,000 for new lines. Windsor's share of the total cost is fixed at approximately $745,000, or about one-third, the remainder to be apportioned among the other eight municipalities. In the event the by-law is defeated by voters in one of the municipalities concerned, it is believed that the road could still be purchased and taken over by the approving municipalities. In their order as to size of apportionment, the other towns included with Windsor are Sandwich, Sandwich East, Sandwich West, Walkerville, Anderson, Amherstburg, Ford and Ojibway, Ojibway's apportionment amounting to $44,515.

SIR ADAM DEFEATED

Sir Adam Beck, chairman of the Ontario Hydro-electric Commission, was defeated at the recent election by a Labor candidate at London, Ont. It is said now that this may hinder the plan to purchase the Sandwich, Windsor & Amherstburg Railway. Sir Adam will have charge of the commission's business until the new government takes over the reins, but as the purchase of the railway serving the border municipalities cannot be made without backing from those who may constitute the government, the proposal to lay the plan before the ratepayers of the eight municipalities some time in December may be delayed, it is said.

News Notes

Mayor Suggests Railway Be Purchased.—A by-law to authorize the purchase of the London (Ont.) Street Railway by the city will be submitted to the ratepayers at the next municipal election, providing the City Council adopts the suggestion of Mayor C. R. Somerville.

Row Over Municipal Procedure.—The Civic Board of Control of Toronto, Ont., broke up in a row on Nov. 6 after passing unanimously Mayor Church's motion to submit to the people the question of authorizing a commission of three, appointed by the Council, to operate the Toronto Railway when the city takes it over in 1921. It was only by three to two, however, that the Board adopted the Mayor's draft act appended to the resolution for submitting the question. Comptroller Cameron accused his colleagues of having "it all cut and dried."

Railway Offered to City.—The City Council of Columbia, S. C., has called a meeting to consider an offer submitted by E. W. Robertson, president of the Columbia Railway, Gas & Electric Company, to sell to the city the railway system now operated by that company. By authority of the board of directors of the company, the offer was made to sell the railway system to the city on the basis of its present valuation. What action the City Council will take is not known. Mayor Blalock stated that a vote of the people will be had if the City Council favors the proposition.

Inductive Interference Alleged.—The Board of Commissioners of Sullivan County, Indiana, has filed suit in the County Circuit Court against the Terre Haute, Indianapolis & Eastern Traction Company, asking that the franchise under which the company is permitted to build lines for transmitting high-voltage current along public highways in the county be annulled and that the company be enjoined from using the public highways for this purpose. The matter seems to hinge upon whether the company should have an exclusive right to use the highways for high-voltage purposes. It was alleged that a telephone company using the same highway cannot transmit its messages because of interference from the high voltage of the railway.

Union Fails to Coerce City.—City Attorney John R. Dillard has approved the position taken by Mayor J. O. Stahlman of Bluefield, W. Va., relative to the protest made by the Central Labor Union against the Appalachian Power Company in which the labor body asked that the city officially take action to have the men now employed by the company in the operation of its cars removed, on the alleged ground that they are inexperienced and dangerous to the public. In his opinion the city attorney said that the city could not have anything to do with the controversy between the Appalachain Power Company and its former railway employees. In connection with the protest made by the Central Labor Union before the City Council, Attorney Dillard said the Appalachian Power Company was responsible for any damage done to the public in the operation of its cars and that the city could in no way interfere, nor under the circumstances would it attempt to interfere, with public utility corporations.

Suggests Plan to Prevent Utility Strikes.—The Merchants' Association of New York has submitted to the Chamber of Commerce of the United States for referendum vote a plan for the prevention of strikes by employees of public utility corporations. The plan, which was submitted to the Merchants' Association by Henry R. Towne, chairman of the board of the Yale & Towne Manufacturing Company, provides that service shall be regulated by law, so that each person who enters employment shall be legally obligated by contract to continue for a specified time. During the prescribed period he cannot lawfully quit nor may he be discharged except according to the provisions of the contract. Resolutions adopted by the Merchants' Association say that the functions of public utilities, exercised only by public authorization, become public agencies and should be controlled by law in the public interest. To obtain this result, the resolution says, continuous and uninterrupted operation must be maintained, and therefore strikes should be guarded against by law.

Program of Meeting

New York Electric Railway Association

The New York Electric Railway Association will hold its twenty-third quarterly meeting and dinner at the Hotel Astor, New York City, on Dec. 10. The program of subjects to be discussed and the list of speakers have not yet been announced.

Financial and Corporate

Mr. Perkins Permanent Receiver

Robert W. Perkins, president of the Shore Line Electric Railway, Norwich, Conn., was made permanent receiver of the company by the Superior Court within and for the County of New London, on Nov. 14, 1919. The court ordered and adjudged "that four months from and after Dec. 1, 1919, be, and the same is, hereby limited for the presentation to said receiver of claims against said estate (plant), and all claims not so presented be forever barred, and that said receiver give notice to all parties concerned of said limitation and that all claims not presented within the time limited will be forever barred, and of the address to which claims could be sent to him by mail, by publishing said notice in three issues each of the Norwich *Bulletin* and *The Day*, newspapers published in Norwich and New London, and by causing a copy of said notice to be mailed, postage prepaid, to each known creditor, all on or before Dec. 1, 1919."

The receiver has announced that claims may be sent to him at Norwich, Conn.

Receiver for West Virginia Road

As the result of a suit by the trustees of the company, Aaron Garlow has been appointed receiver of the South Morgantown Traction Company, Morgantown, W. Va. Service on the line will be resumed immediately according to an announcement made following the appointment of the receiver.

The company recently made application to the State Public Service Commission for an increase in rates. A hearing was set for Nov. 12. The company has asked for an 8-cent fare with fourteen tickets for $1 for adults and sixteen tickets for $1 for school children.

Service on the South Morgantown line has been suspended for several weeks because of the inability of the railway to pay its outstanding bills. The service prior to that time, however, was subjected to occasional suspensions and was a source of annoyance to the people of Greenmount, South Park and South Morgantown.

Suit for Foreclosure Commenced

Suit has been started in the United States District Court of the Eastern District of Illinois, before Judge Evans, by the Northern Trust Company, Chicago, against the Aurora, Elgin & Chicago Railroad for the foreclosure of the first and refunding mortgage, amounting to nearly $4,750,000. The court has issued an order extending the receivership of the electric railroad.

The mortgage of the company is dated July 1, 1906. It secured (originally) an authorized issue of $25,000,000 of 5 per cent bonds due on July 1, 1946, but subject to call on or before July 1, 1911, at 102½ and interest. The Northern Trust Company, Chicago, is trustee. Interest is payable on Jan. 1 and July 1 at the office of the Citizens Savings & Trust Company, Cleveland, Ohio.

Of the bonds $2,979,000 have been sold, $4,628,000 are in escrow to take care of underlying bonds and $7,393,000 are being held to provide for future improvements and extensions.

In 1911 the authorized issue of bonds under this mortgage was reduced to $15,000,000. Of the $2,979,000 of these bonds outstanding on June 30, 1911, $272,000 were issued against the Elgin, Aurora & Southern Railroad bonds acquired under sinking fund operations. The remaining $2,707,000 were issued against extensions, improvements or betterments made or acquired since the consolidation.

Offer to Purchase International Bonds and Stocks Rejected

George F. Rand, chairman of the board of directors of the Marine Trust Company, Buffalo, N. Y., acting on behalf of a committee of Buffalo bankers and businessmen, on Oct. 3 made an offer to the bondholders' committee of the International Traction Company, Buffalo, to purchase $17,000,000 of the International Railway of Buffalo stock and the $5,000,000 underlying bonds, which carry control of the system.

Mr. Rand's offer to purchase was considered at several conferences at which Thomas E. Mitten, Philadelphia, a member of the International Traction bondholders' protective committee, was present, but it has apparently been turned down. Mr. Rand says he has withdrawn his offer.

In a statement in reference to the Buffalo traction situation, Mr. Rand says the attitude of the city officials toward the company and the antagonistic feeling of the public as evidenced by the recent election tend to make the outlook anything but promising for any prospective purchaser of the bonds.

Corporation Counsel Urges Consolidation

Among those in Washington who are urging the consolidation of the Washington Railway & Electric Company and the Capital Traction Company is Conrad H. Syme, corporation counsel of the District of Columbia. Mr. Syme made public some of his views on the matter in a speech which he delivered recently. He said that if the railways do not agree to a merger Congress should condemn and seize them. He favors stopping the taxation of all utilities. In this connection he pointed out that it is the consumer who ultimately pays the tax bill in increased charges for service.

He pointed out the essential differences between the two railways operating in Washington, drawing attention particularly to the great density of traffic and compactness of the system of the Capital Traction Company as opposed to that of the Washington Railway & Electric Company. The differences between the structures of the two companies had made it very difficult to decide the recent fare case, for it would not do to have two companies in a city, one operating at a fare different from the other.

Another matter to which he referred was the recent valuation report, digested previously in the ELECTRIC RAILWAY JOURNAL.

Brooklyn Deposits Urged

The work is well under way of organizing to protect the holders of securities of the companies included in the Brooklyn (N. Y.) Rapid Transit Company, now in the hands of Lindley M. Garrison as receiver.

On Nov. 20 it was announced that the time had been extended for the deposit of the first consolidated mortgage 4 per cent gold bonds of the Nassau Electric Railroad. The extended date is Dec. 15. Holders are urged to deposit, it being pointed out that they should be in a position to bring foreclosure suit and to make application to have the Nassau road operated separately if such independent operation appears desirable.

On the same day the holders of bonds secured by the first consolidated mortgage of the Brooklyn, Queens County & Suburban Railroad were urged to send their names to a committee headed by Haley Fiske, which committee has a deposit agreement in course of preparation.

Financial News Notes

Valuation Figures Disagree.—The engineers of the Board of Public Utility Commissions of Manitoba have completed their appraisal of the property of the Winnipeg Electric Railway. The value reported to have been found by them, exclusive of considerable realty, is about $20,000,000. It is reported unofficially that the figure found by the company's engineers is about $26,000,000.

First Indianapolis Dividend Since Reorganization.—At the meeting of the board of directors of the Indianapolis (Ind.) Street Railway, held at Indianapolis on Nov. 12, it was voted to declare a dividend of 1½ per cent for the quarter from June 1 to Aug. 31, 1919, on the preferred stock of the Consolidated Indianapolis Street Railway, payable on Dec. 1, 1919. It was also voted to send a circular letter to the stockholders of the old Indianapolis Street Railway requesting them to forward their stock certificates to the treasurer of the company and receive in lieu thereof an equal number of shares of preferred stock of the new consolidated Indianapolis Street Railway.

Indianapolis Bonds Cancelled.—Cancellation of the $2,000,000 of bonds of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., and of the old Indianapolis Street Railway held in the sinking fund of the Traction & Terminal Company has been completed, in compliance with an order of the Indiana Public Service Commission. Robert I. Todd, president of the company, has obtained the consent of 80 per cent of the bondholders of the Indianapolis Traction & Terminal Company and 65 per cent of the bondholders of the old Indianapolis Street Railway. The commission, in approving the reorganization of the railways of Indianapolis, directed that the bonds held in the sinking fund and on which interest was being paid, should be cancelled.

Traffic and Transportation

Rates in Gary Increased

Indiana Commission Grants Six-Cent Fares and Also Offers Advice About Regulating Jitneys

In an order which became effective on Nov. 1, the Public Service Commission of Indiana, acting on a petition of the Gary Street Railway, granted an increase in rates in Gary, Hammond and East Chicago from 5 cents to 6 cents and an increase in the rates between these cities from 10 cents to 20 cents. In its petition the company had requested permission to make a transfer charge of 3 cents. This was denied by the commission.

In petitioning the commission the company stated that no dividends had been paid on either preferred or common stock; that the company would in the near future be required to re-lay certain of its tracks and re-pave certain streets in the city of Gary at a cost of $350,000; that the city was calling for further extensions; that during the war period the company had borrowed about $170,000 which must be repaid in five annual installments; that increases in trainmen's wages between March 1, 1918, and July 1, 1919, averaged 48 per cent; and that the operating expenses would be increased $20,000 a year.

The commission found it unnecessary to make a formal valuation of the property. The tentative estimate of the value of the property as of November, 1917, was used together with a list of the additions, extensions and betterments since made. On this basis the commission estimated the value of the property at from $1,600,000 to $1,800,000.

Using this estimate as a basis, the net operating revenue of the company would amount from 3.1 per cent to 2.74 per cent, respectively. The commission said:

> Such a return is so inadequate as not only to justify a readjustment of petitioners' rate schedules, but to constitute a positive menace to the rapidly growing community served.

The company estimated that the increase in rates sought would result in an increase in revenue of $72,000 per year. Referring to this the commission said:

> This would yield a return of 7.57 per cent on a value of $1,600,000, or 6.73 per cent on a value of $1,800,000, neither of which could be considered unreasonable.

The commission expressed no doubt that increased cost of operation made impossible a continuance of the 5-cent fare. In the words of the commission the company "is confronted with the most formidable jitney competition in the State." The question was whether the institution of a 6-cent fare and a 3-cent transfer charge would result in driving traffic to the jitneys to such an extent as to result in a decrease rather than in an increase in revenue. The commission assumed the attitude that the 3-cent transfer charge, making the through fare 9 cents between points where a transfer would be needed, would have a repressive effect on traffic, and would at the same time create a 50 per cent discrimination between citizens traveling like distances.

The commission considered that a straight 6-cent fare should at least be given a trial and reports made during a period of sixty to ninety days. The commission said:

> Without prejudging the test of the 6-cent fare without transfer, the commission is nevertheless fearful that it will be found to be insufficient provided the jitneys are permitted to continue to operate and skim the cream of short-haul traffic. The commission, however, is hopeful that the 6-cent fare will prove successful if there can be eliminated the $100,000 gross loss of revenue per year which now goes to the jitneys.

The commission said further:

> The time has come . . . when cities . . . must select between jitneys, which can and will serve only a few people, and low fares and good service on the railways, which are held responsible for constant operation over large areas, much of which operation is unprofitable.
>
> Competitive conditions, are especially unreasonable in Gary. The results are that:
>
> (1) The railway paves and maintains a large part of the street used freely by jitneys which deprive the railway of revenue.
>
> (2) The people who ride on the railway pay higher fares than otherwise would be the case, to provide and maintain pavement for other transportation agencies whose operation tends to increase the fares of railway patrons.
>
> The commission has no jurisdiction that will enable it to regulate street traffic in municipalities. In exercising its rate-making duties in this instance, it must provide $100,000 in higher fares to be paid by the masses of people who do not own automobiles and who must use the street cars to cover revenues lost to the jitneys. The commission therefore feels justified in directing the attention of the city of Gary to the question of whether Gary shall have low street car fares for all, or jitneys for a few.
>
> The commission also will suggest to the city of Gary for its consideration the possibility of an eventual return to a 5-cent fare by removing from the railway patrons the burden of providing funds for pavements which are used by the entire community including private pleasure cars and trucks.

In regard to an increase in fares between cities the company sought an increase from 10 cents to 20 cents. The fare which had been charged was a 5-cent fare in each city. There is, however, some thinly populated country between the three cities, and the company sought the privilege of charging the 20-cent fare in three zones, 6 cents in each city, and 8 cents between the cities. The evidence submitted by the company showed that the distance the passenger might travel between the center of two cities was more than 11 miles, at a fare of 10 cents. The commission contended that such a fare was not adequate. The commission held that the service was really interurban service, and that should interurban fares be charged the cost would be 28 cents. The commission therefore granted the increase with the specification that the 8-cent zone should be divided into two 4-cent zones.

Changes in Operation Proposed

The United Railways & Electric Company, Baltimore, Md., has decided upon several important changes in its operating methods. In the first place it proposes to experiment on one line with the plan of having two cars discharge and take on passengers simultaneously. Under the present arrangement the follower runs slow behind his leader, while the latter is loading and unloading and comes to a full stop only when the leader has pulled out. The change that is now proposed of having the two cars load and unload at the same time will in many cases eliminate a stop by the follower and should tend to speed up the service.

Another new plan is for putting in an express service on the suburban lines. A study is now being made of riding habits on these lines and an experiment with express stops is promised for one of these lines soon.

Tickets for Kansas City

By Popularizing Tickets Company Hopes to Retain Basic Seven-Cent Fare and Also Increase Riding

It is expected that by the first week in December the Wood fare boxes will be installed on all the cars of the Kansas City (Mo.) Railways and new methods of collection will then go into effect. The 8-cent cash fare recently granted by the commission has not as yet been put into effect due to an agreement which was made with the city.

The railway is willing to continue selling transportation on a 7-cent basis, but is anxious to make the use of tickets much more general. To accomplish this the scale of fares ordered by the commission will be placed in effect and the cash fare will be 8 cents. A passenger wishing to buy return transportation or to pay for a friend can purchase two metal tokens for 15 cents while the regular patron can purchase tickets in strips of five for 35 cents or at the rate of 7 cents each.

To reduce insofar as possible the necessary work of the conductor he will sell the metal tokens only. The strip tickets will be on sale in quantities of five or any multiple thereof at some 400 locations throughout the city. This will very materially decrease congestion and delay at the boarding points and will thus be a direct benefit to the car rider by speeding up service. The fact that tickets will not be for sale on the cars will not be a hardship on the public as the selling points will be easily accessible to all.

Tickets will be placed on sale for a week or more in advance of starting the 8-cent cash fare. Their sale will be popularized by extensive advertising and by having extra men go through the cars in the mornings calling out the tickets for sale. It is believed that the tickets will appeal strongly to the public for both economy and convenience.

New Fares Work Well

After the first week of operation under a 7-cent fare, the Washington Railway & Electric Company and the Capital Traction, Washington, D. C., reported increased revenues of 9.5 per cent and 6.9 per cent, respectively.

The Washington Railway & Electric Company during the first week of November collected $98,868 as against $90,282 during the last week in October, when the fare was 5 cents. Taking the increased revenue of the first week as an average throughout the year, the annual increase in revenue to the company would amount to approximately $445,992, or slightly more than half the amount which the Public Utilities Commission estimated would be necessary for the company to earn 6 per cent on its investment.

The Capital Traction Company after the first week of increased fares reported additional revenue of $6,284 as compared with the revenue during the last week of the 5-cent fare. The gross revenue of the Capital Traction Company for the first week of November was $97,814, while the revenue for the last week of October was $91,530.

Both companies reported a decrease in traffic, despite the increase in revenue. The patronage of the Washington Railway & Electric Company during the first week of November was 8.1 per cent below that of the week preceding, while the Capital Traction Company experienced a decrease in traffic of 11.8 per cent during the same period.

Transfer Case Up Again

New York Supreme Court Will Pass Upon Commissioner's Authority to Make Order—Other Happenings in New York

Justice Delehanty of the New York State Supreme Court on Nov. 17 issued a writ of certiorari calling for a rehearing of the action of Public Service Commissioner Lewis Nixon of the First District in abolishing free transfers on the lines of the New York Railways and the Brooklyn Rapid Transit Company. Justice Delehanty issued the writ on the application of Corporation Counsel William P. Burr of New York City. Commissioner Nixon was given twenty days in which to file a return.

CASE WILL GO HIGHER

The case will be submitted to the Appellate Division of the Supreme Court, which will be asked to decide whether Mr. Nixon has jurisdiction to make an order annulling provisions in the franchises given by the city to the companies.

Mr. Nixon's order was made on July 17 last. Mr. Burr alleges that the order was unjustified and unwarranted by law, that it violated the contracts binding the companies to charge not more than a 5-cent fare, that the testimony taken by the Public Service Commission was inadequate to show what were the obligations of the traction companies, and that the city had no opportunity to submit testimony in opposition.

Mr. Burr holds that even if the commission had authority to increase the charge for a continuous ride it violated the law in acting without obtaining sufficient information.

Corporation Counsel Burr appeared before Justice Giegerich of the Supreme Court on Nov. 10 and asked that Commissioner Nixon be compelled to state in his return in the Manhattan & Queens Traction Corporation case whether he assumes to have the power to increase the fare on traction lines. Several weeks ago Justice Finch, on the application of Mr. Burr, issued an alternative writ prohibiting Mr. Nixon from taking any steps in a request from the Manhattan & Queens Company for permission to increase its fare.

Mr. Burr described the return of Mr. Nixon on the writ as incomplete and evasive, and said that he wanted Mr. Nixon to make a fuller return, and especially to make clear his state of mind as to his jurisdiction in requests for fare increases.

He told the court that as soon as Mr. Nixon became a Public Service Commissioner he assumed the right to abrogate free transfers, and to compel a transfer charge that cost the people of Manhattan $80,000 a year and the people of Brooklyn $1,200,000. He charged Mr. Nixon with having acted in violation of the decision of the Court of Appeals in the Quinby case, which stated that the commission had no power to increase fares that were fixed in franchises.

NEW YORK COMPANY NEEDS MORE REVENUE

Evidence that the New York Railways is still in need of income was indicated on Nov. 17 by notice served on the Public Service Commission by counsel for Receiver Job E. Hedges, stating that a motion would be made before Federal Judge Mayer on Nov. 24 for permission to abolish transfers between the lines of the company and three lines operated by the Third Avenue Railway system. The three are the Fifty-ninth Street, the Grand Street, and West Belt lines.

The petition to be presented to the court says that in the last fiscal year it cost the New York Railways 3.117 cents to carry each passenger, exclusive of taxes, rents, interest, dividends, and maintenance reserve. Counting in these the cost would amount to 4.088 cents. Counting the present rate of wages the cost would be 4.624.

The company receives 3 cents for each passenger transferred to its lines from the Fifty-ninth Street line, and the loss on each passenger is therefor more than 1 cent. Figures presented as to the traffic between the company's lines and the other two Third Avenue lines indicate a heavy loss on transfers.

The action of the Brooklyn City Railroad in collecting double fares on several of its lines, which were recently severed from the Brooklyn Rapid Transit System by Judge Mayer, has evoked many protests from Brooklynites. The company, which operates more than twenty trolley routes, contends that it has the right to establish zones with a 5-cent charge in each zone.

The collection of 10-cent fares on the company's Flatbush Avenue line was the cause of most of the protest by car riders. The company on Nov. 5 moved up the second fare point on this line from Nostrand Avenue to Foster Avenue and announced that, when a car reached this point it would be halted until the passengers already on board had paid the second fare. A number of riders refused to pay, causing considerable disorder and several delays.

Commissioner Nixon has taken under consideration the question of the company's right to charge the extra fare on this line. Following a hearing before Mr. Nixon on Nov. 7, the company and the city submitted briefs, that of the latter contending that the second fare was illegal. Mr. Nixon has not given his decision in the case..

Mayor Hylan's bus lines, established during the last two months in various sections of Manhattan and Brooklyn, have attracted the attention of the Federal Courts. Judge Mayer on Nov. 6 instructed counsel for Job E. Hedges to inquire into the legal right of the bus service to operate in opposition to the Eighty-sixth Street Railroad, a part of the Fourth & Madison Avenue line, a subsidiary of the New York Railways. Counsel were instructed to determine the probable effect of the bus competition on the company's earnings.

The city authorities have ignored commissioner Nixon's warning that the bus lines must secure certificates of convenience and necessity. The Secretary of State of New York has served notice that each bus must secure a state motor license or cease operation. The license fee ranges from $40 to $67.50.

Buffalo Wins Its Case

Commission Grants Company Seven-Cent Fare, Ending Long Fight for Increased Return—City May Appeal

After a fight in the courts covering a period of more than three years, the Public Service Commission for the Second District has handed down a decision allowing the International Railway, Buffalo, N. Y., to collect a 7-cent cash fare within the city limits and directing it to sell four tickets for 25 cents. Although the order allowed the company to put the increased rate in effect on Nov. 1, threatened appeal on the part of the city has led to three postponements. Stipulations entered into between the city and the company have put off the collection of higher fare until Nov. 30.

The International Railway is planning to use metal tokens. These will be sold by conductors. The company is preparing to spend $50,000 re-arranging its fare boxes to fit the new system. The city wanted tickets sold, but the company opposed the proposal that the conductors be allowed to sell them.

In announcing the 7-cent fare decision, Charles B. Hill, chairman of the Public Service Commission for the Second District, said that the commission used as a basis for its order a valuation of $18,000,000 as compared with approximately $35,000,000 which the International Railway sought to have used as a basis for a return.

The 7-cent fare will remain in force for six months. At the expiration of that period the rate will revert to 5 cents, but if there is no change in conditions, the company may make application to have the higher fare continued in force. Similar applications may be made every six months.

The question of higher fares in Buffalo has been before the public for several years. In 1916 the City Council, believing the 5-cent rate to be too high, petitioned the commission to fix a just and reasonable rate. Owing to war conditions the case remained unsettled for nearly two years. At the end of that time it was apparent that a higher rather than a lower fare was necessary to save the company from bankruptcy.

The Buffalo City Council in 1918 passed a resolution consenting to a fare increase, but at the referendum election which followed this resolution was vetoed. The company thereupon turned to the Public Service Commission for relief and, answering the petition of the city of Buffalo contended that the fare was too low. It, in its turn, asked the commission to consider the rates and to raise them in accordance with changed conditions. The commission refused to accept the answer on the ground that it lacked power to act in the case owing to franchise provisions which, it claimed, limited the fare to 5 cents.

FRANCHISE UPHELD

The State Supreme Court thereupon granted a mandamus, the proceeding later being changed by amendment into one of certiorari. The Appellate Division annuled the ruling of the commission and remanded the case for hearing and decision. The case was carried on appeal to the Court of Appeals, which decided in an opinion handed down on July 15 last, that the commission had jurisdiction.

The Court of Appeals, in its decision, held that under the Milburn franchise agreement between the city and the International Railway the city transferred to the Legislature the power to adjust fares. This power later, the court held, was delegated by the Legislature to the commission when the Legislature passed the Public Service Commission Act of 1907. The court therefore ruled that in deciding in favor of the rate-making power of the commission it was enforcing rather than overruling the provisions of the franchise.

Lawrence May Be Carless

So Say Trustees of Bay State Street Railway Unless Jitneys Are Curbed Before Nov. 26

Unable longer to face unrestricted jitney competition in Lawrence, Mass., the public trustees of the Eastern Massachusetts Street Railway, the successor to the Bay State Street Railway, have notified Mayor John J. Hurley of that city that unless the municipality takes steps to curb the jitneys before Nov. 26, service will halt on all local lines on that date. The letter of the trustees, signed by Homer Loring, chairman, points out that the Lawrence district is operating at an annual loss, as based on the returns for the month of September, of $300,000.

The statement of earnings for the Lawrence district for September, the first month of "Home Rule" operation, shows a loss of approximately $25,000. The blame for this deficit is placed solely upon the jitneys. The trustees contend that but for the jitney competition, the returns would have justified a reduction of fare.

The letter of the trustees follows:

The public trustees of the Eastern Massachusetts Street Railway have just received from Manager John H. Hayes the first statement of earnings for the Lawrence district under the home rule plan, and we regret to inform you that the district during September failed to earn operating expenses and depreciation.

The loss was caused entirely by the unrestricted jitney traffic permitted by the City Council. A careful estimate of our employees shows that the unrestricted jitneys are entirely responsible for a monthly loss to this publicly-controlled street railway of $25,000 per month or $300,000 per year. But for this drain upon its treasury, the Lawrence district in September would not only have been operated without loss but the earnings would have been sufficient immediately to warrant a reduction in fares.

You are, of course, aware that in the establishment of the Lawrence district the public trustees have seen to it that only earnings and expenses in Lawrence and surrounding lines are taken into consideration in the determination of fares there. You also know that the public trustees have no funds available for the operation of any district at a loss.

The public trustees appreciate the earnest efforts of the Chamber of Commerce and Citizens' Committee to bring about reasonable jitney regulations, but the financial condition of the Lawrence district makes an immediate decision necessary. The time has come when Lawrence must choose between street railway and jitney service. The earnings in October were less than in September, and the public trustees are unable longer to run the district at a loss.

We are, therefore, obliged to notify you that unless effective measures to restrict the jitney competition are adopted by Nov. 26, street railway service on all local lines, and most of the interurban lines, will be discontinued on and after that date.

Segregation With Safety Cars

Race Separation Not Found Difficult in Raleigh—Some Cars Are Short-Routed

Seven safety cars have been operating on the lines of the Carolina Power & Light Company, Raleigh, N. C., for several weeks. There will soon be a total of fifteen such cars in service. The public and the trainmen have accepted them without complaint. The segregation of negroes has caused some difficulty, although it has brought no serious complaint from the white population.

There is a "Jim Crow" law in North Carolina requiring the negroes to fill the car from the rear and the whites from the front. This makes it necessary for the negroes to pass by the white people both boarding and alighting. There was some apprehension that the negroes would not go to the rear of the car but would take a forward seat. This has not happened to any appreciable extent.

The most difficult situation to meet has been in connection with the Hillsboro line, which is the heaviest traveled line of the company's system. It extends from a good residential section at one end to a negro section at the other, passing a popular amusement park en route. On Sundays, particularly just after church time, the negroes fill the cars as they come from their end of town toward this park. White persons desiring to board a car in the downtown section at this time frequently find the car full of negroes.

To alleviate this situation, the company has followed the practice of turning certain extra cars short of the negro section, so that they are then available for the white passengers when they reach the downtown loading points. White people then finding a car full of blacks, understand that there will be another car very shortly which will not be thus loaded. There is, however, no law or rule to prevent a white person from getting on a car full of negroes if he wants to do so, provided the car stops for him.

Courtesy Campaign Started

Indianapolis Company Issues a Booklet Planned to Help Better Public Relations

The Indianapolis (Ind.) Street Railway has started a "Courtesy Campaign" for the benefit of the public and its employees. One of the principal thoughts behind the campaign was to bring about a better feeling and a more courteous attitude between the public and the car service employees. Bulletins have been placed in the various carhouses with instructions to the trainmen. A pamphlet headed "Courtesy" has been issued to all motormen and conductors. The text of the pamphlet follows:

Common courtesy is the business of every man who meets the public.

Courtesy becomes a part of his trade, to be applied in the face of resistance, the same as it is a part of a carpenter's trade to apply a jack-plane on cross-grained wood, knots and an occasional nail head.

The station foreman, inspectors, conductors and motormen, or any man whose business is to come in individual contact with the public, if he becomes skillful in his work, must learn to restrain himself from doing that which is every man's natural instinct to do in meeting discourteous, impatient and unreasonable people.

We can never make the public better by impatience. The average mechanic does the best he can with the material delivered to him and he does not destroy that which resists him. An experienced carpenter, for instance, does not get angry and throw his tools out of the window when he strikes cross-grained wood—he simply reverses the action of his tool. It is only the boy amateur who flies into a rage at resistance and pounds up that which he is attempting. Any man who comes in contact with the public will meet a lot of thoughtless people. Nearly all people are unreasonable at some time.

Few people are unreasonable at all times. The people who are cross-grained in the morning are frequently kind enough at night. Doctors say that the reason people are more irritable in the morning, or after they have been sleeping, is that their blood pressure is low—their circulation is not normal. People who are unreasonable or who give way to their temper in the morning are frequently sorry for it by night. Temper and irritability in the case of most people are the results of defective nerves rather than unkindness of heart.

The station foreman, inspector, conductor and motorman who is able to keep his temper and his voice low, and maintain himself with calmness, has a powerful weapon in his own defense and with which to administer real punishment to his offenders. The man whose business it is to meet the public, who resists impatience with patience, and temper with calmness, is gaining the respect and sympathy of every witness of the situation, and the offender will regret his act in his first reasoning moment.

The prosperity of every institution patronized by the public is largely dependent upon the good will of the individuals who comprise the public. The increasing prosperity of an institution depends absolutely upon the good will of an increasing number of individuals, and these individuals include the impatient, the discourteous and the unreasonable, along with the patient, the courteous and the reasonable, all of which go to make up a composite—the public. In a street railroad, for instance, the station foreman, inspectors, conductors and motormen are the only points of contact between the public and those who manage the property for the thousands of stockholders who own it.

A few of the many ways that courtesy may be applied by conductors and motormen.

BY CONDUCTORS

By seeing that all passengers have ample time to board and alight from cars.

By answering all questions politely but never to carry on an extended conversation.

By calling all streets and transfer points loudly and distinctly.

By not losing temper in disputes with passengers over fares or transfers.

Transfers probably cause more dispute between conductors and passengers than any other one thing in their relations, so much so that we believe that conductors should be very careful of how they handle a situation of this kind. In case you feel that you should reject a transfer, notify the passenger quietly and politely, giving your reasons for not accepting transfer and further notify him that in case any mistake has been made by the company or its agents, it will be rectified by the superintendent if called to his attention.

BY MOTORMEN

By seeing jointly with conductors that all passengers have ample time to board and alight from cars.

By not passing up any one unless a car is following within a reasonable distance.

By always running car on schedule time so that a uniform interval between cars is maintained.

By running car carefully at all times thereby taking no chances on injuring person or property.

Transportation News Notes

Complain of San Pedro Service.—The Railroad Commission of California recently held a hearing on the complaint of the San Pedro Chamber of Commerce that the Pacific Electric Railway, Los Angeles, was not furnishing sufficient service in the water front district of San Pedro. Attorneys for the railway contended that lack of services was due to congestion along the water front and insufficient space to be used for local and interurban cars.

Relief from Bus Competition Denied.—The Pennsylvania Public Service Commission has denied a rehearing of the complaint of the receivers for the Pittsburgh (Pa.) Railways, against the Pittsburgh Transportation Company, which operates a line of auto buses in the city of Pittsburgh. The receivers charged in their original petition that the bus company exceeded its rights to the use of streets granted by the commission. Their plea for relief was denied.

Cars Unheated, Coal Saved.—The East St. Louis (Ill.) Railway is sending out all of its cars without heat until the present coal crisis is over. An average of six carloads of coal is consumed at the plant daily and it is hoped to reduce this consumption to four carloads daily by economy. Much of the power used by the company is supplied by the Keokuk Power Company, but it is impossible to secure all that is needed from this source and some must be supplied by the local plants.

Traffic Check in Birmingham.—A system of traffic checking has been installed by the Birmingham Railway, Light & Power Company, Birmingham, Ala. A crew of traffic checkers has been put to work. Traffic on the various lines will be checked up daily especially that at peak hours. Daily reports will be made and will be tabulated for weekly periods. The check is being made in accordance with the policy instituted by Receiver Lee C. Bradley and is expected to result in an improvement of the service. Congested conditions now prevail at the peak hours.

Personal Mention

Mr. Milliken Promoted

Appointed Manager of Houston Electric Company by Stone & Webster—Formerly at Houghton, Mich.

E. L. Milliken, until recently manager of the Houghton County Traction Company, Houghton, Mich., has been appointed manager of the Houston (Tex.) Electric Company by Stone & Webster. Mr. Milliken succeeds David Daly, whose appointment as manager of the Keokuk, Ia., properties of Stone & Webster was noted in a former issue of the ELECTRIC RAILWAY JOURNAL.

Mr. Milliken was born at Biddeford, Me., in 1888 and was educated at the University of Maine, from which he was graduated in 1908 with the degree of Bachelor of Science in Electrical Engineering. During his summer vacations from 1903 to 1908 he was employed in various capacities by the Westbrook Electric Light & Power Company, the Bangor & Aroostook Railroad, and the Massachusetts Telephone & Telegraph Company. Upon his graduation he joined the Stone & Webster organization, with which he has been continuously connected since 1908.

During September and October, 1908, he was engaged in the statistical department in the central office of the Stone & Webster Management Association. In November of the same year he entered the service of the Cape Breton Electric Company. During the first two years of his connection with the company he was clerk to the manager. For the next two years he served as superintendent of distribution and electrical engineer, also acting as superintendent of light and power.

In May, 1912, he became manager of the company. He retained this position for five years. He took an active part in the affairs of the Canadian Electric Railway Association, and was elected a member of the executive committee in June, 1917. In October of that year he was appointed manager of the Houghton County Traction Company and the Houghton County Electric Light Company, resigning to assume his present duties.

New Post for Major Gillette

Maj. George Gillette has been appointed to the newly created position of general superintendent of railways of the Tidewater Power Company, Wilmington, N. C. Major Gillette began service with the company as an electrician's helper in 1904 and in 1906 became storekeeper. During this time he attended night school and then went to the North Carolina State College from which he was graduated in 1911 with the degree of Bachelor of Science in electrical engineering. He rejoined the company in 1912 as foreman of equipment and in 1913 was made master mechanic and, later, claim agent.

In September, 1916, he organized a volunteer company of engineers of which he was commissioned captain, spending six months on the Mexican border. Soon thereafter he was sent to France, where he served with the 105th Engineers of the 30th Division and later with the 6th Engineers of the 3rd Division, which formed part of the army of occupation. During this period he was promoted to major and given command of a battalion. He was ordered back to Norfolk, Va., in July, last, where he acted as executive officer of the supply base there, receiving his discharge on Sept. 24. He returned to the Tidewater Power Company, on Nov. 7.

H. E. Rose, storekeeper for the Androscogin & Kennebec Railway, Lewiston, Me., has been appointed purchasing agent of the company.

L. A. Bansbach has resigned as local storekeeper of the Pittsburgh (Pa.) Railways to accept a position with the Lehigh Transit Company, Allentown, Pa., as general storekeeper.

J. F. Canfield, formerly auditor of the Ottumwa Railway & Light Company, Ottumwa, Ia., has been appointed auditor of the Union Light, Heat & Power Company, Fargo, N. D.

Samuel H. Mitchell, general manager of the Phoenix (Ariz.) Railway, has tendered his resignation to take effect as soon as present improvement plans of the company are carried out. Mr. Mitchell has been connected with the company for the last seventeen years.

C. H. Hardesty has been appointed traveling passenger and express agent for the lines of the Monongahela Valley Traction Company, Fairmont, W. Va. The position of traveling agent was recently created. Mr. Hardesty will make his headquarters in Fairmont.

Captain W. S. Wyche has resumed his duties with the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., after service in France with the 2d Engineers. He was twice decorated for bravery, winning the Croix de Guerre with palms and a citation from General Pershing.

E. F. Taylor, general superintendent of the Southern Public Utilities Company, Charlotte, N. C., has resigned to accept a position with The Texas Company as engineer in charge of a railway lubrication department, newly created. The resignation was effective Nov. 1. Mr. Taylor will make his headquarters in New York.

R. L. Miller has succeeded Tully Bostwick as general passenger agent of the Northern Texas Traction Company, Fort Worth, Tex. He was at one time connected with the company's claim department, resigning two years ago to become assistant claim agent for the Galveston (Tex.) Street Railway.

William B. Hartshorn has succeeded Jacob T. Barron as head of the central division of the distribution department of the Public Service Railway, Newark, N. J. Prior to his new appointment Mr. Hartshorn was connected with the Bergen division of the company. He will make his headquarters at Elizabeth, N. J.

O. C. Macy, superintendent of the East St. Louis, Columbia & Waterloo Railway, who has been associated with this company as superintendent for the last five years, with headquarters at East St. Louis, Ill., has resigned to become connected with the Franklin-Ross Automobile Company, East St. Louis.

Roland P. Hall, who for several years has been assistant passenger agent for the Texas Electric Railway with headquarters at Dallas, Tex., has submitted his resignation, effective on Dec. 1. Mr. Hall will join the James P. Simpson Company, Inc., advertising agency, as vice-president. He has been active in advertising circles in Dallas for some time, having been chairman of the study division of the Dallas Advertising League.

F. W. Lachicotte, Jr. and **S. L. Duckett** of the Southern Public Utilities Company, Charlotte, N. C., have been made responsible for the engineering work formerly in charge of E. F. Taylor, general manager, resigned. Mr. Lachicotte will have charge of the electrical engineering work and Mr. Duckett, of the civil engineering work, particularly that pertaining to the construction of gas works. Both men have been connected with the company for many years.

C. C. Johnson, formerly purchasing agent and assistant to the general manager of the Virginia Railway & Power Company, Richmond, Va., has been made general superintendent of railways in charge of transportation and shops of the Richmond division, thus assuming part of the duties of A. Taurman, resigned. Supervision of the shops and rolling stock on the Norfolk-Portsmouth division formerly under Mr. Taurman has been transferred to T. N. Jones in addition to his other duties as assistant general manager in direct charge of this division.

Patrick F. Sheehan, who for the last five months has been assistant division superintendent of the Eastern Massachusetts Street Railway with headquarters in Brockton, Mass., has been made division superintendent. Mr. Sheehan, for a number of years a leader of the state branch of the American Federation of Labor, until his appointment as assistant division superintendent had been president of the Brockton branch of the Amalgamated Association of Street & Electric Railway Employees of America. Upon assuming his new duties he automatically severed his connection with the union.

B. W. Frauenthal has been appointed general traffic agent for the United Railways, St. Louis, Mo. Mr. Frauenthal is one of the best known men in St. Louis and especially to the traveling public. For many years he was in charge of the Information Bureau at the Union Station. There he gained the name "Ask Me" Frauenthal by his knowledge of everything connected with timetables and rates and his willingness to impart the knowledge. He was later put in charge of the whole station, with the title general station agent. He resigned from that position to become connected with the United Railways. He will have charge of the readjustment of passenger fares and tickets, including charges for special service, mail and express charges, and will direct the development of traffic.

Obituary

Arthur E. Brown, disciplinary officer of the Detroit (Mich.) United Railway, was accidentally killed on Oct. 10 while on a hunting trip in the Upper Peninsula of Michigan. Mr. Brown joined the company twenty-five years ago as car repairer. He was successively promoted to carehouse foreman, motor inspector, division superintendent, and finally superintendent of employment. He had been disciplinary officer for more than a year.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Steel Situation Shows Improvement

Pig Iron Sales Are Made at Advances of $1.50 to $3 Per Ton—Unfilled Orders Show Increases

Production in the majority of the steel mills is now 60 to 70 per cent of what it was previous to the strike. The steel and iron situation is gradually becoming better and conditions approximating those of normal are rapidly being reached.

SALES AT ADVANCE PRICES

Several large sales of pig and foundry iron have been made at advances of $1.50 to $3 per ton. Regardless of recent sales, pig and foundry iron are being quoted at Pittsburgh at the old prices effective since March 21.

Unfilled orders on the books of the United States Steel Corporation up to and including Oct. 31 show an increase of 188,030 tons compared with the September figures. The figures show the unfilled tonnage on Oct. 31 to be 6,472,668 as compared with 6,284,638 at the end of September. The October tonnage was higher than that of any month since January, 1919, and it is expected that the succeeding months will show increases even greater than those shown in the last few months.

COAL SUPPLY REPORTED LOW

Up to the present time, the iron and steel mills have not been handicapped on account of coal shortage. In most instances, steel producers had a fair supply of coal and coke on hand and in many cases actually controlled a considerable amount of tonnage mined by subsidiary companies. While some of the mills have only one to three weeks coal supply, the government authorities who are in charge of distributing the available coal supply will see that the steel industry operates, although it will not furnish mills with fuel until their present stocks are depleted. This is absolutely necessary on account of the selling price fixed on coal by the government, and the desire of the steel trade to convert it into coke for furnace use.

Rubber-Covered Wire Mills Well Booked

Heavy Ordering on Smaller Sizes Uses Up Day Capacity—Labor Condition Uncertain

Manufacturers of rubber-covered wire have been very busy since midsummer trying to keep up to the demand for the smaller code sizes. Factories as a rule are running to their capacity and in several cases are booked up to a comfortable day capacity for the remainder of the year on Nos. 10, 12 and 14. More business can be taken on by these mills, but only under conditions of night work if 1919 shipments are necessary. Large orders are being received for the heavier sizes of this wire, but still not in quantities sufficient to surpass current capacity.

Labor conditions have here and there been responsible for poor shipments, and in some cases have caused shut-downs to the mills. Although these latter conditions have only recently been overcome, labor is still not giving full efficiency to its work. Full capacity is really appreciably below normal on account of this one feature, with no apparent relief in sight.

Prices have been holding steady on a 30-cent base, and until a further rise in labor, copper and cotton there seems no reason to expect a higher base.

Time to Order Track Tools for Spring

Advance of 10 Per Cent in Effect on Nov. 1—Deliveries on Some Lines Are Lengthening

Orders for track construction tools for spring work should be placed before the end of the year in order to insure delivery by the time the frost is well out of the ground.

While during the next four months there will not be sufficient track and other construction work to require a large volume of tools, it must not be forgotten that many of these tools are also required in building construction. Contractors with excavation work to start early will not wait until the last minute to order tools. Also if the railroads are returned to their owners of the first of the year they also will be in the market for tools.

PRESENT STOCKS MODERATE

Present stocks of picks, hammers, sledges, mauls, wedges, bars, tongs and miscellaneous track tools are only moderate and on account of present orders on hand, manufacturers are unable to keep them up to their expected capacity. Under normal sales, it is estimated that present stocks are sufficient to last sixty days.

Production is better now than for some time past. Several plants, recently tied up with strikes, have resumed operation and reports indicate that the men are working much better than before the trouble occurred.

Buying is regular and a considerable number of inquiries are being received. Although there are no large individual orders, sales are showing improvement. Sales for the first six months of this year are but slightly less than for the first six months of last year.

Prices have advanced approximately 10 per cent. This increase, however, was not unexpected and it is not known whether another advance will be announced before spring.

Reasonable deliveries on some lines can be made in thirty days. Picks, sledges, bars, chisels, tongs and mauls can be delivered in quantity from stock now although no promises are held out that these conditions will exist in another month. Six weeks ago, labor was slowing up manufacturing and causing longer deliveries but with the plants gradually returning to normal working conditions, it is expected that deliveries will be permitted to be made on some important tools now on order by the different companies.

Effect of Return of Steam Roads

Indication that Deliveries Will Be Lengthened and that Prices, Particularly of Premiums, Will Be Higher

Should the present plan to turn back the railroads to their owners Jan. 1 be realized the market for supplies used by both the railroad and the electric railways will probably undergo a marked change.

At this writing the railroads are sending out inquiries for large volumes of materials, principally track supplies, pending the return of the roads. So far as can be learned manufacturers are not eager to do business on this basis.

It is very evident, however, that should the roads be returned that these inquiries will result in considerable business. In that event the visible supplies will be quickly absorbed.

Some increases in price undoubtedly will occur. Even in lines where prices are not advanced, it seems probable that premiums for spring delivery will follow closely the return of the roads.

To those electric railways planning track work the situation is of considerable interest. Many railways, requiring only a small amount of such supplies rely on the stock of the jobber. Should the supply be tied up by the requirements of the steam roads the jobber will be forced, under all the rules of the game, to pay more for his stocks and these higher prices must naturally be passed on to the consumer. While of course the entire situation depends, on the action taking in Washington and therefore is uncertain, still there is sufficient cause to make preparations for requirements for the first half of 1920. Even if orders for future delivery are placed now and the roads are not returned, there is no loss to the buyer for all signs points to prices for the first half of the year at least as high as these now prevailing.

Scrap Prices Higher

Demand Is Strongest for Foundry Cast Scrap—Large Sale of Shell Scrap by the National Government

Scrap car wheels, cast iron and heavy steel scrap continue to advance. The market is less active in Pittsburgh than in East and South where the mills are bidding for heavy tonnages due to the scarcity of pig iron.

According to quotations on Nov. 11 wrought iron scrap is up 50 cents a ton, heavy steel and cast iron scrap have each advanced $1 per ton, while car wheels are selling at an advance of $3 per gross ton. The supply of available scrap is limited. Cast borings are being disposed of quickly at $16 to $17 a ton delivered, although there is little demand so far for turnings which are quoted at $13 per ton.

Old material dealers have just purchased 141,000 tons of shell steel from the government. This represents all the material the Ordinance Department had left over in the different depots. About 50 per cent of this material, consisting of shell forgings, is reported to have brought $24.50 per gross ton.

Rolling Stock

Tidewater Power Company, Wilmington, N. C., is in the market for four 50-ft. interurban cars to be equipped with two motors each and multiple unit control. Delivery is required in the spring.

Birmingham Railway, Light & Power Company, Birmingham, Ala., has been authorized to purchase 144 65-hp. motors. The General Electric Company and the Westinghouse Company will furnish the motors which will cost, including installation, approximately $200,000. In addition trucks will be given complete overhauling.

Recent Incorporations

Albright & Bruceton Railway, Albright, W. Va.—The Albright & Bruceton Railway with a capital stock of $5,000, has been incorporated at Albright, W. Va., by E. G. Calfisch, Albright, J. C. Calfisch, F. C. Chapin, W. B. Fulton and Fred J. Maurer, all of Union City, Pa. The road will run from Albright, Preston County, along Cheat River to Sandy Creek, and thence to Bruceton Mills, a distance of about 18 miles.

Track and Roadway

Municipal Railway of San Francisco, San Francisco, Cal.—The Public Utilities Committee of the Board of Supervisors of San Francisco has passed a motion requesting the city engineer to make a recommendation to the Board of Public Works as to the advisability of extending the Municipal Railway on Taraval Street from Thirty-third Avenue to the ocean.

Cincinnati (Ohio) Traction Company.—The Rapid Transit Commission of Cincinnati has received the following bids for the construction of the second section of the proposed rapid transit loop; The Hickory Brothers Construction Company, Columbus, Ohio, $498,540; E. G. Yawger Company, Indianapolis, Ind., $509,501, and Hinkle & Sullivan, Cincinnati, Ohio, $563,935. The engineer's estimate was $513,560. The section includes the portion of the loop between Charles and Oliver Streets, most of it underground construction, with a station building at Liberty Street.

Houston, Richmond & San Antonio Interurban Association, Houston, Tex.—Engineering work preparatory to the construction of the Houston-San Antonio Interurban Line, as planned by the Houston, Richmond & San Antonio Interurban Association, will begin shortly under the terms of a contract awarded at Houston to R. E. Gurley & Sons, Chicago. It is estimated that the engineering work will cover 186 miles and that it will cost $186,000. The proposed line passes through Richmond, Rosenberg, Wharton, Gonzales, Sutherland Springs and San Antonio. H. A. Halverton of Houston is president of the company.

Seattle (Wash.) Municipal Street Railway.—The Seattle Municipal Street Railway system is to be improved by the rerouting of several important car lines, which will greatly reduce running time and cost of operation of these lines. New double tracks on Leary Avenue will shortly be completed, providing a short, direct route for the Fremont-Ballard car lines, and reducing running time eight minutes each way. The double track on Avalon Way and 36th Avenue S. W. from Spokane Street to Alaska Street, will be completed soon. The company will double track its Division A line from 24th Avenue, N. W., to 28th Avenue, N. W.

Edmonton (Alta.) Municipal Street Railway.—The Alberta Utilities Commission will recommend to the Edmonton City Council the construction of extensions of the line of the Edmonton Municipal Street Railway along Brandon Avenue from the present terminus at Calder Street to a point not less than five blocks easterly. Construction is to be completed this fall.

Guelph (Ont.) Radial Railway.—Engineers from the Ontario Hydro-Electric Power Commission are going over the property of the Guelph Radial Railway and will report on the cost required to place it in good condition.

London & Port Stanley Railway, London, Ont.—The London Railway Commission will request the City Council to issue debentures to raise $200,000 for improvements to the London & Port Stanley Railway. A by-law to this effect will be voted upon next January.

Toronto & Eastern Radial Railway, Toronto, Ont.—Pickering Township, Ont., the first of the nine municipalities interested in the construction of the Toronto & Eastern Radial Railway by the Ontario Hydro-Electric Commission, at a referendum election on Oct. 12 passed the necessary by-law in favor of the line by a large majority.

Power Houses, Shops and Buildings

Birmingham Railway, Light & Power Company, Birmingham, Ala.—The Birmingham Railway, Light & Power Company will erect a new substation equipped with one 1000-kw. rotary converter, together with switchboard, to supply 250-volt energy to Edison service. L. L. Newman is engineer in charge.

Rock Island Southern Railway, Rock Island, Ill.—Arrangements have been made whereby the Rock Island Southern Railway will secure power from the Keokuk, Ia., dam and will abandon its power house at Matherville, Ill.

Northern Ohio Traction & Light Company, Akron, Ohio.—Mayor Poorman of Canton, Ohio, has taken up the subject of a terminal station with the Northern Ohio Traction & Light Company. Such a terminal would relieve the traffic congestion in the Public Square.

Trade Notes

H. V. McKedy, assistant to the vice-president in charge of sales of the American Locomotive Company, has severed his connection with that company. He has been appointed Eastern representative of the Glidden Company, Cleveland, Ohio, with headquarters at 636 West Thirty-fourth Street, New York City.

Parsons-Moorehead Machinery Company, Hostetter Building, Pittsburgh, Pa., has been organized to do a general machinery business. William L. Moorehead was formerly vice-president of the Duquesne Electric & Manufacturing Company, while Mr. Parsons has been doing a general machinery business for several years.

Ohio Brass Company, Mansfield, Ohio, announces that Dr. Leonard F. Fuller has been made assistant manager of its insulator factory at Barberton, Ohio. During the war Dr. Fuller did some notable wireless work in connection with the laboratories of the Federal Telegraph Company at Palo Alto, California, for which he was honored by Leland Stanford University.

Atlantic Sales Company, Philadelphia, Pa., has been organized by M. F. Knapp and J. C. Vogel as manufacturers' agent with offices and warehouse at Fifty-ninth Street and Woodland Avenue. The new company will act as distributors for the Kentucky Electric Lamp Company; A. F. Daum Manufacturing Company's renewable fuses; Hart Manufacturing Company's mica insulation; and Arts Electrical Company's "Safety First."

New Advertising Literature

Macbeth-Evans Glass Company, Pittsburgh, Pa.: An illustrated folder on its Alba light No. 5350.

Pyrolectric Instrument Company, Trenton, N. J.: Bulletin No. 8 describing its quadrant electrometer.

St. Louis Electric Works, St. Louis, Mo.: Bulletin A on its type M U alternating-current battery charger.

Western Electro-Mechanical Company, Inc., Oakland, Cal.: A booklet describing its load and meter-testing equipment.

Caille Brothers Company, Detroit, Mich.: A booklet describing its electric ticket sellers and electric ticket choppers.

Rawson Electrical Instrument Company, Cambridge, Mass.: Bulletin No. 1 on its type 501 portable single-pivot meters.

Trumbull Electric Manufacturing Company, Plainville, Conn.: Bulletin No. 3, dated December, 1919, on "Safety" externally operated switches.

Belden Manufacturing Company, Chicago, Ill.: Bulletin No. 1214 on coil-winding machines has been issued in advance of its new catalog No. 8.

Conneaut (Ohio) Metal Works Company: Bulletin B on automatic valve-closed watertight electrical plug receptacles and attaching plugs.

Herman H. Stiche and Company, New York, N. Y.: Bulletin 105 AA, on its mono-pivot galvanometers, micro-ammeters, milli-voltmeters and milli-ammeters.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis.: Publication No. 479 covering electric heaters and entitled "Miscellaneous Applications of Electrical Heat."

Packard Electric Company, Warren, Ohio: Bulletin No. 200 describing its distribution transformers. Also Bulletin No. 202 on series regulating transformers for street lighting.

De Laval Separator Company, New York, N. Y.: A twenty-four page booklet on the De Laval method of purifying and reclaiming lubricating, cutting, hardening and fuel oils.

R. D. Nuttall Company, Pittsburgh, Pa.: Bulletin 25 on the heat treatment of steel gears for industrial mining and electric railway purposes. Also, Bulletin 26 on the application and use of helical type of gearing for electric railway service.

Published on December 13 with Current News

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Vol. 54 Baltimore and New York, Nov. 15, 22, 29, Dec. 6, 13, 1919 No. 20

The Strike Is Over and Radicalism Has Been Routed

WHEN the radical leaders among the New York printers brought on the strike on Oct. 1, they hoped to tie up the printing situation in New York so that no issues could be printed. The ELECTRIC RAILWAY JOURNAL felt that it could not give in to the unreasonable demands of the strikers so commenced printing in another city.

This is the seventh issue of the ELECTRIC RAILWAY JOURNAL which has been published away from New York. The editorial and mechanical problems of using a printing office some 200 miles away from the main editorial office are not small. We have had to divide our staff, keeping part in one city and part in another. We have also had to use printing facilities not primarily designed for the publication of periodicals. But we have received hearty co-operation from the printing fraternity in the city where we have been doing our work, and without them the undertaking would have been impossible. We have endeavored to maintain throughout these issues published outside of New York the same editorial standards as when work was done in our own office.

We are glad to report that the compositors and pressmen in New York now see the futility of remaining out of work longer. Many of our old men have accepted the terms which had been offered to them before the strike, and they are again at work in our own printing plant. In other words, the strike has collapsed, and radicalism in the industry has been routed.

We are deeply appreciative of the support which our subscribers have extended to us during this fight. Their letters of encouragement and the absence of any complaint about the delayed service have been a great help. Our advertisers have been equally generous with us and have authorized us to repeat their copy as often as was deemed to be expedient, instead of making the usual changes in wording or subject matter.

As our printing office will be congested for some time to come we have a choice between two courses. One is to publish our delayed issues as rapidly as we can, say every five days, until we are even with the calendar. The other is to combine the editorial sections for the next five successive issues so that we can be back on our regular schedule at the earliest possible date. The latter plan, of course, is much more expensive as by it we omit the equivalent of four complete issues of advertising. Nevertheless, we have decided on this course as it will more quickly bring the reader up to date, and we consider it a duty to do this and also to pay the cost of the strike ourselves and not pass it along to the advertiser.

This number, therefore, carries five dates and represents the issues which would normally have been issued on the Saturdays from Nov. 15 to Dec. 13 inclusive. Beginning with the issue of Dec. 20, this paper will be published from New York and will be back on its regular schedule.

January Eight a Busy Day for Railway Executives

THE program for the mid-winter conference of the American Electric Railway Association, to be held in Cleveland on Thursday, Jan. 8, 1920, is beautiful in its simplicity, but the topics to be discussed furnish a wide scope for the expression of thought. Take, for example, the matter of increasing the membership dues in the association. The income must be increased—that point will require no discussion—but how much? The demands on the organization are increasing at a rate which is both alarming and encouraging; alarming because it is causing the small surplus of funds to be rapidly consumed; encouraging because it shows that the association is needed and appreciated. The augmented demand for service comes at a time when the cost of giving it is multiplied by the well-known H. C. L. factor.

For many members, however, the cost of membership has in the past been merely nominal; often a single item of association service has been worth a whole year's fee. In view of these circumstances all members will welcome a statement from the special committee which has been working on the matter, giving expert opinion as to how much income is needed, how much the industry can reasonably be expected to contribute, and how it is proposed to divide the expense among the members in accordance with ability to pay.

The revision of dues is down on the program for settlement first. With this question settled right the conference will be in a mood to consider the technicalities of depreciation and the labor situation.

Cleveland is a very happy choice for the conference this year. Recent conferences have been held on the Atlantic Coast for good and sufficient reasons, but it is only fair to the Western members to make the meeting more accessible to them at this time. There is a certain spirit of hospitality and general friendliness in the Middle West, also, that renders a visit there very attractive at any time. The opportunity to study railway operating conditions in the home of service-at-cost, of the erstwhile 3-cent fare and of Peter Witt's (formerly) 1-cent car line will also be appreciated by the delegates.

In How Large Sizes Can Turbo-Generator Units Be Built?

A VERY instructive presentation of the elements of modern steam-turbine design was made at the American Institute of Electrical Engineers meeting held in New York City on Nov. 14. The chairman of the meeting explained that the program was planned long ago, before the occurrence of the epidemic of turbine troubles which accompanied the war period. The information given in the papers and the opinion expressed therein and in the subsequent discussion will, therefore, prove doubly reassuring to those who may have feared that limitations in regard to safe size in turbines, and to safe capacity for a given weight, have already been passed. The fact is that the causes of trouble have now been diagnosed and the remedies appear to be simple and easy of application. Compared with the number of machines operating smoothly and continuously for long periods the number of those which have given trouble is small, but the trouble has had wide publicity owing to the popular and technical interest in the steam turbine.

We must remember that the steam turbine and its running mate, the high-speed, high-capacity generator, have imposed new and difficult problems on designers. Here is a combination of high-pressure, high-temperature steam, flowing with tremendous velocity through a very novel bucket-wheel structure, a structure which by the very nature of the principles involved is much more difficult to render mechanically stable than the older types of engine. Moreover, the steam turbine is still young, but owing to its inherent virtues the demand for it in larger and larger sizes has been so insistent that the manufacturers have been kept "on their toes" to supply the demand. This has made difficult the maintenance of the close relation between the science and the art of turbine construction which would have insured even greater efficiency and reliability.

The net result of the very rapid development of the turbine, however, has been that at present the units can be built in any size that is demanded by economic considerations. The turbine is being built in large sizes at an efficiency closely approximating theoretical perfection (that is, within 25 per cent). In other words, the turbine is extracting from the steam almost the total amount of energy available within the ranges of pressure and temperature employed. This transformation is being made in power-plant floor space very small in comparison with what would have been necessary with reciprocating engines. In fact, a reciprocating-engine power plant of a capacity like that of a number of the recent turbine plants would be so huge as to be almost unthinkable.

Mention has already been made of the velocities involved in the modern turbine. To illustrate these, we may cite the 1800-r.p.m. machine considered at the New York meeting, the pitch diameter of the last-stage wheel of which is 88 in. The linear velocity on this diameter is 41,500 ft., or nearly 8 miles, per minute. The upper economic limit of generator rotor speed at present was said, by one of the speakers at the meeting, to be 24,000 ft., or about 4½ miles, per minute. Steam passes through the last stage of a turbine like this at a velocity which challenges the imagination.

The volume of steam which has to be passed through the lowest pressure stage is also of a magnitude to attract attention. For example, a 30,000-kw. turbine with a water rate of say 11½ lb. per kilowatt-hour must, with suitable pressure and superheat, pass 30,000 x 11½ x 585 (cu. ft. per lb.) = 202,000,000 cu. ft. of steam per hour, or 3,360,000 cu. ft. per minute, or 56,000 cu. ft. per second, into a condenser wherein a 29-in. vacuum is maintained. These data are quoted simply to impress upon the mind of the general reader the magnitude of the quantities involved. They are commonplaces, of course, to the engineer. The real point in the whole matter is that the size of turbine can now be selected on the basis of the lowest annual cost per kilowatt-hour, including all factors involved in the cost, with confidence that a high degree of reliability can be counted upon.

Companies Should Know the Value of Their Properties

NO ONE knows what the future legal basis of operation for most of our electric railway properties will be, whether on a service-at-cost franchise, partnership basis with the city, municipal ownership or a continuation of the present form of franchise with commission regulation of service and finances and supervision of fares. It would be only a rash guess for anyone to predict which of these forms of franchise will be most popular with the public which, in the end, will decide this question, or whether some other form of railway control will be preferred. But there is one thing which is certain, and that is that a valuation of the property will have to be made before any permanent basis for future operation can be established.

It seems to us, therefore, that one of the most important things to be done by every company which is not satisfied with its present rate of fare or has a short-term franchise is to get busy and have a valuation made. Otherwise, the need for one may come so quickly that the company will find itself unprepared. Valuations cannot be made in a day or a week, and any hurried valuation will be far more likely to leave out items which properly should be included than to include those which have no place in the appraisal. The latter items can be readily identified and thrown out, but omitted assets are not included because they are forgotten. A hasty valuation, therefore, is much more apt to be too low than too high.

Another question which may be asked is upon what basis should the valuation be made? To this our answer is that it should be made upon all of the present recognized bases for valuations, or at least the data should be located and made available by which a valuation made according to one basis can be corrected or changed to accord with another basis. Thus, a company should not be satisfied simply with a determination of the cost to reproduce new according to present prices but should determine the factor by which this total would have to be multiplied to accord with the average prices of the last five years. The value of the intangibles should be appraised separately so they can be included or not as occasion may require. Accrued depreciation should be determined whether the management believes it to be a legitimate deduction from the value of the property for rate-making purposes or not, and an attempt should be made to learn from the records of the company the investment in the property and when made. Finally the current records of its company should be in such shape that the valuation can be brought up to date without too great difficulty.

The Romans had a saying, used so frequently that they contracted it to *verb. sap.*, meaning that a word to the wise is sufficient. We shall therefore not expand further on this subject.

The Spigot End Is Cost of Car Maintenance

AT ONE of the informal conferences at the recent convention there was a spirited discussion on the data so far available on the maintenance of automatic one-man cars. One or two of the men present showed a tendency to hold back on the installation of such cars until it had been demonstrated that they would cost little to maintain and last a long while.

This point of view was described long ago by the phrase: To save at the spigot but waste at the bunghole. Surely, a scrap of paper and a bit of lead pencil ought to settle the question as to whether it makes much difference whether the cost of maintaining these cars is or is not as much per ton or per mile as older, less complex cars. The bunghole combination is platform expense, power and accidents; the spigot item is maintenance. For example, in a certain city where the cost of running old cars is 20 cents per car mile, platform expense is 10 to 11 cents, power is 4 cents and accidents, 1.3 to 1.4 cents and maintenance, 2 cents or a total of say 18 cents for three items, leaving about 2 cents for the tax-gatherer and fixed charges. Now on the same property for the one-man car, the first three items total only 7 to 8 cents against 16 cents, because platform expense is 5 cents, power about 2 cents and accidents but 0.4 cent. In other words, the difference in operating costs exclusive of maintenance is 8 cents per car mile. Therefore, there is ample leeway for higher maintenance costs without serious impairment of net.

But what are the facts? The new cars average only 1 cent a mile for upkeep as against 2 cents a mile for cars that may be simpler in apparatus but which are twice as heavy and really too old to be economically maintained. The new cars through their very incorporation of the latest improvements in control, motors, air brakes, etc., are bound to cost less to maintain for their first two or three years at least; but let us remember that in the meantime they are also saving so much power, platform and accident expense and creating so much new traffic that the user of such cars could not only afford to pay more for maintenance but could also afford to put aside enough to pay for and replace the light-weight automatic cars within five years. Some more pencil and paper, please!

What Will the Car of To-morrow Weigh?

THE car of the future is certain to be built to light weight standards and stripped of all excessive material. Some leading equipment engineers have put the weight of the car of the near future at not more than 300 lb. per passenger seat. Others consider that a weight of 400 lb. to 450 lb. per passenger seat will be nearer that actually realized. Whether these figures are high or low it is certain that weight economy is one of the outstanding aims of the farseeing car builder of today.

The problem of reducing operating costs has been forced on the attention of all operating men for several years, and the present financial conditions of the electric railways of this country have emphasized still farther the necessity for economy. Weight reduction offers perhaps the greatest results in this direction. In the cars produced just previous to the year 1917, the weight per seated passenger for double truck cars was from 588 lb. to 694 lb. For single truck cars, the weight per seated passenger was from 474 lb. to 748 lb., and for ultra-light cars built for one-man car operation, the weight per passenger seat was from 345 lb. to 511 lb.

The use of these light cars has shown the officials of electric railways how little power is actually needed to transport passengers and also how much power has been wasted by heavy cars. Thus it pointed the way to the use of light cars of the safety type that are now coming into use so rapidly. The weight of the present standard safety car is about 425 lb. per passenger seat. While this is not as low as some of the ultra-light cars produced, it is a marked improvement over the weight of the single truck cars used just previous to the year 1916. Among railway men responsible for the maintenance of car equipment, there has been some disappointment because the saving in power consumption from the lighter weight has been in a measure offset by increases in maintenance cost. This is unavoidable to some extent, but efforts should not be spared to make the car of the most rugged construction consistent with weight reduction.

Improperly maintained track has always been regarded as one of the principal factors in the deterioration of cars. but in addition to those conditions which originate outside the car, there are many produced in the car structure itself. By avoiding excessive wear and by renewing parts before they have become worn to such a point as to produce excessive vibration in the equipment, the maintenance forces are helping to solve this problem. Manufacturers of equipment have also realized that they can assist in this work by reducing the dynamic forces originating in the car equipment itself. These changes give less pronounced results than those involved in reducing the weight of the car body. Nevertheless, taken altogether, their influence upon the weight of the car cannot fail to be of great importance. The practical accomplishment of the light car has been definitely established and a still further reduction in weight is sure to result without any sacrifice of the features of strength which are considered to be of paramount importance.

What the Brooklyn Report Shows

AT A TIME when the residents of Brooklyn are complaining about the payment of a second fare on the Brooklyn City Railroad system, charged because authorized under an old franchise, the report of Stone & Webster on the Brooklyn Rapid Transit system to Judge Mayer is published and shows to what a serious condition that company has been brought. Here is a property which only two years ago was earning more than $5,000,000 over taxes and fixed charges and its underlying and guaranteed securities were considered suitable for fiduciary investments. Yet from this condition the rapid transit lines alone (based on estimates for 1920) are failing by about $1,302,000 to meet their fixed charges, while the surface lines (for the same period) will not pay even their operating expenses and taxes by $1,114,000. This sudden change from comparative affluence to abject poverty, it should be clearly understood, has not been caused by financial or operating mismanagement. It is due entirely to the change in the purchasing power of the fare charged, that is to say, to conditions brought about by the war and over which the company has had no control.

What will be the result? On this point the report is clear and to the point. Unless there is an increase in fares, the operation of many of the surface lines will eventually have to be discontinued because of their failure to earn operating expenses and taxes. Nothing less than an 8-cent fare, with a charge of 2 cents for transfers, will provide a safe margin for the operation of the surface lines as one system, with reasonable provision for upkeep. Even an 8-cent fare will not yield a fair return upon the actual investment in these lines or upon their reproduction value. As regards the rapid transit lines, without an increased fare they will not be able to earn even fixed charges, and it will take an 8-cent fare to cover the company's preferential and provide a substantial return upon the city investment, including cost of completion.

It is obvious, therefore, that unless the authorities wake up and settle this question promptly and on a permanent basis by giving the companies a living fare, Brooklyn will be bereft of many of its existing surface lines and will be so crippled as to its rapid transit lines that they will be unable to make the extensions which the transportation needs of the borough require.

We believe that there is every reason, from the standpoint of justice, for the grant of a higher fare to the Brooklyn transportation systems, but independent of this reason entirely, the grant should be made as a matter of self-interest by the city. Brooklyn is essentially a city of homes, and for this reason is perhaps more dependent than the average community on good transportation. Anything which prevents the wage earners of the family easily and quickly getting to their places of work will retard the development of Brooklyn. The rapid transit lines cannot reach all parts of the borough, and the bulk of all its local transportation will have to be carried on the surface lines. If some of these are abandoned and the others broken into even smaller fragments than at present, with frequent changes of cars and additional fares at every change, a serious condition will be reached.

If we add to this that the rapid transit lines will be unable financially to carry out any extensions other than those covered by the present contract and must be operated by a receiver in the interests of the bond holders, Brooklyn will prove to be anything but a desirable place as a residence for anyone who lives at a considerable distance from his work.

One-Man Cars Demand Simplest Possible Fare System

ONE of the most gratifying features of more-service operation with one-man cars is the evident willingness of the riding public to facilitate the work of the car operator by taking more pains to have exact change ready. It does not take the passengers long to see that the speed of the getaway is largely up to them—a condition which is less obvious when there is a conductor at the back of the car. It is a fact, however, that odd fares necessarily reduce the proportion of passengers with exact change, thereby slowing down the schedule. A further slowing down is bound to occur if the operator has to handle and register a variety of cut-rate tickets, especially if some of the tickets carry limiting conditions as to hours of use. For these reasons it is extremely desirable that fare collection on one-man cars be reduced to the simplest possible terms.

In some cases, an attractive reduction in the price of tickets and intensive selling of such tickets will do the trick. In other cases, the sale of tickets in quantity might not do because it would be redounding chiefly to the benefit of rush-hour riders who are already being carried at or below cost. In instances of the latter kind, it might be found feasible to sell transportation either through a limited-ride coupon book or an unlimited-ride pass at a price based upon some definite number of rides.

It is not practicable in street railway service to limit such books or passes to the original purchaser, but this is no great disadvantage, as the purchaser could not pass the privilege along unless he failed to ride on it himself. The coupon book is costlier to print and is more cumbersome than the pass since it calls for more work by both passenger and car operator, but if it would give as tangible a check as the presentation of cash, however, it would not prevent the substitution of tickets for cash. The pass is exceedingly simple, calling for no stopping and tearing off of coupons by the holder, while the operator need ring up the presentation only for the sake of the traffic record. It is true that a pass does not give so tangible a check as the coupon book, but this should not prove an insuperable obstacle on one-man cars where all passengers face forward and so exert a moral influence that is impossible when the transactions go on behind their backs. Either class of transportation would carry the boon of eliminating the time-limit transfer which is annoying to the rider and expensive to the operator.

Blessings Brighten as They Take Their Flight

THE voters of Toledo must have felt very well satisfied a few weeks ago when a count of the ballots showed that they had won " a great victory " over the local traction company in approving an ouster ordinance to drive that corporation from the streets. At last those naughty " magnates " would be shown that the will of the people is supreme! Their self-satisfaction must have changed to a feeling something akin to chagrin a few days later when they awoke to find that the corporation officials actually had obeyed the demand of the people and had removed their cars from the streets. They said " traction barons " always were contrary anyhow—they obeyed the law just when the people didn't want them to do so. They should have known that the voters " were only fooling."

Undoubtedly the good people of Toledo were within their rights when they voted to abolish their street car system. Likewise the company management was within its rights in carrying out the expressed wish of the voters. The result of having both parties exercise their prerogatives is that the people of Toledo—voters and non-voters alike—had to walk. Of course the Toledoans had the alternative of paying from 10 to 25 cents for jitney rides, but this was not a suitable salve for their injured feelings.

Persons dependent upon local transportation in other cities ought to feel obliged to Toledo for bringing this lesson home. There has been much bragging about the power of the people to show the street car companies " where they get off." No one will be so bold, perhaps, as to gainsay this power. However, even the all-powerful public will take time for second thought when such developments as the recent event in Toledo show how an exercise of their rights may lead to distress. It sometimes requires a tieup of transportation to reveal the necessity of such facilities for community welfare.

Are We On to Our Jobs?

A LITTLE traffic investigation which we were privileged to make in a Mid-Western city of 60,000 to 70,000 people lately has set us to wondering whether electric railway operators are paying proper attention to the ravages of the commercial motor truck as a passenger carrier.

In this particular city, a number of factories have sprung up on the outskirts, most of them at or within easy walking distance of the terminals, the remainder extending out 2 or 3 miles. Owing to insufficient service on the existing lines and no service at all beyond the tracks, the factories have been obliged to improvise passenger vehicles out of their fleets of motor trucks. Morning and evening a few rough benches are set up and the employees are bumped to and from their jobs. It is true that they pay nothing for this service, but that doesn't mean that they would refuse to patronize comfortable cars if such cars were provided. A natural consequence of this absence of service is that the employees have no incentive to settle on the ample acres nearer the factory, for the good and sufficient reason that no real facilities are available for mid-day shopping and evening pleasure travel. Better service would insure a better-rounded development of this community. For every long-distance rush-hour rider transplanted closer to his work, there would be a family of potential short riders for the off-peak periods.

So far as service over existing track is concerned, investigation disclosed that the remedy would be three-men, two-car trains during the rush hours and one-man cars the rest of the day. With the gradual development of housing nearer the later factories, the train service would eventually become unnecessary, whereas the all-day, one-man car service would become of increasing importance.

As for service to the factories a mile or two beyond the terminals, the immediate answer seemed to be in providing one-man buses as an integral part of the street railway system until the traffic developed would be sufficiently heavy to justify the extension of the tracks. Indeed, in this particular instance, the bus age of operation may be unnecessary if the city waives the paving tax and if the railway finds that it can use light-weight rail for light-weight car service. Then it will be on its job in earnest!

It's the Net per Car-Mile That Counts

IN COMPARING the car-mile earnings of two properties lately, we were amazed to learn that while the 20-cent per mile property was making money the 30-cent per mile property was losing money. Not only that; the property with the heavier gross per car-mile was operating in a town so small that its intake had to be considered excellent, whereas the property with the smaller gross obviously was serving a large community with a poorer riding habit.

The contradiction was resolved by a closer study of power, platform and schedules. The 20-cent property was running the majority of its cars on an energy consumption of about 1.25 kw.-hr. per car-mile instead of 3 kw.-hr. per car-mile because it had light-weight cars; it had a platform expense of 50 cents an hour instead of 90 cents because its cars largely were being operated with one man instead of two; and it was operating on a schedule speed of 10 m.p.h. instead of 8 m.p.h. because its cars were equipped with high-accelerating control, quick-braking apparatus, air-operated doors and other means for shortening standing time. On a car-mile basis the 20-cent property had a platform expense of but 5 cents a mile whereas the other property had a platform expense of 11¼ cents a mile. Thus we see that because of the greater schedule speed of the automatized car, the platform expense was cut more than half, despite the payment of a bonus to the one-man car operator.

For this reason it was possible for the 20-cent property to risk a big increase in service for which it has been amply rewarded by public patronage. Its gross earnings per car-mile are a trifle less than they were before, but its actual margin between income and outgo is far greater than the other property which has gross earnings fully 50 per cent higher. For those who are still skeptical about modern one-man car operation, a little figuring of their margins is in order.

Some Experiences in the Development of Automatic Substations

The Author Tells of Several Schemes Which Were Tried and Abandoned in Bringing the Apparatus of One Manufacturer to a Satisfactory Degree of Reliability

BY R. J. WENSLEY
Switchboard Engineer Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

MANY difficulties have been met and vanquished in the development of automatic control for rotating machinery in substations. The requirements of such a control would at first seem to demand attributes so nearly human that the problem might at first glance be considered incapable of solution. On analysis, however, it resolves itself into the anticipation of as many probable conditions of operation that may be met, not so much in the ordinary daily run as in the time of abnormal stress that is sure to come to even the best of systems and machinery.

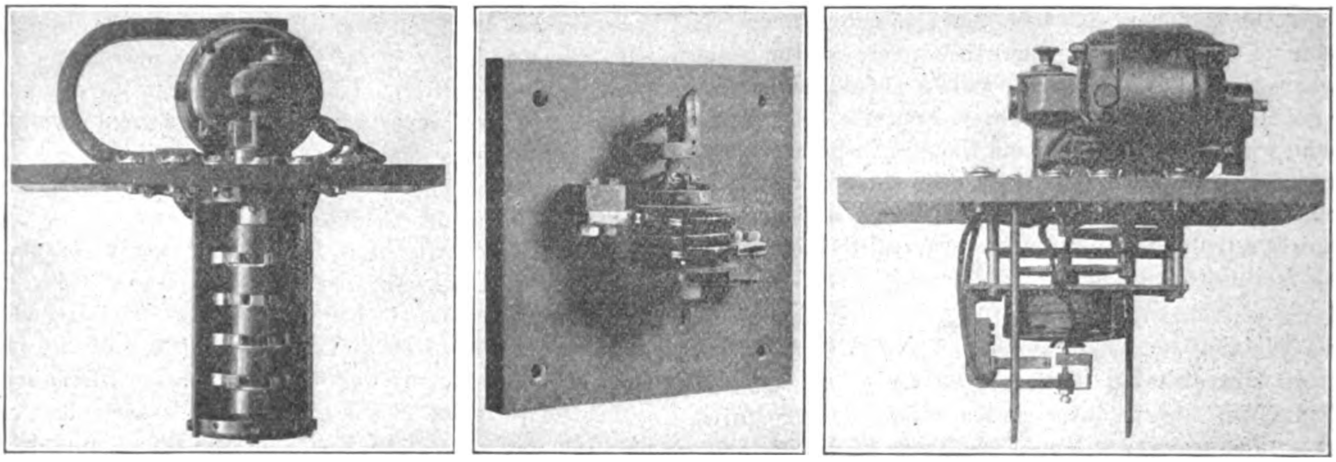
The average user of apparatus, such as the automatic substation, seldom has the chance to know any of the inside story connected with its development in the factory and with the troubles met in actual operation on systems with which he is not immediately associated. Often there are many interesting developments that considerably modify the original conception of the equipment in its evolution from the first sketches to the perfected machine. This has been quite true in the case of the automatic substation and the purpose of this article is to acquaint those interested with some of the steps in design, as well as some of the troubles and their remedies, from the experience of one manufacturer of this class of equipment.

In the preliminary design, the major problem seemed to be in the development of a satisfactory means to start a synchronous converter from rest as an induction motor, to fix its polarity properly, and accurately to determine the earliest time at which it could safely be connected to the full voltage of its transformers. The converter was the first to be considered because of the great preponderance of its use in railway substations. The motor-generator control, while considered in theory, was not attacked in practice until after the converter problems had been solved.

The first scheme proposed was the use of relays to determine the various times at which connections should be changed to accomplish the starting and loading of the substation. The first equipment constructed for experimental purposes consisted of an assembly of standard switchboard relays, steel-mill-type contactor switches, and a motor-driven drum controller to establish the sequence of operations. The polarity of the converter was corrected by flashing its field from a small generator driven by the drum motor. This equipment was assembled and given an operating test with 300-kw. and 500-kw. converters on both 25 and 60 cycles. This first equipment worked fairly well, but was abandoned in favor of what was considered a more fundamentally sound scheme of switching.

With this first equipment it was necessary that the operations caused by the drum controller should not exceed the rate of acceleration of the converter. This necessitated that the drum speed be set for the longest time that might be required under the worst starting conditions, the result being that under normal conditions the time required for starting would be too long. To prevent this waste of time while starting, the drum could be speeded up to the shortest starting time and some means provided to stop it if it was about to reach the running position before the converter was in synchronism. As the best indication of synchronism in a self-started converter is the presence of unidirectional potential at the direct-current brushes, a polarized relay could be used to " signal " the drum when it was safe to proceed. If this polarized relay could be made definitely to determine the synchronous condition of the machine, then the drum controller would seem superfluous.

The first scheme proposed involved the use of a polarized relay for the purpose of determining synchronism; so it was decided to revert to that method of operation and to omit the drum controller. The abandonment of the drum and its driving motor left the small polarizing generator without a driving means. It could have been direct-connected to the converter shaft and operated all the time the converter was in service, but this was considered objectionable.

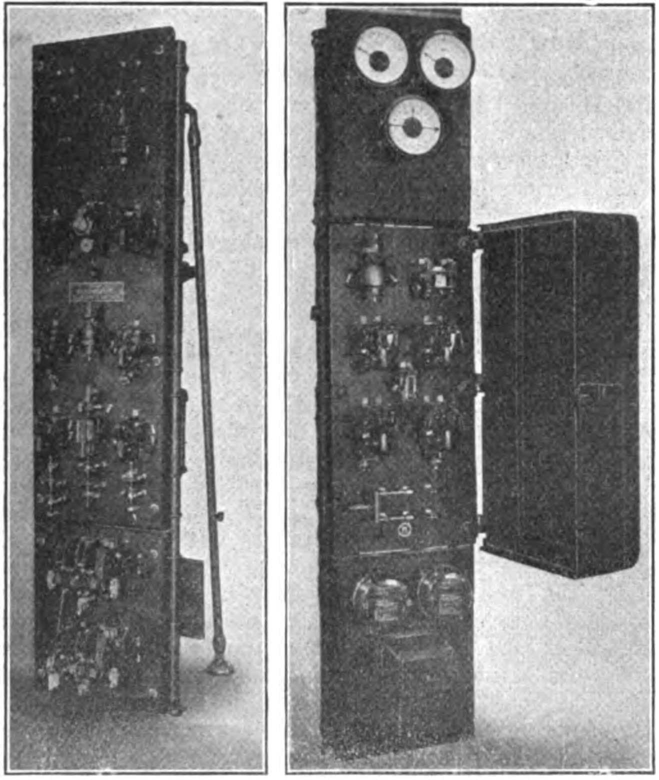


AT LEFT, POLARIZED MOTOR RELAY AS FINALLY DEVELOPED. IN CENTER, TYPE OF CURRENT RELAY FINALLY ADOPTED FOR AUTOMATIC SUBSTATION. AT RIGHT, MOTOR OPERATED PRIMARY RELAY USED FOR SHUTTING DOWN STATIONS

In the preliminary development it had been proposed to slip a pole automatically by means of the polarized relay. This method seemed to work out quite well in manual stations and it was therefore adopted as the standard method of polarity fixation. The development of a relay to respond to the change from alternating to direct current at the commutator and to indicate the polarity of the converter at the same time gave some little trouble. The first attempt was the use of a reverse-current relay built like a D'Arsonval movement except with powerful shunt field. This was very highly damped, but the long pulsations of the low-frequency potential at the commutator brushes were sufficient to cause operation of the relay before actual synchronism was reached.

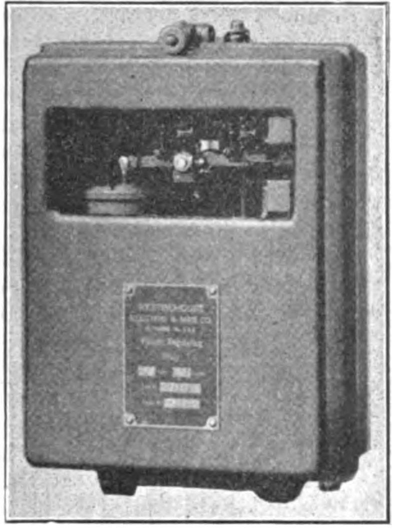
To obtain the longer time element which seemed desirable, it was proposed to put a commutator on the relay movement and operate the contacts through a gear train. Since this was so obviously a direct-current motor, the relay was discarded and an ordinary motor was substituted. This motor was built with a permanent magnet to supply the excitation and a shunt coil to keep the magnet strength up to its maximum. The 10-in. oscillating-fan motor was found to be readily adaptable for the purpose, as its standard gear train was suitable for the application and it had the further advantage of being a well-proved piece of equipment.

This motor-relay was connected across the converter brushes during starting and soon proved itself exactly suited for the application. During the acceleration of the converter the relay armature would oscillate, rapidly at first, then more slowly as the machine approached synchronism, until finally the armature would be revolving one revolution more or less in either direction just before the point of synchronism was reached. As the converter locked in, the motor armature would revolve continuously in one direction or another depending on the polarity of the converter. This offered just the means desired with which to operate the pole-slipping device.



AT LEFT, SWITCHBOARD FOR ELABORATELY INTERLOCKED CIRCUITS, AFTERWARDS GREATLY SIMPLIFIED. AT RIGHT, PANEL FINALLY DEVELOPED ELIMINATING UNNECESSARY INTERLOCKS

A contact device was connected to the reducing gearing of the motor relay, with four circuits. Interlocking relays were so connected that if the relay revolved in one direction the starting switch was opened and the running switch closed. If the relay revolved in the opposite direction, a direct-current relay was energized from the converter brushes. This relay in turn operated the field-reversing switches. When the shunt field of a converter is reversed, the direct-current potential dies away rapidly, and the converter hunts slowly backward and forward across the zero line. The field-reversing relay was so calibrated that it dropped out as the potential fell to zero. This allowed the field-reversing switch to return to its correct position and the converter to reverse its polarity. To provide against failure to function properly, provision was made for repeated reversals of field to insure proper polarity. The motor relay, which was left connected to the converter during this operation, would slow down as the potential died away and would start up with the opposite direction of rotation when the converter reversed.



PRIMARY RELAY AS USED WITH INDUCTION REGULATOR

This whole scheme was so entirely simple and satisfactory that it was at once adopted as standard and all future developments centered on the use of the "polarized motor relay," as this device was called. The final form which this relay took is shown in one of the illustrations.

EXPERIENCE WITH INDUCTION REGULATOR WAS HELPFUL

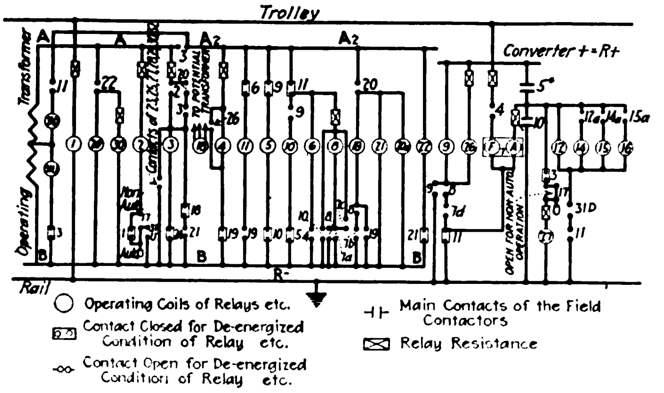
For starting the station as a result of low trolley voltage, a standard piece of apparatus was adopted from the automatic induction regulator. The primary relay for this class of service, as shown in a second illustration, is subjected to very severe service conditions, as it is in almost continuous operation for twenty-four hours a day in its regular service, while the service requirements of the automatic substation would only need its operation five or ten times a day. It was therefore thought to be entirely safe to use this relay. What was overlooked, however, was that in its normal place this relay is operated from a potential transformer and is not subjected to line surges. In the automatic substation this relay was used on the ground side of a limiting resistor but the trolley surges proved too severe for its insulation. As a result three of these relays burnt up in rapid succession on the first equipment placed in actual service. A similar experience with the current relay, which was of the telegraph-relay type, was proof that automatic equipments would have to be constructed with a greater margin of safety than was at first considered to be necessary.

A simple and rugged current relay was adopted as shown in a third illustration. A similar relay with a shunt coil was adopted for the trolley voltage relay. There have been no insulation failures with either of these relays since their adoption.

To provide for shutting down the station when no demand existed, the current relay mentioned herein was used. However, this relay alone would not suffice since it was instantaneous in action and would shut down the station each time the load fell momentarily below its setting. Some form of time element was therefore found to be essential. The use of oil or air dash pots, or of air bellows, was considered impracticable due to their inherent unreliability which is especially great when long-time elements are required. The first form of time relay tried was a solenoid with a heavy moving core, to which a gear train and fan were connected by an over-running clutch. This relay would pick up instantly without driving the gear train but would have to drive the gear.

This relay operated many thousand times but it was of necessity built with rather delicate parts and its maximum time setting was about five minutes. It frequently stuck, due to the excessive mechanical friction as compared to the driving force, the weight of the plunger being considerable.

To secure a greater length of travel, this same principle was adopted, the operation being by means of a small motor which wound up a weight on a drum, the weight in turn driving a gear train and fan on the downward trip through a ratchet. The motor remained energized while the load relay was in contact, and started to unwind against the time element when the load relay opened. This relay was actually shipped with the first equipment but gave trouble due to excessive friction and to pitting of the motor commutator at the point where the brushes rested in the energized position. In this relay also the ratio of torque to friction was entirely too low.


Trolley
Converter + = R+
Transformer
Operating
Rail
A
A2
B
R-
Operating Coils of Relays etc.
Contact Closed for De-energized Condition of Relay etc.
Contact Open for De-energized Condition of Relay etc.
Main Contacts of the Field Contactors
Relay Resistance

SIMPLE STRAIGHT-LINE DIAGRAM, ELIMINATING "SNEAK" CIRCUITS

1. Under-voltage D.C. relay.
2. Low-voltage delay A.C. relay.
3. A.C. shunt relay.
4. A.C. shunt relay.
5. Field contactor "normal field."
6. A.C. starting contactor.
7a. Armature of polarized motor relay.
7b. Field of polarized motor relay.
8. A.C. shunt relay.
9. D.C. relay for "field reversal."
10. Field contactor "reversed field."
11. A.C. running contactor.
12. D.C. line switch.
13. D.C. series underload relay.
14, 15, 16. D.C. line resistance shunting switches.
12a, 14a, 15a. D.C. accelerating relays.
17. Two-pole D.T. knife switch.
18. Reverse-phase and low-voltage A.C. relay.
19. A.C. shunt relay.
20. Main oil switch in A.C. power line.
20a. Low-voltage release on 20.
21. A.C. dash-pot relay.
22. Control contactor for item 20.
23. A.C. overload relays.
24. Overspeed device on converter.
25. Bearing thermostats.
26. Field reverse limiting relay.
27. Underload delay relay.
28. Grid thermostat (for converter).
29. Replica thermal relay.
30. Lockout relay.
31. Brush-lifting mechanism.
32. D.C. reverse-current relay.

EXPLANATORY NOTES

The polarized motor relay No. 7, consists of a polarized motor driving a rotary-type switch. When during the starting operation the converter voltage builds up with the correct polarity, the switch contacts are made in the order a, b, c, d, etc. When the converter voltage builds up with wrong polarity these contacts are made in the order of d, c, b, a, etc.

If after three trials of reversing the converter polarity, the voltage again builds up reversed, the contacts of relay No. 26 are closed, thus opening the starting contactor.

No. 6 through the opening of No. 4, and a complete new start will then be made.

No. 30 closes its contacts up on the third power impulse produced by the closing of No. 22, unless mechanically reset by the closing of No. 16.

It was then decided to experiment with a motor-operated time relay in which the motor would run during the timing operation. This was successful and the relay illustrated was developed as a result. The same fan motor was made use of as in the polarized-motor relay. In this case it is used as a straight shunt motor. The gears, which in the fan motor operate the oscillating device, are here used as part of the reduction between the motor and the timing contacts.

The ratio of the fan motor gears is 198 to 1, and two 10 to 1 reductions are added below, making the total ratio 19,800 to 1. The contact arm is driven through a small and simple magnetic clutch, with the coil in series with the motor. The contact arm is driven forward against a light spiral spring, which immediately returns it to rest against a back stop, the position of which may be changed to alter the time setting of the relay. A variation of from three to twenty minutes may be obtained in this way.

The motor and clutch are energized through contacts on the load relay, which contacts are closed when the load falls to a predetermined value. This starts the motor and engages the clutch. If the load remains low, the moving contact arm will finally reach the contacts and press them together, this circuit shutting down the station. If, however, the load relay should pick up at any time prior to the time at which the contacts touch, then the motor will stop, the clutch will disengage and the contact arm will instantly return to its position of rest against the back stop. This prevents any cumulative effect, as the relay must always start from zero position no matter how brief the demand for load on the station may be.

How "Sneak Circuits" were Eliminated

The earlier "circuit diagrams" were quite complicated and abounded in sneak circuits which showed up at most inopportune times. The tendency at first was to add an interlock on one of the relays whenever any circuit trouble was experienced. This resulted in loading the circuits up with multiplied chances for trouble and loading the relays up so that they would hardly operate. At least two equipments were built in this manner, of which an example is shown in one of the illustrations.

A determined effort was made to simplify the circuits and a great number of straight-line diagrams, similar to the one shown, were made up while eliminating the sneak circuits, which are readily visible in this type of diagram. At the same time, most of the objectionable interlocks were removed, the result being the panel illustrated.

This change fortunately was made while the two equipments mentioned were still in the works. These were scrapped and new panel assemblies were made using the simplified diagram.

In the first equipments shipped many aggravating troubles were experienced which were not directly attributable to the automatic control but which caused some unfavorable comment. For instance, the wiremen on the first equipment in their anxiety to do an exceedingly neat job of wiring bent the wire at very sharp right angles, thus breaking the insulation and causing some very nasty breakdowns in service. On the oil circuit-breaker mechanism, a low-voltage tripping device was used of exactly the same design as those used for years in ordinary circuit-breaker practice. This would not stand the unusual shocks to which it was subjected in automatic substation service and a new type of trip had to be adopted.

Some Disconcerting Troubles in Early Machines

The first machine to be operated by this type of automatic control was a 500-kw., 25-cycle, 600-volt non-commutating-pole converter of relatively recent design, having distributed damper bars for starting. These bars were fastened to the end rings by bolts, and the unusually frequent starting service resulted in the loosening up of the end ring connections until finally the converter would not start. Prior to the time when the entire failure to start was observed, a puzzling circumstance occured which caused much thought and worry before it was understood. The machine, upon coming up with reversed polarity, would go through the sequence of operations in the usual manner until the field switches would reverse. The direct-current voltage should then drop to zero, at which point the field-reversing relay should drop out and normal field should be restored. In this case, the converter would slip partly out of step and then lock with the direct-current voltage only part way down. This was sufficient to hold the field-reversing relay, and the converter would run on the starting tap with field reversed until tripped out by hand. This trouble entirely vanished when the damper winding was repaired.

This repair was accomplished by the use of an oxy-acetylene torch and silver solder, the result closely resembling the electrically brazed joints made in the most modern types of converters. This same trouble with the joints of a cage winding was experienced with the rotor winding of a starting motor used with an old converter, for which automatic control was supplied. This winding was repaired in the same way.

In connection with motor-started converters many peculiar problems were met due to the necessarily different starting methods and to the inherent characteristics of this form of converter. These machines are brought up to speed by the motor and then thrown onto the line through a reactance regardless of the phase relation. The ordinary pole-slipping method does not always work with these machines as the direct-current voltage goes much higher than in the self-starting type. To get some of these machines to reverse, it is necessary temporarily to insert some non-inductive resistance in the circuit so as to loosen the coupling between the converter and the line. The converter will then slip a pole much more readily than when reversed with only reactance in circuit. This is not true of all motor-started converters and experience has shown that each case has to be considered separately.

A BUTTERFLY CAUSED ONE SHUT DOWN

The only failure to function properly which has been experienced that was chargeable to insect life was in the station containing the motor-started converter. A butterfly crawled into the arc chute of the running-field contactor and prevented the closing of the field circuit, which in turn prevented the station from coming on the line. In a way the experience was valuable, since it emphasized this hazard and all possible changes were made at once to guard against its repetition. It also suggests the importance of properly screening all ventilating openings as an additional safeguard from this source of trouble. Small-mesh screening is most desirable and its use should be considered in the design of substations. Of course, larger ventilating openings are necessary due to the choking effect of the small-mesh screening.

The only case of trouble that caused any apprehension as to the fundamental scheme of automatic switching, was due to a defective direct-current contactor which failed to open, resulting in material damage from overspeed to the 300 kw., 60-cycle converter it controlled. Inspection and experiment, however, showed that everything was correct and had functioned properly except the contactor. This had failed to open due to improper assembly. Aside from the fact that the automatic switching was entirely vindicated, it was even a greater satisfaction to be able to have this substation in full automatic operation in only a little more than a week after the accident. This was accomplished by shipping a new converter form stock half way across the continent by express.

While a number of detail difficulties, as enumerated, have been experienced, the fundamental principle of switching only in accordance with the electrical condition of the machine controlled has proved to be absolutely correct. Experience has further demonstrated that simplicity is very necessary in the apparatus and in the control circuits to make the automatic substation a success.

Gear Manufacturers Discuss Standardization

Recommended Practices Were Adopted for Gears and Pinions for Railway Service and Other Industrial Applications

THE semi-annual meeting of the American Gear Manufacturers' Association was held at Boston, Mass., on Oct. 13 to 16. Recommended practices were prepared and proposed for adoption covering composition gearing, gears and pinions for electric railway service, bevel gearing, limits for holes in gears, and roller-chain and sprocket-wheel standardization.

In the case of composition gearing, standards were offered for adoption covering four classes of gears or pinions, namely, rawhide, fabroil, bakelite and fiber. Charts were prepared and submitted covering the minimum allowance between bottom of teeth and bore, thickness of brass retainers, diameter and number of rivets, and face width of rawhide additional to that of metal mates. This report was accepted in its entirety by the association excepting one section relating to horse-power, action upon which was postponed.

The recommended practice for electric railway gears and pinions as proposed was based upon the specifications of the American Electric Railway Engineering Association, Sections Et 3b, Et 14a, Et 15a, Et 16a and Et 17a.

In addition a further recommendation was submitted as to the proper method of installing railway pinions, as follows:

PUTTING ON RAILWAY MOTOR PINIONS

Many of the pinion failures on electric railway motors are caused by putting the pinions on incorrectly.

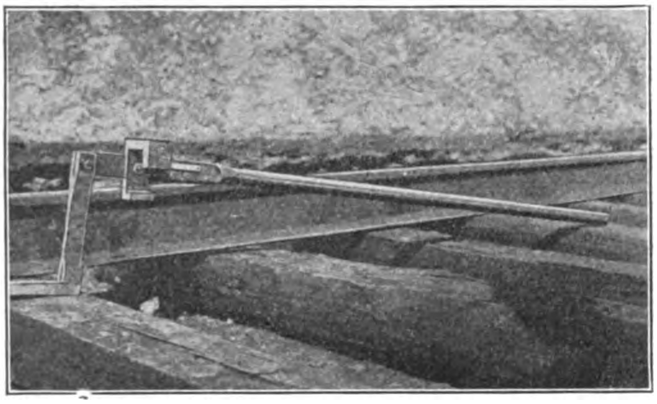
Driving a pinion.—It is generally believed that if a pinion is shoved on to the shaft and the nut is tightened, the pinion will run satisfactorily without loosening. Experience has shown that in order to obtain satisfactory operation, pinions should drive their gears through the "press fit" or "shrink fit" on the shaft and not through the key. The key acts merely as a safety device should the pinion accidentally loosen. The desired fit for the pinion can be had by heating or by pressing.

Precautions.—The following points should be observed when putting pinions on railway motor shafts with taper fit: (a) The shaft should be clean and free from burrs or swellings. (b) The pinion bore should be clean and free from burrs. (c) The fit of the pinion bore should be in contact with at least 75 per cent of the surface of the taper fit on the shaft. This can be checked by rubbing Prussian blue, thin red lead and oil, or thin lamp black and oil on the pinion bore and fitting it on the shaft. (d) After the above points have been taken care of the pinions should be put on the shaft cold to make sure that the keyway in the pinion is the proper size for the key mounted on the shaft, and that the pinion does not ride or bind on the top and sides of the key and will not ride the key when pressed further on.

The keyway on the pinion can be 0.002 in. larger than the key but no smaller. There should be at least 1/64-in. clearance between the top of the key and the bottom of the keyway in the pinion. The corners of the key should not cut into the fillet of the keyway. To prevent this, the corners of the key should be rounded.

Pinions up to 3-in. bore should be heated in boiling water for thirty minutes, and those with 3-in., or larger bore for sixty minutes. When the pinion has attained the temperature of the boiling water it should be taken out of the water and the bore quickly wiped clean. Before the pinion has had time to cool it should be tapped on the shaft with a 6 or 8-lb. sledge hammer, using a heavy piece of wood or copper between the pinion and the hammer. This sledging is not to get a driving fit, but to make sure that the pinion is "home" and well seated. Three or four taps evenly distributed around the pinion end should be enough. The pinion nut, with lock washer, can then be screwed home tight with a wrench having a purchase or lever arm of 3 or 4 ft.

A suitable pinion-heating arrangement can be easily made, the water being heated by an electric heater, or a gas flame or a steam coil could be used.



TIE LIFTER DEVELOPED BY TRACK FOREMAN OF IOWA COMPANY

To prevent rusting and to insure a clean surface at the fit, washing soda should be added to the water in the proportion of ¼ lb. of soda to 5 gal. of water.

By following these directions it is possible to put a pinion on an armature shaft so that it will "stay put" and drive through its fit under the very hardest pulling from the motor.

ACTION ON COMMITTEES' REPORTS

The report abstracted above was accepted in its entirety as recommended practice with provision for furnishing certain additions, such as drawings, etc.

The proposed standards offered for bevel gearing were confined largely to gears up to 20 in. in diameter as distinguished from larger gears. Sections on shafting, length of face and length of bearing were accepted as recommended practice. The section on limit of application and a table giving the proper amount of back-lash was referred back to the committee.

The recommendations of the committee on holes for gears included classes for air craft, printing machinery, automobiles, pumps and hoisting machines and for general jobbing gears. This was accepted as recommended practice.

A report submitted by the roller chain sprocket wheel standardization committee will be printed later by the association and submitted to the membership. No action beyond "Permission to print" was taken at this meeting.

New "Tie Nipper" Reduces Spiking Difficulties

A NEW TOOL which greatly simplifies the operation of spiking ties and makes it no longer necessary to resort to the bar and block to hold the tie up against the rail during spiking has been developed on the property of the Tri-City Railway, Davenport, Iowa. The usual process is not only uncomfortable for the man on the end of the bar, but requires the use of a man and bar on each side of the tie. The new device requires only one man for this purpose and the leverage is such that no jar is felt by the operator. It consists of a lever with a side projection or head to fit over the ball of the rail and act as a fulcrum while a foot at the short end of the lever goes under the tie. The particular function of this device is to clamp rail and tie together firmly while the spiking operation is being performed.

The "nipper" as it is called, consists of four parts, a lever, handle, head and foot. These are put together with pins and cotter-pins for purposes of interchangeability and adjustment to various types and sizes of rail. The foot is a casting and is made in various lengths for any height of rail. For a 7-in. rail the distance from the pivot in the bar to the top side of the horizontal foot is 10 in. The lever or bar to which the foot is attached is ¼ in. x 2 in. and a 1¼-in. pipe which fits onto the end gives a total length of 6 ft. The head which fits over the rail is also a casting and is made in a sufficient number of types to fit any rail. This head is set 4 in. from the end of the bar.

SPIKING TIE HELD SECURELY IN PLACE BY NEW "TIE NIPPER"

In operation the foot is first placed under the tie, the head is then placed over the ball of the rail and by means of the handle lever the tie is held firmly against the rail base while being spiked. An actual test made over a given length of track resulted in the accomplishment of the work with the "nipper" in one-third the time necessary when the old method was used. At the time of the test the trackmen did not know a comparison was being made and were not familiar with the new device.

The fact that the handle is quickly detachable makes the tool convenient for the tool box. The total weight is about 26 lb. as equipped for use with a 7-in. T-rail. The device has been patented by its designers, Messrs. Emmons and Johnson of the Davenport track department.

C. W. Rice, chairman of the employment bureau conducted by the engineering societies, reports that during the ten months ending Sept. 30, 1919, the bureau interviewed 17,083 men, registered 4858 men and 1988 positions, and placed in positions approximately 1000 men. The work is to be continued.

Fares Increased in Milwaukee

Commission Estimates Normal Expenditures and Increases Fares to Cover Deficit—Changes in Accounting Methods Ordered to Pave Way for Establishing Fares on an Automatic Cost Basis

THE Wisconsin Railroad Commission on Oct. 30, 1919, handed down a decision of much importance affecting the fares, service and accounting methods in Milwaukee. A brief note regarding this decision appeared on page 808 of the issue of this paper for Oct. 25. From the full report of the decision, now available, the following longer abstract has been prepared.

On July 25 the company filed a petition for a revision of the rates of fare and zone limits within the Milwaukee single-zone area and adjacent suburban zones, claiming a reasonable return was not being received under the previous order. Subsequent to the filing of this application, the question of wages paid in the transportation department was brought before the Board of Conciliation of Wisconsin, in accordance with the State law (Chap. 530 of 1919), and this board filed a schedule for increased wages with the Railroad Commission, which subsequently approved it, although the order required by the above-mentioned law had not been entered. Increases in wages were not confined to the transportation department but other collateral wage increases grew out of this adjustment. The estimated total increase in Milwaukee and suburban areas was $710,000. If the Racine and the interurban companies were included the increase would amount to $829,000.

The state law referred to reads:

> **In the event that such dispute shall arise between any public service corporation and its employees of any class, division or grade, and said Board of Conciliation shall investigate and report thereon as herein provided and determine the wages, hours of labor or working conditions to which such employees are reasonably entitled, such determination shall be immediately submitted to the Railroad Commission of Wisconsin, which Railroad Commission shall without delay further investigate the said matter and make and file its determination therein, confirming or modifying the report of said Board within 45 days after receiving the same. If the earnings of such public service business in which such employees are engaged are found to be sufficient to meet the cost of making the determination of said Commission effective without depriving said corporation of a fair return upon the capital employed in such business as determined by the Railroad Commission, said Railroad Commission shall order such public service corporation to make effective the wages, hours of labor and working conditions so determined by it to be fair, equitable and just, otherwise the Commission shall provide for such a revision of the rates, tariffs and charges of such public service business as will enable it to meet such cost and yield a fair rate of return upon the capital employed therein, as determined by the Railroad Commission, which order of the Railroad Commission shall be subject to review in the manner now provided by law, etc.**

ESTIMATES FOR YEAR 1920 IN SINGLE-FARE AREA

The commission made a forecast, designed to indicate the amount by which the present fares would fail to yield an adequate return upon the fair value of the Milwaukee city and suburban railway property. Determining this the commission indicated the specific fare increases considered necessary to provide the additional revenue requirements. The commission used as a base the figures for three months ending July 31, 1919, due consideration being given to seasonal variations and to increases in the cost of labor and material.

The operating revenue for the three months ending July 31, 1919, were taken as being representative of any quarter, and the yearly revenue estimated therefrom. This was estimated to be $6,340,986.

In estimating the operating expenses for a normal year the various items were considered separately and not necessarily in the same manner. In carrying out this idea the commission made an audit of expenses for three months ending July 31, 1919, and considered first the expenses if based on the price levels of July 31, 1919, and added thereto wage increases effective Aug. 1, 1919, or which were expected in the near future.

An audit examination, the commission stated, in many cases has secondary value as the questions involved relate not only to the character of expenditures which may be properly considered maintenance, but also to the amount of maintenance which may properly be considered normal for any one year. The most reliable index was the average annual expenditure for actual maintenance work over a period of years, if due regard was given to changes in the cost of labor and materials. Unfortunately, the accounts of the Milwaukee company are not so kept as to show charges which should have been made to property and plant account or depreciation reserves, and therefore any allowance for maintenance based on such averages would unnecessarily be higher, inasmuch as expenditures that should have been capitalized are included.

ESTIMATES OF EXPENSES FOR 1920

Estimates for way and structures and equipment accounts were worked out on two bases, namely:

The first basis used the average maintenance figures per car-mile over a period of years reduced to a level of pre-war costs, and to this cost the estimated increase of present-day costs over the pre-war costs was applied. This figure was then adjusted to show the effect of wage increases already allowed or anticipated within the period for which the estimate was made. On the second basis the estimated increase in the cost of labor and materials for 1919 over 1916 applied to adjusted figures for the calendar year 1916, so as to make the estimate on July, 1919, price levels. To this figure were added the wage increases either already allowed or anticipated within the period for which the estimate was made.

To make allowances for the charges which the commission claimed should have been capitalized or cared for by the depreciation reserves, an amount equal to the difference between these two bases was deducted from the figures under the estimate based on the figures for the first half of 1919 adjusted to the calendar year 1916. To this difference was added the same allowance for increase in wages effective during the period of the estimate.

Investigation of way and structure accounts showed that December, 1916, price levels were approximately the average for the period July 1, 1908, to June 30, 1917, and the cost for the last half of 1918 averaged 47.97 per cent higher. In July, 1919, labor showed a 64.39 per cent increase and materials 48.77 per cent increase over December, 1916, while the composite figure indicated a 56.25 per cent increase.

Investigation of equipment accounts showed that figures for the year ending June 30, 1918, must be reduced 29.39 per cent to be on a 1916 cost basis and that for the last half of 1918 costs had to be reduced 58.7 per cent. Labor in July, 1919, increased 105.26 per cent over December, 1916, and materials 60.76 per cent, while the composite figure showed an increase of 79.87 per cent.

Expenses for traffic, cost of power, conducting transportation, general expenses and undistributed expenses were figured by the commission for the three months ending July 31, 1919, stated on an annual basis. An allowance for depreciation and a 7½ per cent return was allowed in the cost of power. To the other items increases in wages anticipated during the coming year were added. To determine the amount for depreciation the commission took the value as of Dec. 31, 1918, of the city property, exclusive of power plant, with additions since made. This gave a valuation in the single-fare area of July 31, 1919, of $15,645,534.

At the allowable rate per annum, 2.82 per cent, less the company's charge to the railway reserve for the quarter ended July 31, 1919, the annual amount for the depreciation reserve was estimated to be $400,766.72.

The taxes for the quarter were increased four times to meet the year's estimate. The commission noted that with any increase in net income, taxes would likewise be increased due to the federal income tax law. The non-operating revenue was estimated to be $22,178.64. In Tables I, II and III is given in detail in tabular form the basis of the commission's estimates—together with a summary to show the estimated revenue needed in the city area.

TABLE I—ESTIMATE FOR EXPENSES, WAY AND STRUCTURES AND EQUIPMENT

	Way and Structures Account	Equipment Account
On basis of twelve and one-half years average:		
Miles of single track operated........	180.4	......
Operation—1916 prices, per mile.....	$199.68—$36,022	......
1919 prices increased by...	52.25%—$56,285	......
Maintenance: Car miles operated, seven months ending July 31, 1919.....	9,767,978	......
Car miles estimated for year Dec. 31, 1919	14,745,105	......
1916 prices, per car-mile at.........	1.15c.—$192,569	1.68c.—$281,318
1919 prices, increased by...........	56.25%—$300,889	79.87%—$506,006
Total costs for 1919—labor and material	$357,174	$506,006
On basis of 1916 adjusted figures:		
Actual expenditures, 7 months ending, July 31, 1919..................	$278,774	$1,400,000
Estimate for year, based on average for 1916-7-8 of	52.34%—$523,068	51.32%—$721,643
Wage increases July 1 and 16, 1919....	$11,982	$46,361
Estimate for year on 1919 prices.......	$535,050	$768,044
Amount that should have been capitalized or charged to deferred maintenance.	$177,876	$262,038
Net maintenance	$357,174	$506,006
Wage increases to be added:		
Granted since August 1, 1919........	58,678	......
Anticipated during period..........	26,438	52,917
Estimated wage increases on basis of....	66.76%—$56,823	65.88%—$34,862
1920 estimate allowed................	$413,997	$540,868

MILWAUKEE SUBURBAN RAILWAY

In considering the rates of fare in the suburban zones the commission believed weight must be given not only to the theoretical cost of rendering service in that area, but also to the connection of that area with the flat-fare city area. Rush-hour or tripper service is largely confined to the flat-fare area, but the cost of such as is operated into the suburban zones is apportioned by the company on the car-hour basis. The commission did not agree that this method was entirely correct but did say that if a suburban rider is to enjoy the advantages secured through the attainment of a better load factor on suburban cars during the off-peak hours of the day and if he is to enjoy the same transfer privileges that a city rider enjoys, he must also expect to bear at least some portion of the cost of the expensive tripper service.

The commission further stated that it did not believe that the suburban area at the present rates of fares was self-supporting; for it would be entirely possible to zone the system in such a way that certain zones could never be self-supporting, just as it is undoubtedly true that certain city lines yield a much smaller return than do certain other lines operating within the single-fare area. These facts lead to the conclusion that a rate within a certain zone or on a certain line is not necessarily too low merely because it is insufficient to make that area or that line, considered by itself, yield a fair rate of return. The question of proper rates of fare for the suburban area therefore, is one that cannot be decided alone on the narrow grounds of the theoretical cost of service. The suburban area of any city railway system always represents the thinly settled portion served, and if the needs of a growing community are to be adequately served, it is inevitable that extensions must be made before the population in those areas has reached a density that will make the extensions when built immediately profitable, if only the revenues earned within the suburban zone are considered. To adopt a policy of making these extensions only when and as they become immediately profitable, would inevitably cause the business and social interests of the community to suffer.

TABLE II—ESTIMATES FOR EXPENSES—TOTAL WITH DEPRECIATION AND TAXES

Item	Three Months Ending July 31, 1919	On Annual Basis	Wage Increase Anticipated	Total
Traffic	$1,941	$7,764	None	$7,764
Cost of power...........	207,559	830,236	None	830,236
Conducting transportation.	583,043	2,340,173	487,078	2,827,251
General expenses	43,537	174,147	10,364	184,511
Undistributed expenses ...	68,627	274,509	5,770	280,279
Total	$906,707	$3,626,829	$503,212	$4,130,041
Way and structures and equipment from Table I.	....	....	....	954,865
Depreciation at 2.82 per cent of valuation.......	110,301			
Less company's charge....	10,109			
Actual	100,192	400,767	....	400,767
Taxes	54,190	216,763	....	216,763
Total operating expenses and taxes........................				$5,702,436

The present relations existing between the city of Milwaukee and the suburban municipalities in respect to their street railway transportation requirements are such that some portion of the shortage in revenue now resulting from the operations of the Milwaukee suburban railway may properly be borne by the city railway and any increase in fares in the flat-fare area automatically results in an increase to the suburban rider, as a very large percentage of rides originating in the suburban area terminate within the flat-fare area.

Figures presented for the suburban area are purely an estimate inasmuch as the company does not keep on its book separate accounts covering the expenses of the suburban railway area.

ESTIMATES OF REVENUE AND EXPENSES

The company's figure of $302,939 for operating revenue for the year ended July 31, 1919, was accepted by the commission.

The character of the way and structure maintenance work in the suburban area made it impossible to follow

TABLE III—SUMMARY OF ESTIMATED REVENUES AND EXPENSES—CITY AREA ONLY

Operating revenue	$6,340,986	
Operating expenses	5,702,436	
Operating income		$638,550
Non-operating revenue		22,179
Gross income		$660,729
Value of Milwaukee city property exclusive of power plant	$15,645,534	
Add for materials and supplies...................	500,000	
Total valuation	$16,145,534	
Estimate revenue needed to earn 7½ per cent and pay operating expenses, without making allowance for increased taxes and high recession rate..................................		$1,210,915
Deficit to be made up in suburban area..................		$550,186

the plan used in the city area. Lacking any definite basis for determining expenses in the suburban area the company's figures for the seven months ended July 31, 1919, were accepted and raised to an annual basis, to which increases in wages actually made or anticipated were added.

The commission did not make any elaborate reinvestigation of the early fare question and only considered the period since its order of Aug. 23, 1912. Taking the period of Aug. 23, 1912, to date as a whole, the commission states, the company has not earned excessive earnings over a reasonable return. If it had previous to that time, whatever earnings there were were under lawful rates and were the property of the company, which it was entitled to use in any lawful manner. To be sure this question of early earnings has a bearing on questions of going value, etc., but to order now the company to forego a reasonable return for a fixed period to absorb past calculated excess earnings would not only in the opinion of the commission be a violation of the Constitution of the United States but would be establishing a principle against public policy and against the interests of the riding public in the city of Milwaukee. It could only result in crippling the company financially, making it impossible to carry out not only the very provisions of this order for giving adequate service, but would be very likely to interfere with other improvements found necessary for serving the public in the future.

TABLE IV—SUMMARY OF EXPENSES SUBURBAN AREA

		Other Figures on Annual Basis	Total Expenses Stated on Annual Basis
Ways and Structures:			
Actual expenses for seven months to July 31, 1919	$67,148	none	$72,144
Equipment:			
Car-miles for seven months to July 31, 1919	614,585	1,053,574	......
At 1916 prices per car-mile	1.68c.	$17,700	......
At 1919 prices—increase of	79.87%	31,837	......
Wage increase anticipated	......	1,794	33,361
Power:			
Car-miles three months to July 31, 1919	275,186	......	......
Cost on per car-mile basis	4.56c.	1,053,574	48,043
Transportation expenses:			
Basis $1.52222 per car-hour	......	......	145,127
General and Undistributed Accounts:			
In city this item was 10.06 per cent of other accounts above	......	......	30,074
Taxes:			
Computed on ratio of valuation	......	......	16,498
Depreciation:			
Calculated on 2.82 per cent property value	......	......	37,244
Total	......	......	$382,761

TABLE V.—ESTIMATE OF REVENUE REQUIREMENTS—SUBURBAN SERVICE

Operating revenues		$302,939
Operating expenses, taxes and depreciation		382,761
Net deficit		$79,822
Valuation of suburban railway as of July 31, 1916	$1,320,698	
Adding allowance for materials and supplies used in April 4, 1919, decision	42,500	
7½ per cent return on valuation of	$1,363,198	102,240
Additional revenue requirements		$182,062

SYSTEM OF FARES

The commission found that the most difficult question was in raising the increased revenue as the basis of fares cannot be placed strictly upon the income account by zones. This would be unfair to the outer zones and give to some extent the single-fare area an advantage of density of traffic and lower costs than would obtain were it not for the contributing traffic from the outer zone areas. No traffic study has been presented upon which an ultimate conclusion as to actual costs can be based, if the contributed density of traffic in the inner zone is considered. Economic and social considerations must also be considered as well as established business and riding habits, and residential congestion in the single-fare area ought not to be furthered by a system of fares that would discourage the outward growth of the city. However, the additional cost for a long haul should not be overlooked, and it is believed that some system of fares, not now in effect, can if properly treated give recognition to the increased cost of hauls into suburban areas, take into account the decreased cost in the single-fare area through traffic originating in the outer zones and give consideration to economic and social conditions. The commission believed it unwise to introduce another zone within the single-fare area, inasmuch as the present area is not large, the outer limit being only 3½ to 4 miles from the Public Service Building. To do so would introduce serious problems in handling fare collections and would greatly influence the trend of traffic throughout all the areas under consideration.

A 6-cent flat fare in the single-fare area would probably produce the necessary revenue and would also for some time at least discourage riding, especially the short haul, and any cash fare using multiple coins is likely adversely to affect the time of loading. It is impossible to avoid multiple coin fares, but a 6-cent cash fare without reduced rate tickets does not recognize the principle that frequent riders are entitled to special consideration and should have some advantage over the occasional riders.

Hence, 7-cent cash fare in the central area and 3-cent zone fares were allowed with tickets in the single-fare area sold in lots of six for 35 cents and eighteen for $1, in order to give the most frequent riders the lowest fare. The commission says it sought to put in ticket rates on a basis which it estimates will produce the necessary revenue. The commission believes that two classes of tickets should be sold so that those who make the largest investment would receive the greatest discount. Inability to forecast the riding on various tickets led the commission not to make this part of the order final. A further study of the revenues accruing under this order is to be made and within a reasonable time the final order regarding ticket rates applicable to the single zone area will be entered.

Riding since Jan. 1, 1919, has increased a great deal and has resulted in far more favorable conditions than existed in October and November, 1918. The commission believes that increased traffic is to be looked for and that additional cars will increase riding and revenues. The careful following of the accounting procedure fixed by the commission should make it possible readily to adjust the ticket rates, especially those at the minimum rate from time to time so as to meet fluctuations in the cost of service.

Metal tickets, the commission acknowledged, were more convenient for the company to handle, but if sold to the car riders in large quantities are an inconvenience. While tokens may possibly prove satisfactory for the first fares established, paper tickets will be more convenient for those riding at the minimum rate of fare.

Between the Cudahy depot and the Bay View district the commission, although against overlapping fare zones as a principle, did establish this plan during rush hours on special cars or trains. Any questions of difficulty in fare collection, it was believed, could be obviated by not running cars south further than Mitchell Street.

The commission also suggested a commutation ticket to South Milwaukee and left it to the company to suggest a rate.

TREATMENT OF RESERVES

Something should be said, the commission continues, in favor of a requirement that depreciation reserves shall be represented by depreciation reserve funds, but the commission does not believe any good public policy would be served by a segregation of such funds, at a moderate rate of interest, to be used only to replace property retired from service, but the public interest requires such funds to be used for corporate purposes, especially for extensions and additions to property. The funds in effect can be restored as capital issues are made. No matter how the funds are used the commission is of the opinion that they should draw not less than 3½ per cent interest, which should be credited to the reserves, inasmuch as depreciation is figured on a corresponding sinking fund basis.

The commission also believes that a further development of traffic can be secured in the non-rush periods, and that economies can be brought about by short routing.

ADDITIONAL CAR EQUIPMENT

In the June 1, 1918, decision the commission retained jurisdiction as to the service. The commission held that the primary duty of a public utility was to render adequate service. Adequate service was as much a corollary to fair rates of return as was the right to demand a fair rate of return for adequate service rendered. More equipment was necessary, it now claimed. The commission engineer reported eighty-three cars needed to fulfill the requirements of the standards of service. It was estimated that 100 more cars having a seating capacity of 5000 seats will be needed by November, 1920.

DOUBLE TRANSFERS

The commission claims that it has brought up the need of extending the use of double transfers repeatedly. The June, 1918, order also referred to this, and the company was expected to submit a proposal for the commission to consider. The company was given until Nov. 24, 1919, to install a transfer system allowing passengers to reach their destination without payment of a double fare. The commission finds that the extension of the double transfers is necessary for this purpose and allowed the company to submit a statement showing the restrictions which it thought necessary to prevent abuse. The commission, retained jurisdiction, to pass not only upon these matters, but on all those growing out of the extension of the use of the transfers and for the purpose of requiring changes from time to time, as may be necessary, to bring about a more general transfer system throughout the city of Milwaukee.

ORDER OF THE COMMISSION

In conclusion, the commission ordered the company to install a new accounting procedure, effective Jan. 1, 1920, to conform to the accounting practices set forth in the previous audits prepared for the commission by its audit staff.

In the single-fare area an allowance of 20 per cent of the operating revenue was made to cover way and structures and equipment maintenance and depreciation, exclusive of power property. The charge for depreciation is to be the excess over and above the monthly expenditures for maintenance, plus an allowance of 2.82 per cent on the valuation of the power plant property devoted to the city area.

The commission states it has given no consideration to the ratio between maintenance expenses and depreciation allowances to operating revenue, but inasmuch as the current price levels are likely to prevail during 1920, it believes the allowance made is reasonable and fair. Nothing in the order, however, should be construed as committing the commission to a permanent policy of basing allowances on percentages of operating revenue or to the percentage used, for as a general matter the depreciation reserve should be based upon the cost of the property against which the reserve is established.

Commencing on Jan. 1, 1920, the company is also ordered to make a monthly charge to interest and a credit to not only its depreciation reserve but to all active reserves, partially or wholly built up through charges to operating expenses, amounting to 3½ per cent interest on the several balances at the beginning of each month. The interest charge is treated as a deduction from gross income.

The company is also obliged to separate the depreciation reserve as between the single-fare and suburban areas, as well as to keep the monthly charges to operating expenses and interest separate as between the reserves, while losses on property retired from service are charged to the proper reserve.

Beginning Jan. 1, 1920, no additional charges are allowed to the reserves for "legal expenses" or "promotion of business." All such expenditures shall be charged directly to operating expenses, except as the company can continue its present practice of charging a part of legal expenses to capital expenditure.

The cost of stock handling, now carried in a separate account, is to be charged after Jan. 1, 1920, to a "materials and supplies disbursement reserve," and a percentage added to materials issued to cover the cost of handling and storage plus losses due to breakage and spoilage after deducting therefrom the interest credits to this reserve.

Until such time as a scientific computation of relief and pension requirements can be made, based upon an actuarial study of pensions accrued yearly, all charges shall be made on the basis outlined in the commission's audit for the three months ended July 31, 1919.

All interest credited to reserves or charged to interest paid, under deductions from income, is segregated from interest paid on funded and floating indebtedness and entered in a lump on the income account under a new caption "interest on reserve capital."

Changes are also made in method of computing and distributing taxes. The commission ordered that all State, city and capital stock taxes be apportioned monthly among the several operating utilities and the power division on the basis of the fair value of the property as of Jan. 1, 1920, until the completion of the property ledger. Federal income taxes are also to be apportioned monthly upon the basis of the distribution of the net income of the preceding calendar year among the several operating utilities.

The company must go back to the forms of monthly reports made prior to the consolidation of last February and again make two separate railway monthly reports—one report covering the operations of the Milwaukee city railway and the other the operations of the suburban, interurban and Racine railways. The same is required of the electric utility, and to preserve the continuity of records the company must prepare corresponding reports covering the results of operations from Feb. 1, 1919, to date.

The November, 1919, and subsequent reports must show condensed statements of income accounts and the power costs computed in the manner specified and apportioned to the several utilities for the month.

Transfers on a transfer are also ordered in the central area, effective Nov. 24, 1919, subject to limitations from time to time, approved by the commission. The company is also instructed to take immediate steps to procure 100 additional cars having a seating capacity of 5000; plans for such cars to be submitted by Dec. 1, 1919, and to be in service not later than Nov. 1, 1920.

The report of the Wisconsin Board of Conciliation (created under Chap. 530, Laws of 1919), filed with the Railroad Commission, was approved and the railway company ordered to make effective the wages, hours of labor, working conditions determined therein as being fair, equitable and just, and in compliance with Chap. 530 of the Laws of 1919, the rates of fare were ordered changed to cover the increased cost of operation.

Effective Nov. 2, 1919, the rates charged are: For any ride within the Milwaukee single-fare area, including transfers, a cash fare of 7-cents, and two tentative ticket rates, namely—six for 35 cents or eighteen for $1. Both classes of tickets are sold on the cars. The eighteen tickets for $1, which are in a convenient book or folder form are also sold at the stations where the electric bills of the company are paid.

In the suburban area the fare was fixed at 3 cents per zone, with a 6-cent minimum. In all other respects the July 2, 1918, decision covering fares on the suburban lines remains in effect.

During the morning and evening rush hours the same fares as prevail in the central area are to be effective on special cars or trains between Cudahy depot and Mitchell Street. The company under the terms of the order is also required to submit prior to Nov. 15, 1919, a scheme for the issuance of commutation tickets between South Milwaukee and the single-fare area.

The commission attached to its order an addendum concerning the advisability of establishing an automatic cost basis of fares within the single-fare and suburban area of the city of Milwaukee.

Regarding this the commission said that it was inclined to believe that with the accounting practices established, no great difficulty would be met in providing by order for a more or less automatic adjustment of fares. The working out of this order and the results of some experience will undoubtedly be helpful in working out a basis for a possible order. This suggestion was made in the hope that it might lead to a larger consideration of the subject and its possible benefit, and with a distinct assurance that if it shall appear to those interested to be feasible, the commission will be glad to work along lines of making it effectual.

Municipal Ownership Conference

Meeting Continues Three Days in Chicago with Three Sessions Each Day—Resolution Indorses the Desirability of Public Operation of Utilities—Papers on San Francisco and Seattle Systems

A THREE-DAY conference was held, Nov. 15-17, at the Congress Hotel, Chicago, by the Public Ownership League of America. Some fifty other organizations were invited to participate in the conference. Among them were the local public ownership leagues in Chicago; Duluth, Mich.; St. Joseph, Mo.; Columbus, Ohio; Dubuque, Ia.; Paducah, Ky.; Fort Wayne, Ind.; and in the states of Kentucky and California; as well as several railway labor organizations. Altogether, forty-three papers were scheduled for the conference. Three sessions were held each day of the meeting, namely on Saturday, Sunday and Monday.

Four papers among those scheduled related primarily to electric railways. One of these was the address of the president, Albert M. Todd, who compared the results of municipal ownership in Great Britain with private ownership of utilities in the United States, to the disadvantage of the latter.

Delos F. Wilcox presented an address on "The Present Street Car Crisis in America and the Way Out," the way out being municipal ownership, which Dr. Wilcox said American cities have been very slow to adopt. Chicago, for instance, voted for immediate municipal ownership thirteen years ago, but has not got it yet. Detroit and Toledo have also been talking about it for a long time, but Toledo has not even got private operation now. Dr. Wilcox thought that the experience of the people in Toledo would teach them to stop pussyfooting. Referring to the progress of the municipal operation idea he said: "The result of the Railroad Administration and the campaign that has been carried on against public ownership, using the Railroad Administration as an illustration of the so-called or so-claimed inconveniences of public ownership, have made the business interests of the community as a whole more reactionary with respect to public ownership than they were before the war, while the underlying elements, the elements that are silent in ordinary times, are more radical." He suggested that the Seattle plan of purchase might be useful in other cities in working out the financial problem.

Mayor Thompson of Chicago was scheduled to present an address on "The People's Plan for Ownership and Operation of the Chicago Street Railway System." In his absence he was represented by Frank T. Ayers, who said that the Mayor's plan was for the railway lines to be operated by a street railway commission of five, elected by popular vote.

Abstracts of the papers on the San Francisco municipal system by M. M. O'Shaughnessy, city engineer of San Francisco, and on the Seattle municipal lines, by Thomas F. Murphine, superintendent of public utilities of Seattle, are published in abstract on pages 896 to 898 of this issue of the JOURNAL.

Before the close of the meeting the conference adopted a resolution in favor of public ownership of urban utility and transportation service, as follows:

RESOLUTION ADOPTED

Whereas, Adequate urban utility services (water, gas and electric supplies, transportation, etc.), are necessities of modern cities and are in their essentials service monopolies for any given city or metropolitan district, and which, as such, are eminently proper functions for governments to undertake and supply at low cost, and

Whereas, It has been the general practice to delegate these important service functions to private interests by charter and franchise grants with an almost universal resulting inadequacy and high cost of service, financial exploitation and the final break-down of the "System," also in view of the recent general demands made by the utilities companies for higher rates and the street railways and rapid transit interests for higher fares (which they have generally secured, regardless of contract obligations, even without proof of the justice or equity of their demands), usually to insure returns on fictitious values, overcapitalization, improvident financing and bad management, and

Whereas, The experience of over sixty years has shown that franchise trading for utility service undertakings and street railway and rapid transit grants and the selfish activity of these private interests for profit, have been the most active and potent factors in bribery, political corruption and prostitution of municipal governments in the country, and

Whereas, The cities of other lands, notably Great Britain and Germany, have found it expedient and to their best interests to eliminate private profit-making concerns, and to take over their urban utility and transportation service as municipal enterprises (the majority of American cities already own their water supply and some of the Pacific coast cities, San Francisco and Seattle, have undertaken public ownership of city transportation service), as the only definite and satisfactory solution of the municipal utility service problem, now therefore be it

Resolved, That we, the members of the Public Ownership League of America, in conference assembled, express our belief and devotion to the principle and practice of public ownership, and operation of the water, gas and electric service and urban transportation and marketing facilities of our cities, and that we pledge ourselves to work in every practicable way to bring this about; that we urge this upon all citizens in the interest of public welfare, political honesty and civic righteousness, the desirability, or rather the necessity, of taking over these func-

tions at the earliest possible date, and, eventually, all other essential services that are monopolies in their nature or scope, under public ownership.

Street Railway Situation in San Francisco*

Beginnings of the Municipal Line Described—City Now Has $6,750,000 Invested—Company is Also Affected by High Cost

By M. M. O'Shaughnessy
Engineer of San Francisco City

SINCE the beginning of street railway transportation San Francisco has been well to the front. It was here that the first cable car in the United States was operated, because of the fact that San Francisco is built on steep hills, making it almost impossible for the city to expand unless power-operated vehicles were employed, the grades being in some cases as steep as 21.3 per cent. Following the natural tendency to keep to the forefront in urban transportation matters, San Francisco also was the first in the United States to take up municipal ownership by the construction and operation of electric street railway lines.

The present mileage within the city consists of 360 single track miles of railway. Of this, 25 miles are operated by cable and 335 miles by electricity. The electric lines are all standard 4-ft. 8½-in. gage, the cable lines 3-ft. 6-in. gage. The 360 miles of road are operated by two companies and the municipality. The California Street Cable Railroad operates a little more than 10 miles of single track, using thirty-eight cars. The United Railroads operates approximately 286 miles of single track, and owns about 700 electric passenger cars. The municipality operates close to 64 miles of single-track line, owning and operating 195 electric passenger cars.

San Francisco has always been noted for the large number of passengers carried per car-mile operated. This is due to the fact that the street grades are so steep in places as to be unpleasant for walking. The natural arrangement of the city is also conducive to riding, as all of the business portion is located at the northeast corner of the peninsula upon which San Francisco is built. This means that all of the population going into the business district or leaving San Francisco for the eastern side of San Francisco Bay must go to one side of the city. This makes the average length of travel much greater than would be the case if the business district were at the geographic center.

Genesis of Municipal Railway

Prior to the fire which destroyed a large part of San Francisco in April, 1906, plans had been prepared and funds secured for the acquisition by the city of the Geary Street, Park & Ocean Railway. All thought of taking up this work was banished by the disaster, the money which had been appropriated for the railway work being used for the reconstruction and rehabilitation of streets and buildings. The Geary Street Railway's franchise had expired in 1903 and the company had been operating on a temporary month-to-month permit, paying into the city's treasury 5 per cent of the gross revenue. On Dec. 30, 1909, at a bond election, a proposition was passed calling for the expenditure of more than $2,000,000 for the construction of a little over 15 miles of single track overhead trolley electric railway over the old route of the Geary Street Railway, with extensions to the ocean on the west and the ferry on the east. This work was in part completed and placed in operation on Dec. 28, 1912; the remaining portion being placed in service on June 24, 1913. This railway was very successful from the outset, bringing in almost $500,000 in gross receipts the first year of its operation, with a passenger car revenue amounting to 34.19 cents per mile.

At the time this road was finished the city was compelled to plan for the traffic of the Panama-Pacific International Exposition. This exposition was to be held in a portion of the city which was not adequately served by street railways. The privately-owned roads declined to make the necessary extensions to serve the exposition. Plans were then made for greatly enlarging the Municipal Railway system and in August, 1913, a bond issue to the amount of $3,500,000 was voted by the people for the primary purpose of serving the exposition needs. This bond issue was to construct some 25 miles of additional single track and to purchase 7.8 miles of single track of the existing Presidio & Ferries system and the work was carried out prior to the opening of the exposition.

In 1916 the matter of constructing a line on Market Street was again taken up. A great deal of opposition from the existing private corporation against building parallel outer tracks was encountered, resulting in the matter being carried to the Supreme Court of the United States. The city, however, after winning all of its contentions was able on June 1, 1918, to commence the operation of its cars along the full length of Market Street over new tracks built outside of those belonging to the United Railroads.

At the present time the city has approximately $6,750,000 invested in its railway system, $1,000,000 of which came from earnings. During the past year it operated more than 7,200,000 car-miles with net passenger receipts of nearly $2,500,000, the revenue per car mile being a little more than 33⅓ cents. Almost 60,000,000 passengers were carried.

Net Earnings Affected by Higher Costs

When the road was first placed in operation the conductors and motormen were paid on the basis of $3 per day of eight hours. This was later increased to $4, then to $4.50, and beginning with July of this year the wage is $5 for eight hours time. The wages paid by the United Railroads are lower, running from 46 to 52 cents per hour, but the men may work more than eight hours per day and every day in the month if they desire. Thus the average monthly pay of a man employed by the private corporation is greater than that of a man employed by the municipality where they are limited to eight hours per day and six days per week.

As indicated before, the passenger car revenue per car-mile in 1912 amounted to over 34 cents. For the past fiscal year this same revenue was but 33⅓ cents. During the same period the operating expenses have increased from 15.9 cents to more than 26 cents per car-mile. There has been no increase in the rate of fare, while the average length of ride per passenger has been very materially increased. Increased expenses of operation have been met out of net earnings. Beginning with July 1, 1919, when the last increase in wages was made, there will be no net income out of which to meet increasing costs or extensions with a continuation of the 5-cent fare. Heretofore it has been the custom to set aside 18 per cent of the gross passenger receipts to cover depreciation and to provide a fund out of which to pay damage claims. These funds are the only place it seems possible to secure the necessary money to meet the expenses. The percentage which has been set aside was very carefully determined at the time that we commenced operating the road. Other roads operating similar system are allocating to depreciation reserve about the same percentage of their passenger receipts. In order to meet the July payroll a small amount has been borrowed from this fund, although as yet no definite action has been taken by the Board of Supervisors of San Francisco as to the final policy which will be pursued.

---

*Abstract of paper presented at meeting of Public Ownership League of America, Chicago, Nov. 15-17, 1919.

The privately-owned railway lines have not agitated for an increased rate of fare although the reports given out by the companies indicate that the companies did not meet their operating expenses and fixed charges during the past year, and they have not for a number of years paid dividends.

Because of a number of causes it is very undesirable upon the part of the corporations to increase their rate of fare. This is partially due to the competitive nature of the Municipal Railway and the privately-owned roads, and also because their franchises stipulate that the fare shall not exceed 5 cents. It is equally true that it is very undesirable for the city to raise the rate on the Municipal Railway, as it would immediately justify any claims the privately-owned lines might make for a similar fare, at the same time causing unfavorable comment from the opponents of muncipal ownership.

Within the past two weeks * the transbay ferry lines have increased their cash fare rate to Oakland, Berkeley, and Alameda, from 11 cents to 15 cents, and the commutation rate from $3.30 to $4.00. The whole matter of street railway operation is being watched with considerable interest by all parties, but at the present time there is no surface indication of any change in street railway fares or operating methods. Taken on the whole, San Francisco, having 1 mile of single track for each 1600 inhabitants, is very well provided with railway service of a high class.

While not wishing to advocate the increase of street railway fares at this time, it is my opinion that the traveling public can only expect to get what it pays for and that in any community served with street railways it is much more desirable that the returns to the corporation or to the municipality be sufficiently high to insure first-class service rather than to retain a low fare and allow the service to deteriorate.

Seattle Municipal Lines †

More Service Given Than Under Private Operation—Control of Jitneys Important—City Has More Tracks Than Any Other Municipal Railway

By THOMAS F. MURPHINE

Superintendent of Public Utilities

ON APRIL 1 of this year the city of Seattle by the purchase of the street railway properties of the Puget Sound Traction, Light & Power Company came into possession of approximately 206 miles of street railway track and overhead system, 540 street cars, eighty pieces of real estate and a variety of buildings, carhouses and shops, freight sheds, machinery, tools and equipment, and a stock of supplies.

Certain portions of this property were appraised by various engineers and real estate experts. The street cars were valued at $2,500,000; the commercial real estate at $540,000; the buildings, carhouses, shops and freight sheds at $528,980; the machinery, tools and equipment at $500,000; and the stock of supplies at $350,000. The railway track and overhead system was not physically appraised at this time, but from former appraisals made by engineers of the Public Service Commission of the State of Washington and by comparison with the cost of construction of like track by the City of Seattle and the City of San Francisco, a value of $11,683,966 was placed on them by this department.

The total purchase price by the city of the street railway properties was $15,000,000 in utility bonds, payable in annual installments of $833,000 beginning March 1, 1922, with interest on the total amount of 5 per cent per annum, payable semi-annually.

REASONS FOR PURCHASE

The immediate causes that led up to the purchase by the City of Seattle of the railway properties of the private company were:

1. The service given by the company was totally inadequate.
2. The company was demanding an increase in fares of from 1 cent to 2 cents.
3. The company was further demanding to be relieved from all franchise obligations.
4. The employees of the private company were not being paid a living wage.

The city officials of Seattle maintained that with the relief from franchise obligations adequate service could be given and the fare kept at 5 cents.

The city has now operated its railway system for the first quarter of the year 1919 and a brief résumé of operating receipts and expenses for the first quarter with the comparison of the corresponding quarter of last year will be interesting. Our experience for the first three months, however, ought not to be taken as a basis for calculating future operations.

CHANGES SINCE MUNICIPAL OWNERSHIP

The operating economies proposed by the Department of Public Utilities have not, as yet, been put into effect for the reason that the physical connections between certain of the lines have not been completed; the skip-stop system has been installed on only four lines; downtown traffic is more congested than ever, the new traffic code having just been passed by the City Council; the campaign for the saving of power has been installed on only a few lines; and the thorough co-operation of the employees with the city has not, as yet, been fully effected.

However, under practically unchanged conditions the city immediately increased its service so that for the first quarter of its ownership it operated 4,146,850 car-miles as against 3,386,311 car-miles for the corresponding quarter of last year, showing that there has been an increase in service of 760,539, or a little more than three-quarters of a million car-miles, carrying a total of 33,015,082 passengers as against 28,394,008 total passengers for the corresponding quarter of last year.

The total revenue for the first quarter of this year was $1,229,039 as against $1,135,122 for the corresponding quarter of last year, and the total operating expense for the first quarter of this year was $1,052,727, leaving a profit over operating expense of $246,312. From this there has been set aside the sum of $198,781 to pay the interest on all outstanding obligations. Also, there has been set aside $20,000 more than has been paid out for accident claims, and approximately a like amount of $20,000 more than has been paid out for industrial insurance, leaving a net profit for the first quarter of $6,808.

The wages of trainmen and other employees were increased practically 20 per cent. The following schedule of wages paid motormen and conductors under city operation as compared with wages paid by the Puget Sound Traction, Light & Power Company show the increase that was paid to trainmen beginning April 1, 1919:

---

* The paper is dated Aug. 27, 1919.

† Abstract of paper presented at meeting of Public Ownership League of America, Chicago, Nov. 15-17, 1919.

	Company scale	City Scale
First six months of service	46 cents	53⅛ cents
Second six months	48 cents	56¼ cents
Over one year	50 cents	59⅜ cents

It will be noted that no amount has been set aside for depreciation, for the reason, which this department deems sufficient, that there has been expended during this quarter for maintenance of way and equipment the sum of $230,540 as against $131,796 during the same period in 1918. Approximately $100,000 more has been spent by the city in maintaining the track, overhead system and street cars for this quarter than was spent by the company for the corresponding quarter of last year.

The Traction Company set aside approximately $25,000 per month to take care of depreciation and allowed the property to depreciate. We believe that spending this depreciation fund now on the tracks and equipment (at least until the same are restored to a normal condition) is wiser than allowing the fund to accumulate, because we are appreciating the value of the property instead of allowing it to depreciate.

We expect to show in the near future, upon the completion of certain work now under way, with the complete installation of the skip-stop system and with certain reroutings, a large gain per month over the first quarter—at least enough to take care of the further increase of wages to employees to meet the increased cost of living.

It must be remembered, however, at this time, that the railway is still maintaining the largest franchise obligation, from a financial standpoint, that the private company agreed to maintain, *i. e.*, the care and maintenance of that portion of the street covered by the railway tracks. This, the department feels, is not a proper railway expense under city ownership and it is not being charged against the railway in San Francisco and other cities which own and operate street railway properties.

MEANS OF RELIEF DISCUSSED

The rise in wages and prices of material caused by the war affected all lines of business, but none more than the street railway business. Nothing is more certain in this field that the fact that the business can no longer bear the charges and burdens that it has borne in the past. This is evidenced by the number of street railway companies that have gone into the hands of receivers in all parts of this country; by the miles of track that have been actually abandoned and taken up, and by the applications for relief from franchise obligations that have been made almost universally to the appropriate authorities.

It is now generally admitted that it is impossible to pay out of a 5-cent fare all the things that have been paid out of it in previous years. About four standard methods have been tried or urged upon the street railways to meet the change in conditions, viz: (1), increase in fare; (2), relief from franchise obligations; (3), economies in operation; (4), public ownership.

No one of them alone will suffice. There must be a combination of at least three of them. The fourth method (public ownership) is not, taken alone, sufficient. It must be accompanied by Nos. 2 and 3.

The increase of fare has been tried almost universally and, while an increased fare brings increased revenue, it does not do so in proportion to the increase in fare, showing that a large percentage of the people, under an increased fare do not use street cars. The short-haul patron walks and the longer-haul patron rides only when necessity compels him to do so. This affects not only the railway but the manufacturer and the business man as well and is not compatible with the idea of service.

Relief from all franchise obligations is imperative, and under public ownership and management there can be no just reason advanced why any portion of the nickel fare should be taken to pay other than legitimate railway expenses. In fact, if the city owes a duty in the way of transportation, and everyone admits that transportation is a vital element in urban life, then the street car patron should be placed on an equality with patrons of other conveyances. At present, the car rider's nickel or fare has to maintain not only the car track but, to a large extent, the track of the competitors of the car in the field of transportation.

If the automobile can render service equal to the electric railway car, at a less cost, the sooner any city is convinced of that fact and acts upon it the better. But before any city can intelligently choose between rival systems of transportation it must first place them on an equal competitive basis, removing handicaps and equalizing burdens.

There is no indication now that automobiles can fill the place occupied by the street railways. They can perhaps take the cream of the business away from the street railways, and where the railway systems are privately owned might drive them into bankruptcy. Under city operation, unregulated jitney competition, while it cannot bankrupt the city, can make its street railways unprofitable and result in placing a burden upon the taxpayers that they would not have if the the street car and the jitney were placed on an equal basis.

MORE MILEAGE THAN ANY OTHER MUNICIPAL ROAD

Seattle has been spoken of as having the largest publicly-owned street railway system in the world. This is only true in regard to mileage of tracks. The City of Seattle is now operating approximately 230 equivalent single-track-miles of street railway. The City of Glasgow, Scotland, operates less than 200 equivalent single-track-miles of street railway, while the City of San Francisco operates approximately 60 equivalent single-track-miles of street railway. The City of Glasgow, however, serves a population three times as large as Seattle and carries annually four times the number of passengers that the street railways of Seattle carry, while the City of San Francisco, with approximately one-quarter the mileage, carries one-half as many passengers.

Procedure in Formulating Safety Codes

THE United States Bureau of Standards has sent out a preliminary report on the subject of best methods of procedure in formulating industrial safety codes. Plans for future precedure were submitted some months ago to a large number associations, federal bureaus, state utility commissions and others, with the request that preferences be indicated. The result of the balloting has been that majority of those voting prefer the following plan: The preparation of safety codes and other standards by appropriate sponsor bodies, but under the auspices and procedure of the American Engineering Standards Committee as enlarged under a revised constitution. Of a total vote of eighty-five organizations, fifty-six indicated a willingness to join the American Engineering Standards Committee.

To consider this matter further, the Bureau has called a conference scheduled to be held in Washington on or about Dec. 8.

It is intended at that time to consider the procedure which should be followed in further work on safety codes and the co-operation that can be secured among the engineering societies, government department and other agencies that are actively concerned with safety work. Formal invitations to attend this conference were to be issued at about the date when the forms closed for this issue of the ELECTRIC RAILWAY JOURNAL.

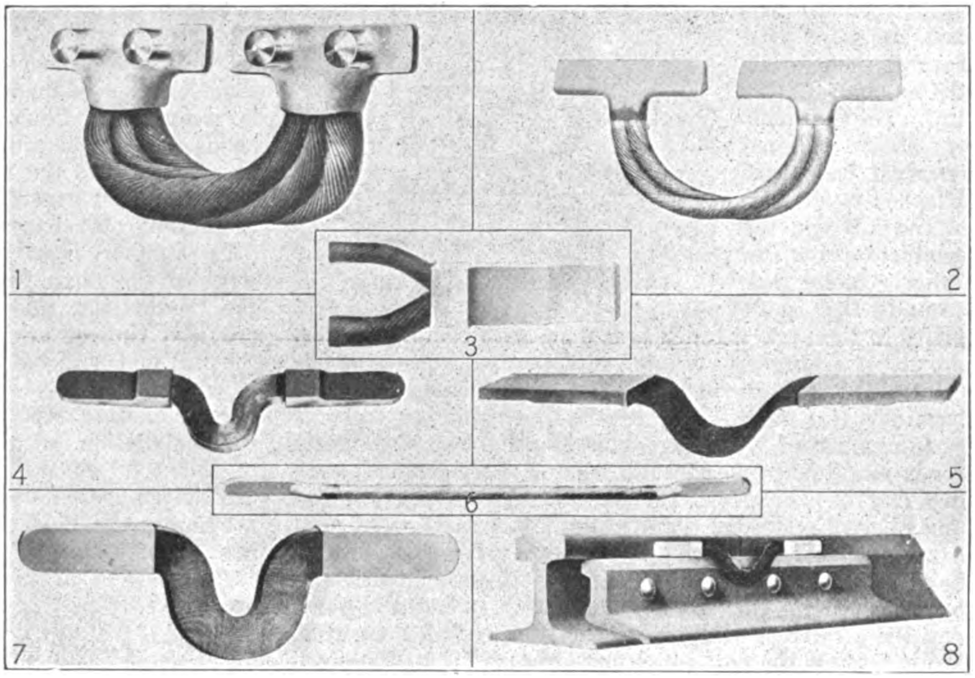
Soldered Bonds for Track Bonding

The Use of Soldered Type Bonds Is Decreasing But There Are Many Places Where Their Use Is Found Most Convenient

BY G. H. MCKELWAY
Engineer of Distribution, Brooklyn Rapid Transit System

THE use of solder for attaching the terminals of bonds to the rails was much more common a few years ago than it is now, although it is still much used, but generally in rather special cases. About 1905 or 1906 the practice became quite universal and at that time many engineers predicted that the soldered bond would become the standard American type and would eventually supersede the other types. It was claimed that the large contact surfaces permitted a low current density and a low contact resistance; that there was not the opportunity for moisture to work in between two soldered surfaces and so to deteriorate the contact, as there is in the case of the joint between an expanded terminal bond and the rail; that the bond, if well installed in the first case, should maintain its excellence of contact indefinitely, and lastly, that the condition of the contact could always be ascertained by either measuring the electrical resistance or by attempting to pull the bond from the rail.

Other points in favor of the soldered bond were: that in most cases a shorter bond could be used than with any of the expanded terminal bonds then on the market, thus making a saving in first cost; that short bonds could be applied to the head of the rail and would be of so little value that it would not pay to steal them; that no holes would be drilled in the rail and so it would not be weakened by the installation of the bonds, and that no elaborate testing instrument would be necessary in making periodic tests to see whether or not the bond contacts were deteriorating, as the inspector need merely see that the terminals had not loosened from the rail and occasionally kick one to assure himself that the contact was still in good condition.



TYPES OF SOLDERED BONDS

1—Soldered stud rail bond. 2—Tapered terminal bond for outer face of ball of rail. 3—Soldered terminal bond with two conductors of different size. 4—Bond with flat ribbon conductor. 5—Bond for underside of rail flange. 6—For bonding around splice bar. 7—Bond with thin copper strips for conductor. 8—Application of soldered bond to head of rail.

Soldered bonds are made in several forms and are applied to all parts of the rails, although the head is the place most frequently used. Two of the accompanying illustrations show bonds adapted for use on the head of the rail. Both consist of two soldered terminals connected by a short loop of copper wire or ribbon. In one case the loop is arranged to hang down vertically and in the other to stand out horizontally. Of the two types the former is more frequently used and is justly the more popular as it presents less surface to the blows of anything hanging from the cars which might strike the bonds and tear them off. It is not often that the brake rigging or other portions of the car equipment get down low enough to harm the bonds, but it takes only one such occurrence to do wholesale damage to the bonds on long sections of track before the trouble is noticed and rectified. In order to avoid such damage the terminals of some bonds are made thinner at the top than at the bottom so as to cause the blows to glance off instead of striking them squarely.

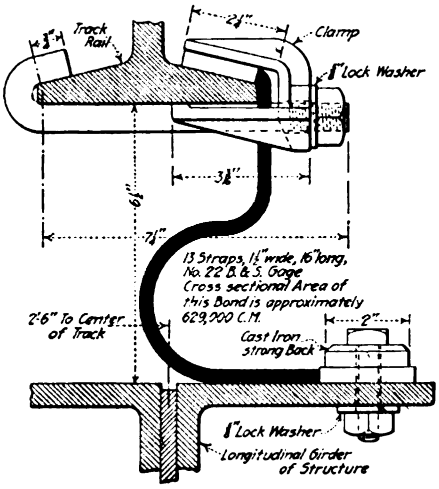
Although in most cases the type of bond with the vertical loop is the one that should be chosen, yet the horizontal type must be used with rail joints of the Weber type which project out too far to permit of the vertical loop being bent across them.

Of the two forms made with the vertical loop it will be found that the bonds made with wire conductors, if the size of the strands has been properly chosen, will generally outlast those having the terminals connected by ribbons, as the ribbons are much more sensitive to vibration and are therefore more easily broken.

There are two methods of inserting the wires into the terminals. In one they enter horizontally and in the other case vertically. The latter is to be preferred, as the bond in the wires at the entrance to the terminal which is necessary to bring them in horizontally, slightly weakens them.

The same type of bond that is attached to the head of the rail and projects out horizontally from it is also suitable for use on the base of the rail. Where the rails are held together with fish plates without shoulders, which cover up the base of the rail, these bonds can be installed on the top of the base, the loop projecting up. The terminals can be installed between the fish plate and the edge of the base. Such plates, however, are but seldom used now so that if these bonds are used as foot bonds they must be installed on the bottom surface of the base. This position makes possible the use of much broader bonds than when they are installed elsewhere but the bonds are hidden in the ballast and cannot be renewed or repaired without going to much trouble and expense. The result is that when such a bond fails another one is installed at another location on the rail instead of trying to do anything with the old one.

When installing such bonds on new rail the best way is to invert the rail and attach the bonds to long lengths of the rail, then set the latter up in place and spike it. Soldered foot bonds have given good service on third-rails but are hardly practicable for running rails, not only because of the difficulty of installing and repairing them but because they are liable to be damaged when the ballast is tamped around them or by the creeping of the rail. The terminals of other soldered terminal bonds are attached to the web of the rail and the conductors are run either under or around the joint plates in the same manner as is done with compressed terminal bonds, the only difference in the two types of bonds being in the form and manner of attachment of the terminals.


⅜"
Track Rail
2¼"
Clamp
⅞" Lock Washer
3⅛"
6¼"
7½"
13 Straps, 1½" wide, 16" long, No. 22 B. & S. Gage Cross sectional Area of this Bond is approximately 629,900 C.M.
2'-6" To Center of Track
2"
Cast Iron Strong Back
⅞" Lock Washer
Longitudinal Girder of Structure

BONDING TRACK TO STRUCTURE

A number of years ago one of the electrified steam roads made quite a thorough test of short copper bonds, one end of which was soldered to the web of the rail and the other to the joint plate. It was thought that a saving in first cost would be shown with this form of bond as it required so little copper. However, two bonds were needed for each joint, one at each end of the plate, and the labor cost of applying the two bonds far exceeded the saving in the cost of copper. In addition, the short bonds soon failed owing to the relative movement between the joint plates and the rail.

All of the bonds so far described are attached to the rail in the same manner, that is, by sweating them on. The rails at the points where the bond terminals are to be applied are first cleaned and polished, preferably with an emery wheel, although filing or chipping will do. These points of the rail are heated with blow torches until they assume a violet or blue color which indicates a temperature of about 500 or 550 deg. Fahrenheit. Occasionally, the rail ends can be cleaned with a sand blast, which makes a first-class job, but it is very seldom that such equipment is available for use. After heating, the locations for the terminals are tinned by first brushing them with acid or other soldering flux and then by rubbing on a stick of solder. This is repeated until the points are well tinned and then the bonds are put in place and clamped there with "C" clamps. More heat is then applied from the torches and wire solder is run in behind and around the edges of the terminal. Probably the best work is done when the bond terminals are clamped only tightly enough to insure their staying in place and then are brought up as tightly as possible after the solder has a chance to penetrate between the terminal and the rail. As the bond terminals are heavily tinned this will seem to be an unnecessary refinement to many, but it is a safer practice than that of setting the clamp up to its maximum tightness at first. Some of the terminals are knurled so that they will become imbedded slightly in the solder, and the chipping of the rail leads to similar results on the other side of the film of solder. One make of bond terminal is surrounded with wire mesh which serves not only to hold the copper ribbons together but also to act as a bond between the rail and the terminal by having its wires securely surrounded by the solder.

In order to be able to remove the clamp almost as soon as the soldering is completed, it has been the practice with some bonders to cool off the bonds with water, but the sudden shrinkage thus set up is liable to make the rail and the terminal pull apart and thus weaken the connection between them. It is safer to have plenty of clamps so that the work can go on and at the same time the bonds can cool slowly.

There are other soldered bonds which do not belong in the same class and which in fact do not belong to any single class as they are installed by first expanding the terminals in holes drilled in the rail and then by soldering them in place The first of these bonds were brought out several years ago and were never widely used, although some companies made them standard and used them in large numbers. They were similar to ordinary compressed bonds except that the terminals were tinned. After being compressed into the rail the solder on the terminals was melted by heat generated by the ignition of a small charge of thermit placed around the end of the terminal.

In another type, designed to be used on and in the webs of the rails, two small terminals project out from the regular flat soldered terminal. These studs, which are also tinned, are compressed into holes drilled into the rail and soldered there, the heat being supplied from blow torches.

Still another type is practically a twin terminal bond for installation on the head of the rail, the terminals of this bond too being tinned. The studs of this bond are driven into holes in the rail head by the blows of a hammer and then the solder on the stud is melted by heat from a torch.

One class of work where soldered bonds have been used on a large proportion of the work is in the bonding of elevated structures or steel bridges so as to protect their members against electrolysis or to add the conductance of the steel in the structure to that in the rail. These bonds are nearly always made of flat copper laminations with the ends of the strips soldered together and also surrounded by a strip of copper soldered around the other strips. The places where the bonds are to be placed are first cleaned and then the bonds are soldered to them in the same manner as to track rails. The vibration of the bridges or other structures is very hard on the soldered connections so that sometimes the soldered contact is not relied on solely but is reinforced by either a clamp or a bolt. This reinforcement not only holds the surfaces closely together and reduces their movements relative to each other, thereby preserving the soldered connection, but, if the latter is broken, the mechanical connection prevents the bond from falling to the ground below and becoming lost. On the other hand, many men dislike the use of the bolted or clamped contact for the reason that there is no way of proving that the bonders have made a good job of the soldering as the bonds will stay in place even if no solder has been applied to their terminals.

Where both the rails and steel structure are bonded it is the custom to install "equalizer" bonds between them so that the current density will be approximately the same in both. These bonds are generally of the soldered type, either with or without the bolt or clamp, and run from the base of the rail to the steel structure. These bonds are frequently installed only on every third length of rail as that is often enough even when heavy currents are taken by the trains. Where connections between the rail and the structure are made on sharp curves where the rail is worn rapidly away by the grinding of the car wheels, and so must be renewed at frequent intervals, it is much simpler to sweat the bond terminals off of the old rail and on to the new one than to renew expanded terminal bonds every time that the rails are changed.

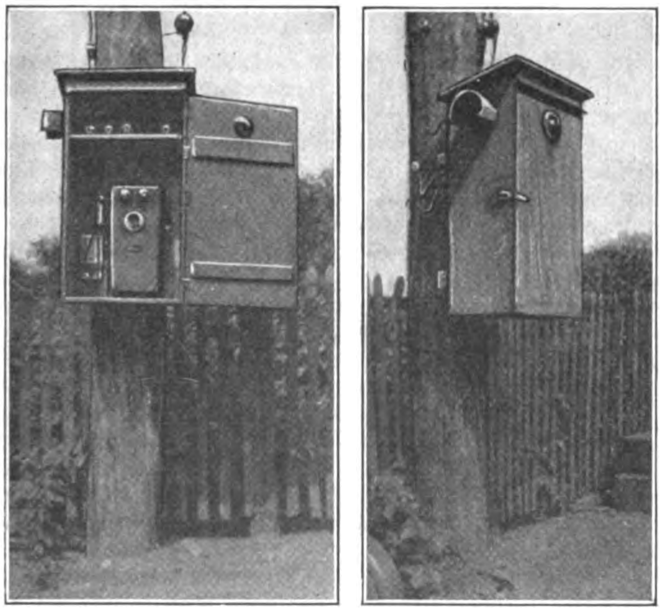
Manganese or other very hard rails are still often bonded with soldered bonds, but, with the exception of structure or equalizer bonds, the "plain soldered" bond has generally given away to some other type. It should be understood, however, that the "plain soldered" bond just referred to does not include the type where the bond is installed by expansion of the terminal as well as by soldering it to the rail.

Combined Signal and Telephone Box

For Communicating With Car Crew While en Route Dispatcher Causes Signal to Be Displayed in Box Which Contains Telephone

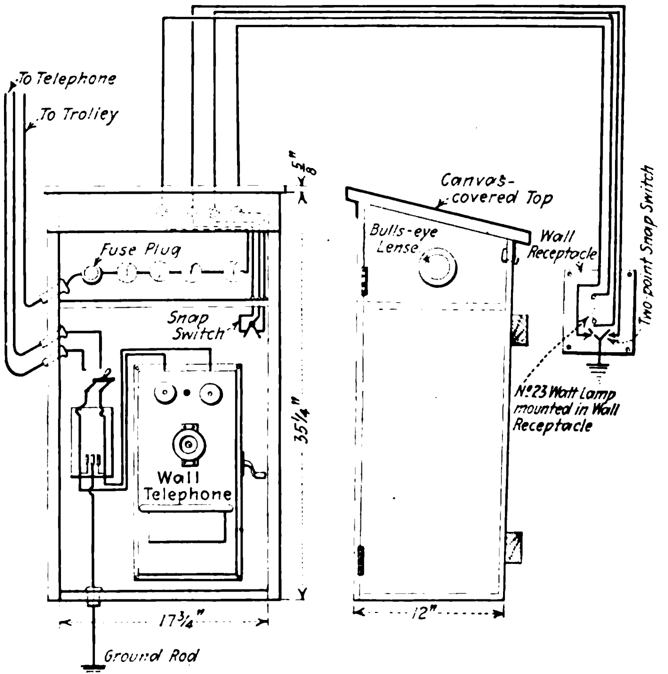
By Harry Restofski
West Penn Railways, Connellsville, Pa.

IT FREQUENTLY is necessary for the Uniontown dispatcher of the West Penn Railways to communicate with a car crew while it is en route to the terminal of that line. As this terminal is near one of the car shops in the outskirts of the city, it has been customary for the dispatcher to call the car shop and ask a man to notify the conductor to call up the dispatcher from the shop telephone as soon as he arrived. It frequently was inconvenient for a man to leave his work in the shop to perform this duty and it also caused a loss of time not only on the part of the shop men but of the crew as well. In order to meet this situation, R. S. Cooper, head of the signal department, designed the combined signal box and miniature telephone booth with its circuits as shown in the accompanying illustration.



INTERIOR AND EXTERIOR VIEWS OF COMBINED TELEPHONE AND SIGNAL BOX

The box is built of wood and is located on a pole adjacent to the track in front of the car shop. It is provided with two compartments. In the upper one is a bank of four lamps, protected by a fuse plug, energized from the trolley wire. This lamp circuit is controlled by two two-point switches, one located in the box and the other adjacent to the telephone in the carhouse. At each side and in front of this compartment red bull's-eye lenses are installed.

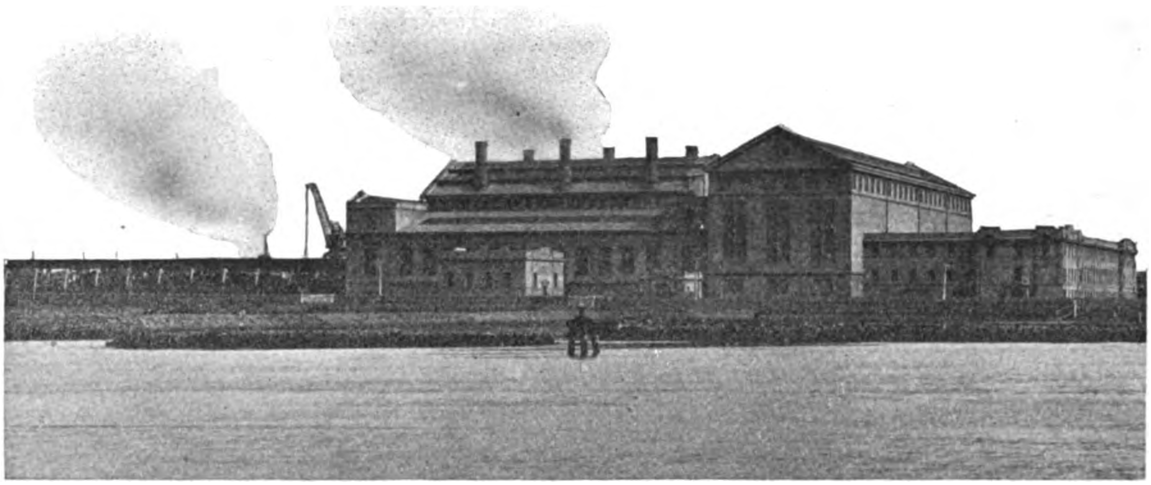


TELEPHONE AND SIGNAL CIRCUIT FOR SIGNAL BOX

In the lower compartment of the box a wall telephone with protecting equipment is installed as well as a telephone switch and a two-point switch in the light circuit.

When the dispatcher desires to communicate with the crew he calls up the shop by telephone. The shop man who answers this call snaps his two-point switch and thus closes the circuit to the lamps in the signal box. A pilot light located just above the two-point switch in the carhouse, and connected with the lamps in the signal box, burns when the signal lights are lighted and thus provides an indication as to satisfactory operation. When the lamps are burning the bull's-eye lenses show red, and the signal crew is thus notified to stop and call up the dispatcher. The box is located at the end of a block so that a stop to operate the signals must always be made at this point. When the crew arrives the conductor connects his telephone, calls the dispatcher and when through turns out the lights by means of the two-point switch and disconnects the telephone from the line.

The Engineering Council, which represents the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Society for Testing Materials, has been elected to membership in the Chamber of Commerce of the United States. The council has appointed to represent it in the national chamber H. W. Buck, of Viele, Blackwell & Buck, consulting engineers, New York City, and as alternate I. E. Moultrop, of the Edison Electric Illuminating Company of Boston.

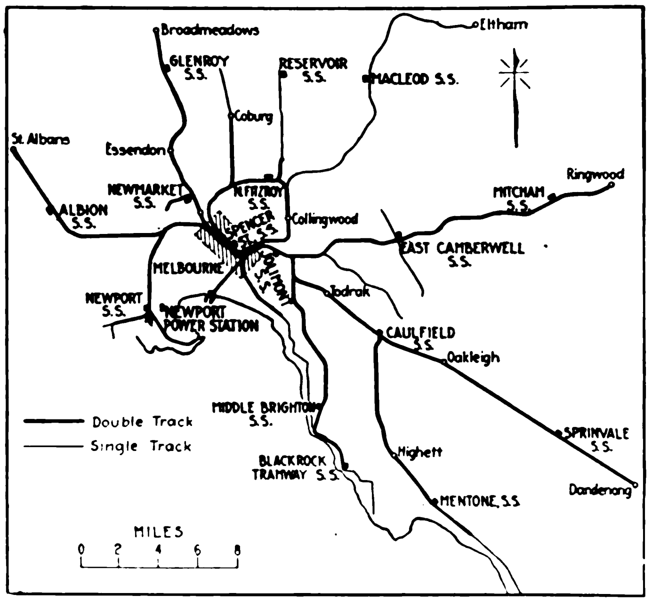


GENERAL VIEW OF NEWPORT POWER STATION OF THE MELBOURNE SUBURBAN RAILWAYS

Melbourne Suburban Railways Electrified—I

Australians Employ 1500-Volt Direct-Current System with Overhead Trolley—Some Interesting Features of the Power House, Distribution System, Substations, Tracks and Rolling Stock Are Described

THE Suburban Railways System of Melbourne, Victoria, comprising approximately 350 single-track miles, including sidings, has been electrified during the last few years. The electrified lines comprise about 155 miles of track route, of which 110 miles is double tracked and the remainder is single, triple, four tracked and six tracked. The project was first taken under consideration in 1908 and the firm of Merz & McLellan, consulting engineers, London, engaged by the Minister of Railways of the Province of Victoria to make a report on the proposed electrification of the system. After a very comprehensive report had been made by the engineers the subject was dropped for a time because the prospective financial results did not justify the proceedings at that time. But it was revived a few years later under the premiership of Hon. W. A. Watt, and after close investigation the Parliament decided to proceed with the conversion to electric traction of the whole suburban railways system. The basis of this decision was the use of the 1500-volt direct-current system, using overhead contact wires. A series of articles published this year in the Australian paper, *The Commonwealth Engineer,* which were written by E. P. Grove, representative of the consulting engineers, give a very full account of the installation and from them this article is abstracted.


Broadmeadows
Eltham
GLENROY S.S.
RESERVOIR S.S.
MACLEOD S.S.
Coburg
St. Albans
Essendon
NEWMARKET S.S.
N. FITZROY S.S.
SPENCER ST. S.S.
Collingwood
ALBION S.S.
Ringwood
MITCHAM S.S.
EAST CAMBERWELL S.S.
MELBOURNE
NEWPORT S.S.
NEWPORT POWER STATION
Toorak
CAULFIELD S.S.
Oakleigh
MIDDLE BRIGHTON S.S.
Double Track
Single Track
SPRINVALE S.S.
BLACKROCK TRAMWAY S.S.
Highett
Dandenong
MENTONE S.S.
MILES
0 2 4 6 8

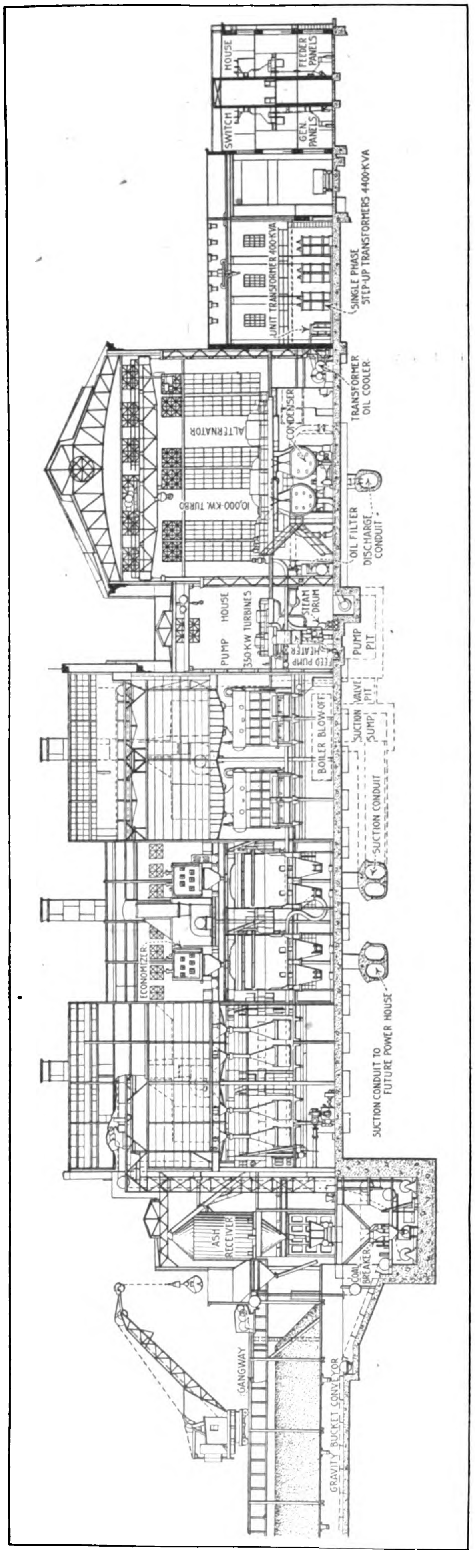
SUBURBAN RAILWAY SYSTEM OF MELBOURNE

NEW POWER HOUSE CONSTRUCTION

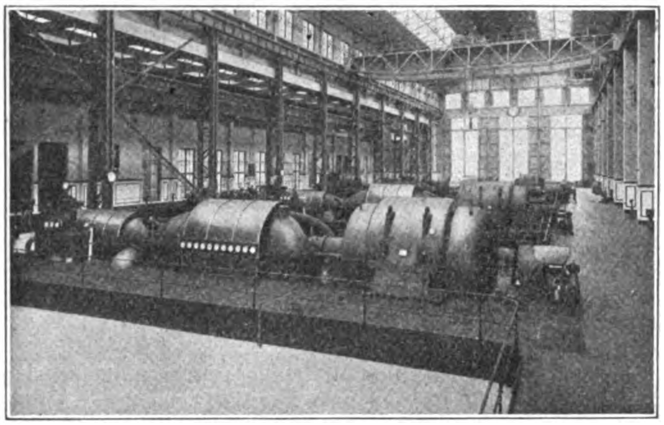
One of the major parts of the electrification plan was the construction of a 60,000-kw. generating station. It was located on the River Yarra, where an ample supply of condensing water was afforded, the name of the near-by town of Newport being adopted to name the power plant. The location of this site with respect to the general suburban railway system may be seen in the accompanying map.

Differing from America's practice which tends strongly toward fewer units of large capacity rather than a larger number of units of smaller capacity, this Australian station is laid out to accommodate six steam turbine generating units of only 10,000 kw. normal rated capacity. These generators have a maximum continuous output of 12,500 kw. at 0.95 power factor with a temperature rise not exceeding 45 deg. C. on an intake air temperature of 25 deg. C. These units generate 25-cycle three-phase energy at 3300 volts pressure, which is stepped up to 20,000 volts. At this voltage, it is transmitted to the several substations.

Each of the two boiler houses which are laid out at right angles to the turbine room is equipped with twelve boilers of Babcock and Wilcox water-tube marine type. The twenty-four boilers are arranged on either side of a central firing aisle and grouped in pairs, and the gases from each pair are handled by one fan and one chimney, both of which are placed immediately over the corresponding boilers. But each boiler is equipped with its own return tube superheater and Green economizer. Pockets are provided below the economizers for collecting soot and flue dirt which is extracted by a suction system which is also employed for handling the ashes.


SWITCH HOUSE
FEEDER PANELS
GEN. PANELS
UNIT TRANSFORMER 400-KVA
SINGLE PHASE STEP-UP TRANSFORMERS 4400-KVA
TRANSFORMER OIL COOLER
ALTERNATOR
CONDENSER
10,000-KW. TURBO
OIL FILTER
DISCHARGE CONDUIT
STEAM DRUM
PUMP HOUSE
350-KW TURBINES
FEED PUMP HEATER
PUMP PIT
VALVE PIT
SUCTION SUMP
BOILER BLOWOFF
SUCTION CONDUIT
ECONOMIZER
SUCTION CONDUIT TO FUTURE POWER HOUSE
ASH RECEIVER
COAL BREAKER
GANGWAY
GRAVITY BUCKET CONVEYOR

LONGITUDINAL SECTION THROUGH NEWPORT POWER STATION

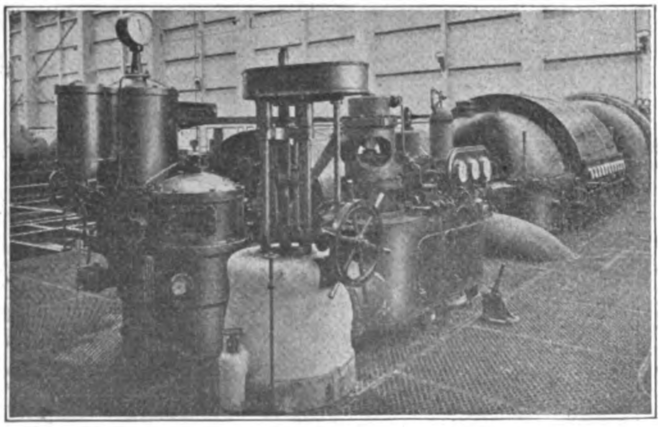


TURBINE ROOM IN NEWPORT POWER STATION

One of the more interesting features of the plant is the equipment for handling ash and coal. Coal is delivered to the plant in 15-ton bottom dump cars, which deliver their loads into four 50-ton track receiving hoppers, two opposite the end of each boiler room. The sidetracking is so arranged that after dumping their loads the cars can be returned to the main line by travel in a continuous direction without switching back. At present a steam locomotive is used for shifting cars in this service, but it is ultimately planned to electrify the sidings at the power plant and employ two electric locomotives.

From the receiving hoppers, the coal passes down through crushers, from whence it is discharged into bucket conveyors, three in number, of which the two outside ones carry the fuel to the two rows of overhead bunkers above each firing aisle. These overhead bunkers supply a capacity of 1500 tons for each boiler house, and the coal is discharged from them by gravity chutes direct into the boiler receiving hoppers.

A 10,000-ton coal storage area is also provided opposite each boiler house. For delivering coal to these storage areas, it is received in the same track hoppers mentioned before, from which the central bucket conveyor carries it up to a structure extending over the storage area from which it is dumped as required. This same conveyor continues to the end of the structure and passes down into a tunnel underneath the structure and returning at this level to the room underneath the main track receiving hopper. Coal can thus be taken from the storage pile underneath the structure by means of chutes which discharge by gravity onto this bucket conveyor and carried back to the power plant where it is dumped on the two conveyors leading up to the overhead bunkers. Or, as a duplicate system, the coal from the storage area may be picked up by a traveling crane and grab bucket which is mounted on the structure



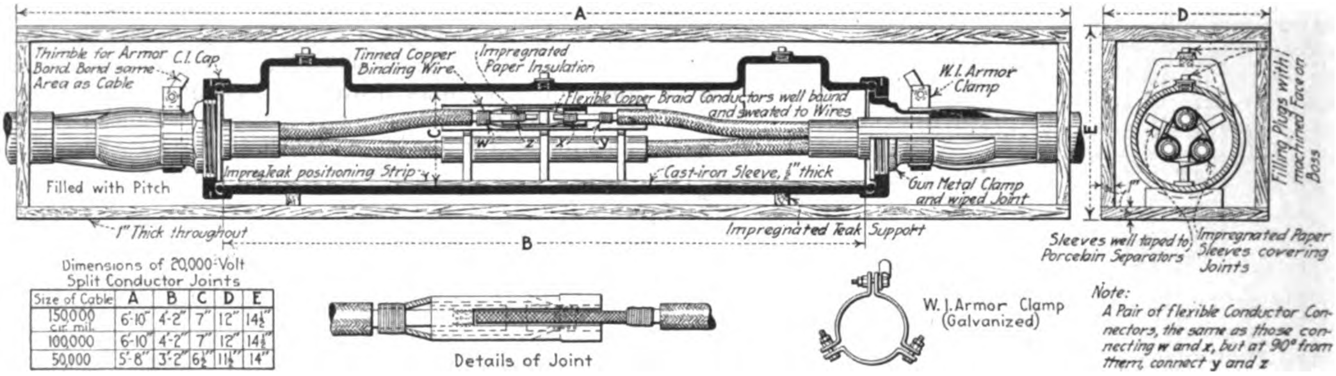
STEAM END OF ONE OF THE 10,000-KW. TANDEM TURBO-GENERATOR UNITS over the storage area, and discharged into an auxiliary hopper which in turn discharges into the main receiving hoppers. One of these traveling jib cranes and bucket conveyor systems is provided for each boiler room.

The ashes from each boiler fall from the stoker into a bunker in the basement, capable of storing an accumulation over some twelve hours of working at full load. A portable crusher for breaking up clinkers is operated on a narrow gage track below the ash bunkers and discharges into a pipe through which the ashes are conveyed by air suction to elevated ash receivers outside and at the end of the boiler houses. From here they are discharged by gravity into cars on the main coal siding.

The six steam turbines, of which four are installed at present, are of the Parsons pure reaction type with a single-flow high-pressure cylinder and double-flow low-pressure cylinder, and they operate at a speed of 1500 r.p.m. Two auxiliary turbines of 350-kw. capacity each, delivering 25-cycle three-phase current at 440 volts, are used mainly for starting up the condensing plant auxiliaries prior to getting the main turbines under way. When the latter are in operation, the 440-volt supply for all station auxiliaries is taken from main transformers or from a separate unit transformer provided for each main turbine generator unit.

DISTRIBUTION SYSTEM

From the Newport power house thirteen 20,000-volt supply lines radiate to the fifteen railway substations. All of these lines are of the split-conductor type of paper-insulated, lead-covered and wire-armored cable, having a protective serving of heavily compounded Hessian tapes between the lead and the armoring and again outside the armoring. They were furnished by the British Insulated & Helsby Cables, Ltd., of Prescot, England.


A
B
C
D
E
Thimble for Armor Bond. Bond same Area as Cable
C.I. Cap
Tinned Copper Binding Wire
Impregnated Paper Insulation
Flexible Copper Braid Conductors well bound and sweated to Wires
W.I. Armor Clamp
w
z
x
y
Filled with Pitch
ImpregTeak positioning Strip
Cast-iron Sleeve, ½" thick
Gun Metal Clamp and wiped Joint
1" Thick throughout
Impregnated Teak Support
Filling Plugs with machined Face on Boss
1"
Sleeves well taped to Porcelain Separators
Impregnated Paper Sleeves covering Joints
Details of Joint
W. I. Armor Clamp (Galvanized)

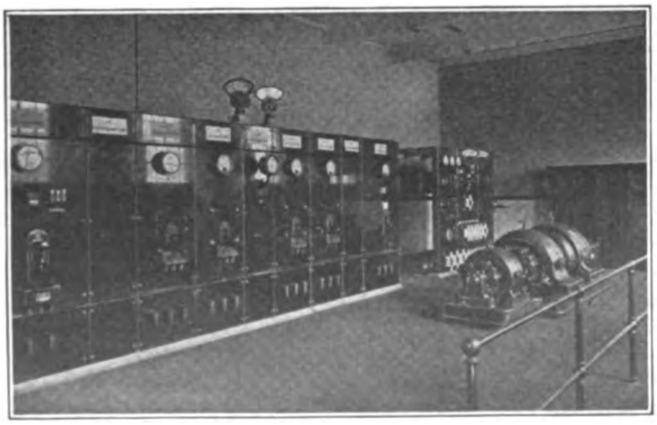
Dimensions of 20,000-Volt Split Conductor Joints

Size of Cable	A	B	C	D	E
150,000 cir. mil.	6'-10"	4'-2"	7"	12"	14½"
100,000	6'-10"	4'-2"	7"	12"	14½"
50,000	5'-8"	3'-2"	6½"	11½"	14"

Note: A Pair of flexible Conductor Connectors, the same as those connecting w and x, but at 90° from them, connect y and z

METHOD OF SPLICING 20,000-VOLT SPLIT CONDUCTOR CABLE

These cables are laid mainly in trenches in the streets owing to the very limited space available along the right-of-way. The trench averages 4 ft. deep, and the cables are laid at a distance between centers of 21 in. and are covered by red gum boards 9 in. wide and 1½ in. thick, laid about 4 in. above the cable. Joints in the cable are made in cast-iron boxes fitted with covers to provide for filling them with compound so that air pockets will be eliminated.



FEEDER CONTROL SWITCHBOARD AND LIGHTING AND BATTERY CHARGING MOTOR-GENERATOR SET WITH DIRECT-COUPLED BOOSTER

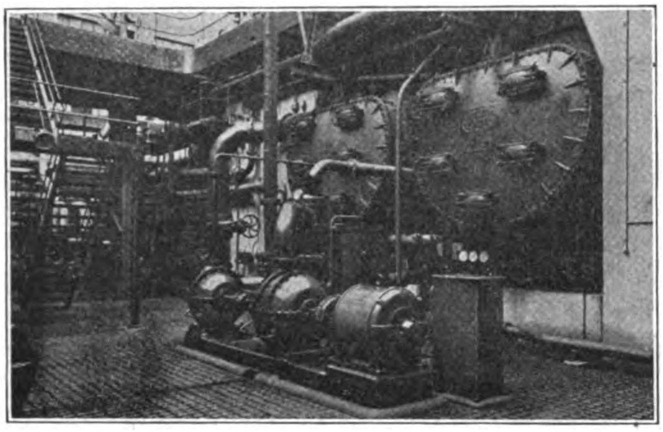
FIRING AISLE OF THE NEWPORT STATION BOILER ROOM

All of these supply lines to the various substations except that to the Albion substation are laid underground their entire length. Only the first mile of the line to the Albion substation is underground, and from this point, the two cables supplying this substation are connected to two overhead transmission lines carried on high steel masts of construction similar to those carrying the contact wires on electrified tracks. These masts will be so arranged that by the introduction of steel bridges between them, the track can be electrified and doubled if necessary.

SUBSTATION CONSTRUCTION AND EQUIPMENT

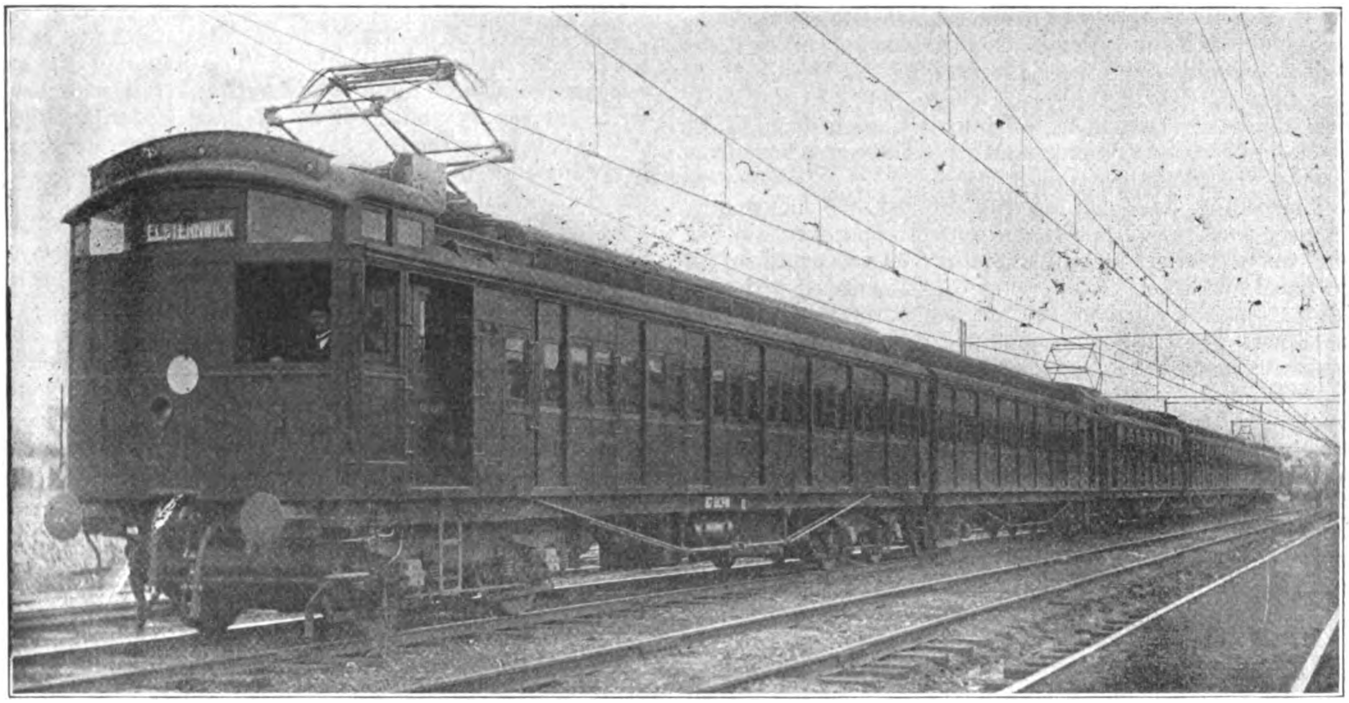
The thirteen railway substations are variously equipped, some of them with temporary installations on account of the difficulty which was experienced in securing the specified machines. The installation in the various substations comprises from two to four 22,000/1500-volt rotary converters of 1500, 2250 or 3000-kw. capacity, and one substation has two 350-kw., 600-volt rotaries. Some of these were manufactured by the Siemens Brothers Dynamo Works, Ltd., of Stafford, England, and some by the General Electric Company, Schenectady.

The substation buildings are constructed of brick and stucco, with flat concrete roofs covered with malthoid. Each building comprises two or more rotary converter bays with an unloading bay, and, in the case of the central substations, a bay set apart for signaling equipment. An annex forms the switchhouse and operating gallery. Each rotary converter is installed in a separate compartment and during the starting up and operation of any particular rotary, the



TWIN CONDENSERS WITH AIR AND WATER EXTRACTION PUMPS

chamber is screened off and the locking gear on the entrance gate is interconnected with the 20,000-volt oil switch controlling the supply to the rotary converter transformers, and with the operating levers controlling the 1500-volt d.c. switch gear.



STANDARD SIX-CAR TRAIN WITH THREE MOTOR CARS

The switch house is three stories high. The ground floor is used for the installation of the cable terminal boxes, grounding switches, and potential transformers. The second floor is used for the oil-switch cells and current transformers, and the third floor for busbar chambers.

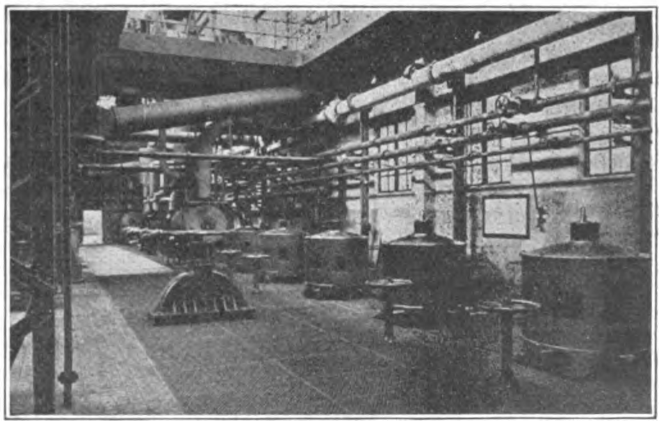
The operating gallery is also provided for on the second floor, and the 20,000-volt oil switches, 1500-volt d.c. switch gear and the 2200-volt signal supply switching are controlled from this point. The 15,000-volt d.c. positive busbar and switch gear is located underneath the operating gallery, and the negative and equalizer busbars are placed in the basement below the rotary converters.

The signaling bays are equipped with 65-kw. motor-generator sets for providing a supply of 2200-volt single-phase current from the 440-volt side of the three-phase auxiliary transformers to the signaling circuit. These motor-generators consist of a three-phase induction motor connected by slip coupling to a 2200-volt single-phase 25-cycle generator having the exciter on the same shaft. The generator shaft is also solid coupled to a 110-volt d.c. motor, so that if the a.c. supply fails the signal current will be maintained from storage batteries which are of 500-amp.-hr. capacity.

THE PERMANENT WAY

Normal permanent way construction consist of 100-lb. "T"-section rails double spiked to untreated ties of hard red gum, ironbark or boxwood, dimensioned 9 ft. x 10 in. x 5 in. and spaced 2 ft. 10 in. centers at intermediate ties and 8 ft. 8 in. centers at joints. The approximate depth of bluestone ballast is 15 in., of which 10 in. is under the ties. The track gage is 5 ft. 3 in. Tracks are centered 11 ft. 8 in. apart with provision for increase of this dimension. Minimum structure clearance above the platform level on tangent track is 7 ft. from the center of the track. This dimension is increased to 8 ft. on curves of 800-ft. radius. The minimum curve is on the Flinders Street (Melbourne) viaduct and this has a radius of 600 ft.

The line between Sandringham and Broadmeadows, which may be taken as typical of the system, contains a maximum grade of 2 per cent. Between North Melbourne and Broadmeadows, a distance of approximately 9 miles, the average grade is 0.85 per cent. The maximum permissible speed on this section is 52 m.p.h., with restrictions on



CIRCULATING PUMP ROOM WITH VERTICAL SHAFT MOTORS MOUNTED AT THE FLOOR LEVEL curves to suit a maximum track super elevation of 3 in. and restrictions at junction work to suit train operations. Practically all curves have a 150-ft. easement approach.

ROLLING STOCK EQUIPMENT

Electric locomotives are not used in connection with the electrification of the Melbourne suburban railways, but instead multiple-unit control motor cars. The practice followed is to operate the normal six-car train with a make-up consisting of a motor car with its controlled end outward at each end of the train, and with a third motor car placed about the center of the train. Thus about one-half of the cars have been equipped with motors, while a number of the trailers are equipped with control apparatus at one end. The balance of the cars are equipped with the necessary cables for multiple-unit control through any train, but without control apparatus.

The rolling stock for the electrical operation has been provided by equipping the old steam road coaches with new trucks and motors, and no new rolling stock has been purchased. Approximately 45 per cent of the electric rolling stock will consist of compartment cars with swing doors, the remainder being a combination type having sliding doors and cross-seats, with a corridor running the length of the passenger portion of the cars. The majority of the latter type of cars are partitioned off into sections to form smoking and non-smoking compartments. These cars seat from seventy to eight-four people.

The rolling stock equipment comprises 359 motor cars, fifty-six trailers equipped with control apparatus and 287 non-control trailers making a total of 702 cars equipped for electrical operation. Each motor car is equipped with four GE-237 motors rated at 140 hp. and normally a 750-volt machine. The two motors mounted on one truck are permanently connected in series and operate as one unit, either in series or in parallel with the two motors of the second truck. Among other equipment placed on the motor cars are the pantograph, dynamotor control apparatus and air compressor for Westinghouse brakes.

The weight of the motor cars completely equipped is from 105,000 to 107,000 lb., depending on the type of car, and the weight of the trailers equipped with the control apparatus is from 58,000 to 62,000 lb. The weight of the trailers not equipped with controllers is from 57,000 to 61,000 lb.

The car bodies are of combination construction, having a steel underframe and bulkhead and the remainder of the body framing of Australian wood or teak. Steel is also used for the exterior and interior panels, and for the headlining. Electric lights have been installed in all cars by modifying the existing Pintsch gas fittings, two of which which are provided in each compartment with total of 80 cp.

The motor trucks used are equipped with four 42-in. wheels, and arranged for inside suspension of the motors. The axles are 6 in. in diameter, and the journals are 9 in. x 5 in. The brakes are of the clasp type acting on both sides of the wheel.

A second installment of this article dealing with the overhead construction which embodies many unusual and unique features will appear in a later issue of ELECTRIC RAILWAY JOURNAL.

In testimony of the effectiveness of the efforts work of its employees interested in the safety campaign, the Ford Motor Company states that with a 26-per cent increase in number of employees between October, 1916, and May, 1919, there has been an 80-per cent decrease in lost-time accidents. For the year ending July 31, 1919, the plant had only one accidental death, a remarkable record for an average of 50,000 employees.

Removing Track with a Small Force of Laborers

By A. G. DRURY
Cincinnati, Ohio

A PUBLIC utility having failed to agree with the municipality in regard to the renewal of a franchise which had expired, permitting operation over two streets, was required by the city to remove its tracks from these streets. There was about 3000 ft. of double track on each street, making a total of 12,000 ft. of single track.

The line on one of these streets paralleled a line one square distant on which the company had a franchise, with the result that in this case the two lines owned by the same company were essentially competing against each other. The company was glad to be relieved of this operation with attendant cost of upkeep, renewals and repairs, to say nothing of the repaving of parts of the street.

On the other street, the situation was different. Certain parts of the line were more than a quarter of a mile from the nearest car line, which meant some loss of patronage. However, the tracks had to come up.

The removal of the tracks on the first street was accomplished in the regular method. The joints of the rails were removed and the single lengths of rail were loaded on a flat car by sliding them by hand up an incline of short skids on to the car.

By the time the company was ready to take up the rails on the second street a distinct shortage of labor had developed, and that which remained was not so efficient as the former gang. In fact, the company did not have enough men to load the rail in the old way, making even what might be termed poor progress.

The track on this street was of 70-lb. rail in 30-ft. lengths. The conductor on the car which hauled the flat car devised a way for loading the rail which worked out very well in this case.

The storage yard to which the scrap rail was hauled was on another line beyond the south end of the street under discussion. The gang therefore began at the north end of the street and would free first the right hand rail, then the left, from the ties and street in strips of seven rail lengths—that is with about 210 ft. of rail jointed together, the joint between the seventh and eighth rail being broken. The rail was freed from the ties and street by ordinary hand jacks, being placed in holes dug about 20 ft. apart under the rail and forcing it up, the wood ties being knocked from the rail with sledge hammers, and cross-rods of iron being cut.

When a 210-ft. strip of each rail was thus freed from the street, the south end of the strip was fastened to the flat car by means of a chain, and the car would then drag it back on to the untouched part of the street. There it would be separated into its 30-ft. lengths by removing the intervening joints.

To load it on to the flat car, the men would lift the end of the rail on to the end of the flat car which would then be started in the direction of the rail, *i. e.*, north, thus forcing the rail to slide up on the car. Two men on the car and the remainder in the street would control the direction of the rail so that it would not slide off the car.

When two such strips, or fourteen rail lengths were thus loaded, the car would haul them to the storage yard where three men would unload them by sliding them off on skids, the piling up of the rail being left for another time.

When the cost of the job was figured up, this method showed only a slight saving in cost of removing track over the old method, but it did demonstrate that track could be removed with a much smaller gang of men than was usually employed for the work, which was a very important consideration at that time.

Correspondence on Washington Testimony

Letters from Messrs. Stotesbury, Mitten and Joyce with a Memorandum from Mr. Warner, Relating to Testimony Before the Federal Electric Railways Commission, Are Published

THE following correspondence is published with the permission of the Philadelphia Rapid Transit Company and the North American Company.

LETTER FROM MR. STOTESBURY

Chestnut and Fifth Streets
Philadelphia, Nov. 7, 1919.

T. E. MITTEN, President,
Philadelphia Rapid Transit Company,
Dear Mr. Mitten:—

The "Memorandum Re Philadelphia Rapid Transit Company" which I sent you some days ago cannot be considered as being anonymous because it was presented to one of my business associates by Mr. R. L. Warner of the North American Company, 30 Broad Street, New York City.

I shall be glad if you will make such answer to the North American memorandum as will set our friends straight in the matter.

Yours very truly,
E. T. STOTESBURY.

The memorandum above referred to reads as follows:

"(1) The American Electric Railway Association has presented before the Federal Electric Railways Commission, appointed by President Wilson, the universal need of increased revenues for electric railways, if these are to continue in operation. The testimony presented by a large number of bankers and operators two months ago were given considerable publicity throughout the country and the need of relief was generally conceded in editorial comment.

"(2) There has been a decided change in the situation during the last two months, due to statements emanating from Philadelphia quoting Mr. T. E. Mitten as entirely satisfied with a 5-cent fare in that city. These statements were generally seized upon by the radical press throughout the country as condemning the electric railway case through the testimony of one of its own operators.

"(3) So widespread has been discussion on this subject, that Mr. Mitten was summoned to appear before the Federal Electric Railways Commission two weeks ago and explain the reason for such satisfaction with a 5-cent fare in Philadelphia. Mr. Mitten did not appear in person but sent a special assistant to testify in his behalf. The general conclusion adduced from this testimony was not only that the 5-cent fare was satisfactory to Mr. Mitten, but that the results achieved by the Philadelphia Rapid Transit Company were due entirely to good management and could be duplicated in almost any other city in the country. These further statements designed to convict the entire industry of gross inefficiency in handling its business, were likewise given widespread publicity throughout the country.

"(4) Sentiment disclosed at the convention last week of the American Electric Railway Association was one of universal condemnation of the harmful publicity put forth from Philadelphia, resulting in several instances in failure of negotiations with public authorities for relief and the suggested retirement of the railway executives because of the resulting crisis. All the results of months of effort in public education have been largely minimized.

"(5) The only reason that can be assigned to Mr. Mitten's action, is that local conditions require his present stand; the facts as adduced from the reports of the Philadelphia Rapid Transit Company did not disclose that this company is more advantageously situated than many others. Maintenance and reserve for renewals are being sacrificed to pay dividends. The Philadelphia Company set up 15 per cent of its operating revenues for these purposes in 1918. It spent practically all of this amount for maintenance and its maintenance expenses per mile of track and per car were less than the corresponding figures in Cleveland, St. Louis and Milwaukee, where we know that maintenance and renewals were not at normal due to the conditions produced by the war. A number of the state commissions have specified as reasonable 10 per cent of the operating revenues for depreciation reserve in addition to the amounts expended for maintenance. Some traction company mortgages require that at least 20 per cent of operating revenues be used or set aside for maintenance and depreciation and engineering testimony generally is to the effect that this amount is the minimum if the property is to be maintained. The rising cost of wages and materials with stationary fares, has made 20 per cent inadequate. It is estimated that an average rate of fare of 6¼ cents would be necessary for the Philadelphia Rapid Transit Company to provide for maintenance and depreciation in accordance with accepted standards and pay 5 per cent dividends on its capital stock.

"(6) An erroneous impression of the prosperity of the Philadelphia Rapid Transit Company is obtained from the statement that it has paid a 5 per cent dividend on its capital stock. The common stock of the company amounts to only $30,000,000 and represents a very small portion of the total investment devoted to city transportation service. Philadelphia in addition to its 5-cent fare secures an additional charge of 3 cents for some of its transfers; the revenue from this source alone was nearly equal to the dividend paid last year.

"(7) Traffic conditions in Philadelphia are unusual; it is one of the few cities whose riding population increased during the war. The relative location of its industrial and residence districts enables cars to be loaded in both directions and its standards of loading are very far below the standards prescribed by public authorities for other cities. These traffic conditions, methods of accounting, and a large proportion of new cars, rather than superior management are responsible for the fact that the company has remained out of the receiver's hands.

"(8) The value for rate making purposes of the property of Philadelphia Rapid Transit Company is probably not less than $120,000,000. Its gross operating revenues for the calendar year 1918 amounted to about $31,000,000. Against this value and this gross, the Mitten management charged to depreciation account only $320,000. This is only 0.27 per cent of value and 1.03 per cent of gross operating revenues. For example, these figures are to be compared with those of United Railways Company of St. Louis. With a value approximately $60,000,000 and gross operating revenues about $13,600,000, maintenance charge was approximately 15 per cent of gross operating revenues, amounting to say, $2,040,000, and in addition thereto, charges to depreciation account amounts to $1,360,000, that is to say, 2¼ per cent of value and 10 per cent of gross operating revenues.

"(9) Had the Mitten management been equally conservative in regard to Philadelphia Rapid Transit Company, its charges to depreciation should have been over $3,000,000, this would have not only wiped out his so-called 5 per cent dividend on $30,000,000 stock, but would have resulted in a deficit of about $1,200,000 after paying interest charges. Upon the basis of sound bookkeeping the Philadelphia Rapid Transit Company is not paying dividends earned but paying dividends in liquidation. The accrued liability for future replacements is not less than $18,000,000. The liability shown on the balance sheet as of December 31, 1918, was about $1,150,000.

"(10) In conclusion

"(a) The allegations that a 5-cent fare in Philadelphia is remunerative have delayed fare adjustments in many other cities and subjected invested capital to further jeopardy;

"(b) Philadelphia requires fare increases as do all other cities and the public is being fooled into believing that increases are not contemplated;

"(c) The property cannot be kept in a proper condition of repair and the corporation cannot be made solvent on the present rate of fare;

"(d) The accrued liability for future replacements is not less than $18,000,000 or about $17,000,000 more than is recorded on the books of account.

LETTER FROM MR. MITTEN

Philadelphia Rapid Transit Company

Philadelphia, Nov. 10, 1919.

MR. E. T. STOTESBURY, Chairman, Board of Directors,
Philadelphia Rapid Transit Company.

The writer of the "Memorandum Re Philadelphia Rapid Transit Company" is evidently unfamiliar with both facts and figures so far as Philadelphia is concerned. The treatise is misleading and bristles with untruth and misrepresentation.

It was only after the Federal Electric Railways Commission had been in session two months and Chairman Elmquist became more insistent because of the fact that Philadelphia, in marked contrast to the experience of other street railway companies, had succeeded in continuing the 5-cent fare despite advancing costs, that I agreed to present

> **PHILADELPHIA'S ANSWER TO THE TRACTION QUESTION**
>
> Philadelphia's Plan is not offered as a cure-all for other cities. Every situation has its own peculiar difficulties to overcome, but in the light of this experience, it is plain duty to decry the thought that there is any cure for the present trouble excepting that which lies in honest dealing, efficient management, effective workers.

There are striking examples of that which follows dependence upon increased fares alone.

Efficiency in management and effectiveness in men must prevail, else other means of transportation will follow higher fares, street cars will be supplanted, and the industry destroyed.

Philadelphia's results under this management are contained in the report for the eight years ended Dec. 31, 1918. This report and the books from which it was derived were both subjected to the scrutiny of separate sets of able accountants representing the City of Philadelphia and the Public Service Commission of Pennsylvania. $31,337,807.04 representing 15 per cent of gross earnings was, by agreement with the city, set aside for maintenance and renewals. This fact speaks for itself and cannot be now confused by figure-juggling separate items of expenditure or appropriation.

More than 15 per cent of our greatly increased earnings are now being set aside. This represents about $10,000 per mile of used track per annum, which is in our opinion here adequate, and is far in excess of the average set aside by other street railway companies. In this connection it must be borne in mind that gross earnings here approximate $60,000 per mile per annum and that while our heavier track and better designed cars represent a greater capital investment, their effective life is much above the average.

The physical condition—cash reserves, and earned but undistributed surplus of P. R. T., will today compare favorably with any similar system.

Transit matters at St. Louis and Milwaukee are not in such condition as to warrant the assumption that the North American Company has yet produced a Moses to lead the industry out of its wilderness.

The North American "slide-rule" method of computation, which can be made seemingly to override facts and show an undue depreciation of property, will fail to impress Philadelphians who are familiar with the greatly improved condition of P. R. T. since the incoming of this management in 1910. The production capacity of the entire transportation system has been so greatly developed, and so substantial a proportion of physical improvement has been here paid from earnings, that the fixed charges, which in 1910 required 45 per cent, are now satisfied with but 28 per cent of the gross earnings.

Representing accomplishment and present sound condition:

The basic 5-cent fare has been retained. The average rate of 4.13 cents has been reduced to 3.98 cents—a saving to passengers of $7,941,983.73 in the period.

Wages increased 151 per cent—average day's pay now $5.51. Passengers carried per trainman increased 121 per cent. The riding habit has been increased 50 per cent. Accidents have been cut in half; the money saved from this item alone totalized $5,392,054.51.

Earned net income $8,079,698.23, of which but $3,597,578.50 was declared in dividends to P. R. T. stockholders—the remaining $4,482,119.73 remained undistributed in surplus account.

Increased effectiveness of men and management makes for economical expenditure and has, therefore, much to do with the results here secured, and also with the adequacy of the funds.

T. E. MITTEN, President.

NOTE: C. J. Joyce ably presented Philadelphia's answer at the Washington hearings. The contents of his accompanying report are significant.

LETTER OF MR. JOYCE

Philadelphia Rapid Transit Company

Philadelphia, Oct. 13, 1919.

MR. T. E. MITTEN, President.
Philadelphia Rapid Transit Company.

Report on Washington hearing of Federal Electric Railways Commission at which I acted as your representative follows:

The need of Philadelphia's testimony is shown by reference to the statement before the Federal Electric Railways Commission Aug. 15 by the Chairman of the Public Service Commission of Pennsylvania, Hon. Wm. D. B. Ainey:

> Let me express in no unfriendly spirit of criticism my astonishment at the incertitude and confusion with respect to remedies which appear in the testimony of the railways and allied interests which have been presented to you.

In the Philadelphia testimony the 5-cent fare was in no instance advocated as universally sufficient. Following your instructions to accentuate the fact that Philadelphia's plan is not offered as a cure-all for other cities, I was careful to make this fact clear in my response to all questions bearing on the subject, and that I succeeded in so convincing my audience is evidenced by the following, taken from the report of the hearings contained in the issue of the Electric Railway Journal, under date October 11, 1919:

> In his testimony the witness (your representative) emphasized the idea that the inference should not be drawn that the measures and practices adopted and followed in Philadelphia would have worked equally favorable results elsewhere.

The argument and brief of the Amalgamated Association of Street & Electric Railway Employes of America demanding union domination was forcefully presented, and was undisputed in the evidence prior to the introduction of Philadelphia's answer.

The spokesman for the Amalgamated Association attempted to show that the efficiency of trainmen has increased out of all proportion to the increase in wages, and their testimony and statements to that effect stand upon the records of the Commission entirely unanswered, save only for the evidence presented by the Philadelphia Rapid Transit Company which shows that in Detroit, the home of the Amalgamated Association, where the employees are fully organized, there was in 1919 an increase in wages of 113 per cent over 1910, while the production of the trainmen has increased only 30 per cent, and in Cleveland where the employees are also fully organized there was, during this period, an increase in wages of 110 per cent and an increase in the production of the trainmen of only 27 per cent. Philadelphia during the same period, by co-operative effort, increased wages 151 per cent co-incidentally increasing the production of trainmen 120 per cent.

Although a considerable portion of the time of the Commission was devoted to hearing testimony on so-called "service-at-cost" plans, all of which involved the valuation of the properties of the utilities, the fact remains that the only positive and constructive suggestion for the basis of such valuation, upon which the commission could, in its report, base a recommendation to the state and municipal authorities, was that which is contained in the statement presented by the Philadelphia Rapid Transit Company.

C. J. JOYCE.
Special Representative.

N. S. C. Forms Engineering Section

THE National Safety Council is organizing an engineering section for the purpose of bringing together the civil, mechanical, electrical, mining and chemical engineers in the council's membership, so that they may contribute more effectively toward the solution of the purely engineering problems so frequently encountered in safety work. Membership qualifications are parallel to those of the great national engineering societies, except that for the present associate membership is open to engineers having three years experience.

The functions of the engineering section are stated to be:

1. To help to meet the technical demands of the various industrial sections and furnish them technical information as desired.
2. To perform technical services for the council, on request of the executive committee, such as the development of standards or participation therein; the solution, by inquiry or through research, of special engineering problems arising in safety work; and helpful co-operation with the American Engineering Standards Committee, the national engineering societies, the Bureau of Standards, the casualty department of Underwriters' Laboratories, etc.
3. To conduct one or more meetings as a part of the Annual Safety Congress, at which engineering problems shall be discussed.
4. To conduct, if considered desirable, one or more additional sectional meetings during the year, or in different localities.
5. To carry on such other activities as will, in the opinion of the executive committee of the National Safety Council, promote the safety movement and the best interests of the council.

The electric railway to Hakone, Japan, a prominent pleasure resort, began operation on June 1. By means of this line the heart of the mountain district is brought within four hours from Tokyo.

Italian Car Design Experience

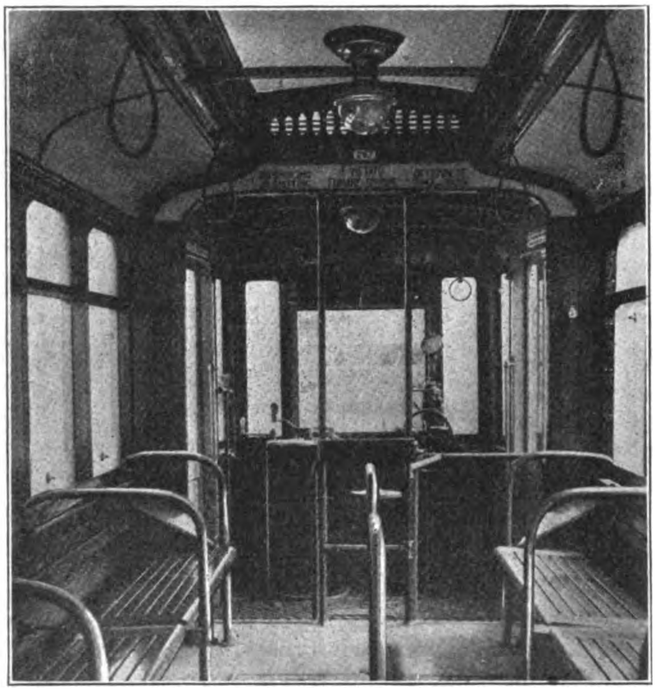
'All Standee" Car Is Unpopular—Convertible Standing and Sitting Car Substituted—American Prepayment Plan Successful in Rome

A SHORT item in the Aug. 3, 1918, issue of ELECTRIC RAILWAY JOURNAL related the plan of the Roman Tramway & Omnibus Company of Rome, Italy, to try out seatless cars for a period of six months. Information is now at hand covering the experience with these cars, and it indicates that they have met with much criticism on the part of the traveling public, even to the point that it has left these cars severely alone.

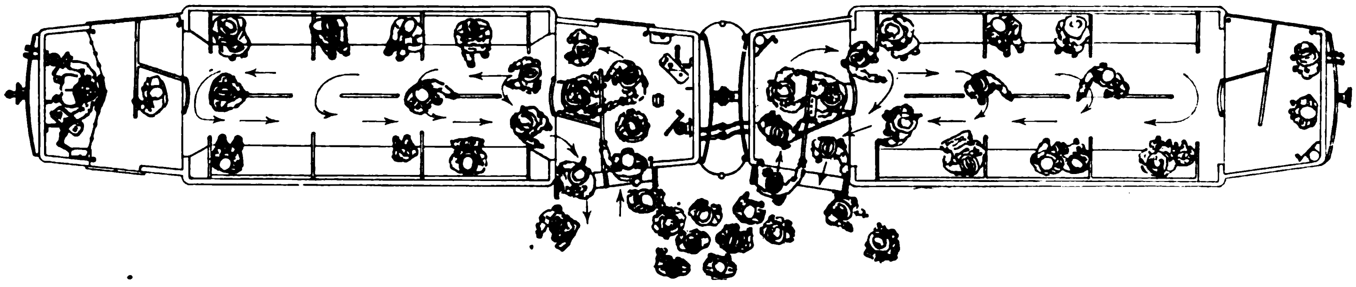
The development has progressed from this standing only car to a new convertible arrangement, whereby longitudinal seats are folded up or down during the rush hours to make seatless cars. The idea behind this plan was that while rush hour passengers were glad to hang on to the car anywhere, and would readily assent to the necessity to hang on the straps or special supports provided in the cars, it did not seem fair to compel non-rush hour passengers to stand. The convertible car, it is reported, has already practically demonstrated its adaptability to varying traffic conditions. The Roman Tramway & Omnibus Company has been operating two-car trains consisting of one seatless car, and one provided with the regular cross seat arrangement. With this combination, it has been very noticeable that the " sitter " cars are always crowded, even on the platforms where no seats are provided, while the " all standee " cars are left empty up to the last minute of the peak. This does not happen in the convertible cars because the passengers know that the conductor will pull the seats out again, as soon as this is possible, and permit the passengers to travel comfortably. A similarly successful experience with the convertible arrangement has been had by the Milan Municipal Tramways.

LOOP PREPAYMENT CARS

After much suffering from over crowding, numerous accidents to passengers riding on the couplers, buffers, steps and fenders of the cars, and the consequent loss of fares, the Municipal Corporation Tramways of Rome decided about the first of this year to install a prepayment plan of fare collection in conjunction with closed vestibules and folding steps. None of the prepayment plans of the United States or Canada was thought to be readily adaptable either to the design of existing cars, or to the riding habits of the Roman public. Also, the almost universal use of trailers had a bearing on this consideration. So it was decided that both entrance and exit should be made on the same platform, as it had been found that the enter-at-rear, leave-at-front scheme which had been advocated and recommended by the management of both traction systems of the city for a number of years, had met with but scant respect from the riders. They always seemed desirous of leaving by the same door through which they had entered the car.



FOLDING SEATS, STANCHIONS AND RAILS IN LOOP PREPAYMENT MOTOR CAR

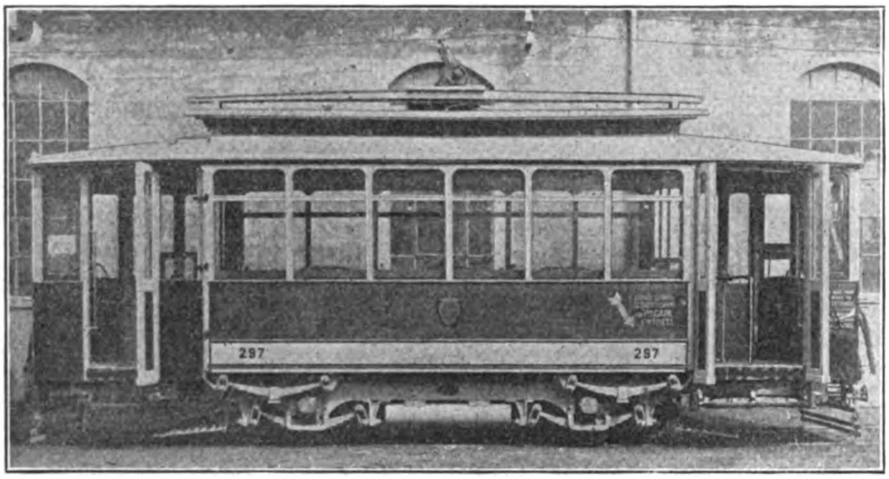


PATH OF PASSENGERS WITH THE LOOP PREPAYMENT ARRANGEMENT ON STANDARD TWO-CAR TRAINS

Based on these various considerations the " loop prepayment " plan was originated. This is illustrated in the accompanying drawing. Passengers enter at the dash side of the platform at the rear end of the motor car and front end of the trailer and leave by the corner post side of the same platform. This plan is claimed to eliminate any confusion, as the stream of entering passengers divides itself between the near entrances of the two cars while the outgoing passengers leave at both sides of the entering stream without meeting or mingling with it. Moreover, the motor car conductor is enabled to supervise all loading and unloading operations of the train, even though the signal inter-locks should fail.

To carry out this plan, the vestibules of the cars were converted into payment platforms by the removal of the bulkheads. Inside the car body, the crosswise seats were removed, and folding longitudinal seats substituted, so that the cars may be converted during the rush hours into the standing only type. With the seats in service, there are seats for 18 passengers and standing room for from 20 to 25. With the seats folded down each car can accommodate as many as 70 riders. These figures apply both to the motor cars and to the trailers.

Each platform of the motor car is equipped with double doorways on one side and a single doorway on the opposite side. The double doorway is used at the rear of the car for the main ingress and egress of passengers. The single



ABOVE. LOOP PREPAYMENT MOTOR CAR SHOWING FOLDING DOORS AND STEPS AT THE FRONT AND REAR. AT RIGHT, ENTRANCE AND EXIT AT THE DOUBLE DOORWAY, AND POSITION OF CONDUCTOR ON THE PLATFORM

doorway is used at the front end of the car to permit the motorman to leave and enter the car without the necessity to go through it. This door is also conveniently used by the traffic inspectors, ticket takers and other employees. The trailer platforms are equipped with double doors on one side only. All doors are manually operated, the double doors by the conductors and the single doors by the motorman.

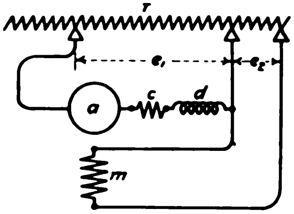
Birney Cars Now Under Consideration

The latest development in the Italian situation is the consideration looking toward the use of one-man safety cars. Data on the Birney cars are now being sought in this country by the Milan Municipal Tramways, and meantime a car is being converted along the lines of the American safety car as a step in blazing the way for the finished product.

Regenerative Braking with Single-Phase Commutator Motors

Tests Carried Out with One of Four Trial Locomotives Ordered by Swiss Federal Railways for St. Gotthard Line

IN THE ARTICLE describing the single-phase locomotives for the Swiss Federal Railways published in the issue of the ELECTRIC RAILWAY JOURNAL for June 14, 1919, page 1141, mention was made of the requirements of the railway authorities that these locomotives be provided with electric braking of some improved form so that power could be returned to the line. A test of this electric braking feature was carried on June 27, 1919, with the second of the four trial locomotives, which was built by the Oerlikon Company in conjunction with the Winterthur Locomotive & Machine Works. This locomotive has been in regular service since the beginning of last May on the newly electrified Berne-Thun section.



CIRCUIT DIAGRAM FOR TWO-POLE MOTOR

Trials were first made with the locomotives alone on the steep gradient between Kandersteg and Frutigen. Additional tests were later made with a train weighing 345 tons (2000 lb.) traveling at different speeds up to approximately 43½ m.p.h. These tests were conducted without the use of any mechanical brakes or brake resistances. The preliminary tests have proved entirely satisfactory, and the regulation at all speeds is reported to have proved very reliable.

The essential connections for regenerative braking used on this locomotive are shown in the accompanying diagram, which represents the circuit of a two-pole motor or generator with a rotor, *a*, and field windings, *m*. The various possible compensating or auxiliary-pole windings are represented by *c*. The armature is connected in series with a choking coil, *d*, of suitable dimensions, and connected with adjustable pressure steps, e_1, to a current transformer, *t*. Pole windings are connected to another suitably chosen pressure step, e_2, on the same tranformer. The machine acts in conjunction with the reactance as a motor or generator, from rest up to high speeds, with a constant torque at the given pressures e_1 and e_2 and a power which increases proportionately with the speed. For a given terminal pressure, the current is said to rise from the lower limit value while stationary more quickly than the speed, and the power factor approaches unity.

In an article in the *Electrician*, London, for Dec. 20, 1918, Dr. H. Behn-Eschenburg gave a brief theoretical discussion of the principles of the control and makes some general statements regarding the arrangement and operation of the equipment. He states that as far as the properties of the motor are concerned, the new arrangement does not appear to offer any advantage, as the weight is generally greater for the same capacity and the power factor lower than in an ordinary series motor. The weight and cost of the choking coil, as well as the losses within it, are also additional. The advantage of the arrangement, however, lies in its simplicity, as only the choking coil is needed in addition to the usual apparatus for the control of the motors.

A note in a recent issue of *Engineering*, London, states that the Shanghai (China) Tramways has decided to build its own street cars. The company has acquired an acre of land, on which it will erect a new factory building and install the required machinery. The company proposes to begin its building operations with the construction of fifteen cars for use on rails and seven cars for railless operation.

Economics and Equity in Valuation

A Discussion of Eight Forces Which Interlock with the Process of Fair Valuation, with Brief Reference to Points of Application and Practical Working Methods

By CHARLES B. COOKE, Jr.

Of Kelly, Cooke & Company, Engineers, Philadelphia, and assistant manager Transportation and Housing Division, U. S. S. B. Emergency Fleet Corporation in Charge of Street Railway Operations.

GENERAL principles to be regarded in the valuation of street railway properties have been extensively and ably discussed, particularly during the past few years, in which the broad question has come to a head under stress of the receding investment status of street railways generally. The important factors, of which due and equitable account must be taken in the development of "fair values," of both physical and intangible property, are generally well appreciated in informed quarters and have recently been summarized in the comprehensive report of the committee on valuation, appointed by the American Electric Railway Association.

On account of the vital importance of the complex problem presented by determination of "fair value," which is a term more easily used than understood in its fundamental aspects, it is desirable at this time to give some additional emphasis to the play of what may be termed the economic levers operating between "value" and the general policy of the regulatory power with respect to limitation of public utility earnings. There are, without question, very direct controlling forces or factors of absolute natural jurisdiction at work in the premises, which may not be disregarded. The following commentary indicates broadly the nature of these:

1. *Origin of Limited Earnings Idea:* The idea of limited earnings has its origin in consideration of the public service business as a natural monopoly and as therefore enjoying a species of public protection for which the company should pay by a restriction of its earning power. Inasmuch as the benefits from monopoly are distributed to the public in the form of better and economically cheaper service, and to the company in the form of such profits as it may earn up to a given amount, without compensating guarantee as to minimum profits, the equity of such a proposition is open to serious question. It is evident that the major protection afforded by the monopoly principle is that received by the public in safeguarding itself from the disjointed service and inevitable higher levels of service charges which would obtain under competitive conditions. In the nature of the case, there can be no limitation of benefits to the public, and these do actually increase from year to year as the service monopoly expands its facilities. The equity here is unbalanced and must in time tend to create an unhealthful condition for the utility, the effect of which will be borne finally by its public either in the shape of higher fares, or the more costly alternative of deficient service.

2. *Differential between Value and Investment:* Commercial and economic definitions of value are multitudinous and, of necessity, relative in character. Viewed as a general proposition, it would appear that definition or measurement of value of capital after investment in public utility must be such as will co-ordinate with definition or measurement of its value after investment in industrial or other enterprises, in order that there may be no hurtful discrimination between competitive fields of investment. Any mature consideration of "value" of a public service property and of the underlying economic forces governing flow of capital into selected applications must lead logically to the conclusion that cash capital devoted to public service represents but one element of its value after investment. Value may obviously be either greater or less than investment. In the case of a well managed property giving adequate service, it cannot be otherwise than greater. In a property giving poor service, value for rate fixing purposes will be equal to or less than investment if the inadequacy arise from bad management, but it will be greater if the poor service is a result of low earnings due to deficient rates.

Pretentions that original cash cost of existing physical property constitutes the only value on which earnings should be allowed emanate from a form of special pleading which would encourage the belief that a dollar invested to carry a man to work earns, and should receive, different treatment than accorded the dollar invested to put clothes on his back or food in his stomach. Man-made laws may authorize labelling the value and limiting the earnings of that dollar in the one case and not in the others, but none have yet been conceived that can control where the dollar chooses to work.

3. *Natural vs. Artificial Limitation of Earnings:* It would appear that the same economic law which governs the supply of other human needs and receipts therefrom will operate even more positively as an automatic governor of utility earnings. The law of diminishing returns will set in more surely following a rise in utility rates, regardless of whether such rise is justified, than it will following increases in commodity prices. Thus, the public utility is subject to the two-fold burden of an artificial and a natural limitation of earning power. The artificial limitation is, in the last analysis, needless, as it attempts to do something which would come about utimately through natural causes, unassisted by fallible human dictation. And in the process of its operation, the artificial limitation works injury to the enterprise affected by automatically causing its withdrawal from attractively profitable classes of investment projects and limiting the grade of its product. The artificial regulatory power may only act with certainty and popular approval in depressing earnings. It cannot, with any similar certainty, elevate earning power by merely authorizing tariff increases, for in this domain the superior law of natural regulation will function, and from this the public service company cannot escape.

Human intelligence has not yet progressed to a point where it may embark safely on a policy which looks toward guiding or confining laws of natural economic forces governing capital distribution so that these will operate to produce certain specific results in a given field of application, without compensating effect therein and in other fields. The imponderable elements here encountered are too elusive and the whole structure of economic law is too complex and fluid in character to permit of manipulation of individual parts, with the assurance that the local effect obtained does not produce, in some degree, damage to the rest of the structure.

4. *Effect of Limited Earnings, Value Adjustment and Risk on Supply and Cost of Capital:* Limitation of earn-

ings may be dictated by all conceivable economic reasons, logical and sound from every academic standpoint, but if the man with money to invest does not like it and diverts his capital to other channels, then that policy applied to the public utility must be fundamentally defective, and it must only be a question of time before injurious effects accumulating from deficient capital resources are felt by both company and public.

Business risk in public utility operations cannot be regulated out of the mind of the investor. The risk is really there (witness railway conditions today), and private capital has the initiative to take it, but naturally and only if there be acceptable compensation in prospect. Capital has always refused to be bound by the judgment of a third party in the matter of what constitutes acceptable compensation for placing itself at risk. It is a poor rule that does not work both ways. Clearly, those who are responsible for an economically unsound utility enterprise should pocket its losses, but it is equally clear that responsibility for well conceived projects is entitled to rewards such as it may earn through increased use of facilities provided and effected through good management and service.

If, because it cannot be justified in a manner acceptable to the regulatory power, property value for rate fixing purposes be depressed, consciously or unconsciously, below a critical point, to an extent which prejudices its interests in the mind of the prospective or actual investor therein, the logical result will be a rise in cost of capital for that property or depreciation of its securities until a compensating balance is reached from the investor's viewpoint. He is the court of last appeal. This follows, not so much from the numerical amount of the value depression, as from the psychological effect on the investor, produced by the exercise of what he considers an arbitrary power which may finally affect his interest.

5. *Value of Property to Community:* Any consideration of fair value of the public service property must necessarily give due weight to value from the standpoint of its service to the community. In the commercial sales transaction, the price of the thing sold is governed largely by the question of its value to the purchaser, and if that value is not large enough to justify manufacture by those who are willing to assume its risk, the enterprise is not economically or commercially sound. The same principle holds good as to the sale of service by the public utility and should be accordingly recognized. If that service be adequate, the value of the property which provides it should be considered at least as not subject to the chance of depression to an extent which may work injury upon it.

It follows logically from this and for other sound reasons that depreciation which has set in on physical property is not a factor to be applied in fixing value for rate making. Value of the property and of its service to the public is not affected by the fact that the rail head may be worn half way through its useful life, so long as the wearing does not affect service. The public is, however, vitally concerned in guaranteeing itself the renewal of that rail at the appointed time and in seeing the company maintained in funds sufficient to provide therefor, and for proper maintenance in the meanwhile.

6. *Other Regulation:* The policy of supervision, or regulation by public bodies, of principles to be regarded in new and reorganizing financial operations is sound and well conceived, in that it tends to prevent recurrence of unsound practices marking the developmental period of some properties. Likewise, and for similar reason, the practice to be followed in capital, expense and revenue accounting is properly subject to guide and action of the regulatory power. Sound procedure in this domain must necessarily be one of the pillars maintaining the future value of the property to the community it serves.

Supervision and control of service and service facilities as to character and their adequacy to the demand is obviously essential and desirable, in view of its vital bearing on public and community interest. Regulation of financial and accounting practice is justified in that service, the vital thing, is thus insured and safeguarded and "value" thereby protected. Service is not so insured or safeguarded by the policy of regulated earnings, and hence value of the service property remains unprotected and is subject to depreciation through the very application of this policy.

7. *Selection of Price Levels:* One of the most difficult questions connected with the development of unit costs concerns the selection of the scale or level of basic material prices and labor rates, upon which to build up the structure of unit and total values. In the past periods of normal price fluctuations, it was common practice to base figures on prices representing three and five year averages, this being considered as a fair measure of the then probable future price levels. This was essentially sound, as findings for rate adjustments applying during a future period must necessarily be based upon probable firm value of property during that period. Under pre-war conditions of moderate variations, plus or minus from normal levels, past average prices could be safely considered as an index of the level of future prices.

Well appreciated conditions brought about by the war have, however, upset the logic and workableness of this basis for establishing fair values for the future period. This question may not now be considered apart from the high levels of operating labor and material costs. These are the reflection of economic and industrial conditions for which no precedent exists as to fundamental cause and future effects arising therefrom. In the nature of the case, it is difficult to avoid the conclusion that, with base labor costs on a high level in all industries producing equipment and maintenance materials and other supplies used by street railways and with their own operating wage scales similarly elevated, there can be no marked recession in existing levels of total operating costs and charges exacted by capital, for many years to come. For decades the trend of wages to labor has been upward. Under normal conditions the change upward has been a slow and graduated process. Under normal conditions, a general decrease in wage levels would be an even slower matter. Under what we term abnormal conditions today, which may represent the normal of the future, any material decrease in wages throughout the whole industrial fabric may be expected to be so slow as to be imperceptible. And when the necessity for national and world wide stimulation of production in all directions is contemplated, the prospect of further elevation of cost levels operating progressively throughout the allied fields of production, whether of materials or service, is not at all unreasonable.

The value of capital, and the required return thereto, measured by the same money standards as measure the value of materials and human labor, must necessarily co-ordinate in some degree with the variations of the latter value as expressed in the medium of exchange. The two things interlock and must move up or down together. There may be some lag in movement of one following movement of the other, but it will finally occur in the same direction and continue until equilibrium is established.

Fair consideration of the foregoing leads to the conviction that present day prices furnish the best, as well as a conservative basis for measurement of physical values which will typify, reflect and recognize conditions of operating and capital costs during the future period. The fact that this basis will, in many cases, produce value figures in excess of known cost is immaterial to the deeper question involved of maintaining correct and stable relations between the economic factors governing the premises.

8. *Valuation Policy:* Experience has shown that regulatory bodies and their technical representatives passing upon valuation matters are usually fair minded, particularly where the material presented to them in support of a given case shows evidence of a consistent purpose to base figures throughout on facts and real conditions, so far as these may be subject to numerical translation. It is unfortunately the case that some valuation proceedings and preparation of data therefor have been based largely upon the trading principle, so that it has become more or less a fixed idea in the mind of the public representative that any figures presented in behalf of the public utility are excessive and subject to substantial reduction. Public authorities in the premises, for political or other reasons, are sometimes governed in their findings by a desire to show a " raison d'etre " for themselves, and consider it advisable, on general principles, to find values lower than facts, properly presented, would justify. This vicious condition or atmosphere, the outgrowth of past political and corporate practices, undoubtedly affects many valuation cases and retards equitable settlement thereof.

It is to be hoped that the present distressing situation of the street railway industry will bring about closer cooperation between companies and regulatory bodies on moot questions of valuation, and a clear appreciation by both that nothing ultimately is to be gained either by corporate or public interests by departure from ascertainable facts and practical principles of equity. It is important, too, that regulatory bodies should realize the ultimate wisdom of a liberal policy in deciding questions of valuation on which reasonable doubt exists. Better by far to err on the side of a too liberal valuation than the opposite and so strengthen rather than weaken the position of the utility. The per capita cost to the public of liberal valuation policies is nothing compared to the cost of the reverse. The inherent nature of the problem is such that the company is frequently unable to produce unassailable proof of certain items of value, evidence of which, while sound and logical, may be largely circumstantial. The general public has much to gain and little to lose by a country-wide policy of liberality in utility valuation cases, and much to lose and little to gain by any policy which may be construed as oppressive. Practical and not academic considerations should govern here.

WORKING METHODS OF VALUATION

It is a matter of major importance that, with general principles of valuation developed and established along sound and logical lines, attention be turned to the equally, and possibly more, vital matter of making practical use of them. In other words, systematic methods should be developed for attacking the problem presented, not only by the necessity of an inclusive inventory and specifications of items of property and investment value, but also the development and application of unit values upon a basis that can withstand critical analysis.

The valuation problem should be approached and carried consistently through to a conclusion with the constant object in view of developing reasonable and defensible supporting detail for every figure appearing in the final valuation report. This applies to tangible as well as intangible items of value. Where certain of these are believed to exist but are not susceptible of logical supporting argument and connecting figures, they should be presented frankly in their proper classification. The attempt to support such items with bolstered up argument rarely, if ever, produces anything but unpleasant suspicions which adversely affect other departments of tangible and intangible valuation in which the company is well fortified.

Unit labor and material costs, forming the basis of total physical values, should be built up step by step in a way that will show the elements of all direct and semi-direct charges against the particular class of property or work to which they apply, and by a method which will show clearly upon investigation how such elements have been derived. Careful attention to these details is of the utmost importance as proof to the examining body of the integrity, fairness, and logic of the developed unit cost structure.

The development of unit figures should rest primarily upon the consideration that practically all classes of railway construction work may be resolved by analysis into a sequence of divisions and sub-divisions of constructive processes. These generally do not conform with standard construction accounting procedure, so that a logical development of unit costs must go further than simply analyzing construction accounts.

For example, in building up substantiating detail for unit and total values of tangent track work, the following plan of inventory and valuation, systematically carried out, provides maximum assurance of credit for all discoverable items of property and support for their valuation:

I—*Classification of Tangent Track by Types:*

- (a) Survey of all tangent track to determine where changes occur in:
  - 1 Rail section and weight
  - 2 Joints
  - 3 Bonding
  - 4 Ties
  - 5 Trench depth
  - 6 Ballast
  - 7 Paving
- (b) Definition of track lengths by classes of construction, A, B, C, etc., this being considered to change wherever a change occurs in any one of the main items above listed. Summary of construction classifications by types, lengths and street locations.

II—*Development of Unit Costs Applying to I-(b) Per Unit Length:*

- (a) Material items occurring in various classifications, A, B, C, etc.
  - 1 Rail, by sections and specifications
  - 2 Joints by types and sizes
  - 3 Bonds by types and sizes
  - 4 Spikes
  - 5 Ties by sizes and specifications
  - 6 Ballast by specifications
  - 7 Paving by occurring classes
- (b) Track labor
  - 1 Segregation of construction into natural sub-divisions and sequence of processes
    - a—Clearing
    - b—Excavation—rough
    - c—Excavation—to line and grade
    - d—Ballast—first course placing and levelling
    - e—Ties—rough placing
    - f—Ties—spacing
    - g—Rail—rough placing
    - h—Joints—temporary bolting
    - i—Rail—gage and spiking
    - j—Bonding—attachment of bonds
    - k—Joints—final bolting
    - l—Ballast—tamping, placing second course, first track surfacing, and back fill
    - m—Operation over track
    - n—Second track surfacing (where required)
    - o—Paving
    - p—Teaming and hauling for above, classified by operations
    - q—Storage of materials—Unloading
      - Labor
      - Hauling to central storage
      - Handling in central storage
      - Hauling to sub-storage
    - r—Transportation of men on and off job
    - s—Miscellaneous labor—
      - Watchmen
      - Water boys
      - Time clerks
    - t—Supervision on job

Each one of the above defined processes represents a time and labor consuming operation and constitutes an element of total labor costs. Based on actual time studies and experience in other similar construction, supplemented with consultations with the intelligent types of track bosses, very close estimates of unit man-hour costs, by classes of labor, for detail operations and combinations thereof may be developed, to which their wage rates may be applied. It has been found that total labor costs per mile, established step by step in this way, check out very closely with actual performance, as disclosed by analyses of particular jobs. Cost figures so established are evidently not open to serious question.

III—*Incidentals:*

No matter how carefully and painstakingingly the inventory of property is taken, it is well known that a large number of items, small in themselves, but representing an important amount in the aggregate, will, in the nature of the case, be overlooked. An analysis of the details of construction vouchers covering almost any class of work will always disclose numbers of items of which the most imaginative estimate would fail to take account. These represent an absolutely legitimate element of valuation, for which due allowance must necessarily be made in the form of a percentage addition, most conveniently made to basic unit costs. The amount of such addition may be properly determined by analysis of incidental details from construction vouchers applying to the particular class of work concerned, which gives a fair and defensible basis for this. As the "incidental" item varies from 2 per cent to as high as 8 per cent and 10 per cent, depending upon the class of property or work, careful attention to the development of supporting figures for the percentages used is advisable.

IV—*Contingencies:*

A few years' first hand experience with construction jobs in the field is the best possible school to develop appreciation of the importance and necessity of liberal allowance for unforeseen contingencies encountered in the usual operation. The character and cost of exceptional or extraordinary contingencies actually met in a given situation can generally be established through analysis of job records and consultation with engineers and foremen handling different types of construction on the company's system. Much valuable historical information relative to invisible physical investment may be collected in this way, and forms an excellent groundwork for developing a fair allowance for this item, representative of practical conditions met in a given situation.

GENERAL

The principles outlined in the foregoing may be likewise applied to other classes of street railway property, with such modifications as may be necessary to recognize differences in construction processes inherent thereto and subject to numerical cost measurement. This applies with particular force to the inventory of special track, analysis of typical layouts, etc., as well as to distribution systems in which property values are constituted in large numbers of similar or identical items of equipment.

The basic thought in the whole inventory question should center about the importance of taking and listing quantities in such a way as will permit of the application of unit costs determinable from analysis of natural sequences of construction processes. In other words, the material items should be taken and grouped in a way that will permit of attachment of ascertainable labor costs connected therewith and ultimate charging into the classification of accounts used by the company. There cannot be too much emphasis laid on the necessity of "system" in scientific inventory. Lack of it will surely and inevitably result in confusion, inaccuracy and defective accounting for existing values which are then easily opened to question. Working papers and figures should be laid out and arranged to provide for ready checking of statements and figures appearing in the valuation report for the convenience and intelligent consideration of the examining body.

In the valuation of large street railway properties it is often either desirable or essential for many obvious reasons to work out allocations of values to various companies, or groups thereof, constituted in the underlying corporate structure.

This involves an analysis, in some cases very complicated, of the corporate history of the property as it exists, the corporate processes through which it has been developed and of the terms and conditions of leases, mortgages, operating agreements and similar instruments through which such corporate processes were consummated.

Electrolysis Amelioration at Kansas City

AN ELECTROLYSIS Committee has been formed at Kansas City with S. H. Grauten, electrical engineer Kansas City Railways, as chairman. The committee includes also a representative from the Bell and Home telephone companies, the Western Union and Postal telegraph companies, the water company, gas company and electric light company. Meetings are held monthly.

The committee was organized for the purpose of studying electrolysis conditions which might affect all the utilities having underground structures. The first step was to adopt a unified system of drainage for all companies owning underground cables.

Aside from the work of the committee, the railway company has made considerable progress in rehabilitating its feeder system, having already installed an insulated return system on two substations. It is expected that a similar work will be completed on a third station during the present year.

At one substation located in the Kaw River bottoms an elevated structure extends for about ½ mile west and 1 mile east. This is a double-track structure with four guard rails, making available eight rails laid on ties and well insulated from the structure. It was arranged for these rails to act as insulated return feeders and thus about 40,000 lb. of return cable was salvaged. Owing to the fact that this cable had been well grounded by part of it lying in the bottom of the Kaw River, electrolysis conditions were much improved by its removal.

New Officers of New York Railroad Club

THE following officers of the New York Railroad Club assumed their duties on Nov. 21, the meeting held on that date being the first one under the new administration: President H. C. Manchester, superintendent of motive power and equipment, D. L. & W. Railroad, Scranton, Pa.; first vice-president, J. A. Droege, general superintendent New Haven Railroad; second vice-president, J. S. Doyle, superintendent of car equipment Interborough Rapid Transit Company; third vice-president, F. T. Dickerson, assistant to the president C. R. R. of N. J.; treasurer, D. W. Pye, president Tuco Products Company; executive member, J. J. Dempsey, vice-president Seamans Oil Company; member of finance committee; C. C. Castle, vice-president National Railway Appliance Company.

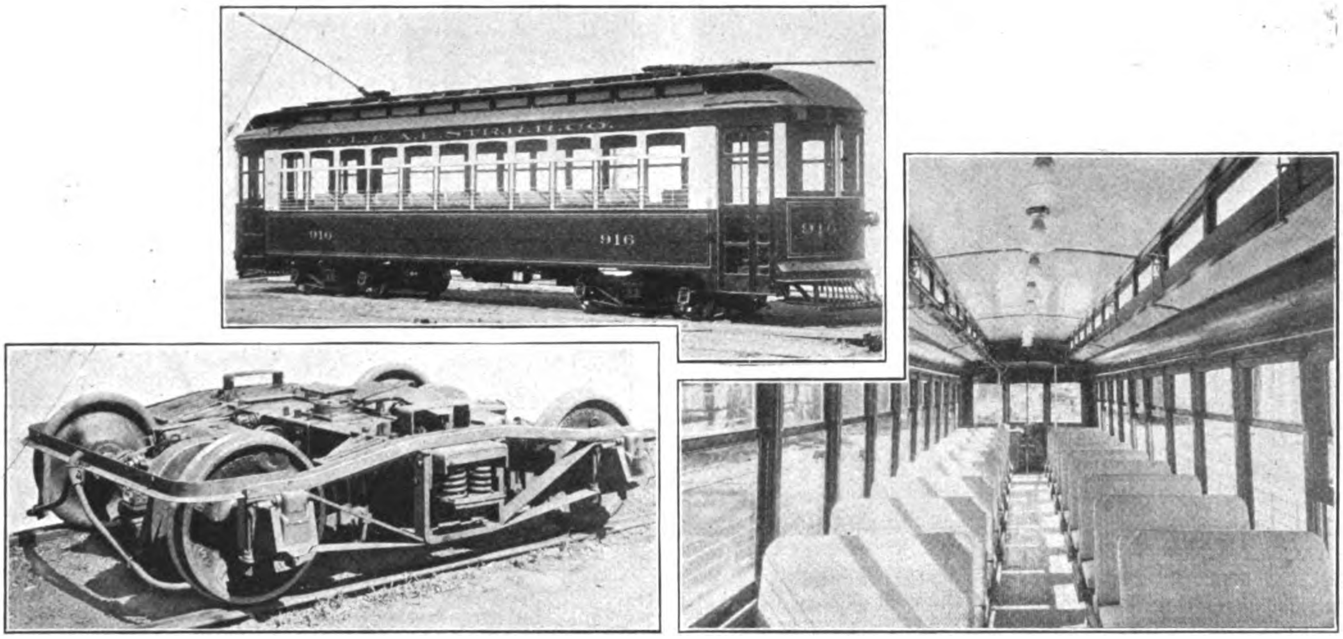
Cutting Down Operating Expenses on a Small Interurban Road

The Cincinnati, Lawrenceburg & Aurora Electric Street Railroad Has Made Large Annual Savings by Eliminating Useless Material, Reducing Labor Cost and Speeding Up Cars

By C. T. DEHORE

Railway and Lighting Department, General Electric Company, Cincinnati, Ohio.

THE Cincinnati, Lawrenceburg & Aurora Electric Street Railroad had been for several years in a receivership, when in 1917 operating expenses commenced the rapid upward trend that has proved so disastrous to the entire industry. Under this condition, the operators faced the alternative of abandoning operation or of materially reducing operating expenses. They decided on the latter course and as a result of their efforts power costs were, during the past year, cut more than 50 per cent; maintenance charges approximately 44 per cent, and platform costs 20 per cent. The return for the first year was about 50 per cent on the net investment in new equipment. The result was achieved by the use of modern, light-weight cars and equipment, the purchase of power from a large central station plant and its distribution through automatic substations, and the elimination of some unnecessary stops by locating part of the road on a private right-of-way instead of in city streets.



EXTERIOR, INTERIOR AND TRUCK OF LIGHTWEIGHT INTERURBAN CAR FOR CINCINNATI, LAWRENCEBURG & AURORA ELECTRIC STREET RAILWAY

The Cincinnati, Lawrenceburg & Aurora Electric Street Railroad is an interurban line 32.6 miles long, running west from the outskirts of Cincinnati (Anderson's Ferry) to Lawrenceburg and Aurora, Ind., a distance of 24.9 miles, with a branch line to Harrison, Ohio, 7.7 miles long.

A half-hourly service is given between Cincinnati and Valley Junction; and every other car branches off at the junction giving hourly service to both Aurora and Harrison.

No freight business is handled on the road because at present the eastern terminus is approximately 6 miles from the business center of Cincinnati and there is no way of getting freight up town. The city lines are wide gage, whereas the C. L. & A. gage is standard. Passengers are transferred at the eastern terminus (Anderson's Ferry) to the Cincinnati Traction Company's cars, which transport them up town.

As passenger earnings of the company had remained practically stationary for seven or eight years and in the fall of 1917 there was the prevalent increase in cost of labor and material, the management decided to invite suggestions from the General Electric Company's engineers as to ways in which expenses could be reduced. These engineers inspected the road, analyzed operating costs and checked up the equipment in use. They made certain recommendations for the reconstruction of the road, which the management put into effect. The details of these and the results are explained below:

CAR WEIGHT CUT 50 PER CENT

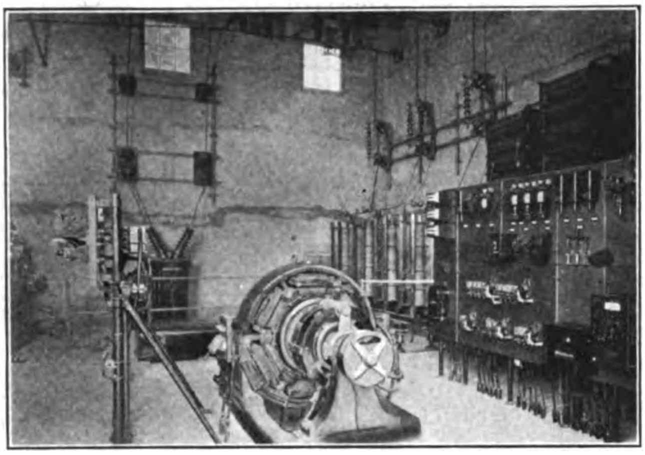
In 1917 the rolling stock consisted of eight 44-passenger cars, equipped with four motors on 33-in. wheels, geared for about 35 m.p.h. free running speed and weighing from 50,000 to 52,000 lb. when officials of the Cincinnati Car Company were consulted, they offered to build a car of equal seating capacity, on trucks with 24-in. wheels, suitable for interurban service, which, with four low-wheel motors, would weigh not to exceed 25,000 lb. The substitution of this type of car for the existing equipment would obviously cut the power consumption in two, and effect material economies in track and equipment maintenance. Seven of these cars were purchased, the use of the old cars being discontinued and the latter were offered for sale.

The cars are a radical departure from those usually found on interurban roads, and as far as we know are the lightest cars in this class of service. The car floor is flush with the platform, and the open bulkhead design is used.

The cars are of composite wood and steel construction with monitor roof and inclosed platforms. They are constructed with the wide body corner posts, or piers of steel, and window posts, letter-board and roof of wood.

The adoption of the open-bulkhead design of car, with flush platform, low wheels and light-weight trucks and electrical equipment, has resulted in a 44-passenger car having a free running speed of 35 m.p.h., weighing but 25,000 lb. complete.

The energy consumption of this car is 1.7 kw.-hr. per car-mile, including line, transformer and converter losses, and the cost of power per kilowatt-hour is 1.2 cents, making the power cost per car-mile about 2 cents.



FERNBANK AUTOMATIC SUBSTATION OF THE C. L. & A. LOOKING TOWARD DIRECT CURRENT END OF ROTARY CONVERTER

A comparison of the weights of the old cars with the new is given in Table I.

The electrical equipment consists of four GE-258 motors, K-12 double-end control, General Electric straight air brakes with emergency feature and conductor valves, using a CP-25, 10-ft. compressor. The electrical equipment and air brakes combined weigh about 6000 lb.

TABLE I—COMPARISON OF OLD AND NEW CAR WEIGHTS

	Old Cars Pounds	New Cars Pounds
Body, including conduit, piping and equipment hangers	22,700	13,500
Electrical equipment	14,400	4,750
Air brake equipment	1,400	850
2-arch bar type trucks	13,500	6,000
Total weight	52,000	25,100

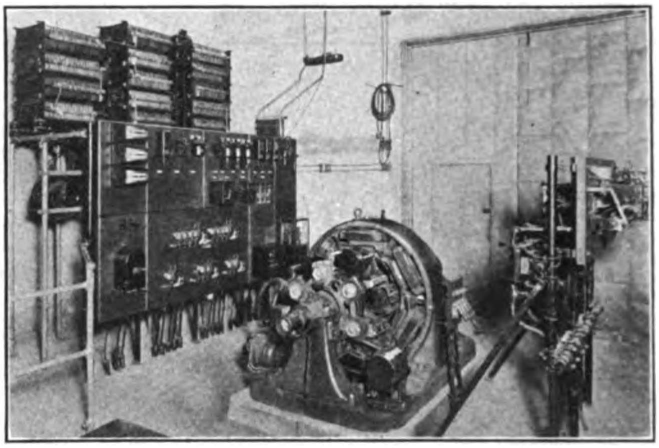
TABLE II—DATA REGARDING THE NEW CARS

Seating capacity	44
Length over all	40 ft. 6 in.
Height—rail to top of trolley base	11 ft. 8 in.
Extreme width	8 ft. 3 in.
Height—rail to step	16 in.
Height—step to platform floor	12 in.
Width of aisle	22 in.
Width of seat	38 in.
Length of platforms	4 ft. 7 in.
Width of door openings	30 in.
Trucks	Cincinnati Car Company arch bar type.
Truck centers	20 ft. 6 in.
Wheel base	5 ft. 8 in.
Size of wheel	24 in.
Material of wheel	Steel
Type of motors	4-GE-258-C 25-hp.
Control	Double-end K-12
Lighting	11 GE combination shade holders and fixtures—Holophane shades down center of car.
Heaters	16 Consolidated No. 199-0 foot rest heaters with Gold thermostatic control.
Fare collection devices	Ohmer fare registers
Entrance and exit	Rear entrance—front exit.

AUTOMATIC SUBSTATIONS PERMIT SALVAGING OF COPPER

In 1917 this company was producing its own power in a 600-volt direct-current steam plant at North Bend, 9.9 miles from the eastern terminus of the road, and 15 miles from Aurora. Due to the extremely long stub-end "feeds" approximately 42 miles of 400,000-circ. mil copper feeder and 22 miles of No. 0000 feeder had been put up.

A proposition was secured from the Union Gas & Electric Company in Cincinnati, covering the furnishing of 3-phase, 60-cycle current at 33,000 volts. The power company built the transmission line to the substations, and it was found that power could be purchased at a somewhat lower figure than it was costing to manufacture it, particularly in view of the extreme high cost of fuel. A contract was therefore entered into with the Union Gas & Electric Company. The power contract specifies a maximum demand rate of $1.50 per kilowatt per month, based on fifteen-minute readings on four consecutive days in the month, with a sliding-scale rate for actual energy consumed, depending upon the amount used. Power is delivered at the substations on the high-tension side and measured by printometers with watt-hour meters.



INTERIOR OF FERNBANK AUTOMATIC SUBSTATION LOOKING TOWARD ALTERNATING CURRENT END OF ROTARY CONVERTER

This contract enabled the company to secure the full benefit of the reduction in energy consumed, and it also enabled them to dispose of their old boilers, engines and generators.

An order was also placed with the General Electric Company for two 200-kw. automatically operated substations. These were designed to receive 33,000-volt, 3-phase, 60-cycle power, and deliever 600-volt, direct-current power. Substation No. 1 was located at a point approximately 6 miles from the eastern terminus, and substation No. 2 was located at a point approximately 8 miles from Aurora.

Both substations are entirely automatic in their operation and both are equipped with time clocks, shutting them down at a predetermined hour around midnight. The clock cuts in again at a predetermined hour early in the morning and starts the substation. A control wire is run from substation No. 1 to the car shops at North Bend, so that the substation can be started up at any time between the midnight and starting time in the morning should occasion demand.

The substation buildings are of concrete blocks, the exterior and interior appearances being as shown in the accompanying illustration. The equipment has all of the standard protective devices developed by the manufacturer, such as those for speed limit and overload protection, thermostats on bearings and resistors, etc. The high-tension lightning arrester is of the new oxide-film type, requiring absolutely no attention. The direct-current arrester is of the standard aluminum cell type.

The use of automatic substations was decided upon to eliminate substation attendance, to reduce feeder copper to the lowest point and to improve the trolley voltage.

With the old 600-volt direct-current generator system, the extremely long stub-end "feeds" and the heavy cars approximately 42 miles of 400,000-circ.mil copper feeder and 22 miles of No. 0000 feeder was required. Under the new plan 400,000-circ.mil feeder is used between the two substations, approximately 9 miles. A No. 0000 feeder is used from each substation to the end of the line and a No. 0000 feeder extends down the Harrison branch, making a total of 21.7 miles. The 33 miles of 400,000-circ.mil feeder no longer required has been taken down and salvaged.

LOCAL PUBLIC WAS REASONABLE

The first 6 miles from Anderson's Ferry is within the city limits of Cincinnati and the line was double-track, with girder rail through the streets of the suburbs. The franchise had only a few years to run, and the operating officials had been of the opinion for some time that it would be good policy to remove the tracks for 3 miles through the villages of Delhi, Sayler Park and Fernbank, and to re-lay them on private right-of-way adjoining the Big Four Railroad, which is only 200 ft. distant from the old line through the streets. There were considerations favoring this move: (1) The old track was in poor condition and would require rehabilitation shortly in any case. (2) Should the city decide to improve this street with brick, it would mean paving charges which the company could not afford. (3) Several curves and grades could be eliminated, a number of stops could be abandoned, and a faster schedule could be maintained.

Negotiations were entered into immediately for a new franchise, with the privilege of making the suggested changes in track. The Big Four Railroad was also approached with a view to securing the desired right-of-way. The franchise was granted in December, 1917, and the use of the right-of-way was also secured at a nominal rental. Three miles of double track in the villages mentioned was abandoned, and one track of the 3 miles of double track between Anderson's Ferry and Delhi was also abandoned and taken up. The second track between Anderson's Ferry and Delhi is off the main thoroughfare, so that no change was thought desirable in this piece of track.

Work on the new roadbed was started in the spring of 1918. This has gravel ballast with only one or two curves and no grades. The number of stopping places for the first 6 miles was cut from thirty-five to eighteen. Due to the light weight of the new rolling stock the ties were spaced on 2-ft. 6-in centers instead of the usual standard 2-ft. centers.

INCREASING THE SCHEDULE SPEED OF CARS

The schedule in 1917 called for six cars to give a half-hourly service to Valley Junction, and hourly service to Aurora and Harrison.

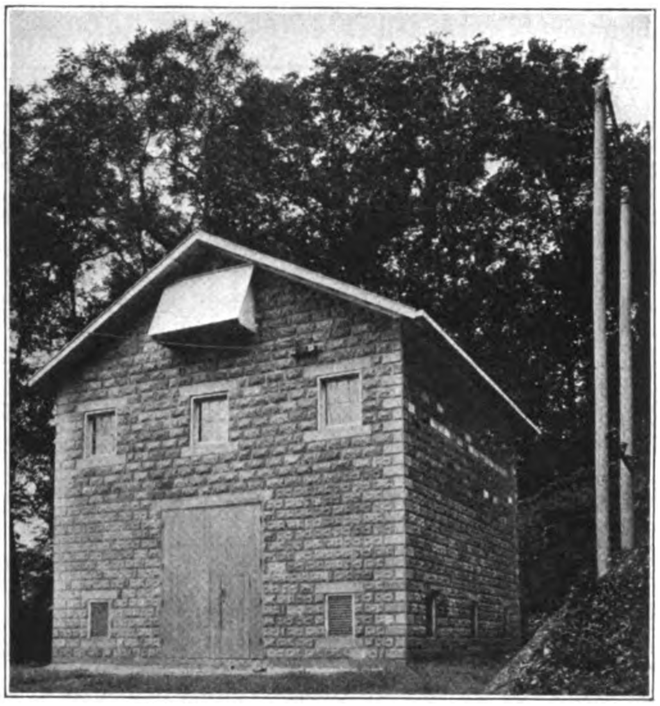
A layover of five minutes was allowed for each car at Anderson's Ferry, with ten- to fifteen-minutes layover at Aurora and Harrison. By reducing these layovers to approximately three minutes at each end of the line, and utilizing the possiblities of the new right-of-way and elimination of stops, the running time was reduced, and it is now possible with the new cars to maintain the same schedule with five cars instead of six, and no difficulty is experienced in keeping the cars on time. This one feature alone reduced the operating expenses per year approximately $7,500.

With the light cars and the new right-of-way if has been found possible to reduce the annual maintenance cost of track and roadway approximately $2,713. The actual costs of operation and date covering the old system as compared with the new are given in Table III.

TABLE III—COMPARATIVE OPERATING DATA—THEN AND NOW

	Old System July, 1917, to June, 1918	New System July, 1919, to June, 1919	Decrease or Increase
Car-miles	533,556	556,389	22,833 Inc.
Car-hours	37,778	37,436	342 dec.
Killowatt-hours per car-mile	3.56 d. c.	1.7 a. c.	1.86 dec.
Platform wages at 90 cents per car-hour	$34,000	$33,692	308 dec.
Power cost	36,423	17,539	18,884 dec.
Maintenance of cars and equipment	7,421	4,150	3,271 dec.
Maintenance of track and roadway	15,073	12,359	2,714 dec.
	$92,917	$67,740	$25,177 dec.

Reduction in operating costs $25,177.



EXTERIOR OF FERNBANK (OHIO) SUBSTATION

Full benefits from the increased schedule speed, resulting in running the service with five cars instead of six, are not shown in the above figures, due to the fact that this schedule was not put into effect until January, 1919. During the next twelve months it is expected that the item of car-hours and platform wages will decrease about 20 per cent as compared with the old system, bringing the total savings up to about $30,000 per year.

Power cost will also show a reduction, due to the fact that the 1918-1919 figures cover the use of a portable hand-operated substation, requiring two attendants and involving a rental charge. This station will be released in September, 1919, so that these items of cost will be entirely eliminated.

From the above it will be noted that the company has made 22,833 more car-miles with 342 fewer car-hours, with a reduction in all items of expense. In addition, it has done approximately 25 per cent more business as measured by receipts and number of passengers carried.

The patrons of the road are very much delighted with the new cars and the reduction in schedule. These light cars with 24-in. wheels ride considerably better than the old-type cars with 33-in. wheels, and the cars are constructed so that there are no obstructions to the passengers' view. As the road follows the Ohio River quite closely, this feature is appreciated by the passengers. The center-lighting scheme with intensive Holophane reflectors is also a cause of considerable favorable comment, as compared with the cluster-type lighting which was installed in the old cars.

LOOKING BACK OVER THE PAST YEAR

The cars have now been operating for a year with no unusual troubles either electrical or mechanical, and with a very low maintenance cost; track repairs have also been considerably reduced since their installation. The reconstruction of the road is now complete, and at the present time there is not a mile of bad track in the system. The substation equipment and rolling stock are in excellent condition, and the substations require the attention of one man only a few hours each week. As this man looks after the substation in connection with his other duties at a slight increase in salary, the labor cost is practically nothing.

The rates of fare on this road are exceptionally low and up to the present time have not been raised. If the company can secure a reasonable increase in rates to offset some of the exceptional high prices of labor and material, it is believed that the receivership can be lifted and the road made to pay fixed charges and possibly a small return on its capital stock.

Due to the fact that the road is partly in Indiana and partly in Ohio, with franchises in several municipalities, considerable delay has been experienced in getting action on the fare question.

In conclusion, I wish to express my admiration for the spirit of the officials of the C. L. & A., who have had the foresight and courage to go to the limit to save this road from abandonment. Had they continued under the old plan of operation, the road would have been unable to meet operating expenses, to say nothing of interest, and as the receiver is not allowed to borrow for operation there would have been no recourse but to scrap the road. As it is, the road has been kept intact, the physical property is in excellent shape, and the prospect of raising the receivership during the coming winter is good.

N. Y. R. R. Club's Annual Electrical Night

New York Central Engineers Summarize Recent Progress in Heavy Electric Traction and Arc Welding

AMONG the papers read at the "Annual Electrical Night" meeting of the New York Railroad Club, held in that city on Nov. 21, the principal papers of electric railway interest were the following: "Electrification of Steam Roads in 1919," by Edwin B. Katté, chief engineer of electric traction New York Central Railroad, and "Recent Progress in Arc Welding," by H. A. Currie, assistant electrical engineer New York Central Railroad. Abstracts of these papers follow:

FOUR MODERN ELECTRIC LOCOMOTIVES

First in importance in electrification work Mr. Katté placed the electrical extension of the Chicago, Milwaukee & St. Paul Railway from Othello to Seattle, a distance of 127 miles over the Cascade Range. This is practically complete and is in partial operation, full service being delayed pending the delivery of the passenger locomotives. This is a 3000-volt direct-current system, with the double overhead working conductor, exactly the same as the construction used on the existing and very successful 440 miles now on its third year of operation on the Rocky Mountain and Missoula divisions.

Two new types of passenger locomotives are now ready for services on these divisions. They are designed to operate a 950-ton train at 65 m. p. h. on level track and to average 25 m. p. h. over 18 miles of average 2.2 per cent grade and 20 miles of average 2 per cent grade.

The Westinghouse Electric & Manufacturing Company will supply 255-ton locomotives, the drive being through gears and quills by six twin motors of 700-hp. capacity each. The General Electric Company will supply five locomotives, each weighing 265 tons, and equipped with twelve bi-polar gearless motors, of 270-hp. capacity each. One locomotive of each type has been completed and tested, while the balance of each order is well under way. Soon after the new year all fifteen of these locomotives will be in service.

Another type of passenger locomotive is the one of the New Haven Railroad, designed to haul 900-ton trains in express service between New Haven and the Pennsylvania Terminal in New York City by way of the New York Connecting Railroad, over the famous Hell Gate Bridge. These operate on either alternating current at 11,000 volts under a suspended contact wire, or on direct current at 600 volts from the third-rail. Each locomotive weighs 180 tons, of which 115 tons is on the drivers. The motor equipment consists of six twin motors of 170-hp. normal rating each. The drive is through gears and quills. The total one-hour rating of the motors is 2000 hp. and at this rating the tractive effort is 21,000 lb. The motor armatures are permanently connected in four groups of three in series. Several of these locomotives are now in successful operation.

A description of recent electric locomotives, however brief, would be incomplete without recalling that the engineers of the Pennsylvania Railroad and the Westinghouse Company have developed and tested an electric freight locomotive, weighing 250 tons, for service over mountain grades. This locomotive, known as No. 3931, was tried out in June, 1917, and after the usual test-track trial was put in regular freight service between Philadelphia and Paoli, where to date it has traveled about 5000 miles.

The electric equipment of this locomotive is designed to operate on 11,000-volt single phase current, taken from an overhead contact wire. At each end of the locomotive there are two motors, each driving a jackshaft, the power being transmitted through springs and side rods to a set of three driving axles. The combined one-hour rating of the motors is 4800 hp. and at this rating the tractive effort is 87,200 lb., the maximum speed being 20.6 m.p.h. These facts have been furnished by William F. Keisle, Jr., mechanical engineer of the Pennsylvania Railroad.

But not only in this country have things been happening electrically on steam railroads during the past year, but also in other countries, notably Australia. The electrification of the Metropolitan Railway system of Melbourne was put in service last May. In 1908, C. H. Merz, the distinguished English authority on electric railroading, first reported favorably on the electrification of the Melbourne suburban section of the Victoria Railway System. Proposals were received in 1912 based upon the single-phase, 11,000-volt alternating-current system and upon the 1500-volt direct-current system. Under both methods the propulsion current was to be collected from overhead catenary contact wires, supported by steel masts or bridges. It was reported that the single-phase scheme would have cost 23 per cent more than the direct current, and it was estimated that it would cost 21.7 per cent more in annual operation. High-voltage direct current was, therefore, adopted. The delay in completing this work is attributed to war conditions.

Mr. Katté then gave some details of the Melbourne electrification which need not be repeated as they will be found fully covered in articles in this paper, one of which appears elsewhere in this issue.

RECENT PROGRESS IN ARC WELDING

Following Mr. Katté, Mr. Currie gave the results of the experience of the New York Central Railroad with arc welding in repair work. He prefaced his remarks by calling attention to the fact that one phase of welding that has had but little attention is the fundamentally important one of preparation, to which he wished to direct special attention in his paper.

The facilities in the New York Central shops for electric welding consist of both direct-current and alternating-current units of various makes. Depending on local requirements they are either portable or in a fixed location. All of the alternating-current equipment is of the transformer type. All types have given satisfactory service.

The welding equipment comprises the single-operator type of machine, suitably located throughout the buildings and so connected by bus lines that machines can be electrically connected to any outlet throughout the shop. This arrangement gives all of the advantages of multiple-operator machines with none of the disadvantages.

The saving in the locomotive shops since electric welding was installed can hardly be calculated and the additional mileage that is obtained from locomotives is remarkable. This is mainly due to the following: (1) Greater permanency of repairs; (2) shorter periods in the shop, giving additional use of equipment; (3) existing shop facilities can take care of larger numbers of locomotives than originally expected, thus relieving shop congestion; (4) the use of worn and broken parts, which without electric welding would be thrown into the scrap pile; (5) the time required to make repairs is much less and the repairs require fewer men, and (6) a smaller quantity of spare parts need be carried in stock.

Mr. Currie then gave a number of examples of actual processes in welding, stating, for example, that in the work of repairing wheels great success had resulted from welding. Flat spots had been built up without removing the wheels from the locomotives, thus effecting a great saving in time and money. Building up sharp flanges has also been very successful. Many axles are being reclaimed by building up the worn parts. These are tender and truck axles which are worn on the journals, wheel fits and collars. The saving is about $25 per tender axle and $20 per truck axle. There is also a large saving in welding broken parts of shop tools and machinery.

Mr. Currie called attention to the importance of careful training of operators for arc welding. Success here depends solely on the men who do the work. They must be instructed in the use of the arc; the type, size and composition of the electrodes for various classes of work, and the characteristics of the various machines which they will be called upon to use. A properly equipped school for teaching these matters would be a valuable adjunct. Manufacturers of equipment have recognized the importance of proper instruction and have equipped schools where men are taught the welding art free of charge.

Another important matter is intelligent supervision. The duties of an inspector might be summarized as follows: (1) To see that the work is properly prepared for the operator; (2) to insure the good condition of machines and wiring; (3) to advise as to the proper selection of electrodes; (4) to inspect the weld in process of application and when finished, and (5) to act as adviser and medium of interchange of welding practice among shops.

Bare electrodes should be used almost exclusively even for alternating-current welds. Whenever a new lot of electrodes is received, it is good practice to make up test-piece samples so that they may be subjected to careful test and analysis. In railway practice the sizes of electrodes and uses to which they are put are as follows: (1) Flue welding, $\frac{1}{8}$ in.; (2) repair work, broken frames, cylinders, etc., $\frac{5}{8}$ in.; (3) building up wearing surfaces, $\frac{7}{32}$ in.

Mr. Currie concluded by suggesting the following rules for guidance in welding procedure:

1. *Preparation.* The work should be arranged or set up so that the electrodes may be held perpendicular to the plane of welding. When this cannot be accomplished the electrodes must be bent so that the arc will be drawn from the point and not the side of the electrodes. The surfaces to be welded must be thoroughly cleaned and free from grease and grit.
2. *Electrode.* The proper electrode and current volume must be selected for the work to be done.
3. *The arc* should be maintained as constant as possible.
4. *The prepared surface* should for nearly all work be evenly welded over and then the new surfaces welded together.
5. *Shields or helmets* of suitable type must be used with proper color values for the lenses.

In the work described by Mr. Currie a good operator will deposit an average of $1\frac{1}{2}$ lb. of electrode per hour. The limits are from 1 to 2 lb.

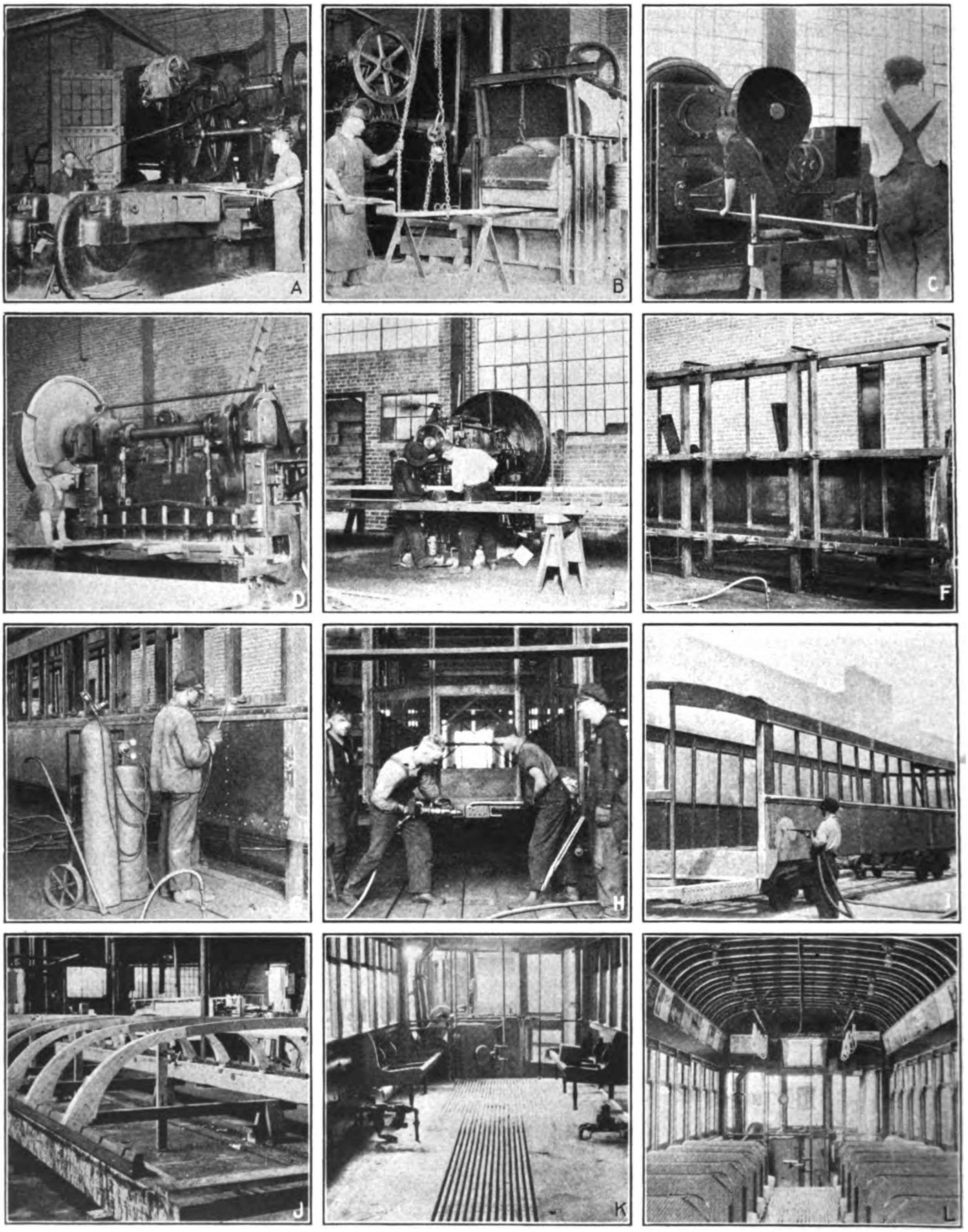
Limiting the Load on Richmond Safety Cars

IN RICHMOND with only eighteen safety cars in operation at the present time, the management has already reached the conclusion that the service which these cars render to the public will be enhanced by observation of a limited load rule. It has adopted the practice of placing a car-full sign in the front window when the number of passengers on the car reaches fifty. With a seating capacity of thirty-two, this gives a standing load of eighteen passengers—certainly a large enough load according to the comment of Mr. Buchanan, the general manager. The contention is that when a car becomes loaded beyond this point, its operation is unduly handicapped. The ingress and egress of passengers is so obstructed that the standing time of the cars is annoyingly prolonged, the passengers become impatient at the delay and condemn the cars, and the operator meets with difficulty in collecting all the fares.

The car-full sign on the Richmond cars has been mounted on a frame inside the car within easy reach of the operator and pivoted about a horizontal axis so that it may be reversed without the slightest delay or effort. On one side the sign reads, "Car Full," and on the other, "Please Have Exact Fare Ready." Thus far there has been no complaint on account of the practice which this sign signifies.

Ivy L. Lee Extends Organization

Ivy L. Lee's organization is now constituted of the following men: J. W. Lee, Jr., W. W. Harris, Daniel T. Pierce, Thomas J. Ross, Jr., Charles W. Towne, Edward N. Lewis, Thomas E. Orr and William L. Dempsey, with H. W. Dengler, Jr., as office manager. The experience represented by this organization includes extended daily newspaper work, technical journalism, political reporting, legislative reporting, advertising management, and other publicity work of many kinds.



Some Steps in the Fabrication of Cars in Detroit United Shops

A—The big bulldozer handles most of the bending work. B—Bolster members are heated in oil-burning furnace before bending. C—Profile shear for cutting angles, channels and bars. D—All large plates for side sheathing are cut in the gate shear. E—Practically all holes in construction of new cars are punched. F—The sides of the car are first assembled on a vertical template. G—The oxy-acetylene apparatus is used in welding joints. H—There is plenty of riveting to be done. I—The sand blasting is done as the car passes on to the carpenter shop. J—The roof is also built on a template. K—The car is now ready for the paint shop. L—Interior of completed car looking toward the front.

Shop Methods Used in Building Cars

Detroit United Railway Is Engaged in an Elaborate Car-Building Enterprise—Templates Used in Constructing Standardized Interchangeable Unit Parts

IN THE EXTENSIVE car building program upon which the Detroit United Railway has entered it is planned to turn out some six or seven cars per month for an indefinite period and by shop methods which differ materially from those usually employed by electric railway companies. This was briefly referred to in a description of the details of design and construction of these cars in an article in the issue of this paper for Nov. 8, page 863. The several parts of the car are built as units upon templates and later assembled; this method having been devised with the idea of standardization and quantity production. Much of the labor is paid for on a piece-work basis.

NEW EQUIPMENT INSTALLED IN BLACKSMITH SHOP

To facilitate the work in the blacksmith shop several pieces of new equipment have been installed. Among these is a Williams & White No. 28 reversible bulldozer, which is used for most of the bending work. This includes the floor supports, made with special dies and formed cold; the top members of the bolsters, also bent cold; and the bottom members which are first heated in a new Ferguson oil-burning furnace, and such other members as the vestibule support angles, belt rails and sash rests.

Other new equipment includes a Buffalo Forge Company profile shear designed to cut a soft steel bar 3 in. in diameter or the equivalent; a No. 6 plate-bending machine and a No. 8 gate shear, made by Bertsch & Company, the shear being powerful enough to cut a plate ⅜ in. thick and 78 in. wide, and a No. 2 Hilles & Jones power punch capable of punching a hole 1 in. in diameter through metal 1 in. thick. In the construction of the new cars practically all holes are punched rather than drilled. Many other new machines essential to present-day steel car building have also been installed.

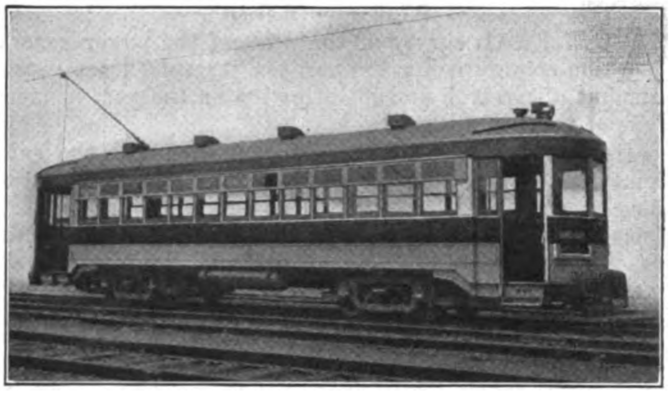
ALL WORK ASSEMBLED BY UNITS ON TEMPLATES

As the steel parts come from the blacksmith shop the two sides of the car are assembled on a vertical template. All parts of this template are adjustable so that if cars of a different design than those now being built are desired they can be constructed on the same template.

The first step in assembling a side is to bolt all vertical T-iron posts to the form. The belt rails and sash rests are then assembled and later the sheet-steel sheathing is bolted in place with its splice plates. The letterboards are then applied and the side sills bolted in position. An angle iron is used at the top of the letterboard as a support for the roof. Next, all parts are riveted together, all joints in sash and letterboard are acetylene-welded and each post is welded at the top and bottom respectively to the letterboard and sash rest.

When both sides have been thus far assembled they are moved along the track and assembled on the body bolsters. After the floor members have been assembled the car is again moved along the track and the vestibules are assembled. All welding is then ground down and the car is sand blasted en route to the carpenter shop and given two priming coats of paint.

The roof is built in three units, the main roof and the front and rear vestibule hoods. Two longitudinal roof angles are first laid out on forms in the carpenter shop and the steel carlines are riveted in place so that one will come over each T-iron post. A pair of wooden carlines is bolted onto each steel carline and two single intermediate wooden carlines are placed between adjacent steel and wood combinations. All holes having been previously punched in the roof angles with corresponding holes in the roof support angles of the car frame, the poplar roofing is applied and covered with canvas duck and the roof, now complete, is assembled on the body framing of the car.


STEEL MOTOR CAR BUILT IN DETROIT RAILWAY SHOPS

The next step is the assembling of all interior wood work including flooring, post furring and lining. All wiring is done in the carpenter shop, the motor wires and resistance being placed in conduit. All equipment, also, except the transverse seats is installed in the carpenter shop. When the woodwork is complete the bodies are placed on trucks and the leads are connected.

PROCEDURE IN THE PAINT SHOP

From the carpenter shop the car proceeds on its own power to the paint shop where the ceiling receives, in order, a priming coat, a putty coat, sanding, a coat of surfacer and two coats of oil enamel. The interior woodwork receives two coats of shellac, is then lettered and finally receives two coats of flat varnish. The base panels are next primed and given two coats of enamel. The floor is then painted and trimming and bronzing is done.

The outside of the car receives first a putty coat, then a sanding and finally a coat of surfacer. Next the roof is painted and finally the car is given a glaze and two coats of enamel and is striped. The fenders, air tanks, etc., are painted black. After all painting is completed the seats, windows and doors are installed.

The French government is putting into operation a plan for co-ordinating the work of the railroads of the country and for providing collaboration of representatives from the different classes of railway workers with the heads of departments and directors in the management of the roads. This will "head up" in the "Committee of Exploitation" comprising representatives from the administrative and operating departments of the lines, representatives of the government and representatives of the employees. A technical committee will supervise the rolling stock, with membership made up of the chief engineers of the lines, manufacturers of road material and representatives of the employees.

Present Status of Engineering Association Standards

Adoption of A. S. M. E. Boiler Code Has Effected Saving in Manufacturing Cost and Improvement in Safety and Operating Methods

BY J. W. WELSH

A GENERAL survey of the work of the power generation committee for the past ten years discloses a great amount of research and investigation on the part of members of this committee.

Its earliest activities have been connected with the boiler house. It is here that the greatest economies in operation have been possible. In the boiler room, however, the problems relate mainly to operating methods and economies as compared with other departments of the electric railway wherein there is a greater use of materials in new construction and maintenance. Notwithstanding this, however, those elements in boiler-house practice which have permitted standardization have received the closest attention and as a result the association has in the Manual the "Boiler Code," the "Specifications for Boiler Tubes," and the "Specifications for the Purchase of Fuel."

Probably the most important and valuable recommendation of this committee has been the adoption of the "Boiler Code" of the American Society of Mechanical Engineers. The preparation of this code has been the work of engineers and experts on this subject, from all parts of the United States. It has resulted in a unification in the construction and manufacture of boilers throughout the country, replacing a condition in which each state had its own requirement. As a result there has been a considerable saving in the cost of manufacture and a tremendous advancement in safety and operating methods.

The "Specifications for Lap Welded and Seamless Boiler Tubes" were developed in the same way as the "Boiler Code" and relate to the chemical and physical properties of steel used in the manufacture of tubes and the methods of installing them in boilers.

In the adoption of a "Specification and Form of Contract for the Purchase of Coal," the association has made an independent contribution as this represents the work of the committee unassisted by outside organizations. These specifications have not been adopted as "standard" but only as "miscellaneous methods and practices," as they serve largely to fix the variable commercial value of coal as its constituent elements change. They should be, however, of material assistance in the preparation of contracts for the purchase of coal.

The researches of the committee during this period of evolution, covering the economics of boiler plants and the improvements in types of equipment for the generation and conversion of electrical energy, have not been so well adapted to standardization. This is well illustrated by the character of the papers that have been presented.

The increase in size of the steam turbine and its substitution for the reciprocating engine and the introduction of centrifugal types of auxiliary apparatus received its greatest development during this period. The commercialization of hitherto laboratory types of measuring devices in the boiler room has permitted the substitution of scientific methods for rule of thumb.

On the other hand, the tremendous growth and complexity of modern power systems have developed great improvements in methods for the control of electrical energy. The possibility of concentrating great quantities of power through the interconnected mesh work of transmission systems has necessitated great advances in suitable control equipment. This is illustrated in the modern switchboard with its gigantic switching equipment, selective relays and other protective devices capable of interrupting instantly the whole power supply of a large city.

The most notable recent development in power equipment undoubtedly has been the automatic substation. The success of this type of laborless apparatus has opened up a new field in the operation of all forms of power equipment, from the power station to the electric car. The recent advances in the cost of labor makes this improvement particularly advantageous at the present time.

The report of this year's committee on power generation represents a well-rounded view of the whole power situation. While it has made no definite recommendations for standards, yet it includes material of permanent value.

The recommendation of a "Standard Form of Contract for the Purchase of Power," meets a very present need in the increasing tendency of railways to take advantage of the economy and diversity of a central power system.

The paper on "Further Consideration of Operating Performances of Railway Power Station" is of special interest, exhibiting the great improvement in operating economy permissible with modern equipment and presents an interesting study of the effect of various factors (such as the form of load curve, size of unit, quality of fuel, etc.) in determining the switchboard cost of power.

The paper on "Automatic Substations" is a review of the experience of those companies where this form of equipment has been adopted. It contains data covering both construction and operating costs together with a statement of operating performances, and is well illustrated.

Modern Steam-Turbine Plants Show High Degree of Efficiency

IN A PAPER read before the American Boiler Manufacturers' Association at Buffalo, N. Y., Dr. D. S. Jacobus pointed out among other things the importance of the relation of furnace and stoker in the matter of design. With a given boiler arrangement, tube spacing, etc., he said, it usually follows that, to secure a high heat transfer, the draft resistence will be greater than with the same amount of surface provided with baffles that will give a lower rate of heat transfer. If the arrangement of heating surface and baffles is such as to lead to too high a draft resistance, the capacity developed by the boiler with a given draft may be lower than desired. If the arrangement is such as to give a low draft resistance, the efficiency may be less than it should be. In providing a proper design, one of these features must be balanced against the other and an arrangement provided which will give the best all-round results.

The addition of an economizer will increase the economy, say 5 to 10 per cent. Now that the price of fuel is increasing, a greater number of economizers are being installed.

For large plants the efficiency obtainable with a modern steam boiler and steam-turbine installation is greater than could be secured through gasifying the coal in producers and using gas engines. A large steam-turbine plant of the best modern design will generate a kilowatt-hour with a heat consumption, based on the heat in the fuel, of 17,000 B.t.u. This is a round figure for plants of the best modern construction with a load factor of, say, 60 per cent and steam pressures of from 250 to 300 lb. By increasing the steam pressure and raising the superheat, the figure can no doubt be reduced to the neighborhood of 15,000 B.t.u. per kilowatt-hour.* There is no likelihood of the gas engine displacing the steam turbine for large power-generating station work for some time to come.

---

* As 1 Kw.-hr. is equivalent to 3412 B.t.u., the thermal efficiency (ratio of output to heat in coal) is 3412 divided by 15,000, or 22.7 per cent.—Eds.

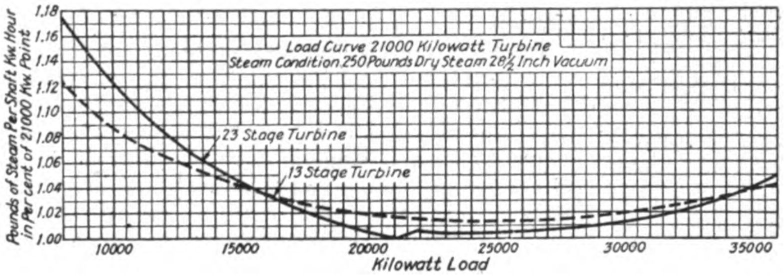
Limitations in Steam-Turbine Design

At the A. I. E. E. Meeting Held in New York City on Nov. 14, the Discussion Brought Out the Relation of Speed, Size, Temperature Rise and Other Factors Which Affect Capacity and Proportions

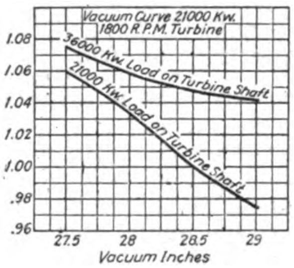
THREE papers on steam-turbine and turbo-generator design were read at a meeting of the American Institute of Electrical Engineers held in New York on Nov. 14. The titles and authors of these were: "Present Limits of Speed and Power of Single-Shaft Curtis Steam Turbines," by Eskil Berg, General Electric Company, Schenectady, N. Y.; "Present Limits of Speed and Power of Single-Shaft Steam Turbines," by J. F. Johnson, Westinghouse Electric & Manufacturing Company, East Pittsburgh. Pa., and "Present Limits of Speed and Output of Single-Shaft Turbo-Generators," by F. D. Newbury, Westinghouse Electric & Manufacturing Company.

OPERATING CHARACTERISTICS OF LARGE TURBINES

Mr. Berg gave data regarding two typical large turbines, one built for 1800 r.p.m. and the other for 3600 r.p.m. and both of the single-flow type. The 1800-r.p.m. machine has twenty-three stages, the pitch diameter of the first stage wheel being 35 in. and that of the last wheel 88 in. The curves reproduced show the best efficiency at 21,000 kw., although with the sacrifice of 5 per cent in efficiency an output of 36,000 kw. can be secured, live steam being by-passed to the eighth stage shell above 21,000 kw., thus accounting for the break in the curve. The curve in dash-line is for a similar turbine in which the first eleven stages are replaced by one two-bucket stage.



STEAM CONSUMPTION OF 21,000-KW. TURBINE, EXPRESSED IN PERCENTAGE OF CONSUMPTION AT RATED LOAD



RELATION OF VACUUM TO CAPACITY FOR 21,000-KW. TURBINE, EXPRESSED IN TERMS OF PERCENTAGE OF RATED LOAD

A second graph shows the effect of vacuum in the twenty-three-stage turbine. Still others show the efficiency of the machine in the last stage, the percentage of energy in the steam which is turned into mechanical energy in this stage, the percentage of energy in the loss of the exhaust and various losses in the machine. As the overload increases the per cent of the energy transformed in the last stage increases, with reduction in efficiency both of the last stage itself and of the turbine as a whole.

The final diagram reproduced gives a load curve of a 3600-r.p.m. turbine, having five stages, one two-bucket wheel in the first stage, and single-bucket wheels in the other four stages. The first wheel has a pitch diameter of 35½ in. and the remaining four wheels one of 54 in. This turbine is designed for a maximum load of 6250 kw.

From the data given in the paper, Mr. Berg concluded that for a given speed there is one particular size of turbine which can be designed to be most economical as to steam consumption, weight, space and price per kilowatt. Even if a size smaller than this is required, it would in many cases pay to install the larger unit even though it would have to run at reduced load for some time.

In some of the first large machines of the type discussed, serious trouble has developed through the formation of cracks in the forged wheels. The cracks have started at holes in the wheels provided either for balancing steam pressures on the two sides of the wheels or for the attachment of balance weights. Much evidence has been accumulated to show that the trouble with the wheels has not resulted from stresses in excess of those which had previously been found to be practicable, but was caused by fluttering and vibrations of the wheels due to the lightness and thinness of their construction.

To overcome such troubles as have developed it is simply necessary to make the wheels stiffer and to put in holes in parts near the hub where a suitable reinforcement of thickness can be provided which stiffens the wheels and reduces the stresses near the holes.

Experience has shown that in the absence of a tendency to form fatigue cracks through vibration, over-speed in such turbine wheels involves relatively little danger as compared with other types of high-speed machinery.

Fluttering or vibration of the web of the wheel not only causes fatigue cracks in the wheels themselves, but also causes loosening and breakage of buckets. A cure for these difficulties is to use stiffer wheels and stiffer buckets, so that the whole structure is incapable of vibration of any amplitude through such forces and periods as arise from the conditions of operation.

WITH HIGH-VACUUM TURBINES THE LIMIT OF POWER IS DETERMINED LARGELY BY THE AREA THROUGH THE LAST STAGE

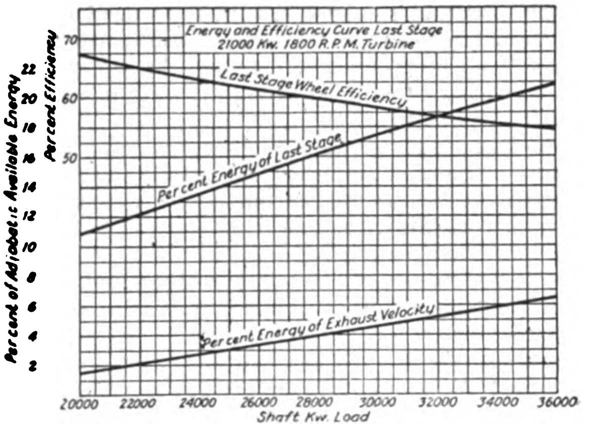
In his paper Mr. Johnson divided the limitations in the size of turbines into three classes—theoretical, physical and economic. That the limiting feature is the area obtainable in the last stage can be seen from the fact that whereas a pound of steam when entering the first stage has a volume of less than 2½ cu. ft., when passing through the last stage it has a volume of approximately 395 cu. ft. when expanded to 28½ in. vacuum, and 585 cu. ft. when expanded to 29 in.

Under theoretical limits Mr. Johnson stated that for a given diameter and blade height, the capacity will be limited by chosen maximum values of steam speed through the blades, in order to keep the leaving losses, or available energy in the steam discharged through the condenser, within permissible limits. Throughout the entire turbine, with the exception of the last few stages, steam speeds only about 25 per cent in excess of the corresponding blade speeds are employed in order to secure maximum efficiency.

In the last stages the steam speed may be twice the blade speed.

When the height of a row of blades is fixed, the area of the steam space is dependent upon the angle formed between the center line of the row of blades and the outlet portion of the blade. The smaller this angle is, the smaller will be the area and *vice versa;* on the other hand, the smaller the angle the higher the efficiency, because of the lower absolute velocity left in the steam discharged to the condenser.

Chief among the physical factors limiting turbine capacity are the physical characteristics of the materials employed and the chosen limits to which these materials may safely be stressed. Conservatism demands adherence to the lower-strength, less-sensitive materials, rather than special alloy steels; and such materials may, with suitable forms of construction, be safely stressed under the maximum stress condition to within a few thousand pounds of their true elastic limits. The steel regularly used by the Westinghouse company for turbine rotors shows these characteristics with standard 2-in. specimens: Tensile strength 65,000 to 75,000 lb. per square inch; true elastic limit 22,000 to 25,000 lb.; elongation 15 to 18 per cent, and reduction of area 20 to 25 per cent. The material is obtained ordinarily in the form of castings, although occasionally forgings are used.



CHARACTERISTIC CURVES OF LAST STAGE OF 21,000-KW. TURBINE

There exist two interesting relations between the stress at the base of the blade, the steam passage area through the blade and the rotative speed. They are these: (1) For any given rotative speed and blade angle, the steam capacity or steam area through the blades is directly proportional to the stress at the base of the blade, regardless of diameter and blade height selected. (2) For any given stress the area through the blade will vary inversely as the square of the speed.

Increased capacity without decrease of rotative speed or increase of stresses may be obtained by employing multiple, low-pressure stages. This expedient possesses the merit of permitting high-vacuum turbines to be built at speeds and capacities up to approximately the present limits of generator construction, without exceeding moderate diameters, blade lengths and stresses.

An important limit of size and capacity now being approached is that imposed by transportation facilities. For example, the low-pressure rotors of the 30,000-kw. Interborough Rapid Transit turbine had to be shipped with the last-stage blade-carrying element removed. Ways may be devised for partial dismantling of rotor elements, as in this case, although diameter will be one of the limiting factors. This cannot be reduced beyond the point of omission of blading.

While the physical dimensions and capacities of turbines are being constantly increased, it is essential that the reliability factor be not decreased. The employment of special materials and higher stresses does not usually permit increased capacity or efficiency without a corresponding increase in weight and cost unless reliability be compromised.

SOME ECONOMIC LIMITATIONS

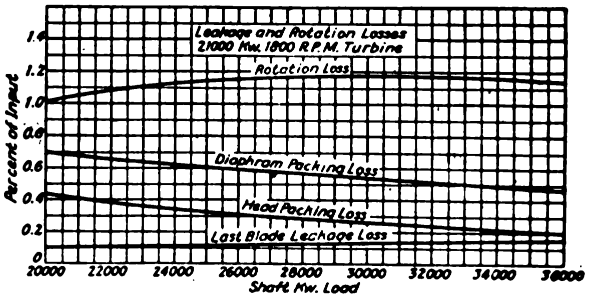
As yet turbines of large capacity are not required in sufficient quantity to warrant equipping and operating shops for their exclusive manufacture. They must, therefore, be produced largely by the same processes and equipment as are used for smaller turbines. As sizes become larger, a greater proportion of special equipment and processes becomes necessary, resulting in increased rates of cost, unless accompanied by very material increase in quantity of production. Under present conditions this economic limited capacity agrees closely with the physical limits of 1500-r.p.m. units.

In the larger low-speed structures, the physical proportions become such that, using ordinary steel and cast iron to which we are limited by the metallurgical art, the distortions due to temperature changes and elastic properties of the material are such that increased clearances and bracings have to be employed. Further development of the allied arts and increased demands for larger units will tend to reduce the influence of this limitation factor. Another factor tending to limit capacity of single units is the loss resulting from suspension of service for inspection or repairs.

In order to avoid the undesirable characteristics referred to, a number of turbine units of capacities varying from 30,000 to 60,000 kw. have been built in which the turbines have been divided into two or three separate compounded elements, each having its own generator and each capable of operating alone on high-pressure steam in emergencies. It is believed that units of this type will continue to be employed for the larger capacities because of the advantages not obtainable in single cylinder types which justify their somewhat greater cost.

GENERATOR OUTPUT IS DETERMINED BROADLY BY ROTOR OR STATOR DIMENSIONS

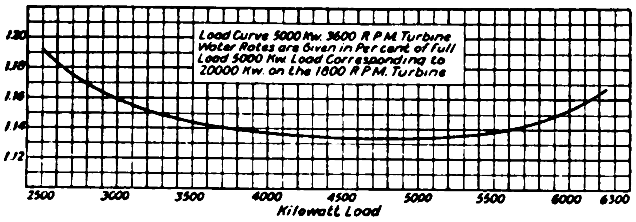
From the electrical end of the turbo-generator units, according to Mr. Newbury, the maximum output at any speed is obtained when slot space is provided for the maximum possible ampere-turns (in either stator or rotor) and core cross-section is provided for the maximum possible flux. These conditions require the most effective rotor diameters (or stator bore) and the maximum rotor and stator core length. All factors that limit rotor diameter (or stator bore) or core length have a possible bearing on limiting output.



OVERLOAD LOSSES IN 21,000-KW. TURBINE, EXPRESSED AS PERCENTAGE OF INPUT

For maximum output the rotor should have maximum space for winding, and maximum tooth and core section for flux. Obviously these requirements are antagonistic and the actual design is a balance between slot area and polar area.

Again, as the diameter is increased (with a given speed) there is more room for both winding and flux, but with increase in diameter each pound of copper exerts an increasing centrifugal force and the ratio of slot area to tooth cross-section must be decreased in order to keep within desired stresses. Beyond a certain peripheral velocity, ampere-turns must be decreased in spite of the increase in available space, and the most effective diameter has been passed. It is seen, therefore, that in order to obtain maximum output at a given speed the rotor proportion must be chosen properly to balance mechanical stresses, rotor ampere-turns and flux.



CHARACTERISTIC CURVE OF 5000-KW. 3600-R. P. M. TURBINE SHOWING WATER RATE AS A PERCENTAGE OF THAT AT A LOAD OF 20,000 KW. ON THE 1800-R. P. M. TURBINE

Voltage regulation has ceased to be a limit to the output of electric generators due to the use of voltage regulators. Permissible regulations are roughly 25 per cent, at 100 per cent power factor, and 40 per cent, at 80 per cent power factor. Obviously such regulations could not be tolerated if regulation were a factor in operation.

Turbo-generators are designed for a maximum speed 20 per cent above the running speed. At this over-speed the tooth stresses should be approximately one-fourth the ultimate strength of the carbon steel and the coil-retaining-ring stress should be approximately one-third the ultimate strength. This results in working stresses, in both cases, of approximately one-half the yield point. It is important that the material be ductile. Carbon steel, with proper working can readily be obtained with 22 per cent elongation and 25 per cent reduction in area, and the alloyed steel should have 22 per cent elongation and 50 per cent reduction. These figures refer to standard 2-in. test pieces under tension.

American design practice has established 400 ft. per second as an upper limit of peripheral speed for maximum ampere-turns in output, for rotational speeds to 1500 r.p.m. and higher.

In the paper Mr. Newbury went on to discuss the factors of ventilation, rotor deflection, winding temperatures and transportation facilities as limitations in generator design. Under the first head he said that designers are already finding it necessary to devise more complicated systems of ventilation in order to take care of 3600 and 1800-r.p.m. ratings now in prospect. As to rotor deflection, obviously as the rotor length is increased, the journal and bearing sizes must be increased in order to keep the shaft stress and the critical speed within desired limits, and the limit may be imposed by bearing losses and temperatures. As to winding temperatures, values higher than 150 deg. result in relatively little gain in rotor ampere-turns on account of the rapid increase in the resistence of the windings. For example, a doubling in temperature rise and rotor loss may result in a gain of only 25 per cent in output. Very high temperatures also introduce danger of trouble from "creeping" of the windings caused by linear expansion. Finally, as to transportation facilities, the same consideration holds as in the case of the turbines. The limiting capacities given for speeds below 1500 r.p.m. can only be obtained by exceeding present transportation facilities if present design types are adhered to.

In conclusion, Mr. Newbury said that he had not intended to express an opinion as to the wisdom of installing very large single-shaft units. Whether it is desirable or even wise to install very large units—above 50,000 kw.—will depend very largely on the growth and size of the generating stations. As stations become larger there will undoubterly be a demand for units of 50,000 to 100,000-kw. capacity. If single-shaft generators are justified from the turbine standpoint, there is no question but that such generators can be conservatively designed and constructed.

DISCUSSION BRINGS OUT EFFECTS OF VIBRATION

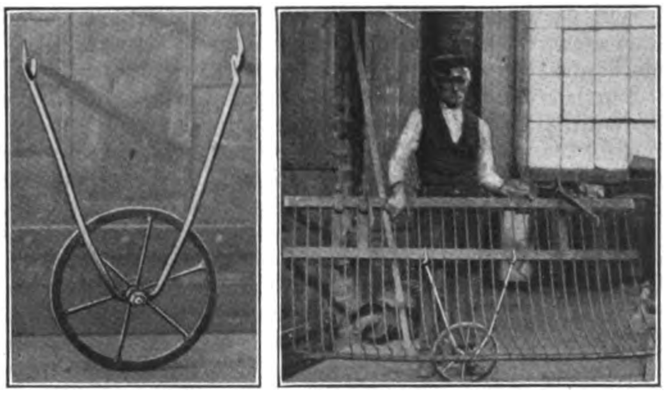
The three papers abstracted above were read together and discussed as a whole. One fact which was dealt upon considerably was the effect of vibration in producing fatigue in the highly-stressed members in turbine and generator construction. In the turbine the disk wheels, of comparatively thin construction, are subject to vibration, particularly at certain speeds, and there was some question as to the effect of continued vibration on the mechanical properties of the steel.

The retaining rings used to resist the effect of centrifugal force on the end windings of the generator rotors also came in for attention. There was some feeling that the high stresses permitted at present might in time cause deterioration of these rings. However, the discussion as a whole brought out the fact that the effect of vibration can be controlled, and that, if materials are used with reasonable factors of safety, there is no reason why turbines and generators cannot be designed to be entirely reliable.

Handy Shop Carriage for Fenders

A FENDER is an awkward thing for one man to handle even with the ordinary small two-wheel truck. A single-wheel carriage which enables one man to transport a fender about the shop through narrow openings and without any lifting has been constructed in the shops of the Tri-City Railway, Davenport, Iowa.

The frame of the carriage consists of a single ⅝-in rod bent to the shape, indicated in the photographs. The ends form two supporting hooks and the center is flattened and drilled to admit the axle. The latter is attached rigidly to the frame by means of a shoulder and nut. The wheel was constructed entirely with the acetylene welder from sections of steel bar and a piece of steel tube for a hub.



AT LEFT, SIMPLE CARRIAGE FOR TRUCKING FENDERS ABOUT SHOP. AT RIGHT, THE FENDER, WHICH IS SUPPORTED BY AND RESTS ON THE CARRIAGE FRAME, IS MOVED LENGTHWISE

The hooks are placed under the fender as indicated and when the wheel is in a vertical position the fender rests on the carriage frame. The carriage when not in motion also acts as a support to hold the fender upright.

Facts Regarding Motor-omnibus Service *

The Author Advocates the Giving of Bus Service as Auxiliary to Municipal Tramways Although Its Field of Profitable Operation is Limited

By A. R. Fearnley

General Manager Sheffield Corporation Tramways and Motors

ON MANY occasions recently when the question of road passenger transport has been under discussion the opportunity has been taken of suggesting that extensions of electric tramways should not be made, but that any further transport facilities required on the roads should be provided by motor omnibuses. This opinion, of course, comes from those who have had no experience in handling passenger transport work by the electric tramcar.

I propose to look at the question from the point-of-view of the municipality engaged in passenger-transport work, and to show as a result of the experience gained while working motor-bus services as auxiliary to a large tramway system, during the past seven years, how and to what extent motor-omnibuses can best be utilized.

Under present conditions it is comparatively easy for any municipality to obtain powers from Parliament to work motor-omnibuses within its own district, and despite the opposition which is generally met with from railway and motor-bus companies, county councils, and urban district councils, it can also obtain powers to work omnibuses in the districts adjoining its boundaries.

In 1907 the Sheffield Corporation obtained a clause which reads as follows: "The Corporation may provide and run motor-omnibuses within the city, and also in connection with its tramways in certain districts adjoining the city on the following routes." Then follows a description of the routes outside the city boundary on which the Corporation is authorized to run motor-omnibuses, and as will be seen from the accompanying map most of the main roads leading into the city are now provided with bus services; on those which are not so provided powers have been already obtained, and in a short time services will be in operation.

Another clause provides that the Corporation shall make payment to the road authority of ¾ cent † per bus-mile run by its motor-omnibuses; also that the Corporation shall not be required to make any payment in excess of the sum of ¾ cent per bus-mile in respect of any road which has not been constructed or reconstructed so as to be adapted for mechanical traffic.

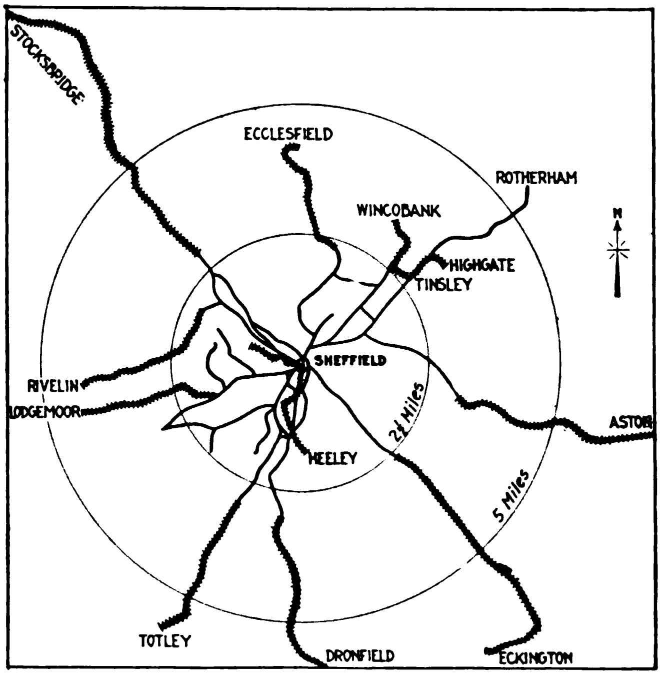
Further clauses provide that the Corporation shall not be required to make any payment in respect of the cost of raising the standard of any road to meet the requirements of mechanical traffic, and that if a grant from the imperial exchequer is made in respect of any roads towards the cost of maintenance the amount to be paid by the Corporation shall be proportionately reduced.

These clauses remain operative for at least five years from March 31, 1919, and were settled by agreement with the West Riding County Council and the Derbyshire County Council so recently as the summer of 1918, after they had had five years' experience in the running of the motor-bus services over their roads.

Another clause in which the Sheffield Corporation appears to have been more fortunate than many other undertakings is in the fare clause. Our clause in regard to this matter reads as follows: "The Corporation may demand and take such reasonable fares and charges for the conveyance of passengers and parcels in or on their motor omnibuses as they may think fit."

With the parliamentary authority above referred to, the Sheffield Corporation commenced in 1913 to run motor-omnibus services on a number of routes within the city and as extensions of its tramway routes outside the city and has continued since that date as opportunity offered to extend such system, until it has now services covering 37 miles of road, of which 15 miles is within the city boundary, and 22 miles outside the city on County Council roads. Altogether about forty motor-omnibuses are employed. At least six additional routes are contemplated, a number of which are to be put into operation as soon as a further supply of suitable omnibuses can be obtained.

The results of the first three years operation were excellent but, of course, war conditions, especially during the last two years, made the working of the services very difficult. At times, owing to inability to obtain spare parts and carry out repairs, it was almost impossible.



OUTLINE MAP OF TRAMWAY AND MOTOR-BUS LINES IN SHEFFIELD
Heavy lines show bus routes

The expenses for the last two years are as follows:

AVERAGE EXPENDITURE PER BUS-MILE

	1915 Cents	1918 Cents	1919 Cents
Traffic expenses	6.02	9.86	14.17
General expenses	0.74	0.76	1.06
Repairs account	3.83	8.82	9.05
Road maintenance account	0.11	0.29	0.40
Power expenses (gasoline)	3.37	8.31	11.10
Total working expenses	14.07	28.04	35.78

Although on country roads the single-deck bus is the more satisfactory type of vehicle, the preference in the district for the double-deck bus is so pronounced that we have tried as far as possible to meet this requirement, 75 per cent being of the latter type.

On the city routes this class of service undoubtedly provides a great public convenience for short-distance cross-town traffic through streets and districts which cannot be served by cars.

The traffic which has been developed on roads branching off from tramway routes is enormous, and has astonished its most sanguine advocates. The use of buses as extensions to existing tramway routes has also proved very satisfactory. In addition to paying their way, they have

---

* Abstract of paper read at meeting of Municipal Tramways Associations, of Great Britain. For more complete abstracts see *Electrical Review*, London, *Tramway & Railway World* and other British periodicals. This abstract amplifies the brief note printed in the issue of this paper for Nov. 8.

† Amounts in American money have been obtained by assuming a value of 2 cents for 1d.

brought a great amount of traffic to the tramways. What this means in the summer months may be gathered from the motor-bus traffic return for the last completed week, ended Aug. 17, 1919, as follows:

Receipts, $10,327.10 (fare 3 cents per mile)
Passengers carried, 159,371
Miles run, 20,768 (lost mileage, 59 miles)
Receipts per bus-mile, 50.2 cents
Receipts per bus-mile up to date this year are 47.1 cents

The traffic on bus routes is greater in summer than in winter, the ratio of difference being much greater than on the tramways. There is no doubt that the general effect on the outlying districts is in every way beneficial.

The motor-omnibus, so far as it has been developed up to date, is:

1. An excellent vehicle in acting as feeder of and in connecting up tramway routes and services.
2. An unsuitable vehicle for dealing satisfactorily with heavy town traffic.
3. Quite inadequate for dealing with peak loads.
4. Financially impossible for workmen's traffic at reduced fares.
5. In regard to average speed maintained throughout the day it has no advantage over the electric tramcar.

The maximum seating capacity that we have so far been able to provide is thirty-seven against the maximum of seventy-six on the latest type of tramcar. The new type of bus, of which one has just been put on the streets by the London General Omnibus Company, seats forty-six passengers.

The great difficulty from the passengers' point of view is that only twenty-two passengers on the new type of bus are provided with cover or a comfortable seat under inclement weather conditions which prevail during eight months in the year, whereas the whole of the seventy-six passengers on the tramcar referred to are under cover and traveling under reasonably comfortable conditions whatever the weather conditions may be.

There are very few tramcars running today in the busy manufacturing centers or thickly-populated districts without covers, experiences having shown that for the greater portion of the year the top-deck seat on the open-top car is of little use and the vehicle without top cover becomes practically a single-deck tramcar.

For dealing with the peak loads the Sheffield type of bus with its maximum of thirty-seven seats would be of very little use; for the Tinsley district in Sheffield, each evening we have to provide a service of eighty-two cars per hour, in which time we carry 5576 passengers at an average fare of less than 1 cent per mile. To carry these passengers the number of buses would have to be double the number of cars provided, and in wet or winter weather this would be totally inadequate for the purpose. Given this necessary increase in the number of vehicles, serious loss would result if the same fares as are now charged on the tramways were maintained.

The 3½-ton maximum weight allowed for the London bus is of no use for the provinces. Actual experience has shown us that a body of the London type after two years on roads such as are met with in the Midlands and North County is in such a condition that very heavy repairs are required, and in fact it then becomes a question whether such type of body is worth repairing for work under such conditions. The makers themselves have confirmed this opinion, and today decline to build a body of that type for use in the provinces.

The minimum weight of a double-deck omnibus for roads such as are found in our district is 4½ tons, and the difference in weight of vehicle per passenger carried in the provinces is, therefore, very little in favor of the motor-omnibus, as compared with the tramcar.

COMPARATIVE FIGURES FROM THE 1918-1919 SHEFFIELD ACCOUNTS

	Per Car-Mile, Cents	Per Bus-Mile, Cents	Bus Expenses Are
Working expenses.	24.77	35.79	44.5 per cent more than tramways
Service of debt (capital)	3.37	1.85	45.3 per cent less than tramways
Total expenses.	28.15	37.63	33.7 per cent more than tramways
	Tram-Ways, per Passenger, Cents	Omni-Buses, per Passenger, Cents	Bus Expenses Are
Working expenses.	1.43	4.27	198 per cent more than tramways
Service of debt (capital)	0.19	0.22	12.8 per cent more than tramways
Total expenses.	1.63	4.49	176 per cent more than tramways
	Tramways per Seat per Car-Mile, Cents	Omnibuses per Seat per Bus-Mile, Cents	Bus Expenses Are
Working expenses.	0.46	1.06	131.3 per cent more than tramways
Service of debt (capital)	0.06	0.05	129 per cent less than tramways *
Total expenses.	0.52	1.11	114.1 per cent more than tramways
	Per Car-Mile, Cents	Per Bus-Mile, Cents	Bus Receipts Are
Traffic receipts ...	33.13	40.91	23.5 per cent more than tramways
Traffic receipts per seat provided ...	0.61	.122	98 per cent more than tramways
Average fare charged per mile.	1.30	3.0	130 per cent more than tramways

* This is an important figure and one which is often entirely overlooked by the motor-bus advocates. The impression usually left is that the difference in capital expenditure is much greater.

Appended are some figures for the year ended March 25, 1919, showing:

1. That the revenue expense of running the motor-bus is 44.5 per cent more than the tramcar. After giving the motor-omnibus the benefit of its comparatively lower capital expenditure it still costs 33.7 per cent more than the tramcar to work per mile.
2. The revenue expenses per passenger carried on the motor-omnibus are 198 per cent more than on the tramcar. The total expenses per passenger carried are 176 per cent more on the bus than on the tramcar.
3. Per seat provided, the omnibus revenue expenses are 131.3 per cent higher than the tramcar revenue expenses. The total expenses per seat provided are 114.1 per cent higher on the bus than on the tramcar.

The average speed of the buses is 9.97 m.p.h., and that of the tramcars 8.65 m.p.h., that is, 15.26 per cent in favor of the bus. Bearing in mind, however, that 75 per cent of such bus mileage as is here referred to is run on urban and rural roads, it will be seen that under similar conditions the speed of the tramcar in the provinces is easily equal to the speed of the bus, so that in this respect there is nothing to choose between the two vehicles.

What is very necessary at present to assist the motor-omnibus undertakings in carrying out their work is a plentiful supply of fuel at a reasonable price; that is not a price a cent or two below the monopoly price of the "petrol ring," which is not the way to encourage the use of either benzol or any other home-produced motor fuel.

In conclusion, I would like to suggest that it is the duty of every tramway-owning municipality to undertake this work.

New Executive Members City Representatives' Association

In the report of the organization of the American Association of City Representatives of Electric Railways at Atlantic City, reported in the issue of this paper for Oct. 11, the statement was made that the executive committee was not filled and that two other members of the committee would be named later. W. C. Culkins, secretary of the association, now announces that these places have been filled by the election of Fielder Sanders, Cleveland, and Lynn D. Milam, Dallas.

Straightforward Publicity Does Bring Results

Experience in Massachusetts and in Several Canadian Cities Is Cited to Show that the Public Wants Facts on the Traction Situation

BY ERNEST B. FREDERICKS

Street Railway Publicity Expert, Ottawa, Ont.

DURING the past five years electric railway companies in many cities have taken the public into their confidence to an extent that would have made the industry stand aghast before the era of co-operation began. In the final analysis the new order of things pays. In places where the companies have been in constant touch with their patrons it is noticeable that a much better relationship exists and a much better understanding of operating conditions is had by the public. From this we can deduce the conclusion that the closer the bond between the car riders and the company, the stronger the position of the latter will be when an issue, vital to the industry, is before the people.

LAST YEAR'S MASSACHUSETTS PUBLICITY CAMPAIGN WAS UNIQUE

Concrete examples of what can be accomplished by well-organized publicity campaigns are not difficult to find. In Massachusetts last year there was conducted what will probably stand for some time as a record performance along these lines. It was undoubtedly the most pretentious and extensive campaign of its kind ever waged in behalf of a definite group of public utilities, because it took in the entire State and covered every road operating therein, whereas in most cases a campaign is limited to one city or county, or to the territory served by one company.

At the time the campaign was started practically every electric railway in the State was in financial distress. Service was breaking down, the public was dissatisfied, governing bodies were non-committal as to what they would do, the Public Service Commission had gone as far as it felt it could, the Legislature was "looking into the matter," investigations were pyramided one on top of the other without getting anywhere, and meanwhile the industry was getting to the end of its rope. Everybody admitted that something ought to be done, but no one had anything tangible to offer except the public-ownership advocates who, while not knowing exactly how the State would get out of the mess if it took over the roads, believed that it might be well to "let George do it."

Realizing that quick action was necessary if the business was to be saved, the security holders to the number of more than 15,000 banded together to devise some means of bringing order out of chaos. It looked like a hopeless task but they went at it. An association was formed to conduct a campaign of education, one of the chief objects of which was to try to get the people to unlearn some of the things that they had been taught about the street railways of Massachusetts. This was a man-size job, because for years many papers throughout the State had charged the roads with committing every crime possible in the railway business as well as a number invented as a background to the general arraignment.

To begin with, the association adopted a definite plan for the relief of the roads and came out strongly for a service-at-cost plan adapted to the different needs of the companies and the cities which they served. It was realized that one general bill would not take care of all the roads so three different service-at-cost measures were advocated, one for the Boston Elevated, one for the former Bay State system and one general bill for the other roads in the State. A jitney regulation measure was also advocated as well as one providing for the carrying of freight.

A press bureau was organized as a branch of the association's work, and every paper in the State was provided with articles of a semi-editorial character dealing with the railway situation and offering the service-at-cost idea as the logical solution of the problem. The papers used the material liberally, many of them asking for special articles in addition to the regular stories. As up to that time there had been no organized effort to get all the facts before the people, the papers and the public were in a receptive mood for the material sent out. The newspaper campaign was supplemented by another phase of publicity work that proved of inestimable value. This consisted of sending capable speakers throughout the State to address chambers of commerce, boards of trade and other organizations, on the street railway question. The advantages of service at cost were dwelt upon and as a result of this part of the campaign the plan advocated by the association was indorsed by practically every organization before which it was presented.

Other meetings were called in various sections of the State to the members of the Legislature representing those sections which were invited and the service-at-cost idea was explained to them. Meanwhile hundreds of thousands of booklets were issued, explaining the situation and showing how the service-at-cost plan appeared to be the best available method of solving the problem. These booklets were distributed by banks to their depositors and the remainder were sent direct to thousands of people known to be interested in public utilities. The banks and insurance companies were very helpful allies because under the laws of Massachusetts such companies are permitted to hold street railway securities, and hundreds of thousands of dollars of bank funds are so invested.

MASSACHUSETTS PLAN SPREADS

Coincident with this campaign a legislative committee was at work drafting various relief measures and the association was consulted frequently before the final drafts of the bills previously mentioned were offered for passage. When these measures were first reported to the Legislature there was a promise of formidable opposition, but the work of the association had been well considered and designed to head off such opposition. The members of the Legislature began to receive letters and petitions from their constituents urging the passage of the service-at-cost legislation. Various public-ownership bills made their appearance, but they received such scant support that they were withdrawn. When the final vote was taken the service-at-cost legislation went through both branches of the Legislature with only a handful of negative votes. There is no doubt that the publicity campaign had a great deal to do with the final result because it acquainted the people of the States with the exact situation and, what is equally important, it offered some definite plan for relief.

Encouraged by the result of the intensive campaign in Massachusetts other places that had been awaiting the outcome in conservative New England undertook similar campaigns. Montreal was one of the first to follow the Massachusetts lead and, with the service-at-cost plan as a groundwork, a well-planned campaign was conducted which ultimately resulted in the adoption of the very admirable plan now in force in that city.

St. Johns, N. B., then took a hand at the same work and began to tell the people why the local public utilities needed relief and pointed out the special advantages of service at cost. The situation here was a little complicated because the campaign had to cover heat, light, power and transportation. A variety of literature was issued, dealing with the subject from a number of viewpoints and, in a straight-from-the-shoulder series of talks, pointing out just what would have to be done. This literature was sent out directly to the customers of the different utilities and before long everybody in the city knew about all there was to know of the situation. The result was the appointment of a special commission to investigate the case and when the commission made its report it recommended the service-at-cost plan.

The most recent instance of what well-directed publicity can accomplish was shown in the case of Sherbrooke, Quebec, where the citizens voted by a large majority to do away with the existing contract with the street railway company and substitute a new agreement providing for a substantial increase in fares and making other concessions to the company. The report of this case was contained in a recent issue of the ELECTRIC RAILWAY JOURNAL. The secret of the success of the new agreement was the nature of the publicity campaign that preceded the vote of the people. In Sherbrooke, as in many other places, there was a strong public-ownership sentiment and, when the new agreement was first discussed, it was freely predicted that the measure would be beaten and that the city would vote to take over the road. The publicity work not only proved the impracticability of public ownership at this time but convinced the people that the best way out of the difficulty was to pass the proposed new agreement.

TORONTO IS STILL OBDURATE

In Toronto a campaign of education was launched about a year ago, encountering a political atmosphere that not only antagonized service at cost but opposed any plan that contemplated relief for the street railway. Certain factions had become obsessed with the idea that public ownership was the only remedy for all public utility ills. Whether this was done as a matter of political expediency or was inspired by public-spirited motives has never been clearly determined. In any event the situation was an impossible one so far as the company was concerned and, while the Ontario Railway Board was in sympathy with the principles of service at cost, the city authorities would consider no plan that involved any kind of relief for the company.

An extensive campaign to tell the people the truth was launched, and a straw ballot showed that the majority of the thinking class were willing to pay a straight 5-cent fare for the kind of service they wanted. When the conciliation board, appointed to arbitrate the wage differences between the employees and the company, handed down a decision favorable to the men it embodied a recommendation that the company be allowed to increase its fares to meet the increased operating costs. The city government "smacked its lips" over the wage award but branded the recommendation as "mischievous," and this despite the fact that it had been shown that the company could not make both ends meet by selling six rides for 25 cents. It was another case where a city "out-Shylocked" Shakespeare's famous character, for Toronto not only insists upon the company carrying out its contract but actually demands more cars and extended service. Fortunately, there are few cities that have put such a strangle hold on their street railways.

The inconsistency of Toronto's attitude toward the company is reflected in the open discussion that is being carried on relative to the fares that the city should charge when it takes over the road in 1921. This in itself is an acknowledgment that the present fares are insufficient and doubtless the city has learned from its limited experience in operating street cars what it means to run this kind of a business. The city has been operating about 10 miles of a civic road for a short time and has managed to pile up a deficit of more than $1,000,000. The loss this year will be around $300,000. A lot of people in Toronto are wondering what the city will do when it takes over the 130 miles of road operated by the Toronto Railway.

LEAVEN OF PUBLICITY IS WORKING AT MANY POINTS

In Vancouver, Winnipeg, Ottawa and other places in Canada publicity campaigns are now under way telling the people about the real conditions in the electric railway industry and how they can be remedied. It is safe to say that the people of Canada are better informed on street railway matters today than they ever were before. That they are taking a real interest in the welfare of the roads is attested by the treatment the companies are getting in most cities. With few exceptions the fare in Canada is less than 5 cents, most of the roads selling six tickets for 25 cents. Many of the companies that are in need of relief would be satisfied with a straight 5-cent fare. Some of the others, and among the latter municipally-operated roads, are not so sure that 5 cents is enough and the day of the 6-cent fare seems not far distant in a number of important cities in the Dominion.

Just what the lasting qualities are of a properly directed publicity campaign is shown in the case of Montreal, where the fare has recently been increased to 7 cents, the second increase since the adoption of the present plan. So well informed had the public been kept that practically no opposition was made to the latest increase. The riding public, being in constant touch with the trend of affairs, has accepted the higher fare as a necessity. The result is that Montreal has one of the best services on the continent, and with a continuance of the present spirit of co-operation manifested by the public the city will doubtless always enjoy good service because the company will be able to keep abreast of the demands made upon it. There is no doubt but that intelligent publicity has made it possible to bring about this condition in Montreal. This case also shows the contrast between a city that will not treat the situation with an open mind, as in the case of Toronto, and a city that decides the question on its merits. One has only to compare the service and equipment in the two cities to find the answer.

In Minneapolis, where a service-at-cost plan is under consideration, a very effective publicity campaign has been under way for some months and it is certain that the public is well informed about what is in prospect. With any kind of reasonable consideration when the plan is voted on by the citizens the service-at-cost plan should be approved by a substantial majority.

Richmond, Va., has been conducting an up-to-the-minute publicity campaign which certainly helped to overcome the opposition that for a long time held up the relief that the road needed and ultimately secured.

The above are but a few of the instances where carefully-planned publicity work has been instrumental in leading the public away from false prophets and showing up the sophistry that has characterized much of the discussion about electric railway matters in the past. Without desiring to discourage any of the efforts that are being made to educate the public about conditions in the street railway industry I shall conclude by observing that there is a marked tendency, in the case of some literature issued by street railways, to indulge in a vein of flippancy that is hardly to be commended. There is a great deal that the public should learn about the street railway business and scarcely a day passes that does not produce its quota of live news relative to the industry. There is ample material for a lot of straight talk about subjects that are of very serious import to the business and I can find no better advice than to fall back on the old but always forceful command "Do it now"—*and put a punch in it.*

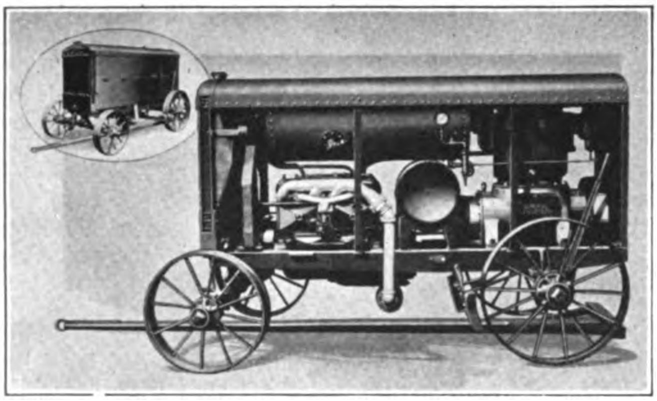
New Portable Air Compressor

ONE thing that has interfered with the use of pneumatic labor saving devices is the trouble and expense of installing an air power plant on a short-time job. Despite the advantages incident to the use of air-operated tools, it is difficult to justify the cost for transporting a stationary machine, the building of a shelter, the setting up of a steam boiler and the laying of a pipe line for only temporary use. To this must be added the cost of tearing down the plant when the job is completed. The portable type of air compressor reduced difficulties somewhat and portable outfits of many varieties have been developed in the last few years.

The Ingersoll-Rand Company has recently introduced a light-weight gasoline engine-driven unit, built in two sizes, to be known as the Imperial Type 14 portable compressor.

These are all-steel outfits and the power plant of each consists of a duplex, vertical compressor, driven at high speed, by a four cylinder, four cycle, tractor type gasoline motor. The outfit, being designed especially for portable use, has unnecessary weight eliminated. The larger machines, of 210 cu. ft. capacity, weigh only 6000 lb. and the 118 cu. ft. unit 400 lb.

The compressors have cylinders cast *en bloc,* with cylinder heads, valve chambers and water jackets integral. Both intake and discharge valves are of plate type and are located directly over the cylinder bore. Crankshafts and connecting rods are drop forgings. Air pistons are fitted with three-piece piston rings and, in addition, with an oil wiper ring. This latter returns all surplus oil from the cylinder walls to the crankcase, and is claimed to obviate the difficulty caused by having the air carry an excess of oil into the receiver.



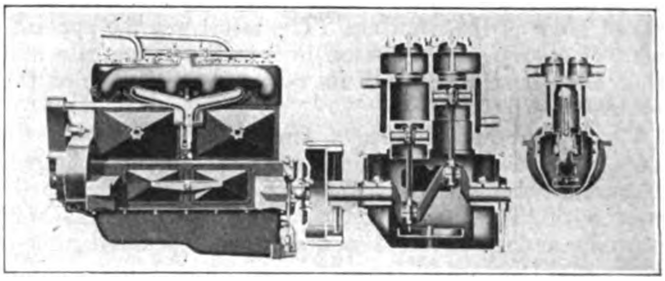
PORTABLE COMPRESSOR 210 CU.FT. CAPACITY

All bearings are die castings of anti-friction metal. Hand holes in the crankcase permit convenient access for adjusting main bearings and those of the crankpins. All parts are lubricated by splash from an oil reservoir in the crankcase.

The compressors are provided with inlet unloading devices which automatically close the compressor intake when the receiver pressure rises above a predetermined limit, and permit the machine to again take up it load when the pressure has fallen a definite amount.

The gasoline driving motors are of long-stroke type, and operate at medium speed. They are equipped with high-tension magneto ignition with automatic governors to maintain constant speed under all working conditions and to prevent overspeeding when idling. A splash oiling system lubricates all moving parts. A starting crank is located at the front of the machine beneath the radiator.

Both compressor and driving motor are water cooled by a circulating system, with centrifugal pump, large radiator and blast fan. The radiators are made up of removable sections, a construction which allows the removal and repair of a damaged section without taking down the entire radiator or interrupting the use of the compressor.



SECTION OF IMPERIAL PORTABLE COMPRESSOR

Each of these units is equipped complete with receiver, safety valve, drain valves, pressure gage and service valves to which the air hose lines may be attached. When the fuel tank has been filled, lubricating oil provided and the cooling system supplied with water, the units are ready for work.

The mounting of the machines provides a swiveled front axle which moves freely in both horizontal and vertical planes. This, with the rigidly attached rear axle, gives three-point suspension, and permits the outfit to pass over inequalities of the ground without any racking effect or misalignment of the power plant.

The two sizes differ in respect to the location of the air receiver and in minor details of design.

Non-Slip Shoe for Ladder

IN the September issue of the *Railway Mechanical Engineer,* A. G. Johnson describes a safety-non-slip shoe for use on ladders. This shoe is made of a hardwood block and it is fastened to the base of the ladder by means of two steel plates. A pad of rubber is glued and then nailed to the underside of each hardwood block, to prevent the ladder from slipping while in use on a hard or smooth surface. These shoes have been in use in the shop of the Duluth & Iron Range Railroad (a steam road) for a number of years and they have given satisfactory service.

A boiler inspector who recently investigated the causes of a disastrous boiler explosion reported that enough evidence was established to assure the inspector that the cause of the accident was imbrittlement of the plate of the boiler by the action of some alkaline or caustic ingredient in the feed water. This feed water was taken from an artesian well. On analysis it was found that it contained a large quantity of alkaline substance. The inspector advised that users of boiler feed water drawn from artesian wells have the water analyzed by competent chemists who can determine whether it is of such a nature as to cause imbrittlement.

Equipment Standards of the A. E. R. E. A.

Conditions that Have Lead to Standardization by the Master Car Builders as Compared with Those Existing in the American Electric Railway Association—Conclusions as to Standard Articles

BY T. A. CHANCE

THE decision expressed in the report of the standards committee presented at the 1919 convention at Atlantic City, to the effect that a determined effort should be made by the association to apply some of the principles of constructive salesmanship to the dissemination and more general use of its standards, makes an analysis of the present status of these standards desirable. A contemplation of the car equipment standards naturally turns one's thoughts to the results that have been accomplished by the Master Car Builders' Association. It may be helpful in studying the electric railway standard situation to compare the individual standards of the two associations.

AIMS OF THE MASTER CAR BUILDERS

In the M. C. B. Proceedings for 1918 an interesting account is given of the formation and objects of the Association, in which it is stated that the organization was founded in 1867 and that:

> **The objects of the association are the advancement of knowledge concerning the construction, maintenance and service of railroad cars and the parts thereof, by investigation through committees and discussions in convention; to provide an organization through which the members and the companies they represent may agree upon such joint action as may be required to bring about uniformity and interchangeability in the parts of the railroad cars, to improve their construction and to adjust the mutual interests growing out of their interchange and repair; but the action of the association shall have only a recommendatory character, and shall not be binding upon any of its members or the companies represented in it.**

The foregoing has been quoted at length to show that the action of the M. C. B. association is not binding. Notwithstanding this fact the M. C. B. Proceedings go on to state:

> **The question of uniformity in the construction of cars, whereby the parts of cars used by one railroad may be used in repairs of the cars of any other road has been constantly before the (M. C. B.) association. As an indication of what has been accomplished in this direction, the following comparison of parts necessary to be kept on hand for repairs at the date of reorganization (1882) and the present time is a test:**

	1882	1918
Axles, different kinds	56	5
Journal boxes, different kinds	58	5
Couplers, different kinds	26	2
Brakeshoes, different kinds	20	1
Brake heads, different kinds	27	1

It may be asked how such a result was obtained without compulsion, and the answer lies in the fact that the cars owned by one steam railroad may travel for a long time on some other road and must receive repairs in the shops of the latter. "To take hold of this condition this (M. C. B.) association has formulated and maintains rules for the truckage of traffic in so far as they relate to the physical condition of the car, so that the traffic itself may not be delayed." Among the efforts of the M. C. B. association through these interchange rules is "the compulsory use by car owners of detail standards of construction as brought about through the operation of the rules, so that when the association feels that certain standards of construction are necessary for the safe operation of cars, they will not be permitted to be interchanged without the use of said standards." Provision is further made that in the event of a car being offered to another road for interchange which contains a non-M. C. B. part covered in the rules of interchange, the second road is to replace the part with the M. C. B. standard and bill the parent road for the cost thereof. This gives a compelling reason for the real standardization of parts which have been considered of sufficient importance to be required by the rules of interchange.

A like reason does not exist among electric railways at the present time, as with few exceptions they operate independently, not interchanging with steam railroads or amongst themselves. We must look elsewhere therefore for a justification of the existence of the A. E. R. E. A. standards and for telling arguments for their increased use. This refers of course to the detail construction standards and not to the standard specifications for materials, which will be treated later.

The "acid tests," therefore, of the A. E. R. E. A. standards are the following: (1) Will they provide better and more durable articles than those now in use? (2) Are these articles cheaper than the present ones? (3) Can the standard article be used on present equipment without prohibitive alteration to adjoining parts?

With these queries in mind let us compare the individual A. E. R. E. A. equipment standards with those of the M. C. B. association.

STANDARD DESIGN OF BRAKE SHOES, BRAKE SHOE HEADS AND KEYS

(Engineering Manual, Section Eb 1a)

The M. C. B. freight-car trucks are of sufficient wheelbase, and have wheels of the same character throughout, thus permitting the use of the standard parts without difficulty. Many electric passenger car trucks are of extremely short wheelbase, maximum-traction variety, which gives but very cramped space for the brake shoe and head. The A. E. R. E. A. standard does not, however, specify any particular design of head at the hanger attachment and the general design is sound and one which can be used on most existing trucks. The tendency of the brakeshoe manufacturers, however, is to urge the use of as thick a shoe as possible, and inasmuch as interchange is not a controlling factor, these roads which can do so might be justified in using a shoe of different thickness. It would therefore seem that the A. E. R. E. A. standard design should provide for a variable thickness. The use of the shoe, of course, involves the use of the A. E. R. E. A. standard wheel flange and tread.

The advantages of the use of the standard shoe are that a shoe which will wear evenly is provided and the manufacturer's patterns and steel backs necessary to be kept in stock are reduced in number.

AUTOMATIC COUPLERS FOR INTERURBAN CARS AND RADIAL DRAFT RIGGING

(Section Ec 2b)

This standard is of a "special" character covering those cases where interurban cars interchange with steam railroad cars. It provides for a coupler of the well-known M. C. B. type, with radial attachment.

LOCATION OF END CONNECTIONS ON INTERURBAN CARS ENGAGED IN THE INTERCHANGE OF CARS

(Section Ec 4a)

This standard while desirable is not of compelling interest inasmuch as the interchange is, in general, of local character and easily adjusted by agreement between the interchanging roads.

TAPER FOR BORE OF PINIONS

(Section Ec 10a)

This is a matter strictly in the hands of the pinion manufacturers, as regards new motors and I believe that the recommendation is generally compiled with. For old motors it can be adapted as armature shafts are changed, and this course should be pursued in so far as possible, as it permits the manufacturer to ship from stock, assuring quick delivery and lessened price.

JOURNAL BOXES

(Section Et 1a)

These boxes are designed for the M. C. B. type of journal with collar, which has been adopted as the standard axle of the association. The use of this style axle is by no means universal among electric railways and there are many roads which prefer a properly designed collarless journal with check plate. The great number of short-radius curves of the electric railways with consequent heavy end thrust on the somewhat limited bearing surface presented by the axle collar causes rapid wear and many roads therefore still prefer the check plate type, and in some instances have changed from the collared axle to the collarless type.

For those roads which wish an M. C. B. journal, the boxes are of good design and might well be adopted. This would permit manufacturers to reduce the number of patterns now found necessary and would enable them to make quick delivery and to figure prices closely. It will be noted that the M. C. B. practice is followed of not specifying the type of lid or its attachments, leaving the manufacturer free to design the ribbing and other features of the box in accordance with his best judgment and experience. It therefore appears that the design should be adopted wherever a collar M. C. B. journal is used, but provision should also be made by the association for a check-plate type of box.

JOURNALS AND JOURNAL BEARING KEYS

(Section Et 2a)

The heading given in the Engineering Manual is somewhat misleading, the matter referring rather to journal brasses than the journals themselves. These are copies of the M. C. B. standard brasses, and as such can be used satisfactorily with the type of journal box above described and the M. C. B. type of collar and axle. The actual details shown no longer agrees with the M. C. B. standard, as certain changes have recently been made in the latter and the A. E. R. E. A. standards should be used.

These brasses have the defect mentioned above in discussion of the journal boxes, namely insufficient bearing to resist the end thrust. Furthermore, where the braking power has been pushed up to the limits recommended by the air-brake manufacturers there is a tendency for the brass to ride up around the journal. Some roads have therefore found it desirable to change the shape of the brass. All in all there would not seem to be enough unanimity to warrant the continuation of the journal box and its contained parts as association standards. The fact that the M. C. B. Association has adopted standards for a certain part does not of necessity prove that that part is susceptible of standardization on electric railways.

AXLES

(Section Et 3a)

As above stated these axles are designed with the M. C. B. collar-type journal and the arguments against its use are already given. Until a substantial agreement is reached as to the relative merits of the two types of bearing, the axle designs should not be included as association standards. All portions of the axle other than the journal collars are as truly matters for standardization, and designers of new equipment and those having trouble with their old designs should use the standards shown.

The commercial advantage of the standard axle is that the manufacturer may reduce his stock of forms and dies and will be familiar with the shipping weight of the axle thus facilitating close figuring in the price quoted. Further advantages are the standards which its use permits in the boring of wheels, motor bearings and gears.

TREAD AND FLANGE OF WHEEL

(Section Et 4a)

No subject has been given more thought and study than that of the wheel flange and tread, and the association standard now presents the agreed best practice. Its use enables way engineers to adopt standard rail sections which simplify the foundry work of the chilled wheel manufacturers. It provides a satisfactory contour and should be adopted generally, and I believe is being very widely used.

ROLLED STEEL WHEELS

(Section Et 7a)

This recommended design covers a part which it is extremely desirable should be made standard, and it is to be considered a matter for congratulation that the equipment committee this year in its report recommended a standard and that the standards committee has approved its recommendation. The resulting tonnage of steel and chilled iron wheels is great and it would greatly facilitate a prompt delivery and reduce manufacturing costs if the association standard wheels are adopted.

CONCLUSION AS TO STANDARD ARTICLES

Reviewing the foregoing notes one may list the equipment standards which appear worthy of general use thus: Brakeshoes, heads and keys (Eb 1a); automatic coupler for interurban cars (Ec 2b); location of end connections on interurban cars (Ec 4a); taper for bore of pinions (Ec 10a); tread and flange of wheel (Et 4a); rolled steel wheels (Et 7a).

These standards which do not seem to have the unanimous support of the association and which therefore should be altered or eliminated are: journal boxes (Et 1a); journal boxes and keys (Et 2a); axles (Et 3a).

The revision of the National Electrical Safety Code, which is being made preparatory to the publication of a new edition, has been nearly completed by the United States Bureau of Standards. Among other items, the rules involving the construction of electric power lines are now governing all outdoor construction will be submitted for under consideration, and soon a revised draft of the rules general criticism. This has been somewhat delayed by a survey of such construction, covering the entire country, which has been carried out in co-operation with the committee of the N. E. L. A.

An Effective Home-Made Grade Indicator

An Extemporized Device Which Was Prepared for Use in Wartime Work Permitted Grades to Be Measured Rapidly

By Charles R. Harte

Construction Engineer The Connecticut Company, New Haven, Conn.

IN COLLECTING the data regarding electric lines which the American Electric Railway Association furnished the War College, the Connecticut Company found it necessary hastily to determine grades on a considerable mileage of tracks which had been built by predecessor companies, for which plans and profiles were incomplete or in many cases entirely lacking.

The base sheets for the work had been enlarged from the United States Topographic Survey sheets, which are on a scale from 1/62,500 to 1/20,000. It was necessary to locate the beginning and the end of each grade of 3 per cent or over, and to determine its magnitude.

J. B. Whittemore, engineer Shore Line Electric Railway, solved the problem for his track by hanging a carpenter's level in a car window so it could swing in the plane of the glass, marking on the latter a circle 2 ft. in diameter having for its center the pivot on which the level turned, and dividing the circumference, for about 2 in. above and below a horizontal line into hundredths of a foot. By keeping the bubble of the level central, the rate of the grade on which the car was standing or operating could be once read on the scale, one per cent being represented by a division approximately ⅛ in. long.

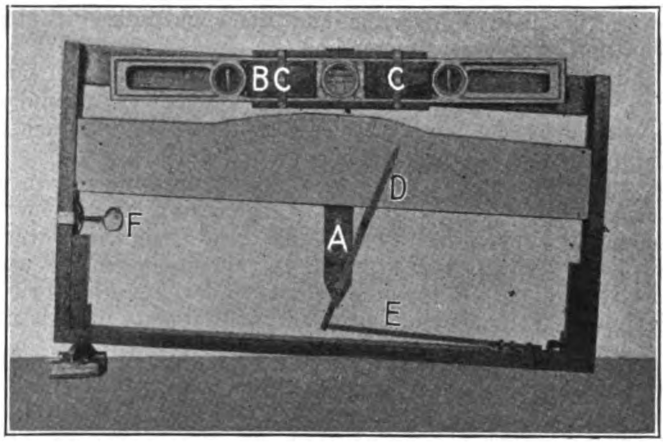
With care the grade could be determined with Mr. Whittemore's device within one half of 1 per cent. The Connecticut Company, however, felt that more rapid and more accurate results would be had by the use of a larger scale, and that as the work was to extend over several divisions it was desirable to have the "gradienter" so it could readily be fixed in any car.

The illustration shows the device as developed. To one end of the steel bar *A*, 2 in. wide, ⅛ in. thick and 10 in. long, were fastened two wood arms between which the carpenter's level *B* just fitted and was held in place by the straps *CC*, while a screw on the center line and midway between the blocks served as a pivot. The brass needle *D* was pivoted to the lower end of *A* and to the swinging arm *E*, the result of the leverages being that a movement of 0.01 ft. at the end of the level which was just 2 ft. long moved the end of the needle about 1 in., the exact relation varying somewhat in different parts of the scale since the point of the needle does not follow a true circle.

An adjusting screw and nuts from an old skate served to connect the swinging arm to the frame and to allow adjustment, and the scale was graduated by first setting the level parallel to the base, by careful measuring at each end and adjusting the needle to the center of the scale at the same time. The needle was then moved until the end of the level had traveled 0.01 ft., then 0.02, and so up to 0.15, the position of the needle point being marked each time. These points were then checked by moving back by the same steps, while the one half of 1 per cent points were measured directly on the scale, halfway between the points secured by trial.

In service the frame is held in a car window by the clamp *F*, which wedges it into the frame, and the needle is brought to the center mark with the level bubble central when the car is on track which is known to be level. This adjustment is necessary, particularly with older cars, since due to unequal spring strengths the window sills are not always parallel to the track. One man then keeps the bubble central, by moving the needle, while the observer notes the readings desired—in our case 3 per cent or over—and the points at which the changes occur.

The results made with the device were checked on the return trip, and in the very few instances of disagreement a second test was made. For the war maps, where 1 in. on the sheet represented 1667 actual feet, the grade-ends could probably be located as accurately as they could be plotted, under regular run conditions. However, having in mind the assistance (?) which would be given the men by curious passengers the users of the device deemed it wiser to run a "special." This gave opportunity to locate the grade points more accurately, and to tie them definitely to known reference points such as bridges, roads, curves or the like. When, as often happened, the grade point was some distance away the special could, with due regard to the regular schedule, of course, be held long enough to tape or pace the required interval.



GRADE INDICATOR DEVELOPED BY CONNECTICUT COMPANY FOR USE IN EMERGENCY WAR WORK

The device proved very satisfactory for the purpose intended. Clamped and adjusted in an automobile or wagon it would serve equally well to determine highway or street grades; with a longer and more sensitive bubble tube the grade could be read to smaller percentage fractions, but of course in such cases particular care would have to be taken to prevent any play in the lever connections. In the arrangement shown machine screws were used in holes just large enough to allow free motion without backlash. These would doubtless soon wear loose if used to any great extent, and for a permanent or more accurate form a spring to hold the pivot against the other parts should be added. However, the simpler form will serve for many purposes, and with the thought that it may help others it is here described.

Vestibuling of Cars Still Going On in Baltimore

THE work of vestibuling 560 double-truck semi-convertible cars by the United Railways & Electric Company of Baltimore, which was started in 1915, is still being carried on. This remodeling of vestibules and the standardizing of other parts were described in the ELECTRIC RAILWAY JOURNAL of Aug. 19, 1916, page 302. Much better progress would have been made but for the war, during which the remodeling was suspended on account of the scarcity of material and the shortage of labor. To date 330 cars have been finished, about 60 per cent of the total number to be done. The cost of reconstructing each car now is practically double that of the first cars, due to the great increases in cost of labor and materials which have taken place since the remodeling process started.

Helical Gearing for Railway Motors

Helical Gearing in Railway Motor Construction Was Introduced in Order to Lessen Motor Troubles Caused by Vibration

By W. H. Phillips
Metallurgist R. D. Nuttall Company, Pittsburgh, Pa.

THE spur gear has been standard for years in electric railway motor construction. While it was known that it had certain inherent defects, still the importance of these imperfections was not given much thought and it was assumed that they were of minor importance. With the increasing demand for cheaper operation, manufacturing engineers spent considerable time in trying to improve this field of gearing, and the spur gear, with its vibration, was carefully studied.

For equipment used in the heavier type of traction service, the flexible gear was introduced. This was originally developed by the Westinghouse Electric & Manufacturing Company and has greatly increased the life of this class of railway equipment, and has produced substantial savings in maintenance costs. The life of the gearing has also been materially increased. The flexible gear design, however, is of too expensive a type to warrant its extensive use in city service. So far all attempts to develop a low-price flexible gear that would meet all requirements have been unsuccessful.

VIBRATION CAUSES SPUR-GEAR TROUBLE

The fundamental cause of most of the spur-gear trouble is vibration, and the reason for the successful operation of flexible gearing is its ability to absorb this vibration. The deterioration of the various parts of a railway equipment is directly proportional to vibration. Therefore, if this is eliminated to any extent the life of the equipment is lengthened and noise is reduced.

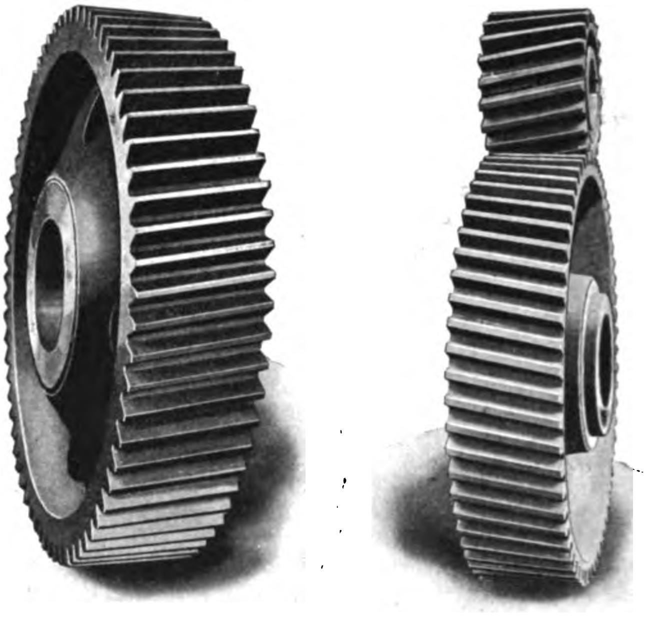
The helical gear goes back a step farther than the flexible gear, and instead of absorbing the vibration eliminates it. In order to see clearly just how this is done it is necessary to study the cycle performed by a spur-gear tooth in passing through mesh with a pinion tooth, or, in other words, the relation between spur gearing and vibration. A motor in ordinary city service, with a gear ratio of 15 to 69, will have one tooth of the pinion in contact with one gear tooth alone, approximately 35 per cent of the time. During the remainder of the travel of this tooth through the arc of action, there will be two teeth of the pinion in contact with two teeth of the gear. A gear tooth, according to the "Lewis" formula, is loaded as a cantilever beam.

Due to the modulus of elasticity or stretch of the steel within its elastic limit, and which stretch is constant for all steels, whether heat-treated or untreated, this tooth will deflect slightly, as will also the tooth of the gear with which it is in contact. When a pinion tooth first makes contact with a gear tooth, the distance between this pinion tooth and the pinion tooth leading it into mesh is less than the normal pitch by an amount equal to the deflection of the leading tooth. At the same time, the distance between the contacting gear tooth and the gear tooth leading it into mesh is greater than the normal pitch by an amount equal to the deflection of the leading gear tooth; that is, the two deflections noted are added together to produce relative displacement of the contacting gear and pinion teeth, bringing them into contact sooner than this should occur.

It is therefore evident that this premature contact causes impact and vibration in the so-called "stepping-over action" of the spur gears. There are many conditions that accentuate this vibration, such as misalignment, load fluctuation, wear of teeth, bearing wear, etc.

Every effort has been made to produce material that will resist wear in gearing. The lubrication and proper design of bearings has been studied, and much time and thought have been expended on gear lubricants, some going as far as to mix sawdust in the grease in an endeavor to effect improvement. While much improvement has resulted from these endeavors, still, as the gears grow older, vibration gradually becomes greater, until the gearing has often to be scrapped before it is worn out.

The helical gear accomplishes the results desired by the practical elimination of tooth deflection. If the spur-tooth impact could be divided into an indefinitely large number of infinitely small impacts, the spur-tooth impact would disappear. Consider a spur pinion tooth made up of layers of tin, with each layer advanced slightly ahead of the next one. The impact of each small step as it somes into contact is infinitely small. If now, in order to simplify the construction, we cut the tooth on a slight helix angle, we obtain the tooth meshing with no steps, and therefore a very smooth action. The teeth feed into mesh like a worm gearing. The tooth picks up its load at one end. The contact falls gradually across the face, and before it leaves the other end a second tooth has taken up its share of the load. It can be seen that while there may be slight tooth deflections at the end as it comes into contact, the action is so smooth that no vibration results. Obviously, the elimination of vibration and impact results in the elimination of noise and actual service has shown that a car equipped with helical gears is practically noiseless. While noiseless gearing is undoubtedly desirable, what may be considered as of much more importance in these days of economy is the effect of the elimination of vibration on the other parts of the equipment.

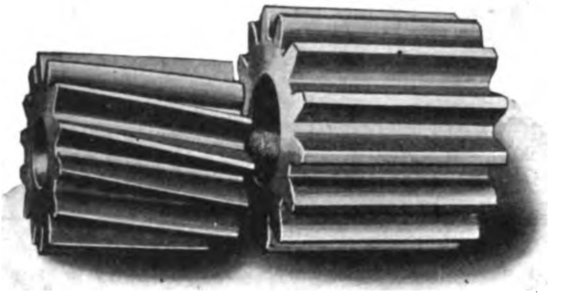


AT LEFT, HELICAL GEAR DESIGNED FOR RAILWAY MOTORS. AT RIGHT, HELICAL GEAR AND PINION AFTER NEARLY 300,000 CAR-MILES SERVICE

END THRUST OF HELICAL GEARING

As the teeth of helical gearing are cut on a slight helix angle, there is bound to be a slight resultant end thrust. In considering the problem of taking care of this end thrust the capacities of the armature and axle collars on most of the modern railway motors have been studied. Tests have shown that the end thrust is under 25 lb. per square inch on these bearings, or well within the ability of the bearings to retain an oil film with the motor running in one direction. This load is on the bearings, with the oil film between restraining lateral movement. With spur-gear operation, due to track irregularities and the lack of restraint of lateral motion, the lurching back and forth causes these bearings to slap together, driving the oil from the surfaces. One or two revolutions in this position will be liable to cut the bearing slightly. Actual service tests extending over a period of five years of heavy interurban service show that the wear on the bearings in which helical gears are used is no greater; and probably is less than in the bearings in which spur gears are used.

Experience with herringbone, or double helical gears, as they are ordinarily installed in heavy industrial service, shows that they are incapable of sustaining end thrust and that where end thrust exists serious wear of the gear teeth results. End thrust in this case is of necessity carried on the gear teeth. With helical gears, however, the tooth angle is selected so that end play of the armature is accompanied by screwing of the pinion tooth past the gear tooth with only a frictional resistance, and a very small direct force component. Experience has proved conclusively that the end play which is permissible with spur gearing is also permissible with helical gearing, as far as the good of the gear itself is concerned.



COMPARISON OF HELICAL WITH SPUR TYPE PINION

The effect of helical gear operation upon the rest of the equipment provides a very interesting study. The deductions which I include are based upon actual experience and are from the opinions of competent operating men. It was formerly considered imperative that there be oscillating motion between the brushes and the commutator of a motor or generator, whether this be accomplished by oscillating devices such as are found on large stationary apparatus or end play of the armature. The use of ball bearings on railway motors has exploded this idea, and there is a strong tendency now to omit the oscillators in stationary apparatus. The commutation on motors equipped with helical gearings is remarkably good, and as one well-known operating man said, with it an old non-interpole motor operates almost as well as a motor of the most modern type. Again, in the case of the armature bearing, it was thought that the end play aided in distributing the oil films and helped the lubrication. With helical gearing it is found that the life of the armature and axle bearings is increased due to the uniform bearing pressures. Obviously, the brushholders and brushes will give much greater life when vibration is eliminated.

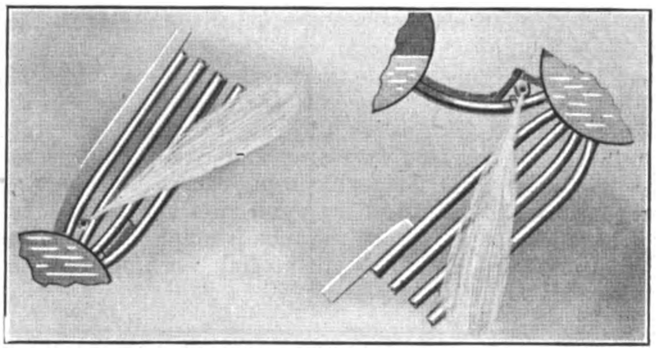
The causes to which open circuits in the various motor windings are traceable are very obscure, and only very extensive operation and a careful analysis of service data will justify any definite conclusion. Results to date, however, indicate a material reduction in open circuits coincident with the use of helical gear. Vibration, especially in aggravated conditions, has a detrimental effect upon insulation, and the elimination of vibration will obviously lengthen its life. The cause of loose punchings has in many cases been traced directly to spur-gear vibration. In the examination of motors with loose punchings the worst condition has been found to exist at the gear end, the trouble becoming progressively less toward the commutator end. Modern motor design has overcome most if not all of this trouble, but the detrimental effect of spur-gear vibration is well illustrated by this former condition. The loosening of all parts, such as axle caps, gear pans, etc., as caused by vibration, will serve to show that by a reduction of this vibration less trouble of this nature should be expected.

This does not mean that the helical gear is a cure-all, and that proper inspection and maintenance can be eliminated. It does mean, however, that it will be possible to lengthen periods between inspection and overhauling on cars equipped with helical gearing. Motors with helical gears have now been in use nearly five years, under widely different operating conditions. The oldest installation has made nearly 300,000 miles on both pinions and gears with little appreciable wear. Since the Nuttall Company formally introduced helical gearing last June, nearly fifty railway companies have made installation of this gearing on a large scale or have made trial applications.

Dead Gas Pockets for Protecting Soot-Cleaner Elements

IN CONNECTION with its research and development work the engineers of the Vulcan Soot Cleaner Company, Du Bois, Pa., has furnished information regarding the protection of soot-cleaner elements by means of so-called "dead gas pockets."

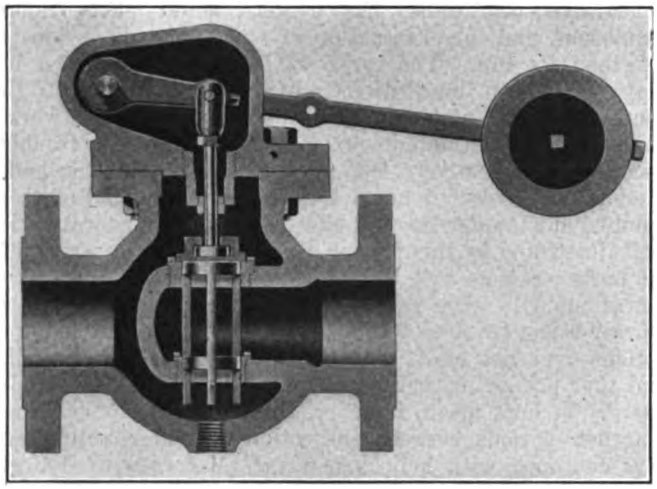
In order fully to protect the soot-cleaner elements in steep-tube boilers, they place a patented deflecting baffle tile, or row of firebrick forming a pocket in which the element is operated, at the bottom of the first pass, as shown in an accompanying illustration. This pocket eliminates the direct scrubbing action of the hot gases. Space is allowed at the bottom of this baffle through which soot and ash will drop during the cleaning process. At the top of the first pass is another dead gas pocket, also patented, in which the second soot-cleaner element is located. This second element rests upon the circulating tubes to the front drum. Contact with the comparatively cool tubes assists greatly in maintaining the element at a safe temperature.



PROTECTION FOR SOOT-CLEANER IN STEEP-TUBE BOILER

By arching the baffle tile over the circulating tubes as shown, the hot gases, in their natural flow do not come into direct contact with the element.

In boilers of this type where tubes are arranged in squares, perpendicular nozzles are used. The nozzle makes a right angle with the axis of the element, hence the jet is directed between the tubes and cleans the entire bank of tubes.



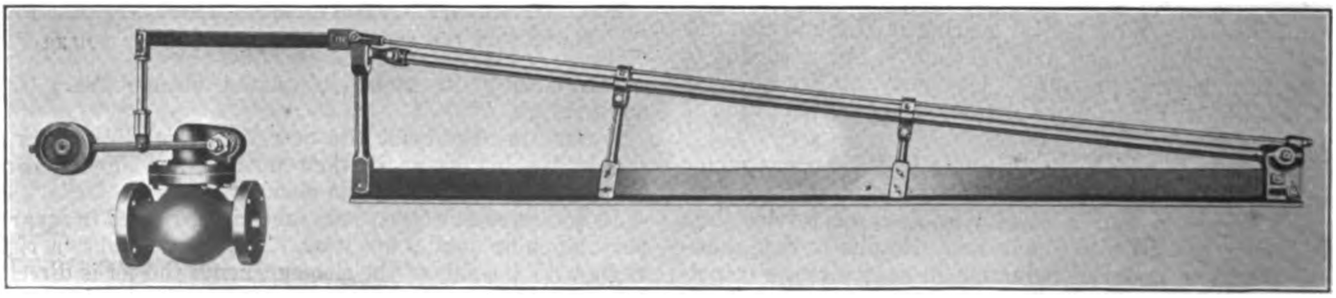
CONTROL VALVE WITH HORIZONTAL SHAFT IN PLACE OF RECIPROCATING STUFFING BOXES

New Regulator for Feed Water

IN 1912, the Northern Equipment Company, Erie, Pa., brought out and patented the continuous feed principle of boiler-feed control. This is that water should be fed proportionally to and variably with the load. It involves a variable water level temporarily inversely proportional to the load for gradual increases or decreases in load—with a temporarily decreased feed on a sudden increase in the load and a temporarily increased feed on a sudden decrease in the load.

In the design of the new Copes control valve shown herewith, which the company uses as part of its feed system, the reciprocating stuffing boxes previously used have been abandoned, and in their place there is a horizontal shaft which rotates very slightly, performing the same function as the old reciprocating rod. The frictional resistance has been reduced as much as 6 to 16 lbs. The valve is of the balanced piston type. The weight on the valve lever exerts a constant closing force of 50 lb. on the valve piston. The valve cap or bonnet can be unbolted and removed with fittings attached without removing the valve body from the pipe line.

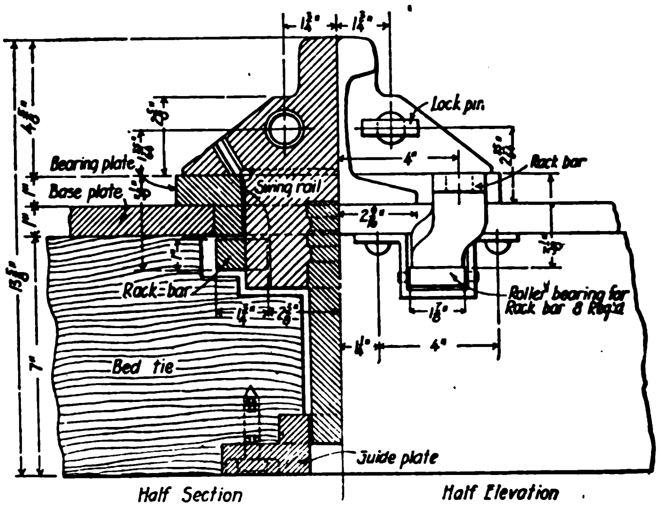
The assembled regulator complete is shown in a second illustration. It consists principally of a heavy expansion tube. This is known as the "thermostat." It is a straight piece of heavy metallic tubing 1½ in. in outside diameter. The top of the thermostat is connected with the steam space of the boiler and the bottom with the water space; hence there is a water level in the thermostat corresponding with the water level in the boiler. It is this water level in the thermostat that determines the rate of feed. The tube lengthens and shortens with drop and rise of water level, the lengthening and shortening being caused by change in temperature of the tube as the water rises and falls. This expansion or contraction of the tube is amplified by means of the link work, and through the link work operates the control valve.



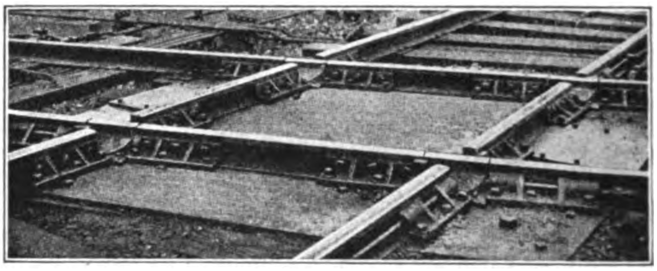
BOILER FEED REGULATOR COMPLETE

New Type of Continuous-Rail Crossing

THE pounding out of railroad crossing frogs and the resulting effect of the vibration on the car equipment as it passes over these crossings are items of exceptional interest to those responsible for railway maintenance. With an idea of reducing these factors the Alexander Railroad Crossing & Equipment Company, Chicago, Ill., is now placing on the market a new type of continuous-rail crossing. This consists of a single steel plate, 1 in. in thickness, on which is mounted a swing rail at the point where the crossing rails intersect. Each swing rail consists of a casting of manganese steel 10 in. in diameter, the top being molded in the form of a rail head, while the bottom part is molded in the form of a pinion. The device is worked by a rack bar, operating upon this pinion. The swing rail works upon a flanged bearing plate, which in turn rests upon the base plate. The swing rails are connected up with the interlocking for the crossing and are operated from an adjacent signal tower. As a precaution against any accidental misadjustment or failure of the parts to work, the usual interlocking devices are operated in connection with the swing rails. The positive locks are worked simultaneously from one lever in the tower.



DETAILS OF CONSTRUCTION OF SWING RAIL AND SUPPORTS



CONTINUOUS-RAIL CROSSING OPERATED FROM INTERLOCKING TOWER

Novel Annunciators for Fire Sprinkler System

As a Safeguard Against Mistakes in Locating Sprinklers When They Operated, a Duplicate Annunciator with Bells Was Found Necessary

THE three-story carhouse of the Brooklyn Rapid Transit Company for the Bay Ridge section occupies the entire block bounded by Fifty-eight and Fifty-ninth streets and Second and Third Avenues, Brooklyn. This has housing facilities for 635 cars and there are times when the house is filled completely. Extreme precautions against fire are necessary at all times.

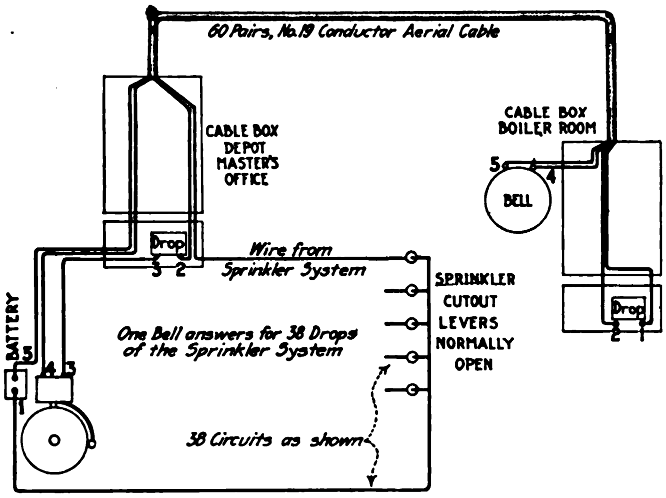

60 Pairs, No.19 Conductor Aerial Cable
CABLE BOX DEPOT MASTER'S OFFICE
CABLE BOX BOILER ROOM
BELL
5
4
Drop
3
2
Wire from Sprinkler System
SPRINKLER CUTOUT LEVERS NORMALLY OPEN
One Bell answers for 38 Drops of the Sprinkler System
38 Circuits as shown
BATTERY
5
4
3
1
Drop
2
1

DIAGRAM OF ADDITIONAL ANNUNCIATOR FOR B. R. T. SPRINKLER SYSTEM

Some years ago this carhouse was equipped with a very complete sprinkler system, the installation being made by the General Fire Extinguisher Company. An annunciator of fifty-two drops, with the usual bells was set up in the main office of the depot master at Fifty-eighth Street and Third Avenue. Later it was decided to equip the quarters of the engineer located at the corner of Fifty-eighth Street and Second Avenue with a duplicate annunciator and bells to work in conjunction with the equipment in the depot master's office. The object of this was to avoid the possibility of mistakes in telephoning the location when sprinklers opened.

The additional annunciator in the engineer's office differs from the one originally installed, which is of the standard type, in that each drop has an incoming and an outgoing binding post instead of having the outgoing posts of each drop connected to a common return. A sixty-pair cable, consisting of No. 19 B. & S. conductors, is used to connect the two annunciators, and this cable is terminated in a cable box directly above each annunciator. The wires are brought to separate binding posts and each circuit is labeled. All sprinkler contacts are normally open.

The accompanying diagram shows a representative circuit; the principle of operation of the other thirty-seven being the same. When the circuit is closed at the sprinkler, one lead runs directly to one side of the battery while the other can be traced as follows: Sprinkler to the annunciator drop in the engineer's room, to the drop in the depot master's office, to the bell in the same office, to the bell in the boiler room and then back to the other side of the battery. When the sprinkler contacts close, due to fire or otherwise, the annunciator drops at both locations will register, and also the bells at each location will ring continuously. In the engineer's office there is a 5-in. 11-ohm bell and in the depot master's office there is a 7-in. 10-ohm vibrating bell.

The resistance of the additional annunciator which was installed in the engineer's room measures about 14 ohms. The system formerly required one set of dry batteries, consisting of seven cells in series, but to overcome the additional resistance, due to the additional annunciator, there was added four sets of dry batteries in series, each set having five batteries in parallel.

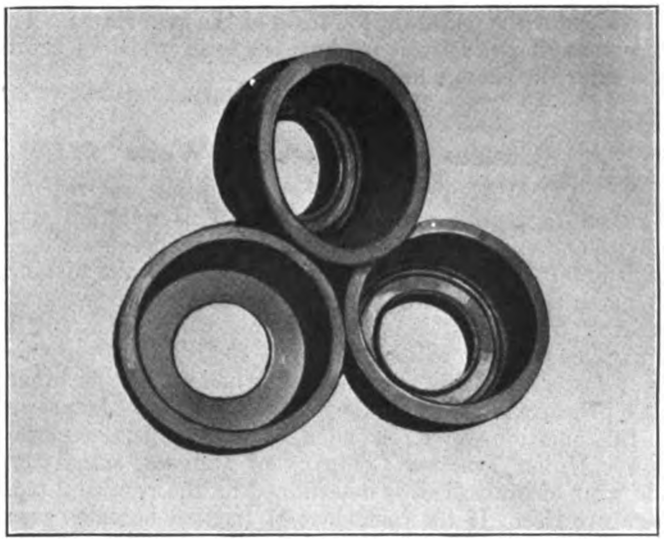
The installation of this additional equipment was done by the electric line department of the company, which department has charge of the maintenance and contruction of its extensive fire alarm system.

Reclaiming Worn Armature Dust Collars

DUST collars on the gear end of the motor armature axle are subject to severe wear on the inside surface and also to some wear around the axle. On the Tri-city Railway, Davenport, Iowa, it was formerly the practice to scrap these collars when they became excessively worn and to purchase new ones for about $2.50 each. At the present time the worn collars are being reclaimed at a cost of about $1 each.

When the collar is badly worn on the inside surface and is also loose on the axle, the first step in reclamation is to heat the collar up to a red heat and then cool it in moderately cool water. The collar is not completely immersed but is held on a rod so that only the outer rim is immersed in the water and then the collar is slowly revolved by means of a pair of tongs. By this method the part of the collar surrounding the axle can be shrunk about 0.01 in. in diameter.

The second step is to smooth up the worn surface by taking out a cut on the lathe and then to rivet in place on this wearing surface a ⅜-in ring. The rings are cut from the end of an old axle. This surface is again turned down until the proper thickness is secured and the axle opening is then drilled out to exact diameter. Some collars that need new wearing surfaces do not need to be shrunk, in which case the cost of reclaiming is proportionately reduced.



THREE STAGES IN DUST COLLAR RECLAMATION

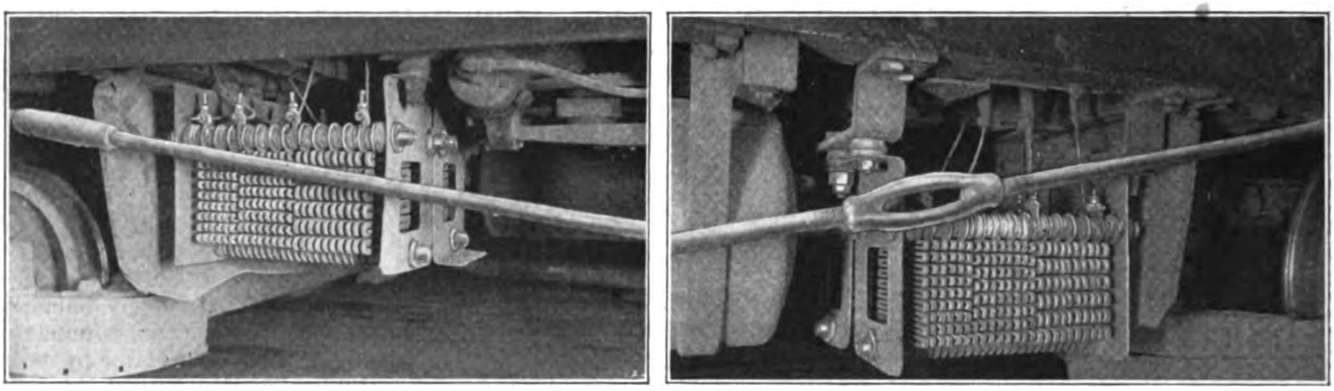
Collar at right shows badly-worn surface as taken from armature axle. Collar above in same condition but has been shrunk. Collar at left has new wearing surface and is ready for reinstallation

---

Engineering Council is urging the appointment on the new Industrial Conference of two or more engineers familiar with industrial problems.

Lowering Grid Resistors to Provide Increased Ventilation

ON THE double-truck closed cars of the Brooklyn Rapid Transit Company, the grid resistors are installed in a location between the end of the main reservoir and the truck. In order to prevent wheel wash from short circuiting the different grids, it has been necessary to install a shield between the end of the resistor frame and the truck. When this type of resistor was first installed on these cars, there were no air brakes and consequently no main reservoirs to interfere with the circulation of the air. The installation of the air-brake equipment placed the grid resistors in a sort of pocket and trouble from overheating resulted in numerous cases. In order to provide increased ventilation for the resistors the company is now lowering them a distance of 4 in. The same insulators and method of supporting are used, but a flat iron support is bolted to the car members with an offset, so that the supporting face provides for the necessary lowering of the grid frame. The accompanying illustrations show the grid resistors before and after the change has been made.



GRID RESISTORS BEFORE AND AFTER LOWERING

Causes of Brakeshoe Wear

IN A COMPANY publication[*] a question was recently asked regarding brakeshoe wear. This question was: "Will brakeshoes wear away faster when operated with a high braking pressure which requires but half the distance to make a stop or with half this pressure and twice the braking distance?" As an example, suppose a 400-lb. brakeshoe pressure will stop a car in 1000 ft., will the shoes wear faster with this operation, or when an 800-lb. brakeshoe pressure is used to make a stop in 500 ft.? In answer to this question, M. F. Skouden, superintendent of motive power Union Traction Company of Indiana, stated that the wear of brakeshoes is determined by the resulting temperature rise. If the coefficient of friction becomes great enough from rapid rise of temperature the surfaces will, in his opinion, wear much faster. He concludes, therefore, that with high brakeshoe pressure there would be a more rapid rise in temperature and a more rapid grinding away of the brakeshoes.

This question was referred by the ELECTRIC RAILWAY JOURNAL to a prominent engineer connected with a brakeshoe manufacturing concern. He stated that the wear is faster at higher temperatures, but that the temperature obtained depends more on the character of the service than upon the brakeshoe pressure and length of stop. A brakeshoe consists of quite a large volume of metal. This can absorb heat only at a certain definite rate, and under certain conditions it might be possible to stop a car with a high brakeshoe pressure before a temperature would be reached which would cause excessive wearing away of the shoes. On the other hand, in freight service, where it is necessary to make long applications of the brakes when descending grades or reducing speed, this is usually accomplished with a comparatively light brakeshoe pressure; but the period of application is so long that very high brakeshoe temperatures are reached and the resulting wear is necessarily very rapid. To illustrate this principle, this engineer refered to a man pouring water from a pail into a barrel through the bunghole. If a stream slightly smaller than the diameter of the hole is used the water can be poured in without waste, but if an attempt was made to force the flow much of the water will be spilled.

In this connection there is another point which should be taken into consideration, namely, that the brakeshoes make contact only in spots and, of course, the smaller the areas of these spots the quicker will heating take place. If the metal of the brakeshoe adjacent to these spots of contact cannot conduct the heat away at a sufficiently high rate, the spots will reach excessive temperatures and will wear away rapidly. It thus appears that an accurate and complete answer to the question can be arrived at only from tests.

It is suggested that anyone having data on this subject available could do the industry good service by sending them, in brief form, to this paper for publication.

Gas vs. Gasoline for Motor Vehicles

A REPORT of the inter-departmental committee on the employment of gas as a source of power in motor vehicles is discussed in London *Engineering* for Aug. 15. It is stated that gas performed a very useful function in the war, but since then has apparently dropped out of use due possibly to the decrease in the coal supply. This report gives an example of the use of gas by the Griscom Street Tramways, which estimated that for every 1000 miles run on gas a saving of nearly $3.75 was made as compared with gasoline. A large part of the gas used had not been debenzolized, and about 240 cu. ft. of gas was to be equivalent to a gallon of gasoline.

The possibility of using steel cylinders for the flexible containers previously used gives an entirely new aspect to this question. The committee recommends that gas be stored at high pressure in steel cylinders and favors a semi-rigid container consisting of an inner member or tube in the form of a rubber container and an outer casing of woven steel wire. This class of container is approximately one-third the weight of a steel container for a given volume of gas, and as it stretches on being charged, it gives ample warning of over-charging. A working pressure of 45 atmospheres is recommended.

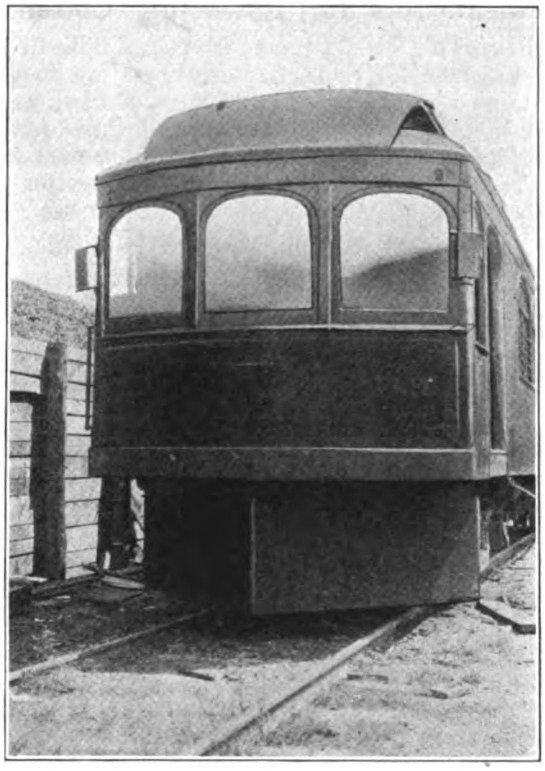
---

[*] *Safety*, published monthly by Union Traction Company of Indiana.

Steel Pilots for All-Year Service

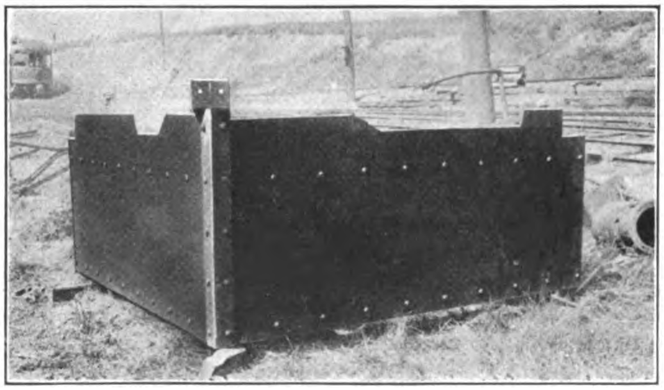
Interurban Company Equips All Motor Cars With Solid Pilots for Protection of Motors and for Service as Snow Plows

THE Winona Interurban Railway, Warsaw, Ind., has equipped all of its interurban motor cars with steel pilots for all-year service. Wood-slat pilots were formerly used, but these were constantly in need of repair. The steel pilots not only protect the motors at all time but also serve as snow plows in the winter.

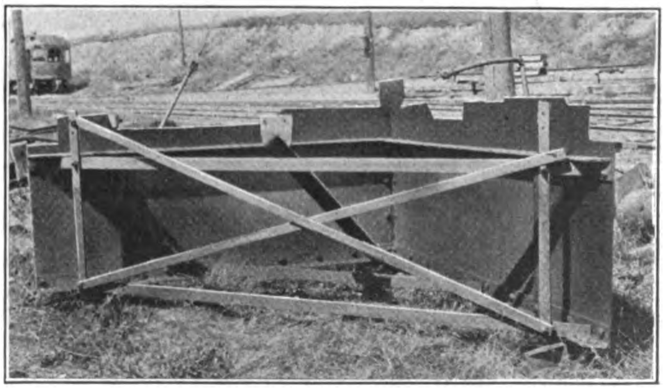


MOTOR CAR EQUIPPED WITH STEEL PILOT

The construction of the plows is clearly shown in the accompanying illustrations. No. 10 gage steel is used and the horizontal reinforcing angles are 3 in. x 3 in. top and bottom. The angle at the point of the plow is also 3 in. x 3 in. and this is bolted to the bumper, suspending the front of the plow therefrom. The frame at the rear, which is bolted to and supports the rear of the plow from the forward longitudinal sill, is made up of 1½-in. x ½-in. strap iron vertical and cross bracing and 2-in. x 2-in. horizontal angles. As additional bracing against shock a 3-in. x 3-in. angle extends from the lower forward point of the pilot to the forward longitudinal car sill which is a 5-in. x 3½-in. angle. All work is bolted together, no riveting or welding being employed.



TOP OF STEEL PLATE IS CUT TO FIT UP CLOSE TO CAR FLOOR



PILOT IS STURDILY CONSTRUCTED AND BRACED AGAINST SHOCK

Using Electric Lights to Replace Oil Tail-Lights

IN ORDER to eliminate the troublesome oil tail-light the Harrisburg Railway has equipped one of its suburban cars with two small battery lamps. These are red lights, such as are usually used for tail-lights of automobiles, and the current is supplied from a 40-amp. storage battery. In order to keep the battery charged it is floated across the line through one of the car-lighting circuits, which has five 23-watt Mazda lamps. So far no trouble of any kind has been experienced, although the car has been in operation over a year. The battery has given no trouble, and the only maintenance necessary so far has been to add distilled water to the cells. The accompanying diagram shows the method of connecting the tail-light and the method of keeping the battery charged.

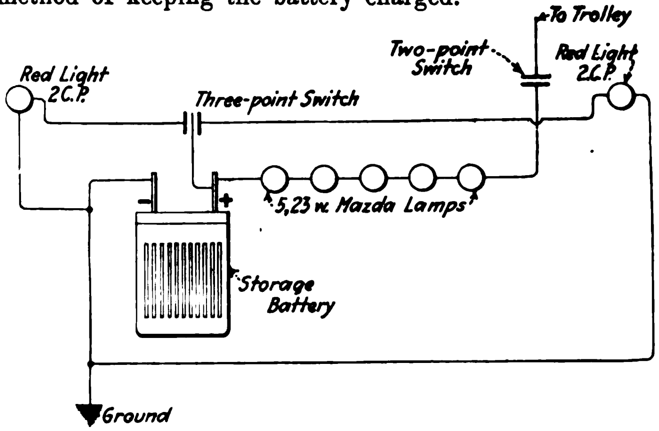


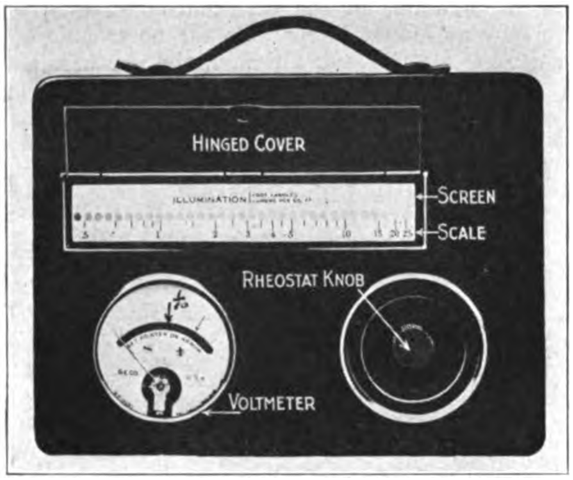
DIAGRAM OF CONNECTIONS FOR ELECTRIC TAIL-LIGHTS

[NOTE—There seems to be an opinion among railway men that there is a certain hazard in the use of electric tail-lights. The New York Municipal Railway has used electric lights for head, tail and marker lights on its subway cars for the past four years, but supplements these by hanging an oil lantern at the rear of each train. The idea is that there is an element of danger in the use of electric lamps for tail-lights as they might become extinguished and lead to serious accident. A double-filament lamp of a type commonly used in electric signal installations is used on these cars, which reduces the hazard from broken filaments. Other installations have used two lamps in parallel, one of which has a high resistance in series, so that ordinarily this lamp is not lighted, but in case the other lamp becomes open-circuited, this lamp lights up.—EDS.]

Portable Foot-Candle Meter

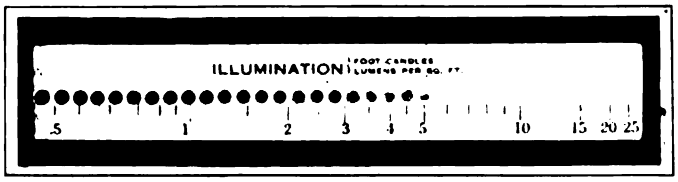
Illumination Intensity of the Light at Any Point Can Be Read at a Glance

IN ITS EXHIBITS at the recent convention of the American Electric Railway Association at Atlantic City the General Electric Company showed a new portable foot-candle meter for general photometric use. This was developed to meet the demand of electric railways for a light, compact, non-complicated instrument which would measure the illumination intensities commonly found. No special skill is required to operate the instrument, and as it is light and compact it can be carried anywhere and readings can be taken in the same manner as with a large photometer and with sufficient accuracy to be of real practical value.



PORTABLE FOOT CANDLE METER

The basic principle on which the foot-candle meter operates is the same as that employed in the photometer. The screen on which the reading is taken consists of a piece of a clear glass on which are two thicknesses of paper. One contains round holes fairly opaque, and the other spots which are highly translucent. This screen forms one side of the light box which is so constructed that the screen is illuminated from within to a much higher intensity at the right end than at the left. The exposed side of the screen is very nearly uniformly lighted and the round spots appear brighter than the surrounding screen at the right end and darker at the left, as shown in the accompanying illustration. At the point where the spots change from brighter than the background to darker, the illumination on both sides of the screen is approximately the same. The illumination intensity thus indicated may be read without any difficulty whatever.

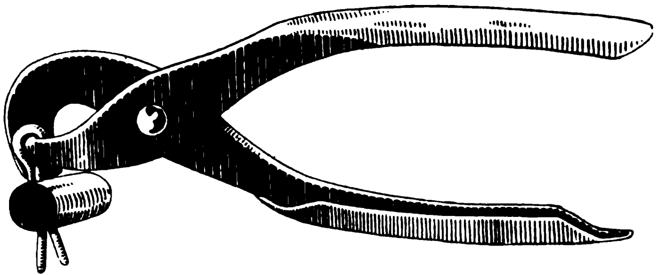


SCREEN OF METER INDICATING A LIGHT INTENSITY OF 5.5 FOOT-CANDLES

As the light supplied to the screen from within comes from a small electric light it is obviously important that, after the foot-candle meter has been calibrated, the light supply be kept constant. To effect this a rheostat or adjustable resistance is connected in series with the lamp and the battery. This permits the voltage applied to the lamp to be maintained at a constant value. A small voltmeter, which is a part of the instrument, shows the voltage supplied to the lamp. An arrow is placed on the voltmeter scale and as long as the voltmeter needle is directly over the arrow the lamp is operating at the correct voltage to supply the proper illumination to the photometric screen. There is another mark on the voltmeter scale, labeled 1/10, which is so located as to make the scale read ten times the illumination measured. This is useful for measuring low values of illumination which are not reached by the direct-reading scale.

Convenient Tool for Extracting Cotter Pins

THE removing of cotter pins is often a difficult job to the shopman, particularly when these are so located as not to be readily accessible. The tools most used for removing cotter pins are hammer and cold chisel, but there are many locations where a hammer cannot be used and the use of the cold chisel frequently damages the cotter pin to such an extent that it is worthless for further use.



EXTRACTING A COTTER PIN WITH SPECIAL PLIERS

The accompanying illustration shows a tool for removing cotter pins which has been given publicity by the *Scientific American*. The device is of the same size as an ordinary pair of pliers. One tong of the pliers engages the pin while the other uses all of the leverage exerted against the member through which the pin is inserted. As this leverage is four times as great as the actual force used the pin comes out quickly and easily.

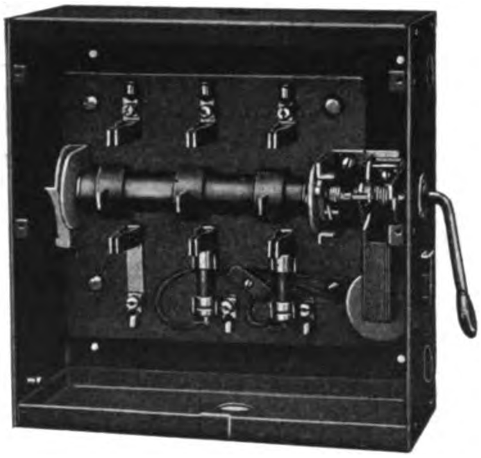
New Portable Utility Light

A NEW TYPE of night lamp for localized lighting has recently been placed on the market by the Western Electric Company. It is known as the "Portable Utility Light," and is for use at close range where the lamp is to be located at distances not greater than 125 ft. from the object or surface to be illuminated. With the light operating on a 100-ft. throw, a 100-ft. spread is obtained at an angle of 60 deg. The hammered glass reflector is spring suspended in a one-piece cast-iron housing. The housing is closed by a wire glass front which is at the bottom and secured by a hand latch. The lighting unit is 19½ in. high and weighs approximately 30 lb. The base is 9 in. in diameter. The unit can also be mounted on either vertical or flat surfaces, such as walls, poles or roofs, by means of a heavy universal joint which fastens the housing to the base. In railway work this light can be used for lighting transfer tables, coaling stations, inspection pits, loading platforms, cranes, drawbridges, loading operations, shop yards, material yards, coal yards, erecting shops, machine shops, conveyors and all kinds of emergency work.

PORTABLE UTILITY LAMP

New Safety Motor Starting Switch

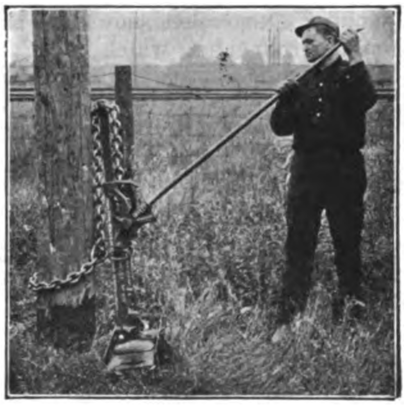
A NEW type of motor starting switch has just been placed on the market by the Westinghouse Electric & Manufacturing Company. It is designed for use with single-phase or polyphase alternating-current motors of from 1 to 10 hp., 250 and 500 volts, and connects these motors directly to the line without the use of the auto-transformers or resistance commonly used. The mechanism is inclosed in a steel box but the protective devices are easily accessible on opening a door in the cover. As a special precaution the box is arranged so that this door cannot be opened except with the switch in its open position, nor can the switch be closed with the door open.


INTERIOR OF SAFETY STARTING SWITCH

No-voltage protection to the motor is provided by a magnetic release which opens the switch automatically on a failure of voltage. Overload protection is provided by means of relays resembling cartridge fuses in appearance, each of which contains a contact connected in series with the release magnet. The entire mechanism is mounted on a slate base and can be removed as a unit without disturbing the box or the conduits.

Improvement in Pole-Pulling Jacks

Templeton, Kenly & Company, Ltd., Chicago, Ill., manufacturers of the Simplex car and track jacks, have recently improved their pole-pulling jacks by making the lowering mechanism a gradually controlled one instead of the tripping arrangement formerly used. The method of control is now the same for lowering and raising. The accompanying illustration shows the method of using this jack to pull a pole.

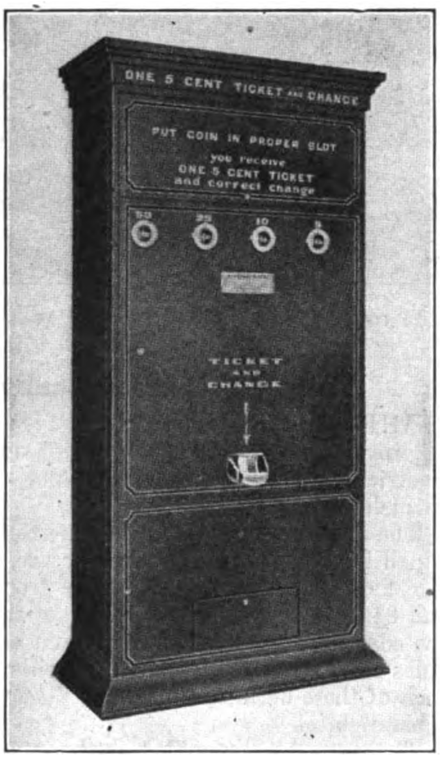

USING A JACK TO RAISE A POLE

The National Safety Council has issued a complete bulletin catalog, consisting principally of small reproductions of its posters. More than 1000 illustrations are shown. There are 135 posters in the electric railway section alone.

Automatic Ticket-Selling Machine

AT THE RECENT electrical show held in New York City, the National Sales Machine Company, New York City, exhibited one of its new model ticket-selling machines. Where it is desired to sell tickets of a single denomination automatically, the machines are arranged to receive coins of any denomination up to and including 50 cents. To obtain a ticket, the coin is put in its proper slot and a ticket together with the correct change is delivered. Defective coins are returned to the delivery tray.

For uses in which it is desirable to have a printed record made on the ticket, suitable provision is made in the machine, so that the date, time, or additional information, such as point of issue, number of zone, etc., will be printed on the ticket as it is issued.



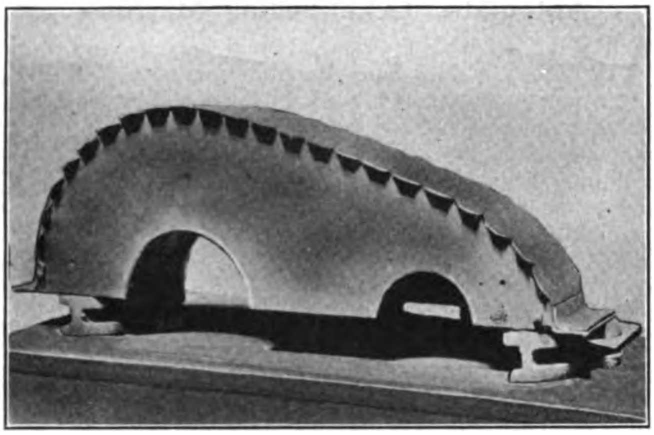
AUTOMATIC ELECTRIC TICKET-SELLING MACHINE

A feature of the machine is the coin detector arranged to reject spurious coins, worn coins or slugs whenever they are offered for payment in the machine. The slot will receive the coin, but the coin detector refuses to accept it in payment, and it is promptly returned to the reject slot. The coin detector takes account of all the particular governmental markings on the various coins by means of a series of points which bear on both sides of the coin as it is received. Any pieces of metal not bearing the required markings will be automatically rejected. These machines are operated by small electric motors and the current necessary for operation may be supplied from any lighting fixture that is convenient.

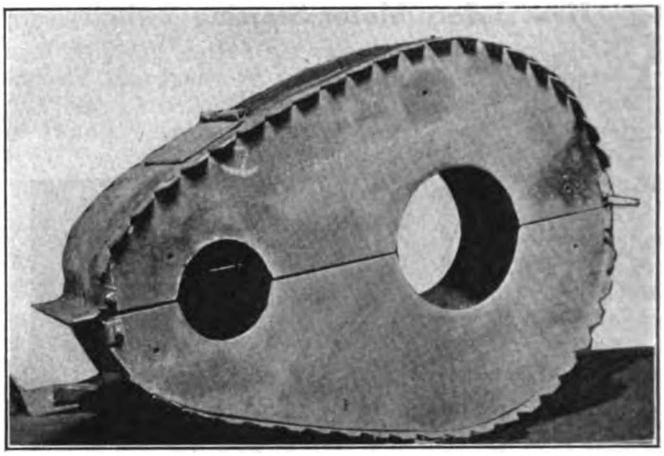
Preventing Punch-Press Accidents

In a recent bulletin of the National Safety Council reference was made to some accidents which occurred on small punch presses in spite of the fact that they were equipped with approved safeguards. Vibration of the building or the falling of a heavy object would cause the presses to repeat while the guard was up. Investigation showed that the trouble was the result of a slight burr on the dog or latch of the press. Acting on these results, the management of the factory instituted a regular weekly inspection of all power presses. Any dogs or latches giving indication of the presence of a burr were immediately polished. This did away with accidents.

While undoubtedly this is a special case the principle of applying systematic inspection methods with regard to machine tools of all kinds is to be commended. An inspector becomes expert in detecting incipient causes of trouble which might possibly escape the notice of the regular operator.



HALF OF GEAR CASE ASSEMBLED WITH ANGLE REINFORCING PLATES IN PLACE



BOTH HALVES OF GEAR CASE ASSEMBLED AND READY FOR WELDING

Gear Cases Electrically Welded

THE Winona Interurban Railway, Warsaw, Ind., is making its own gear cases, using $\frac{3}{16}$-in. sheet steel and an electric welder. No rivets or bolts are employed in the furnished product.

The side pieces are cut out in the usual form. The strips which hold the two sides together are, however, more complicated in design. Each is made from a strip 52 in. long and 8½ in. wide. Along each side of this strip, $\frac{13}{16}$ in. from the edge and beginning 4¼ in. from one end, twenty-three holes each ⅛ in. in diameter are drilled 2 in. apart. With each of these holes as a vertex a V-segment is cut out with a hand chisel.

The parts are assembled as shown in the accompanying illustrations and temporarily held together by four bolts in each half. With a block inserted to give firm support, the fingers are bent over and welded to the sides with an Erico welder. The ends are bent up in line with the center axis of the case and an angle-plate reinforcing is welded at each end. A complete gear case can be welded up in about two hours.

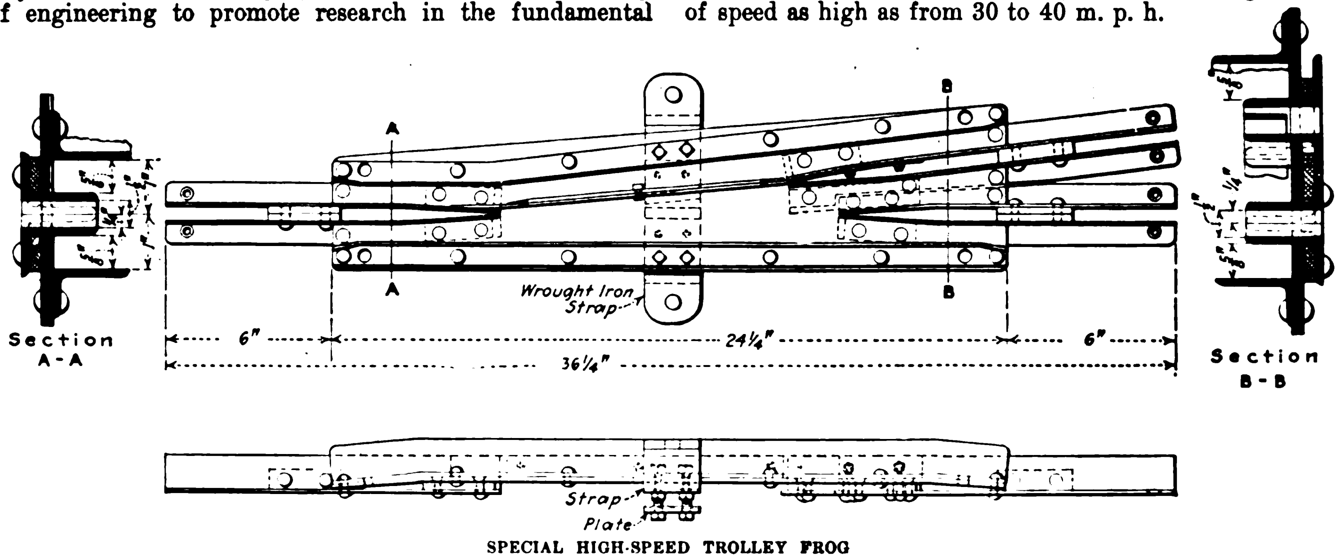
More than twenty cases have been constructed in this manner and those now in use are giving excellent service. These cases are made up at odd times.

The one-hundredth anniversary of the death of James Watt, the inventor of the steam engine, was fittingly celebrated in Great Britain, particularly at Birmingham, England, a few weeks after the centenary date, Aug. 19. By way of a memorial it is proposed to endow a professorship of engineering to promote research in the fundamental principles underlying the production of power and the study of the conservation of the national sources of energy, to erect a memorial building and to publish a memorial volume.

Home-Made High-Speed Trolley Frogs

IN CONNECTION with the article on page 566 of the ELECTRIC RAILWAY JOURNAL for Sept. 20, 1919, showing method of making spring switches from the standard trolley frogs, M. B. Rosevear, superintendent of distribution Public Service Railway, Newark, N. J., has called attention to the method which has been in use on his property for some years and which apparently accomplishes the same results in a simpler and less expensive manner. This consists in fastening a flat steel spring to the side of the runway underneath the casting so as to form a guide for the trolley wheel. The flat spring can be fastened by drilling and tapping four holes. This method was described in the issue of this paper for Oct. 7, 1911, page 591. A modification in the material used for the spring has recently been made. Formerly phosphor bronze springs were used, but now the railway has adopted steel springs because they last longer and give better results.

The accompanying illustration shows the assembly for a special high-speed trolley frog which is also being made in the shops of the Public Service Railway. This consists of a heavy rolled-steel plate to which angle irons are riveted for guides and runways. To insure that the trolley wheel will follow the proper wire, a reinforced flat spring is used. Cars operate successfully under this frog at rates of speed as high as from 30 to 40 m. p. h.



SPECIAL HIGH-SPEED TROLLEY FROG

Letter to the Editors

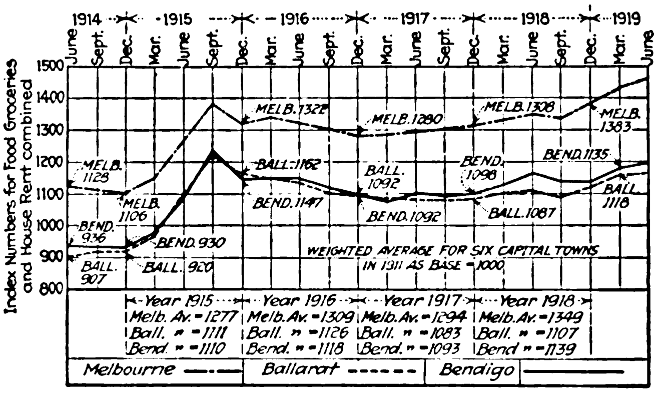
The Principle of Differential Wages in Awards

THE ELECTRIC SUPPLY COMPANY OF VICTORIA, LTD.
BALLARAT, AUSTRALIA, Aug. 25, 1919.

To the Editors:

I see from various issues of your valuable journal that the question of differential wages has been exercising many of your undertakings during the recent general demand for increased wages. The officials of the Kansas City Railways made a strong defence in this direction before the National War Labor Board. It may be of interest, therefore, to your readers to have some particulars of how this matter is dealt with in Australia.

Coming from the old country some eight years ago, where differential wages dependent upon the local conditions and cost of living are generally recognized between the unions and the employers, I was much surprised to find that here wages were being awarded by the various industrial courts on a fixed standard with only one exception, which was the following: If a state as a whole had higher cost of living than another, then differential wages would be found in federal awards.



COST OF FOOD, GROCERIES AND HOUSE RENT COMBINED IN MELBOURNE, BALLARAT AND BENDIGO, THE WEIGHTED AVERAGE OF SIX CAPITAL TOWNS IN 1911 TAKEN AS 1000.

For instance, in West Australia the cost of living was notoriously higher than in Victoria, and the former would in consequence have wages awarded from 10 per cent to 15 per cent higher. There was, however, no attempt to differentiate between one town or district in a state, yet in the capital cities the cost of living is much higher and this fact should receive consideration in wage awards.

As the undertakings which I control are in inland towns away from the capital cities, this principle has been of great importance to us. I have been the pioneer of this principle of differential wages in both the Federal Arbitration Court and in the various state awards, and it has become an accepted principle in all arbitration court awards and in many state awards for the last six or seven years.

I append copy of a curve dealing with food, groceries, (forty-six commodities) and house rent combined, which I prepared prior to the war and have kept up to date since. This shows the fluctuations in the cost of living between Melbourne and the towns of Ballarat and Bendigo, in which we operate electric light, power and tramway undertakings. Food, groceries and rent represent approximately 60 per cent of a worker's expenditure. The commonwealth statistician makes no similar inquiry into the balance of expenditure. Much evidence in regard to this balance has frequently been brought before the courts, and they assume that this is subject to approximately the same increase as the 60 per cent. On this basis Melbourne's cost of living for the June quarter of this year has increased 35.5 per cent over pre-war times, the Federal Arbitration Court now awarding a basic wage of 66s. a week of forty-eight hours. The cost of living figures for Ballarat and Bendigo are now 19.8 per cent and 17.7 per cent respectively lower than Melbourne.

The high peak shown in September, 1915, is due to the effects of the war combined with drought. The cost of living for our country towns then came very much nearer Melbourne's, owing to many of our food costs increasing above the Melbourne standard. This was because many local supplies were cut off by the drought and had to be imported from other states. As Ballarat is 75 miles, and Bendigo 100 miles from Melbourne, extra freight charges above Melbourne had to be met. Food and groceries are now, as normally, a little cheaper in both of our towns than in Melbourne, but the main difference is due to house rents.

The differentiation in wages allowed to our towns, compared, with Melbourne, varies in Federal awards from 6s. to 10s.6d. per week per man less.

P. J. PRINGLE,
Chief Engineer and General Manager.

Association News

Work of Committee of One Hundred Summarized

L. S. STORRS, chairman of the sub-committee on information and service of the committee of one hundred, has issued a summary of the work of the committee and has sent to all electric railways reprints of the progress reports presented at the Atlantic City convention.

Mr. Storrs says in substance that the committee:

1. Brought together about fifty leading railway executives, manufacturers, engineers, bankers and economists who presented the case for the electric railway industry to the members of the Federal Electric Railways Commission in a series of hearings held in Washington and extending for a period of more than two weeks.

2a. Organized a bureau of information and service which prepared daily abstracts of the testimony submitted and mailed 60,000 copies the same night to companies, public authorities, organizations and associations in every part of the United States.

2b. Prepared daily news stories of the hearings for the press with the result that the Associated Press carried from 800 to 2000 words daily in 1100 newspapers; the United Press from 400 to 800 words in 750 papers; the International News Service from 500 to 2500 words in 300 papers; and innumerable special stories were sent out by 300 special correspondents located at Washington.

2c. Prepared special pamphlets, bulletins, reports and window card advertisements for electric railway companies.

An expert compilation of the aggregate space obtained in the newspapers as proved by clippings actually returned to the Washington office, shows that $1,000,000 worth of publicity was given to the railways, measured on the basis of actual advertising rates.

3. The committee's counsel is now preparing a brief covering the case of the railways, which will probably be completed and made public about Dec. 1.

4. As soon as the Federal Electric Railways Commission issues its report at least 50,000 copies will be distributed. Simultaneously the printing of the entire testimony and the report will be undertaken.

5. The work of the committee of one hundred has already resulted in demonstrating that the problem of the electric railways is a national one, that the situation of the railway com-

panies is a matter of importance to every individual, and that a readjustment of relations between the companies and the public is essential to the public interest. A broad foundation has been laid for the companies to complete a similar campaign locally whenever their interests require it at any time within the next decade.

On Nov. 24, Bentley W. Warren, counsel for the Committee of One Hundred, in his presentation of case of the electric railways before the Federal Electric Railways Commission, filed his argument and brief on the testimony submitted. The brief occupies 153 printed pages, and its cover shows that Edwin Gruhl, A. S. Hills, and Harlow C. Clark assisted in its preparation.

Besides a short foreword and introductory statement, the document is divided into five parts. The first of these is entitled "Argument and Brief." This is followed by a statement of the historical development of the street railway industry, occupying thirty-eight pages. The next chapter is a brief one on "Present Condition of the Industry." This is followed by a longer chapter on the causes of the present condition, and this by the final chapter entitled "Fundamentals Underlying the Solution of the Problem." There is an appendix giving the identification of the witnesses.

Safety Car Motion Picture

SECRETARY Burritt of the Association in a letter to member companies under date of Nov. 17, 1919, advised that a number of reels of the motion picture depicting the operation of the safety car, which aroused so much interest at the recent Atlantic City convention, had been made for the use of electric railway companies. Under arrangements with the Universal Film Company a copy of the film has been placed in the Film Exchange maintained by that company in Atlanta, Boston, Chicago, Dallas, New York City, Omaha, Philadelphia, St. Louis, San Francisco, and Seattle, Wash., and can be secured upon application. Companies contemplating the installation of safety cars will find it helpful to have this film shown in local motion picture houses, prior to actual installation of the cars. Arrangements can also be made with the exchange to show the picture to special parties of public officials without extra expense except for the operator's time.

Mr. Dunham Elected President at New Haven

THE thirty-second and annual meeting of the Connecticut Company section was held at New Haven on Nov. 24 with ninty-nine members and guests in attendance. Dinner was served at the Hotel Garde, and after dinner the program was opened by Congressman John Q. Tilson, who congratulated the officers and employees of the company for so successfully preserving intact the transportation system through the war period. President L. S. Storrs then thanked all employees for their interest and efforts in inaugurating the zone system, and he called attention to the importance of all employees putting greater thought into the improvement of public service.

The next speaker was H. C. Eddy, senior traffic inspector New Jersey Board of Public Utilities Commissioners, who gave a historical lecture on the development of electric transportation equipment, illustrated with lantern slides. A model of the original Vandepoele motor, the first used in this country for transporting freight, was shown, and F. L. Beardsley, superintendent of the company's New Britain division, who had operated the original motor in 1888, demonstrated its construction.

The following officers for the coming year were then elected: President, W. R. Dunham, Jr.; vice-president, J. W. Colton; secretary (re-elected), C. K. Savery; treasurer, G. H. Crosson; director for three years, F. A. Hewitt.

Resolution for Consideration at Cleveland

SUPPLEMENTING the preliminary note regarding the program of the mid-winter conference which is to be held at Cleveland in Jan. 8, 1919, the following text of the resolution to be introduced and supported by Williston Fish, vice-president West Penn Railways, is given:

***Resolved*, That the American Electric Railway Association recommend to its member companies that they provide in their accounting practice for the creation of adequate reserves to insure the replacement or abandonment of major items of property in advance of their actual replacement or abandonment; that such reserve shall, if possible, be provided for in cost-of-service franchises; and further that this subject be referred to an appropriate joint committee of the American Electric Railway Accounting Association and American Electric Railway Engineering Association, to formulate report on the preferable means of creating such replacement reserve and the variations in the amount thereof that will occur in railway properties of different characteristics; and be it further**

***Resolved*, That a summary of such report be presented to the American Electric Railway Association at its annual convention in 1920.**

An analysis of the records of the American Electric Railway Association giving an up-to-date list of companies now operating or about to operate one-man cars shows a total of 2409 cars, of which 6 per cent are safety cars.

Railroad Association Adopts Overhead Crossing Specifications Revision

AT ITS MEETING held in Chicago the American Railroad Association adopted, on Nov. 19, a report of its general committee of Section 2—Engineering, on behalf of the electrical division.

The report consisted of three parts: (1) On regulations of the electrical division; (2) a list of officers of the electrical division, and (3) railroad specification for electric light, power supply and trolley lines crossing steam and electric railways; originally adopted May 15, 1912 and previously amended Nov. 18, 1914.

The electric division includes those connected in official or supervisory capacities with the application of electricity to railroad service. Affiliated members may be appointed by the committee of direction. The committee of direction consists of nine representatives of members within the division, including the chairman and vice-chairman of the division, to be selected by the general committee of Section 2—Engineering. The committee of direction conducts the business of the division, authorizes orders, defines duties, and fixes the number of and appoints the members of certain special committees as may be necessary to investigate and report their findings and recommendations upon any subject to be considered by them. The following committees are provided for: (1) On electricity; (2) on overhead and third-rail working conductors, and (3) on crossings of power and other service wires.

The officers of the electrical division are George Gibbs of Gibbs & Hill, New York City, chairman; Edwin B. Katté, chief engineer of electric traction New York Central Railroad, New York City, vice-chairman; committee of direction, Messrs. Gibbs, Katté, A. S. Baldwin, vice-president Illinois Central Railroad; C. L. Bardo, general manager New York, New Haven & Hartford Railroad; H. B. Earling, general manager lines west, Chicago, Milwaukee & St. Paul Railroad; J. E. Crawford, chief engineer Norfolk & Western Railroad; J. H. Davis, electrical engineer Baltimore & Ohio Railroad. There are still two vacancies to be filled in the committee of direction.

The overhead crossing specifications report was the same as that presented at the Atlantic City convention, report No. 304 A, referred to in the convention report supplement of this paper, issued on Oct. 11, page 71.

Bulletin News Page

Summary of the Principal Happenings of the Industry of Current Interest Since the Last Issue of This Paper Was Published

PRINTED DECEMBER 4, 1919

"Dan" Pierce has joined Ivy L. Lee in general publicity work.

The Brooklyn (N. Y.) City Railroad has withdrawn its extra fare charge on the Flatbush Avenue Line pending a determination of its rights by the courts.

Fares in San Diego, Cal., have been ordered readjusted and the zone system prescribed.

Bankers who have reviewed the affairs of the Brooklyn Rapid Transit Company see the system's only financial hope in an increase in fare.

The net operating revenue of the Virginia Railway & Power Company, Richmond, Va., declined $252,570 for the year ended June 30, 1919, over the previous year.

The *Wall Street Journal* says that much new financing by public utilities is in prospect.

Bankers point out that obligations of the Baltimore railway are much more onerous than those of the Philadelphia Rapid Transit Company.

An interesting comparison of conditions under municipal ownership and under private operation is contained in the award of the arbitrators at Portland, Ore., advancing wages on the private lines there.

The Massachusetts Institute of Technology suggests a new alignment between big business and the institute, profitable alike to both.

The city of Lawrence, Mass., required to choose between jitneys and the trolleys, has eliminated the jitneys.

The Columbia Railway, Gas & Electric Company, Columbia, S. C., has offered to sell its railway lines to the city.

William E. Rolston, formerly superintendent of power and equipment of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., has been appointed superintendent of power of the Kansas City (Mo.) Railways.

A decision by the United States Supreme Court is interpreted to mean that the Public Service Commission of Missouri has authority to fix rates regardless of franchise provisions limiting fares to 5 cents.

The State Supreme Court of New York has ruled that because of provisions in the company's franchise which limit the rate of fare, the Public Service Commission has no authority to increase fares on the Binghamton Railway.

The Railroad Commission of California says a 5-cent fare is sufficient for the Los Angeles Railway Corporation and that there is no need for a charge for transfers. The engineers who conducted the investigation believe that economies and improvements are possible. One-man cars are recommended. Relief for the company from paving is another reform suggested.

The Public Service Railway, Newark, N. J., has been authorized to abandon the zone plan as modified recently by the Board of Public Utility Commissioners and to return to a flat 7-cent charge with 1 cent for each transfer.

The Public Service Commission of New York has approved the reorganization plan for the Buffalo (N. Y.) Southern Railway.

The shareholders of the Cities Service Company, New York, N. Y., have approved the creation of an authorized issue of $100,000,000 of second preferred stock.

The report of the engineers retained by security holders of the Interborough Rapid Transit Company, New York, N. Y., to inquire into that company's affairs confirms the need of the company for additional revenue if the company is to be saved from receivership.

The reorganization plan for Oakland, Antioch & Eastern Railway, Oakland, Cal., is to be modified.

The property of the Southern Traction Company, East St. Louis, Ill., may again be offered for sale at foreclosure, as the purchaser is in technical default in making the purchase payments.

Traction securities in New York shrunk in value more than $106,000,000 during the period from Jan. 2 to Nov. 10.

A special session of the Legislature of Michigan is urged for the purpose of considering the question of bonding the city of Detroit so that subways may be built at public expense.

A substitute is offered by E. R. Morse, transit commissioner of Pittsburgh, Pa., for the city's proposal of a $6,000,000 downtown subway loop.

The director of city transit of Philadelphia takes issue with the proposal of President Mitten of the Philadelphia Rapid Transit Company over Mr. Mitten's plan for relief for the company.

The Public Service Commissioner for Greater New York is expected to reiterate his suggestion for consolidation of the lines in New York as a step in the solution of the railway problem in that city.

Arbitrators have decided in favor of a maximum wage increase of 10 cents for the employees of the Des Moines (Ia.) City Railway.

The court has stepped into the street railway controversy at Toledo, where service has been abandoned, and has proposed terms for a temporary settlement, with other suggestions looking toward permanent relief. In the opinion of the court Toledo has made itself a joke to all the rest of the country.

Railway operators are contributing to a discussion on fare being conducted by the Chicago *Daily News*. Among the railway men who have participated are President Mitten of the Philadelphia Rapid Transit Company, President Brooks of the Detroit United Railway and L. A. Busby, president of the Chicago Surface Lines.

The Portland Railway, Light & Power Company, Portland, Ore., as the result of a wage award increase, has asked the Public Service Commission to determine upon a fare charge that will permit the company to meet its obligations.

The Shore Line Electric Railway in Connecticut has asked the court to determine the right of the company to discontinue service that is unprofitable. The property is in the hands of a receiver.

St. Louis has taken to the token.

The recent daily average of passengers carried on the surface and rapid transit lines in Greater New York has been 6,400,000. The fares per capita have increased to 370. The cold figures of the Public Service Commission covering passenger traffic in New York last year deserve careful reading.

All lines of the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company except one have been equipped with safety cars.

The Chicago (Ill.) Surface Lines has been ordered to sell ten tickets for 65 cents and books of fifty tickets for $3. The Public Service Commission, however, has refused to order the discontinuance of the 7-cent cash fare.

A dispute has arisen over the interpretation of the terms of the loan of the War Finance Corporation to the New Orleans Railway & Light Company.

A bill of foreclosure has been filed against the Aurora, Elgin & Chicago Railroad, Wheaton, Ill.

A receiver has been named for the Northampton, Easton & Washington Traction Company, Easton, Pa.

The operator of New York's municipal busses sees a great future in these vehicles as operated by himself.

The merit system has been applied to the employees of the Seattle (Wash.) Municipal Railway by Superintendent Murphine.

The manager of the Brooklyn City Railroad, recently separated from the Brooklyn Rapid Transit Company, sees a deficit of $400,000 before him for the year ended Aug. 31, 1920, with no allowance for Federal taxes, payment of rentals or interest on securities outstanding.

The wages of trainmen in Portland, Ore., have been advanced 6 cents an hour under arbitration.

News of the Electric Railways

Principal Happenings Up to Closing of Forms for This Issue, on Dec. 1. Issue Printed Dec. 13, 1919

FINANCIAL AND CORPORATE . TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Railway Ready to Sell

South Carolina Company, Insisting on Its Rights, Offers to Dispose of Its Property to the City

Edwin W. Robertson, president of the Columbia Railway, Gas & Electric Company, Columbia, S. C., on Nov. 8 transmitted a letter to the City Council in which, speaking for the directors, he offered to sell the railway to the city.

BUSINESS RUN AT LOSS

It is pointed out that the business is being operated at a loss, the deficit from Jan. 1 to Nov. 1 being $134,886. Mr. Robertson emphasizes that the present system cannot be maintained indefinitely with its sources of revenue so sharply reduced. In his letter Mr. Robertson says:

> For some time now this company has been operating its railway at a decided loss, as shown by the figures in statements hereto attached, and any additional burdens placed upon the company at this time will react to the discomfort and inconvenience of our citizens.
>
> Municipal ownership and operation of city railway lines have been before the people of many municipalities and the advantage claimed for such ownership and management has been so thoroughly discussed that I will not attempt to advise you along these lines. If Council deems it to the best interest of the citizens of Columbia that the railway lines should be owned and operated by the city government, in the full faith and belief that the same can be operated as well and more economically, I am authorized to offer to sell the railway lines and equipment belonging to this company to the city of Columbia on a fair valuation basis as of the date of this letter. There is one large item I readily see can be saved under municipal ownership which is now a heavy burden on this company, to-wit: taxes. This year taxes will amount to practically $92,000.
>
> In the past we have been able to give to the citizens of Columbia what we have every reason to believe is one of the best electric railway services in the country, and we have been enabled to do this because of profits made from other departments of the company which were not expended in dividends to the stockholders, but used to improve and better the service in every respect. The recent decisions of the Public Service Commission have taken away our means to continue this course, and I cannot say at this writing how much longer the company will be able to maintain the present service. Certainly if additional paving burdens are forced upon us there is no other alternative save reduction in the number of cars operated.

The losses as set forth from the books by Mr. Robertson range from $10,809 for February, the lowest for the year, up to $16,757 for September, the highest. The total receipts were $369,459 against operating expenses amounting to $504,346, or a net loss of $134,886. This does not include interest on bonds and taxes.

At its meeting on Nov. 11 the City Council took no definite action on the proposal of the company to sell the railway to the municipality, but passed a resolution the sense of which was that Council would expect the company to pave the car tracks on Divine Street as requested in another resolution passed at a recent meeting. The matter of buying the railway will be discussed later.

CITY INSISTS ON PAVING

When the letter of Mr. Robertson was presented to the Council Councilman Coleman stated the he considered the part relative to the paving of the car tracks along Divine Street in Shandon separate from the proposal to sell the railway to the city and he thought that Council should insist on its previous resolution that the paving work be done. He contended that the paving was being damaged by the tracks not being paved. A resolution was then put and carried calling upon the company to proceed with the paving as referred to in the previous resolution, which brought forth Mr. Robertson's letter.

As to the matter of buying the railway it was proposed that Council hold a special meeting and if it considered the plan feasible to have a committee meet with a committee of the directors of the railway, to discuss the matter and also to look into the advisability of purchasing the entire interests of the company in case an offer on a fair basis be made.

It is understood that the company will persist in its refusal to pave the track on its own right-of-way. This right-of-way was purchased or received as a gratuity from a land development company. The land on which the tracks are laid now happens to be in the streets as extended to meet the requirements of the growth of the city.

Ten-Cent Wage Increase in Des Moines

The employees of the Des Moines (Ia.) City Railway will get a maximum wage increase of 10 cents according to the decision of the arbitrators. C. W. Reese, representing the public, and Fred Sargent, representing the company, have signed the agreement making it effective at once, but Ben J. Wiley, the representative of the employees on the arbitration board, refused to sign the agreement. He stated, however, that the terms would be accepted by the men.

The rates of pay which have been determined upon for the men by the board are: 51 cents an hour for the first three months of service, 54 cents for the next nine months, and 57 cents after one year. The men demanded a maximum of 65 cents. The same three arbitrators some months ago agreed upon 50, 55 and 60 cents contingent upon the passage of a 6-cent fare, but this was turned down at a special election. Judge Martin J. Wade, of the Federal Court, then ordered the 47-cent scale re-established.

The new agreement is retroactive to March 1, 1919, and continues until the present contract between the men and the company expires on March 1, 1920. As the company has paid a portion of the time on the basis of the 60-cent scale a credit will be due according to the recent decision of the arbitration board.

Improvement Program for St. Louis

The annual report of Charles S. Butts, engineer for the department of public utilities of St. Louis, Mo., outlines improvements which the United Railways can make for the benefit of the city. Mr. Butts' improvement program calls for the expenditure of $2,000,000. He recommends the construction of a car line from Meramec Street through Carondelet Park to the southern limits of the city. The report urges the extension of several other lines to outlying parts of St. Louis.

Consolidation as a Way Out

New York Commissioner, It Is Said, Will Again Urge Merger as a Means to Traction Settlement

The talk of a merger of the traction lines in New York has again been revived. The rumors come to New York via Mount Clemons, Mich, where Lewis Nixon, public service commissioner, has been spending a vacation. Report has it that the data and findings in connection with the various inquiries into and the engineering reports on the New York City companies have all been transmitted to Mr. Nixon and that he has been devoting no small part of his time to the consideration of what had best be done.

SEVERAL CONFERENCES RECENTLY

For all this there would appear to be some foundation in fact. Mr. Nixon has conferred several times with the representatives of the various railways and early in the present proceedings urged that all negotiations be conducted in the spirit of give and take. He has said previously that he was inclined to favor service-at-cost, indeterminate grants in place of the present perpetual franchises, the valuation of the properties in the interest of the city, the right of the city to purchase the lines, the abolition of holding companies and the termination of the present leases.

If rumor is to be believed then Mr. Nixon has modified his views to the extent of considering it advisable to bring about consolidations of the lines in the boroughs of Manhattan and the Bronx as a unit and those of Brooklyn and Queens as a unit, with the ultimate goal a final consolidation of all the companies rather than the first objective as reported some time ago.

From all the conferences looking toward a readjustment of affairs the present city administration, headed by Mayor Hylan, has stood aloof. Thus the effort to have the Mayor participate has failed. In fact one of the developments in connection with the inquiry by the commission into the transit situation was a passage at arms between the Mayor and the commissioner. In political circles the tilt between the Mayor and the commissioner has been construed as a rupture between the Mayor and the Governor, by whom Mr. Nixon was appointed. Whatever the significance of these moves from a political standpoint may be, there can be no mistaking the uncompromising attitude of the city administration toward the local railways.

SECURITY READJUSTMENT OF PROBLEM

As for Commissioner Nixon it is said that upon his return he will have ready for submission to the officials and legal representatives of the companies a complete plan for the merger. All this would have to be presaged upon the ability of those in charge to reconcile the holders of the various security issues involved to the changes in the nature of their holdings which would necessarily have to follow.

Plan Suggested for Temporary Toledo Resumption

City Sought Mandatory Order—Court Suggested Friendly Temporary Adjustment—Company Willing to Resume on Assurance of Protection

The Toledo, Ohio, abandonment case has reached the courts. Shortly after the cessation of service by the Toledo Railways & Light Company following the vote by the people upholding the ouster ordinance Mayor Schreiber hinted at a legal way to require the company to resume operations. It appears now that the Mayor had in mind a law passed recently, for he applied to Judge Killits of the District Court for the Northern District of Ohio, Western Division, for relief.

Court Suggests Temporary Settlement

The case came before the court on Nov. 28. Judge Killits said he was ready to order the cars back to the streets immediately upon the formal order of Mayor Schreiber now in court, but he expressed the belief that the order of the Mayor lacked the sanction of the City Council. To this Mayor Schreiber declared he would call Council in special session. In his suggestion for operation of the cars immediately Judge Killits proposed to appoint a commission, composed of six or ten members, equally divided between adherents of municipal ownership and those favoring the Tayler service-at-cost plan.

Under this plan, he said the cars could be operated at once as he would suggest appointing Frank Coates, president of the Toledo Railways & Light Company, operating head of the traction system, while the city officials and traction owners consider details of the franchise drafts they now are working upon.

The plan proposed by Judge Killitts has been summarized as follows:

1. Provides for resumption of car service at once, on temporary basis, if H. L. Doherty, Mayor Schreiber and Council accept court's suggestions for temporary and permanent settlement.
2. Requires Council first to pass emergency resolution, ratifying Mayor Schrieber's application for mandatory order for resumption of car service under Miller law.
3. Judge Killits then to begin operation of railway for sixty-day period, preserving company organization intact, and appointing President Frank R. Coates operating officer. Court to determine fare, schedules, re-routing.
4. For permanent settlement, Mayor and Council must agree to accept assistance of a commission, to be appointed by Killits and approved by Mayor and Council.
5. Commission to consist of either six or ten members, divided equally between municipal ownership and Tayler plan advocates.
6. Commission, Mayor and Council to work out ordinances providing for both plans to be submitted to popular vote.
7. Acceptance of court's proposal by either party not to be deemed final until order is framed and submitted designating exactly how cars shall be operated temporarily.
8. If both city and company refuse to accept court's suggested order, Judge Killits may abandon further attempt to help.
9. Court reserves judgment as to what will be done further if one party accepts and other refuses to accept suggested plan.
10. Judge Killits expresses opinion court has power to order resumption of transportation, under Miller law, but says this or any other order would be subject to appeal and indefinite delay.

Court Explains Situation

The remarks of the court on the general situation were very significant. Judge Killitts said in part:

> It will occur to everybody that the city loses in prestige and promise every day the cars stay out; that citizens in private and business life are suffering financially and, what is more important, the health of our people will be seriously impaired with the bitter season at hand.
>
> The controversy which has afflicted Toledo for fifteen-years ought to have a quick end. It has disastrously hampered the city's growth and has embittered its people, arraying them in opposing classes and breeding heated dissensions among them. Some of the situations it has produced all of us would like to forget. Wherever you go, you find that we have the reputation of a quarrelsome, divided people. The local papers might fill pages of editorial comment ridiculing Toledo for its present plight, which newspapers from the Atlantic to the Pacific have recently printed. Plainly, we have made ourselves a joke to all the rest of the country. We have put upon ourselves an intolerable burden, and a great many people think that a very great sacrifice might well be borne if thereby Toledo could throw it off for all time.
>
> But, after all, very little sacrifice is necessary to put our city on the map again as a community of sensible, enterprising people. We would at one step go more than half way out of the mire if everyone of us would meet the matter coolly and as a fresh proposition, with open minds, and a fair regard for the feelings, views and interests of each other, and, above all, with a fixed determination to do the very best for the city, in short, if we would act just as citizens of a democracy should act, to get the best result out of the principle of democracy.
>
> What can the court do to help? God knows this court will do all it can, and it will not stick for propriety or conventionality. In the first place, the court can make no order in the pending case which is not subject to review by a higher court, and it would only make things worse if the court should enter an order which a higher court might set aside. This court is bound to a best effort to get an order which it feels a higher court would sustain, and then enforce it. This order must protect rights which the parties enjoy, otherwise it will not stand. It must be so written that it will give the least possible excuse for appeal. We have in mind a discretion abiding in this court the exercise of which cannot be reversed unless it is seen on the face of the record that the discretion has been unwisely used, and we think we know how to use it without encountering reversal. An order in this line does not involve the Miller law in any way whatever, but to issue it would not directly involve the running of cars. It would, however, create a situation which would probably bring about the result in the end. We also believe that the court has the power to issue an order based upon the Miller law, directly going to the resumption of transportation, leaving only to the court's discretion the terms and conditions of that order.
>
> In both cases, however, as we have said, an appeal could not be prevented, and the order might not go into effect until this court was sustained by a higher court.
>
> So far as giving immediate transportation through this court is concerned, two factors are considered:
>
> First, how far is the court willing to use its discretion?
>
> Second, what is the disposition of the company respecting obedience to the court's order without appeal?
>
> Now this court, deeply impressed as we are with the necessity for quick resumption of service, will not use its discretion to that end except upon conditions which will, first, protect the company in every legal right it possesses, giving it every safeguard it should have, so that it would have the least possible chance for success in a higher court, and which will, secondly, encourage the company to refrain from testing the order in a higher court. We must impose conditions, also, which will work to as speedy a final adjustment of the street car question as can be consistent with safe action.

The court then outlined at some length the plan for settlement which has been summarized previously, stating first of all that the Council must pass an emergency resolution ratifying the act of the Mayor in making application to the court. In conclusion the court said:

> These suggestions are submitted to the parties with the sincere hope and with much confidence that they will appeal to their good judgment and public spirit, and that they will so far meet with the approval of both sides that the parties will cordially unite in mutual agreements within the limits of these conditions which will reduce to the minimum the courts work therein.

A meeting of the company officials and city officers with Judge Killitts followed almost immediately and the company asked more time to consider the proposals of the court for a settlement by temporary restoration of service as suggested by the court. No time was set for another conference and the meeting of the Council called for Saturday to pass the emergency resolution ratifying the appeal of the Mayor to the Court was postponed.

At the conference the company did not refuse to accept the court's proposal. It merely presented these conditions upon which it might bring the cars back:

1. A temporary ordinance granting the right to operate cars and protect the company.
2. A high enough temporary fare for service to make a permanent settlement at lower fares attractive to the people.
3. Elimination of bus competition during the interval of temporary service.

Mayor Quotes New Law

The Mayor bases his case against the company on the so-called Miller law. This measure was passed by the Legislature on April 15, 1919, and was approved on May 16. It enlarged the powers and duties of the Public Utility Commission with reference to the abandonment of service facilities of railroad and public utilities, and provided that no political sub-division of the State shall require to be abandoned, and no public utility (including interurban and street railway service) shall abandon the operation of any such public utility until reasonable notice is given to the Public Utilities Commission so that body may inquire into the propriety of such cessation.

In appealing to the court for a mandatory order compelling the company to restore service under the old conditions, the city contends that at "no time has any application been made to the Public Utilities Commission for leave to abandon service or remove such cars and no order permitting such abandonment has ever been allowed by such Public Utility Commission, nor has such leave ever been granted by this court or any other court, either as to city or interurban cars."

The court entertained the city's plea to the extent of notifying the city and the company to appear before him on Nov. 21. After a short hearing Judge Killits put the case over a few days. This was done on the plea of Thomas H. Tracy, counsel for the company, who said he desired time to consult with Henry L. Doherty of Henry L. Doherty & Company, operating managers of the local company. Mr. Tracy said that counsel for the company believed the Miller law was not applicable to city street railway systems.

History Reviewed Briefly

It should, perhaps, be explained that since January, 1914, the company has been operating under a day-to-day franchise, the city having the right to oust the company on twenty-four hours notice and the company having the same right to abandon operation. The court in April, 1918, ordered a straight 5-cent fare and a charge of 1 cent for each transfer. In May, 1919, wages were referred to War Labor Board. Increases were granted, and in June the fare was increased to 6 cents with 2 cents for a transfer. Mayor Schreiber retaliated with an ouster ordinance. This was passed by the Council, but its application was postponed by a initiative petition putting the matter to the people at the polls. In the meantime the company submitted a service-at-cost plan, but this was shelved. At the election the voters upheld the ouster measure and as soon as the official count had been returned the company withdrew its cars across the border into Michigan. One of the things Mr. Doherty wants is a decisive vote for municipal ownership or an expression of opinion favorable to the company being granted a workable franchise under private ownership.

Meanwhile the work is being kept up of securing names to the petition looking toward the filing of a request for an initiated franchise ordinance which would place the issue squarely before the public.

Lawrence Service Restored

Railway Withdraws Service Compelling City to Decide Definitely Between the Trolley and the Jitney

A notable struggle over jitneys in Lawrence, Mass., was brought to a climax on Nov. 26 when the public trustees in charge of the Eastern Massachusetts Street Railway withdrew electric railway service after the City Council had failed to enforce an order for the revocation of all jitney licenses. The expressed attitude of the trustees was this:

> A street railway and jitneys can not both live in the same community. These rival transportation mediums operating against each other are an economic waste. The people should choose between the two. If the people want jitneys they should abolish the street railway, but if they want the street railway they should abolish the jitneys.

The public trustees, appointed by Governor Coolidge to take charge of the railway under the Public Control Act, providing for service-at-cost, have had numerous clashes with city and town officials over the jitney problem, and in every instance thus far the verdict of the people has been in favor of the railway, and jitney competition has been eliminated.

Immediately service had been withdrawn there was such public clamor that the city officials, after ineffectually appealing to the Governor to compel the trustees to restore railway service, found it necessary to confer with the public trustees and submit to terms which covered all of the points made in the original ultimatum served upon Mayor John J. Hurley and the other members of the Lawrence City Council on Nov. 11.

ORDINANCE PASSED RESTRICTING JITNEYS

After their conference with the public trustees in Boston, on Nov. 26, the Mayor and City Council returned to Lawrence and at a midnight session passed an ordinance which provides that jitneys cannot operate on any street or part of a street where the street railway is now in operation and that motor buses cannot operate upon any other street until public necessity for the same has been shown and the street railway refuses to take care of the transportation thereon.

The one trolleyless day in a drizzling rain during which the people in the outlying districts were left practically stranded and the retail merchants reported business almost at a standstill, apparently convinced the City Council that the city without trolley cars was unthinkable.

As the result of the unrestrained jitney traffic in streets already served by the Bay State in Lawrence the public trustees discovered in the segregation of the Lawrence District accounts that the monthly loss in earnings was $25,000. Although jitney regulations had been adopted by the Lawrence City Council, the Department of Public Safety paid little or no attention to their enforcement.

These facts were brought sharply to the attention of the Chamber of Commerce and a service committee composed of five representative citizens was appointed, which throughout all the dealing between the public trustees and the City Council stood stanchly by the public trustees in favor of giving the railway the right to operate without having to contend with the unfair and wasteful jitney competition.

George E. Ricks, secretary of the Lawrence Chamber of Commerce, and James H. Bride, a wholesale plumber and steam fitter, gave their services in conducting a campaign of education which aided the public trustees materially in effectively presenting their case to the people of Lawrence.

Manufacturers, retail merchants and newspaper publishers also got into the line and one newspaper conducted a referendum of its own which showed conclusively that there is an overwhelming public sentiment in favor of the street cars. This newspaper, *The Telegram*, printed on its first page for several days a ballot and invited its readers to express their choice as between street cars and jitneys. About 95 per cent of the replies expressed preference for street cars.

REDUCED FARE PLAN SUGGESTED

When the railway service was restored on Nov. 28, the reserve cars were operating on all of the local lines, and Howard F. Fritch, assistant general manager, immediately took up with the citizens' service committee the matter of lower fares which the public trustees promised in the event of the elimination of the jitney traffic. It is proposed to put into effect in Lawrence on Dec. 7 a sixteen-ride $1 punch ticket with no transfer privilege.

Since the passage of the ordinance by the City Council at its special session a marked change has come over the Police Department, which is now enthusiastically co-operating with the public trustees and strictly enforcing the order of the City Council revoking the jitney licenses. The new city ordinance will not become effective until Dec. 6 under the provisions of the Lawrence City Charter, but the existing regulations under which the jitney licenses were revoked will remain in force until the new ordinance becomes operative.

In the city of Brockton jitney competition has been completely removed without the public trustees being obliged to resort to the cessation of service. When Patrick F. Sheehan, manager of the division there, announced the proposed discontinuance because of unfair jitney competition, neighborhood meetings were held and the people expressed themselves so strongly in favor of the continuance of railway service that the Board of Aldermen voted five to one for the revocation of all jitney licenses under the existing ordinance and Mayor William L. Gleason having served notice that it was his intention to make the Police Station the destination of every jitney driver who operated after the revocation became effective, there has been little or no irritation from that source since. Brockton has also been given a sixteen-ride $1 punch ticket without transfers.

JITNEYS ELIMINATED IN OTHER CITIES

Lowell, Fall River and Taunton are the other Bay State System cities where there is no jitney competition and all three are enjoying reduced ticket rates which appear to be working out satisfactorily.

Optimistic About New York Busses

Application was made to the Board of Estimates of New York City on Nov. 21 by Grover A. Whelan, commissioner of plants and structures, for authority to continue the operation of the various bus lines in the city until July 1 next and to charge the bus owners $2 a day for each bus. This money, Mr. Whalen suggested, could constitute a fund to meet the expenses of supervision. The present authorization under which Mr. Whalen is permitting the busses to operate expired on Dec. 1.

In his report on the busses, Mr. Whalen said that 114 of them were in operation on Nov. 14, and that they carried 75,000 passengers daily. He thought that if the city would undertake the operation of a unified system of city-owned busses great success would attend the venture. He submitted figures showing that 100 busses, seating twenty-seven passengers each, would cost $550,000, and that garage equipment and spare parts would cost an additional $20,000.

His figures for operation and maintenance, including garages, the employment of 180 chauffeurs at $1,800 a year each, starters, checkers, etc., total $635,000. Then Mr. Whalen's report says that it is proposed to operate ninety-two busses on the nine routes, which have bus service at the present time, eight busses being held for emergency service.

He estimates the profits of operation at $376.80 a day. Then his report reads:

> These nine routes total a length of only 25 miles, and on account of their length are bound to be profitable sources of revenue, and the service of these 100 busses will give, I confidently expect, in one year after city operation is commenced, a much greater income than is quoted here.

Endowment on Business Basis

Massachusetts Institute of Technology Proposes a New Relation With Industry Big With Possibilities

Big possibilities for the future of American engineering schools are inherent in a plant which the Massachusetts Institute of Technology is now developing. This plan not only puts contributions to the endowment fund upon the sound business basis of quid pro quo, but affords an opportunity to many industries of contributing without charging the appropriations to bequests and charities.

The Institute, it may be recalled, is seeking $8,000,000 in endowment funds—or rather, $4,000,000 from the public in order to secure a like amount already promised by the "mysterious Mr. Smith," the income from the fund to be used to pay more nearly adequate salaries to the members of its teaching staff.

In the quest for this amount, "Tech" has decided to place before the great industrial corporations a plan by which they will agree to pay an annual fee to the institute in return for certain specified services and privileges. The Institute, on its part, permits the corporation to have the use of its library, the opportunity to consult its professors, and the first chance at hiring Technology men.

Fears that the proposal may conflict with the work of the consulting engineer are answered by the obvious fact that the problems submitted to the institute would be beyond the scope of the private engineering firm to handle and by the further fact that the consulting experts of the country are already swamped with the unending questions submitted to them for solution.

Under its new constitution, the State of Massachusetts is compelled to withdraw the aid formerly given to Technology. The per capita income from the student body is insufficient to meet the actual cost of instruction, and the tuition fee cannot be further increased without working a hardship on many students. Hence the turning to industry and the plan for a closer and more helpful relationship than has ever before been obtained.

Wage Advance Granted in Portland, Ore.

Arbitrators Compare Portland Railway With Seattle Municipal Line and Recommend Relief

By a unanimous decision of the board of arbitration considering a scale of wages for the trainmen and other classified railway employees of the Portland Railway, Light & Power Company, Portland, Ore., a schedule was signed on Nov. 14 for the period from Oct. 1, 1919, to April 30, 1920, subject to reopening at intervals of six months commencing May 1, 1920.

SIXTY-TWO CENT MAXIMUM ESTABLISHED

Wages of platform men are raised from a maximum of 56 cents an hour to a maximum of 62 cents an hour and those of other classified employees to a scale corresponding with that figure.

The arbitrators were Otto Hartwig, appointed to represent the employees; F. C. Knapp, appointed to represent the company, by whom Ira F. Powers was selected as the third member and designated as chairman of the board of arbitration.

In concluding the task the members of the board expressed their gratification that most cordial relations exist between the employees and officials of the corporation, and commended the spirit in which the parties to the controversy had presented their testimony.

The schedule showing the present wages and scale of the award for platform men, applying alike to conductors and motormen, is as follows:

	Present rate per hour	Award
First three months	$0.52	$0.58
Next nine months	.54	.60
After one year	.56	.62
One-man car operators, 6 cents an hour above scale.		
Extra men, a month	$90	$100

In the schedule for classified employees, including blacksmiths, carpenters, machinists, painters, employees in the truck, air and other departments and in the carhouses, including laborers, there is a general advance in wages of from 3 to 4 and 5 cents an hour over the former agreement. This also applies to the interurban track force, bridge and building force, interurban station agents and employees and tellers at the carhouses.

SEATTLE LINES HELPED

During the negotiations reference was made time and again to conditions that prevail on the Seattle (Wash.) Municipal Railway. On this point the arbitrators say:

> This board has not raised the Portland rate to the full level of the Seattle rate because of the following considerations:
>
> (a) The financial condition of the Portland company as compared with the municipal fund in Seattle which is available for transportation expense.
>
> (b) An effort has been made to adjust the rates fixed by this award in accordance with the award of the War Labor Board of August, 1919, taking account of the increase in the cost of living since that time.
>
> (c) The cost of living is somewhat less in Portland than in Seattle.
>
> Full data were presented to the board showing the present financial condition of the Portland Railway, Light & Power Company.
>
> For the purpose merely of suggesting possible solutions, it may not be out of place to incorporate in this report certain comparative data applying to Seattle and Portland which the parties brought before this board.
>
> The Seattle Municipal Railway department is relieved from the following items which are borne directly by the Portland company:
>
> General taxes, franchise fees, legal department and accounting expense (assumed in Seattle by other city departments), bridge tolls, paving (assumed in Seattle by street department).
>
> The aggregate of these expenses in Portland amounts approximately to $600,000 per annum.
>
> It further appears that Seattle is charging no depreciation on its railway system, while the Portland company is subject to a depreciation charge of $366,000 a year.
>
> Furthermore, it appears that Seattle is now paying from the general fund to the railway department approximately $50,000 a year for carrying city employees. In Portland firemen and policemen are carried free.
>
> In effect the increases in the cost of operating the Seattle system are thus assumed by the taxpayers, and unless the Portland public desires to undertake the necessary investment incident to acquiring the railway property and the consequent obligations of operation, some adjustment of revenue or expense would appear to be the only alternative.

Another very interesting feature of the Portland finding is the reference by the board to means of relief for the local company. On this point the board said:

> This board does not conceive that it is its proper function to do more in this regard than to list the possibilities of increasing revenue and decreasing expenditures, all without recommendation, but in order that the public may consider the necessary effect of this award and give consideration to ways and means of insuring a continuance of service.
>
> POSSIBILITIES OF INCREASING REVENUE
>
> 1. Increased fares.
> 2. Charge for transfers.
> 3. Limiting length of ride for one fare.
> 4. Payment of fare by city for firemen and policemen.
>
> POSSIBILITIES OF REDUCING EXPENDITURES
>
> 1. Relief from bridge tolls.
> 2. Relief from franchise fees.
> 3. Reduction of taxes.
> 4. Relief from paving obligations.
> 5. Reduction of service.
>
> It has appeared to this board that the prosperity of the people of Portland would be seriously affected by the insolvency and bankruptcy of a utility which plays such an important part in our industrial and commercial activity, and that the board would fail in its duty to the public if it should withhold a clear and comprehensive statement of the facts brought out at its hearings, which, with their obvious results, are of such importance to the public generally.

Merit System in Seattle

No Political Nepotism on Seattle Municipal Railway Under Civil Service Direction

A new system of merit marking for conductors and motormen on the Seattle (Wash.) Municipal Railway has been started by T. F. Murphine, superintendent of public utilities. It is known as the "Discipline-by-Record" plan. Under the new system, the top notch pay of $5.25 a day goes only to the men who rate 0.85 or better in the city's merit ledger. Those whose marks lower their standing a certain per cent go into the second grade and are paid only $5. Lower ratings calling for $4.75, and if the rating falls below 0.70, it means that the employee is in line to quit the service automatically.

BASIS OF MERIT MARKS

The merit markings are based on personal appearance of the trainmen, courtesy to passengers, efforts to insure safety, and suggestions for improvement of service. There are thirty-five causes for demerit marks and eight causes for merits.

Mr. Murphine states that the trial of the system so far made shows that the application of the merit plan has improved the service of the company to a remarkable extent. Each man's record is posted daily, and he is accorded the right to protest against any demerit, if he has an acceptable excuse.

The railway men are under the rule of the city civil service commission, which requires each department head to report every sixty days on a percentage basis the relative efficiency of his employees. It was this fact that led to the installation of the merit rating system for the railway men.

The "Psychological" vs. the "Mathematical"

Many Differences Exist Between Operating Terms and Conditions in Baltimore and Philadelphia

The Philadelphia correspondent of the Baltimore *Sun*, in a recent communication, contrasts the method of the Philadelphia Rapid Transit Company and the United Railways & Electric Company, Baltimore, in an endeavor to increase its receipts to meet increased operating expenses, and exemplifies as follows:

> The difference in the methods of the two companies in securing the additional money they need might be described as the psychological *versus* the mathematical method. The Baltimore company, finding itself short of sufficient money to maintain and operate the property, pay its fixed charges, and get a sufficient balance to surplus for credit purposes, put a lot of experts on its books, figured how much it would require and then asked the Public Service Commission to establish a fare that would yield the amount required. That was the mathematical method.
>
> The Philadelphia Company, in a similar financial situation, put some experts in another line to studying the situation and evolved the salesmanship plan—the plan of selling more units of the thing it produces, which are street-car rides; of filling the empty seats in the cars at non-rush hour periods, of inducing the man who otherwise would walk to ride by convincing him that by riding instead of walking he would be helping to maintain the 5-cent fare and thus do his city as well as himself a good turn. That is the psychological method.

In commenting on this statement Nelson, Cook & Company, Baltimore, bankers, said in part:

> In other words, the Baltimore company appealed to the Public Service Commission for an increased fare while the Philadelphia company appealed to the public to ride oftener and thus prevent the necessity for an increased fare.
>
> The fact that the Philadelphia company is still charging 5 cents and paying dividends, while the United Railways is charging 6½ cents and not paying dividends, has been illustrated as a reason why the Public Service Commission should not authorize an increased fare. On its face this is a reasonable argument, but most unreasonable when it is explained that conditions regulating and controlling the two systems are absolutely dissimilar.
>
> The Philadelphia Rapid Transit Company is enjoying the benefit of the "skip-stop" policy, once in force at Baltimore and repealed at the protesting request of the public. This privilege is estimated to be worth $1,000,000 per annum to the Philadelphia company. This company charges 3 cents for transfers at 580 points and gives free transfers at 320 points. The revenue from transfers is estimated at $1,500,000. The Philadelphia company pays, under a contract made with the city, $550,000 per annum "in lieu and satisfaction of all liability on the part of the company and its subsidiary companies for the paving, repaving, and repair of the streets occupied by their surface lines, the obligation of the companies with respect to the removal of snow therefrom, and all license fees, and shall be in lieu of the right of the city to impose upon the company similar obligations and charges." The only other tax required is the usual tax on real estate. The Philadelphia company charges full fare for children over four years of age. It would appear that the total obligation of the Philadelphia company to the city of Philadelphia is less than 6 per cent of its gross receipts.
>
> Now contrast this condition at Philadelphia with what the United Railways is obligated to the city of Baltimore and its people. In addition to carrying children in arms free, the United Railways is compelled to charge only 4 cents for children under twelve years of age; it is required to pay a special tax (Park Tax) of 9 per cent of gross receipts within certain limits. In addition the company is compelled to pay all other corporation taxes, trackage, real estate, etc., and also a license tax on each car. It is compelled to pave and repave all streets occupied between the tracks and 2 ft. outside of the tracks, and is required to give free transfers, to clear the tracks of snow, and, in summer, to water the streets occupied.
>
> The grand total of public charges last year was $1,344,406 or more than 26 per cent of the net receipts after operating expenses. The park tax alone was last year $755,467.
>
> The United Railways pays $1,344,000 in taxes and other municipal obligations, against the Philadelphia company's $550,000—a difference in favor of the latter company of $794,000. This is equivalent to 2½ per cent annual dividend on the capital stock of the Philadelphia company. Now add to this estimate savings of $1,000,000 to the Philadelphia Company from skip-stops and $1,500,000 revenue from 3-cent transfers and we find that the United Railways is handicapped about $3,294,000 in its competition with the Philadelphia Rapid Transit Company in its efforts to make both ends meet.
>
> This is what we call the psychology of mathematics.

Mr. Mitten's Transit Plan Attacked

Improvement Program Pending Before Philadelphia Council Opposed by Mr. Twining—Counter Proposals Made

Plans recently advanced by Thomas E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, for improving electric railway service in Philadelphia, have encountered opposition from William S. Twining, director of city transit, who has recommended to the City Council that Mr. Mitten's suggestions be rejected. Mr. Twining in a report submitted to the joint councilmanic committees on finance and street railways on Nov. 14, alleged that Mr. Mitten's program, if carried out, would subordinate the interests of the city to those of the company.

ORDINANCES INTRODUCED IN COUNCIL

Mr. Mitten's program was embodied in a series of ordinances recently introduced in the City Council and now pending before that body, as announced previously in the ELECTRIC RAILWAY JOURNAL. The plan calls for the release of the company from the annual payment of $785,000 for street paving, in return for which the company agrees to abolish the 3-cent charge for exchange tickets, except in certain sections of the city, where the transfer privilege would be done away with. It includes a form of lease for the Frankford elevated line under which the company proposes to operate the road, now nearing completion, for a term of years beginning on July 4, 1920, at a nominal rental payment $1 a year. It also provides for track improvements in the section adjacent to the City Hall.

Soon after the ordinances were introduced Director Twining requested President Mitten to answer a series of twenty-seven questions intended to throw light on the company's policy. Mr. Mitten in his reply characterized the questions as lacking in constructive value. After answering the series of questions categorically, Mr. Mitten said:

> Co-operation between city and company is now more than ever essential to insure the best possible use of existing facilities. This management now respectfully submits that its record of the last eight years justifies the confidence of the people.
>
> Constructive action should now displace carping criticism. The street car system should be developed to its greatest capacity, which is possible only of accomplishment after eliminating the 3-cent exchange.
>
> The need of the car rider for increased transit is urgent, and the way should forthwith be opened to early use of the Frankford "L."

Mr. Twining promised to expand his criticism of the company's plans. His report to the councilmanic committees followed.

CITY TRANSIT COMMISSION PROPOSAL

In this report the director of the city transit, alleging that the company, even since its formation in 1902, had been "seeking the pocket of gold at the end of the rainbow," charged that Mr. Mitten's plan was designed to give the company a maximum of income with a minimum of expense and obligation. He further declared that in seeking to be relieved from paving charges, the company was seeking a direct contribution from the city in order to retain the 5-cent fare.

The transit director set forward a counter proposal for the operation of the Frankford "L" by which the city would lease the line to the company at an annual rental of $600,000. The lease would run until 1957. Anticipating that the company might reject this proposition, he declared municipal operation to be the only alternative. Mr. Twining's counter-plan follows:

> The company shall agree to lease the completed section of the Frankford Elevated Railway from Front and Arch to Bridge Street, for a period running until 1957, at a fixed annual rental of $600,000, and to give the same privileges as are accorded the company's lines in West Philadelphia. The company to agree to operate all extensions and other lines of the city's system upon terms to be settled by arbitration before the Public Service Commission. The city to furnish all funds necessary for the initial equipment of the Frankford Elevated ready for operation, the company to furnish all funds needed for additional equipment during the period of the lease; the city's rental to be considered as a part of the company's fixed charges and all matters pertaining to the service and fare to be regulated by the Public Service Commission, either directly or through a local board, as provided in the former agreement.
>
> I regard this proposal as embodying the limit to which the city is justified in going. Under this proposal the operation of the city's lines will be secured on a unified basis and both the city and company will be protected by the State body legally designated for that purpose. It is an offer by the city to submit the terms for operating the remainder of the city's system to the arbitration of the Public Service Commission, and it is difficult to see what valid objections the company can raise to this proposal, or to see what other method can be adopted for harmonizing the conflicting viewpoints of the city and the company.
>
> It is also difficult to see how the Public Service Commission can refuse to act in this matter, in view of its having final responsibility in all these matters.

President Mitten, after studying the report, addressed a letter to Director Twining in which he declared that the latter's plan failed to solve the problem.. Mr. Mitten said in part:

> Municipal transit plans undertaken six years ago have failed to date to produce transportation for a single passenger. Discussion of the dead past does not produce transportation for Philadelphia now.
>
> Director Twining makes such criticism of that which has been done by the Stotesbury-Mitten management to increase and improve transit. This management recognizes that facilities are still inadequate, and with that knowledge has submitted certain definite proposals to Councils. The director condemns these proposals, recommends that they be put aside without further consideration and urges that the whole transit problem, past, present and future, be turned over to the Public Service Commission.
>
> The following are vital objections to Director Twining's conclusions:
>
> 1. P. R. .T. Operation. The director's proposal for a lease running to 1957 ties the hands of the incoming city administration. P. R. T.'s proposal, revocable on six months' notice, avoids this. P. R. T. cannot guarantee $600,000 rental for Frankford "L" with a 5-cent fare, when on the City Transit Department's own showing the Frankford "L" cost will be 7½ cents per passenger.
>
> 2. Municipal Operation. The director's proposal for municipal operation, after unnecessary expenditure on the makeshift Sansom Street terminal, sacrifices the greatest public advantage of the P. R. T. proposal, i. e., through operation of the Frankford "L" and Market Street lines, including free transfer with surface lines.
>
> The director's whole report promises nothing for the future, except continued discussion. It is exactly this policy that has resulted in no accomplishment in the past six years. The city needs more transit now. The company alone offers a plan to meet this need.

Contending that there was little likelihood of the enactment of the proposed legislation during the life of the present Council, Mr. Mitten on Nov. 20 wrote to the joint councilmanic committees asking permission to withdraw the pending ordinances. He plans to ask for the passage of the measures when the incoming Council meets in January.

Recommends Loop Plan Be Abandoned

City Transit Commissioner of Pittsburgh Opposes City Administration—He Also Recommends Municipal Ownership

Abandonment of the entire system of transit operation involved in the $6,000,000 downtown subway loop approved by the voters of Pittsburgh, Pa., in the bond election of last July, is demanded by E. K. Morse, transit commissioner of Pittsburgh, in the annual report of the City Transit Commission submitted on Nov. 18 to the Mayor and the Council. Mr. Morse declares that municipal ownership and the operation of the cars at a straight 5-cent fare inside the city (the fare is now 7½ cents by ticket and 10 cents cash) would so far increase the car-riding habit as to insure revenues enough to operate the electric railway system. Failure to solve the traction problem, he said, has driven people from Pittsburgh. The report contains a chart showing that population of Pittsburgh has increased only 13.2 per cent in nine years, the smallest percentage of gain by any of the ten leading cities of the country.

The subway loop plan, so directly opposed by Mr. Morse in his report, was fostered by the city administration, and was retained in the bond issue by the administration. The commissioner insists the subway loop leaves unsolved the real problem—"rapid transit, which must be provided, or Pittsburgh cannot compete with Detroit, Cleveland and Cincinnati, all of which are providing rapid transit and rapidly outstripping Pittsburgh in population." The present report says:

> The transit commissioner made his views against a subway loop very plain in the 1917 report, and has not had occasion to change them. The views expressed then were written after most careful consideration of surveys, data taken by the commission, plans and estimates. It was shown conclusively that a subway loop would not provide rapid transit; that the city of Pittsburgh could not operate a subway loop; that the Pittsburgh Railways was the only company that could operate such a loop; that no additional revenue would be derived by its operation and for that reason the company could not be expected and should not be allowed to pay to the city any rental whatsoever for its use; that the building of the loopings back of the surface lines and passageways, such as Washington Street and other streets in Boston, had become such a financial burden to the company that it was then threatened with bankruptcy.
>
> To begin with, $6,000,000 will not build the proposed subway loop. It will not accommodate one-half the present number of street cars now entering the central business district; will not provide for future growth; will not take care of a single car from the Northside, and will not reduce the running time to or from the city in any direction. Those favorable to the subway loop argued that it was the beginning of rapid transit; that the subway loop would be used by rapid transit cars, and that it would relieve the downtown congestion. Nothing could be more misleading. Nothing would be, if ever built, more disappointing. Nothing could be more wasteful of the city's borrowing power than an expenditure of this kind and magnitude. . . . No city in the United States contemplated a subway loop such as that presented to the voters of Pittsburgh on July 8, a subway that each and every car entering it is planned to travel 8,400 ft. before passing back into the subway approach that it entered.

As a substitute for this, the transit commissioner urges that the city expend the $6,000,000 it has voted, by building the first phase of the rapid transit plan submitted in a previous report by the transit commissioner. That, he said, would make a beginning of real rapid transit. In touching upon municipal ownership, he said:

> In the recent investigation of the traction problem of Cleveland, Ohio, made by Barclay Parsons & Klapp, they give the riding habit as more than 325. If the same riding habit was obtained in the metropolitan district of Pittsburgh, the passenger revenue at 5 cents for the Pittsburgh Railways would amount to $19,500,000 annually, more than enough to meet all expenses of the service company, and leave a balance. . . . . If the street car system were under the control of the city, were it municipally owned and were service at 5 cents everywhere within the city limits and 10 cents beyond, the riding habit would

very soon be equal to that of Cleveland. As an investment, as a financial proposition, the street car service of Pittsburgh should take in more money than Cleveland and yield a greater net profit on the investment. The time has come when the city should enjoy the benefits of municipal ownership.

COMMISSIONER'S RECOMMENDATIONS

Mr. Morse's recommendations are submitted thus:

1. Start Rapid Transit: It will bring about the following solutions:
   (a) The housing problem.
   (b) Municipal ownership.
   (c) "Service-at-cost" plan.
   (d) Riding habit.
   (e) Relieve congestion.
   (f) Thereby protect Pittsburgh's supremacy.
2. Remove the Pennsylvania Railroad tracks from the Point and the Duquesne way. (These are elevated freight tracks running along the wharf of the Allegheny River, encircling a portion of the business section.)
3. Reclaim and improve the wharf.
4. Abandon the subway loop plan and
   (a) Use the $6,000,000 in constructing the Grant Street and Diamond Street units of rapid transit,
   (b) Use these units for surface cars, until
   (c) The rapid transit lines recommended in the report of 1917 are completed.

A Manager's Problem

Plea for Brooklyn City Railroad Made Before Local Chamber of Commerce by Company Executive

H. Hobart Porter, general manager of the Brooklyn (N. Y.) City Railroad, recently separated from the rest of the Brooklyn Rapid Transit System, addressed the Flatbush Chamber of Commerce on Nov. 15. Mr. Porter discussed more particularly the conditions confronting his own company, but he made it perfectly plain that many of the problems which have come up for settlement in Brooklyn are common to the industry as a whole. He went over the ground covering the total of receiverships of electric railways throughout the county, advances in prices and increases in the cost of doing business and cited the case of Toledo which through its arbitrary action is now entirely without railway service.

A $400,000 DEFICIT

In referring more particularly to the electric railway situation in the borough of Brooklyn, Mr. Porter said:

The companies composing the Brooklyn Rapid Transit System suffered from these conditions as well as from certain problems of their own, with the result that the receiver of the company was ordered by Judge Mayer to cancel all leases, and contracts between it and the Brooklyn City Railroad, and to return the latter property to its original owners.

The receiver, in his petition to the court, estimated that on the basis of the present cost of materials wages, and rates of fare, the gross earnings of the Brooklyn Heights Railroad for the year ended Aug. 31, 1920, had it continued to operate, would have been as follows:

Gross earnings	$10,180,000
Operating expenses	10,043,000
Net operating revenue	$137,000
Taxes	537,000
Net operating deficit	$400,000

The operating expenses above mentioned include no payments for rentals, nor Federal income tax imposed on the Brooklyn City Railroad, nor for any interest upon any securities whatsoever.

Under these circumstances, it could hardly be claimed by any fair and reasonable property holder, business man or association that the company is not entitled to some measure of relief. Certainly the investors who own this property, admittedly of great value, may reasonably expect a return upon their investment.

The Brooklyn City Railroad is largely owned and controlled by residents of Brooklyn. Of its 1472 stockholders, 742 are women, 208 are trustees, administrators, executors, guardians, life insurance companies, charitable institutions and colleges, and 522 are other corporations and individuals.

The records of the company show that it received 100 cents on the dollar in cash for every share of stock issued. Under the direction of boards of directors, which have always been composed of prominent and representative Brooklyn citizens, this cash was invested in the company's property.

Detroit Council Persistent

Despite the Mayor, It Wants Agreement With D. U. R. Embodying Best Tayler Plan Features

Although its action is almost certain to be vetoed by Mayor Couzens, the City Council of Detroit, Mich., at the meeting on Nov. 11 adopted a resolution embodying a majority report authorizing the nonexistent Street Railway Commission to begin negotiations with the Detroit United Railway for an agreement along the lines of the Tayler grant as applied in the city of Cleveland.

The majority report, signed by five members of the Council, stated that the committee of the whole had considered the report and recommendations of the Board of Street Railway Commissioners relative to the acquirement by the city of control, operation and extension of a railway system that will make possible the betterment of transportation facilities now so inadequate and unsatisfactory. In reviewing the commissioner's report it was stated that the same had included recommendations that the city begin now to build and own its subways and other rapid transit structures, and that an agreement including the best features of the Tayler service-at-cost plan be entered into with the local railway. Municipal control of operation of the enlarged system provided for in this agreement which is to be negotiated by the Street Railway Commission and to contain a purchase clause at a fixed valuation is also recommended. The purchase right is to be exercisable by the city at its own option at the end of any five-year period.

WANTS VOTE BY PEOPLE

The commission also recommended that the members be authorized to proceed on this basis and that the people be given an opportunity to vote upon this plan and at the same time upon any amendments to the city charter which the city's legal advisers may find necessary in order to make this plan legally possible. Inasmuch as the commission's recommendations merely ask that the members be authorized to negotiate with the company, and any agreement they may make would have to meet the full approval of the Common Council before submission of the matter to the people, the recommendations were concurred in by the signers of the majority report.

The resolution authorizing the Board of Commissioners to present a plan of settlement to the Common Council after negotiations with the railway in accordance with the commission's former report and recommendations was offered by Councilman Nagel. The resolution also requests the commissioners to include in any agreement which they may make, a provision that the city will build all trackage and extensions and replace all worn-out tracks and foundations so that the city shall eventually own all tracks.

A defeated minority report stated that its signers did not agree with the commissioners in their statement that the people had twiced voted adversely upon an immediate and outright proposition to purchase the railway system. It further maintained that each previous proposition carried with it a franchise in some form.

A resolution was accepted and ordered laid on the table requesting that the governor of Michigan cause a special session of the Legislature to be convened during the present year for the purpose of a consideration of the question of bonding the city so that subways may be built at public expense.

News Notes

Offer to Supply Bus Service.—The Fifth Avenue Coach Company, New York, N. Y., which is controlled by the Interborough Rapid Transit Company, has issued an illustrated booklet which contains the announcement that the company is ready to supply all the motor bus service the city needs. It also said the company has applications before the city authorities for permits to place new lines in immediate operation. The officers of the company know the requirements of the city from their experience in operating buses on Fifth Avenue.

Purchase Vote Arranged.—Representatives of nine border municipalities, Windsor, Walkerville, Ford City, Sandwich, Ojibway, Sandwich East township, Sandwich West township, Anderson township, Tecumseh and Amherstburg, Ont., have decided to have the ratepayers vote on Dec. 6 on the question of authorizing the Hydro-Electric Power Commission of Ontario to purchase the Sandwich & Amherstburg Railway for $2,039,000. The development of the plans for this purchase were reviewed at considerable length in the ELECTRIC RAILWAY JOURNAL for Nov. 8, page 873.

Bonner Freight Container System Urged.—Col. Joseph C. Bonner has filed with the Federal Electric Railways Commission a brief urging the investigation of the Bonner "through container" system for transporting freight on electric railways. This system, it is claimed, is much cheaper than by auto truck. Col. Bonner stated in his brief that one of the large railways expected to test the system, and that several hundred "through container" units and the complementary accessory rail cars and auto truck carriers are planned as the operating unit. If, through the Federal Commission, the roads can again be put on their feet, the brief urges that there will be an opportunity of developing this economic method of transporting freight, for the benefit of the transportation companies and the public. The Bonner system has been described previously in the ELECTRIC RAILWAY JOURNAL.

New Wage Contract in Charleston.—The Charleston Consolidated Railway & Lighting Company, Charleston, S. C., has signed a new wage agreement with its men, organized as a division of the Amalgamated Association. The old rates of pay were 36, 38 and 40 cents an hour. The new rates are 46 cents an hour for the first three months, 48 cents for the next nine months and 50 cents thereafter. There is a provision for time and one-half for overtime and five legal holidays, plus fourteen days vacation with full pay each year. The only provision from the absolutely closed shop is that the company reserves the right to use outside men if at any time the union fails to supply enough men. There has never been a strike in Charleston on the railway system, which has been organized since 1907, and the scale of wages under the agreement with the union in Charleston has been steadily less than in the neighboring non-union towns until the present time.

Financial and Corporate

$430,713 Deficit

Permitted Return at Dallas Under Service-at-Cost Has Fallen Behind This Amount in Two Years

The Dallas (Tex.) Railway operating under a service-at-cost franchises, for the twelve months ended Sept. 30, 1919, earned 4.61 per cent net on the agreed valuations, as against an authorized return of 7 per cent, according to the report of Grover C. Bland, chief accountant in the office of the supervisor of public utilities. The agreed valuation of the properties of the company on Sept. 30, 1919, was $8,560,429. This includes the valuation fixed at the time the franchise was granted, plus additions and betterments made since then.

EARNINGS AND EXPENSES COMPARED

A comparison of the earnings and expenses of the company for the first and second years of operation is shown as follows:

Gross earnings	$564,511	Inc.
Operating expenses and maintenance and accident charges	498,091	Inc.
Net earnings	66,420	Inc.
Interurban Terminal net earnings	5,350	Inc.
Non-operating income	1,639	Dec.
Total net earnings	$70,132	Inc.
Authorized return—7 per cent on property value	31,885	Inc.
Deficit in authorized return	$38,247	Dec.

The total net earnings for the two years were equivalent to a rate of return of 4.30 per cent per annum on the property value, as against a permitted return of 7 per cent, resulting in a deficit of $430,713 in the authorized (or permitted) return for the period.

The railway gross earnings for the second year increased over the first year by an amount of $564,511, or 34.68 per cent, due to elimination of jitney competition and a general increase in traffic. There was jitney competition during nine months of the first year of the street railway's operation under the new franchise, the abolition of the jitneys becoming effective on July 1, 1918.

The railway operating expenses and maintenance and accident charges for the second year show an increase of $498,091, or 22.99 per cent.

The principal increases were in the items of maintenance expenditures and conducting transportation. The increase in maintenance was due to higher costs of labor and material, and to the fact that somewhat more maintenance work was done during the second year. The increase in conducting transportation was caused by higher wages to employees in the transportation department.

OPERATING RATIO HIGH

The total appropriations to the accident reserve for the two years (6 per cent of the railway gross receipts, as provided by the franchise) amounted to $229,161, and the expenditures therefrom were $186,501, leaving a balance of $42,652 in accident reserve as at Sept. 30, 1919. There were no balances in the surplus reserve or repair, maintenance and depreciation reserve of the company as at this date.

The operating expense ratio was 84.03 per cent for the year ended Sept. 30, 1918, and 86.11 per cent for the year ended Sept. 30, 1919, as compared with an average operating expense ratio of 73.80 per cent for the five years immediately preceding the beginning of operation under the new franchise on Oct. 1, 1917.

RECORD OF PASSENGER TRAFFIC

During the twelve months ended Sept. 30, 1919, the railway carried 43,352,996 revenue passengers, 396,837 free passengers and 7,337,952 free transfer passengers, a total of 51,087,785 passengers. The transportation revenue per revenue passenger was 4.79 cents, and per revenue and free transfer passenger 4.09 cents.

The net earnings from operation of the interurban terminal building and facilities for the year ended Sept. 30, 1919, increased $5,350, or 11.59 per cent over the first year. The total net earnings for the two years amounted to $97,644, equivalent to a rate of approximately 3½ per cent per annum on the investment in the interurban terminal property.

$106,000,000 Security Shrinkage

Receiver Reduces to Dollars and Cents Loss in Railway Security Values in New York in Ten Months

Job E. Hedges, receiver of the New York (N. Y.) Railways, addressed the New York Credit Men on Nov. 13. For the most part his remarks had to do with the problems confronting the electric railways in New York City. He said that the great difficulty with the problem was that for a year and a half public opinion had not been adequately expressed. He wanted to know why the credit men, men of faith and credit, had been civically silent so long.

MR. HEDGES GIVES DETAILS

One of the matters with which Mr. Hedges had recently concerned himself was that of the shrinkage in security values of the railway attributable to the present unsettled condition with respect to some definite program of relief for the railways. On this point he said:

> I took pains to-day to secure figures on the loss of traction values consequent upon a refusal of the Mayor to recognize facts as part of the problem. I found the following shrinkage in values by virtue of the non-expression of the thinking people of this city: Interborough 5 per cent and 7 per cent notes, $36,000,000; Interborough collateral bonds, $12,000,000; Manhattan Railway stocks and bonds, $26,700,000; New York Railway two issues of bonds, $3,371,000; Brooklyn Rapid Transit bonds and notes, $28,471,000.
>
> Facts are dangerous to fool with if you have never had an intimate acquaintance with them. When one accepts another's theory for facts, his mind is likely to be confused in logical sequence. This shrinkage in value has come about in order that a foolish theory may be imposed by unthinking men on thinking men who are mentally dormant.
>
> It is my aim that government functions shall not be fogged by the impotency of men charged with creating public opinion.
>
> I recently suggested in a lawful manner by letter to a superior officer what I thought his lawful duties were, and my letter was sent to the District Attorney with the suggestion that I be indicted for trying to have an effect on his official mind.

Mr. Hedges explained that the shrinkages to which he referred were from Jan. 2 to Nov. 10.

Affairs Again Tangled

The Purchase Payments Not Made for Southern Traction and Security Holders Seeking Redress

Further legal complications are threatened in the already badly tangled affairs of the Southern Traction Company, East St. Louis, Ill., in an appeal of a group of stockholders against the ruling made in the United States Court that holders of stock issued during the period the company was in the hands of receivers shall not participate in the money realized at the recent sale of the property.

PROMOTER BEHIND IN PAYMENT

Furthermore H. D. Mepham, the original promoter of the road, on whose bid of $400,000 the property was knocked down three months ago, has failed to make the two payments due in October of $30,000 each and the final payment of the purchase price on Nov. 1. It is expected that an application for a resale of the property will be made in United States Court at East St. Louis.

The appeal from the decision of Judge English which barred the holders of certain securities of the company has been filed in the United States Court of Appeals at Chicago. Corporations and individuals who delivered goods to the road and rendered other services and whose claims aggregate $31,500 have joined in the appeal to the court. Among others who are expected to join in this appeal is Assistant Attorney General William E. Trautman, who holds abut $50,000 in accumulated claims.

When the road was knocked down to Mr. Mephan he paid $30,000 "earnest money." If he fails to make good on his final payments, which are now overdue, this sum will be held to pay the expenses of the two sales. Mr. Mephan has paid $75,000 in all, which may go by default if he does not fulfill his contract.

BEFORE THE COURTS SINCE 1914

The affairs of the Southern Traction Company have been in the courts since 1914, when the company became involved after more than $1,500,000 had been spent in construction work. Former United States Senator William Lorimer, Chicago, who was the head of the Lorimer-Gallagher Construction Company, which built the road for the most part from East St. Louis to a point just beyond Belleville, lost much money in the enterprise before he suffered financial eclipse in the failure of the LaSalle Street Trust & Savings Bank, Chicago, of which he was president.

Interest in financial circles now centers in the possible resale order. In the first sale Mr. Mephan outbid Judge E. C. Kramer, who was acting for a group of St. Louis financiers. This group, it is expected, will bid again for the road if it is offered for resale.

Fate of Eastern Massachusetts Branches Decided

The Randolph-South Braintree Street Railway, a branch of the Eastern Massachusetts Street Railway, Boston, Mass., will be discontinued after Nov. 21.

The proposed abandonment of the Danvers-Putnamville line of the Eastern Massachusetts Street Railway has been postponed. By a vote of about two to one the citizens abolished jitney licenses. The Eastern Massachusetts Street Railway has reduced the fare on the Danvers-Salem line to nine tickets for $1.

$5,000,000 Subway Deficit in New York

Engineers Report that Based Upon Present Prices Lines Will Fall $8,800,000 Short by June 30, 1920, on Five-Cent Fare

The report and analysis of the Interborough Rapid Transit Company, New York, N. Y., which the engineering firm of Day & Zimmermann, Inc., has been making for the committee for the Interborough Rapid Transit Company first and refunding mortgage 5 per cent bonds and the three-year secured convertible 7 per cent notes have been completed, and the secretary of the committee, William Ewing, sent out copies of the report to all bondholders on Nov. 22.

J. P. Morgan is chairman of the committee. As explained previously in the ELECTRIC RAILWAY JOURNAL it was deemed advisable to organize a committee in the interest of the security holders mentioned, but no deposits have been requested.

The engineering firm was engaged in February to make the examination. It completed its efforts in June, before the award of the 25 per cent wage increase to Interborough employees. The engineers then revised the report to incorporate in the analysis the effect of the increased wages.

ADVICE TO SECURITY HOLDERS

The committee, in its letter to holders of bonds and notes, said that "although it is impossible for the committee to predict with certainty the future trend of operating costs or the position the city will finally take with regard to increased fares, it is of the opinion that investments in both bonds and notes will ultimately be protected, and, therefore, recommends that the holders refrain from sacrificing such securities."

The report has been summarized as follows:

The corporate history of the Interborough is unusually free from those complexities which have resulted from circumstances incident to the growth of most transportation properties serving large communities. All the subways in operation have been constructed new since 1900, and the disbursement of the proceeds from the sale of the 5 per cent bonds and 7 per cent notes (approximately $200,000,000), and the investment by the city (approximately $159,000,000), has at all times been subject to the supervision of public authorities and is a matter of public record.

The report shows the physical property is in good condition throughout, and well maintained in spite of the difficulties which the management has encountered through and subsequent to the war, and that the results of its operations with an unparalleled record of safety could not have been achieved but for the highly efficient organization which the company has created and maintained throughout the period of its activities.

The operating ratio increased from 45.6 per cent in 1916 to 67.9 per cent in 1919, equivalent to approximately $10,000,000. Of this amount $6,000,000 is accounted for directly by the increase in wages and $3,000,000 by the increased cost of coal and other supplies. These figures do not include the increase in wages of Aug. 17, 1919, equivalent to approximately $5,000,000 annually.

The report shows that if 1916 unit costs had remained in effect, the Interborough Company would have passed successfully through the remaining period of construction as estimated when the contract with the Gaynor administration was negotiated.

During the year ended June 30, 1918, the company was experiencing the increasing costs generally prevailing owing to conditions growing out of the war, but it was not until the following year that these increases became serious. In the early part of the fiscal year 1919, a wage increase (separate from and prior to the 25 per cent increase made in August, 1919), was granted amounting to approximately $3,000,000 annually.

The effect of this increase, together with increased costs of materials and supplies, notwithstanding the fact that gross earnings for the year ended June 30, 1919, increased $2,700,000 over the year 1918, resulted in a decrease in net earnings, after the payment of operating expenses and taxes, from $18,219,000 to $14,447,000, a loss of nearly $4.000,00.

Also, during this year the interest and sinking fund on the 5 per cent bonds and 7 per cent notes chargeable to income amounted to $9,215,000, an increase of almost $4,500,000, the result of the opening of the Seventh Avenue and Lexington Avenue subways and other extensions. The deficit in this year, of $3,810,000, was the direct result of the foregoing conditions.

The report includes estimates for the future up to and through the year ending June 30, 1924, all of which estimates are based on the continuance of the 5-cent fare and present costs of materials and supplies. The report indicates that even with the 5-cent fare, provided unit operating costs prior to the last wage increase had remained the same through the next five years, the company could have earned in the year 1924 its fixed charges for that year, excluding, however, any return on the $100,000,000 invested by the city under Contract 3.

The wage increase of Aug. 17, 1919, has changed the situation completely. This increase adds approximately $5,000,000 annually to the operating expenses. Through the five-year period ending June 30, 1924, it is estimated that the accumulated deficit, as the result of the conditions mentioned above, would amount to about $40,000,000.

The report shows that on Oct. 31 of this year the cash position of the company will be such that approximately $5,000,000 will have to be provided from some source other than operating income that the company may meet the rentals and fixed charges payable on Jan. 1. For the fiscal year ending June 30, 1920, it is estimated, based on present prices of wages, materials and supplies, and the continuance of the 5-cent fare, that the company will fall short of meeting its fixed charges (including rentals) by approximately $8,800,000.

It must be borne in mind in connection with the foregoing estimates that present unprecedented costs have been made the basis of estimates, and while it is impossible to forecast the future it is obvious that any decrease in operating expenses would be reflected directly in an equivalent increase in the sum available for interest and sinking fund on the outstanding 5 per cent bonds and 7 per cent notes.

Increase in Philadelphia Net

The Philadelphia (Pa.) Rapid Transit Company on Nov. 17 made public the following statement of earnings:

October	1919	1918
Operating revenue	$3,165,552	$2,411,985
Operation and taxes.......	2,140,411	1,794,717
Operating income	$1,025,141	$617,267
Non-operating income	45,216	50,202
Gross income	$1,070,357	$667,470
Fixed charges	813,550	806,395
Net income	$256,806	*$138,925

* Deficit.

Ten Months Ended October	1919	1918
Operating revenue	$29,160,983	$25,535,542
Operation and taxes.......	20,029,040	16,883,766
Operating income	$9,131,942	$8,651,775
Non-operating income	441,311	520,480
Gross income	$9,573,254	$9,172,255
Fixed charges	8,109,495	8,017,458
Net income	$1,463,758	$1,154,797

Reorganization Plan Changed

Changes in the plans of the reorganization committee having in charge the financial affairs of the Oakland & Antioch Railway, Oakland, Cal., are indicated in a supplemental petition filed with the Railroad Commission on behalf of the San Francisco & Sacramento Railroad, the new corporation formed to take over the Oakland & Antioch lines. The new plans provide that the rate of interest on the bonds to be issued by the new corporation is not to exceed 7 per cent, and that the bonds to be issued in accordance with the reorganization scheme are to mature in five years instead of twenty, as was originally contemplated. The total authorized bond issue will be $3,000,000 par value, of which not to exceed $2,100,000 will be issued forthwith. The remainder of the bonds are to remain in the treasury and are to be issued only for the purpose of acquiring new properties or for defraying costs of additions, extensions or betterments, the bond sale to be made only upon approval of the commission.

Of the $2,100,000 of bonds to be issued forthwith the bondholders of the Oakland & Antioch Railway, Oakland, Antioch & Eastern Railway and San Ramon Valley Railroad, as provided in the original plan, are to receive $1,300,000. The balance of $800,000 is to be sold at a figure to net the company not less than $720,000, nor more than $732,000. The proceeds from the sale of the bonds are to be utilized to pay off prior liens, non-assenting bondholders, to provide working capital for the company, to meet reorganization expenses and to pay costs of extensions, additions and betterments.

Receivers for Interstate Road

William L. Doyle, Easton, Pa., has been named receiver of the Northampton, Easton & Washington Traction Company, Easton, Pa., in a suit for foreclosure brought by the Bankers' Trust Company, Easton. There will be a hearing to show cause why the receiver should not be continued permanently.

The mortgage against the railway under which the bank acts as trustee amounts to $536,000. The traction company, it is alleged, executed a mortgage with the trust company covering all its personal property and real estate to secure a bond issue on May 1, 1910. The railway is charged with failing to pay $13,400 interest due on Nov. 1, 1919.

The inability of the railway to meet its obligations was brought about by operating and financial difficulties. A short time ago the employees of the company went on strike for an increase in wages. The company said it could not grant the increase because of having lost $20,000 per month on the operation of the 18 miles of road. The company then ceased operations. Officials say that the road will probably be dismantled.

Mr. Doyle, the receiver, is treasurer of the railway.

Intervening Petition in St. Louis Suit

An intervening petition has been filed in the United States District Court in behalf of George E. Vail in the suit of John W. Seaman against the United Railways, St. Louis, Mo. The petitioner charges among other things that by means of a voting trust the legal control of the company was bartered away from the majority of the stockholders. It further alleges that company officials by use of company funds, sought to influence legislation.

The petition reviews the consolidation of the fourteen companies operating in St. Louis in 1898 by the St. Louis Transit Company, which afterward became the United Railways. It is alleged that these companies had an investment of $5,000,000 or less and that on this actual value $15,000,000 of bonds were issued, for which no adequate consideration was secured, and $25,000,000 of stock, on which the stockholders still owe $20,000,000.

The petition demands an accounting by the directors of the company and its officials, the return to the company's treasury of 250,000 shares of common stock and 163,832 shares of preferred. It also asks that the outstanding bonds be declared to have been issued fraudulently.

Judge Dyer has referred the intervening petition to Henry Lamm, master in chancery, who has been hearing evidence in the United Railways case.

Charles W. Bates, attorney for the receiver, said he was not acquainted with Mr. Vail or the contents of the suit. He would make no comment.

Melbourne Lines Prosperous

Although Operating Costs Have Increased Materially the Cable Lines of Australia City Do Well

The Tramway Board of Melbourne, Australia, in its third annual report covering cable and horse tramway operation for the year ended June 30, 1919, states that notwithstanding the heavy loss of traffic due to the influenza epidemic of some months ago and more recently to the industrial unrest the passenger revenue showed an increase over the previous year of nearly 7.5 per cent. The increase, however, was more than absorbed in the greater cost of operation due to higher costs of fuel, supplies and a wage increase which was retroactive to Mar. 1, 1919. The operating ratio increased from 56.6 in 1918 to 61.21 in 1919. The system operates 44.3 miles of double-track line and serves a population which is estimated at 450,000.

OPERATIONS COMPARED WITH PREVIOUS YEAR

		+ Inc. — Dec. 1918
Passenger revenue	£944,269	+ £42,795
Non-operating revenue	1,530	
Total revenue	£945,799	
Maintenance expenses	£53,226	
Power expenses	118,650	
Transportation expenses ...	344,066	
General expenses	38,323	
Total operating expenses	£554,265	
Net operating revenue.....	+391,534	
Taxes and car licenses.....	27,691	
Reserves, etc.	135,000	
Surplus	£228,843	
Traffic statistics:		
Tram miles	13,149,637	+316,208
Tram hours (estimated)...	1,460,000	
Schedule speed in m. p. h...	9	
Revenue passengers carried.	118,302,781	+4,268,624
Special concession tickets..	102,864	
Free tickets to 1914 returned soldiers, sailors, and nurses on furlough	248,340	
Number of employees June 30	2,400	+125
Cars owned	547	—2
Dummies owned	539	+24
Av. Max. No. trains operated daily	429	
Scale of fares......1d., 1½d., 2d., 3d.		
Average distance in miles for a penny fare.........	1.628	

Pursuant to the provisions of the Melbourne & Metropolitan Tramways act of 1918 the surplus of revenue over expenditure between Jan. 8 and June 30, 1919, (£250,000) was credited to the Melbourne and Metropolitan Municipal loans redemption fund in addition to £250,000 which was transferred from the "tramway fund." Amounts of £100,000 have also been respectively credited to the renewals and reconstruction reserve funds.

The electric lighting of the cable cars from storage batteries, which was delayed by the non-delivery of equipment for the charging stations, is now being pushed to completion. It is said that the installation is much appreciated by the traveling public and it is believed that the expenditure should be amply justified by the results obtained.

A new agreement with the Australian Tramway Employee's Association supplementing the one that expired on Dec. 2, last, was entered into after extended negotiations and subsequently filed at the court of conciliation and arbitration. This agreement, which runs until May 1, 1922, provided increased wages averaging one shilling per day, additional annual holiday leave, extra payment for "spread of hours" and holiday work. On Peace Celebration Day double time is granted to all workers.

A summary of revenues and expenses arranged to agree with the I. C. C. classification system is presented herewith.

Cities Service Earnings Increase

Earnings of Cities Service Company, New York, N. Y., for October, 1919, show a fair increase over the preceding month, indicating that the improvement in earnings noted in the September statement is still continuing.

Gross earnings of the company for October, 1919, were larger by $37,756 than for September, while the amount available for payment of dividends on the preferred stock for the month increased $40,451. The balance available for reserves, dividends on the common stock and surplus for October showed a gain of $38,987 over the preceding month, and an increase of $195,820 over the balance for August, 1919.

In conformity with the policy announced in May, 1916, the directors at their November meeting increased the rate of stock dividends being paid on the common stock from 12 per cent to 15 per cent annually by declaring a monthly dividend of 1¼ per cent on the common stock, payable in common stock at par on Feb. 1, 1920, to stock of record Jan. 15, 1920. The board also declared the regular monthly dividends, payable in cash, of one-half of 1 per cent on the preferred stock and one-half of 1 per cent on common stock, both payable on Feb. 1, 1920, to stock of record Jan. 15, 1920.

In 1916 and 1917 the Cities Service Company paid 6 per cent in stock dividends on the common stock, in 1918 9 per cent was paid on the common stock in stock dividends, and the present rate of payment of these dividends is 12 per cent.

The directors at the meeting also approved the issue and sale of the $3,000,000, par value, preference B shares recently offered to stockholders of Cities Service Company, which offering was heavily over subscribed, and declared the initial monthly dividend on the 6 per cent cumulative preference B shares of one-half of 1 per cent payable on Jan. 1, 1920, to shares of record Dec. 15, 1919.

Public Utility Security Outlook

Despite adverse conditions affecting public utilities arising from war prices and fixed rates and fares, these corporations, says the *Wall Street Journal*, have been able to do considerable financing recently by means of stock issues sold to the public. The total amount of stock sold by public utilities corporations so far in 1919 is $53,601,490. This compares with $614,858,600 preferred and $514,948,500 common stock sold by industrial corporations.

Many utility corporations, particularly traction and gas companies, says the same authority, are in need of money for expansion purposes, but owing to their curtailed earning power wherever they have been obliged to operate under rates and fares which prevailed before the war, financing cannot be successfully promoted at present time. The situation, however, is slowly but surely improving and through courts and public utility commissions many of the companies have been authorized to increase rates and fares to meet higher operating costs.

With improvement in the general situation it is expected that much new financing will be done by public utilities and their securities which have always as a class been regarded highly in peace times, will eventually work back to their former position.

Virginia Railway Net Declines

With 30 Per Cent Increase in Expenses the Net Revenue, Even with 12 Per Cent Increase, Declines

The annual report for the year ended June 30, 1919, of the Virginia Railway & Power Company, which operates electric railway, gas and electric utilities in Richmond, Portsmouth and Norfolk shows that the railway contributed 55.2 per cent of the total earnings, at an expense of 60 per cent, although the operating ratio of the railway alone was only 69.5 per cent.

In addition to the current charges for way and equipment maintenance, which increased 4. 95 per cent over the previous year, the company set aside an amount equal to 6 per cent of the gross revenue for depreciation, thus continuing the policy established eight years ago. Only one cash dividend of 3 per cent was paid on the preferred stock, due to the necessity for conserving cash resources for making extensions and improvements.

To provide in part for additional facilities required on account of government activities two loans were secured, one of $500,000 from the U. S. Shipping Board, which was used in the installation of additional power house equipment, and the other from the U. S. Housing Corporation of $300,000, for the purchase of fifty cars. Both of these loans are to be repaid in equal annual installments beginning one year after the declaration of peace.

The results of the year's railway operations compared with those of the preceding year were as follows:

	June 30, 1919	— Dec. + Inc.
Revenues:		
Passenger	$4,569,524	+ $500,982
Freight	41,707	— 17,343
Mail	1,069	— 124
Non-operating	35,610	+ 5,800
Total railway revenue..	$4,647,910	+ $489,315
Operating expenses:		
Way and structures.......	$482,798	+ $180,985
Equipment	349,871	+ 115,588
Traffic	6,619	— 1,296
Transportation	1,922,004	+ 427,055
General	431,030	+ 19,543
Total operating expenses	$3,222,322	+ $741,875
Net operating revenue (Ry.)	$1,425,588	— $252,570
Taxes and licenses........	$354,969	+ $57,859
Statistics of operation:		
Revenue passengers	91,556,392	+8,910,643
Transfer and free passengers	18,189,760	+1,035,566
Total passengers	109,746,152	+9,946,209
Car miles run............	13,693,501	— 515,229
Car-hours operated	1,638,725	— 30,890
Kw.-hr. used	48,022,532	—2,183,223

At the end of the fiscal year the company operated 177.7 miles of route having a total of 255.09 miles of single track, of which 15.22 were sidings. Three hundred and thirty-one double-truck and 228 single-truck passenger cars were owned, the majority being of the semi-convertible type. In addition forty-nine service cars of various types belonged to the company. During the year thirty-five new single-truck "safety cars" with equipment and one interurban car were purchased and six single-truck open cars were converted into double-truck trailers, all of which are included in the above totals.

No main track extensions were constructed during the year in Richmond and vicinity although several sidings were extended and rearranged with a net increase in single-track equivalent of 0.241 miles. In the Norfolk and Portsmouth division 2.583 miles of single track equivalent were constructed, 2.384 miles abandoned and removed and 5.583 miles of standard gage were changed to wide-gage. In addition to that made necessary by the rebuilding of tracks 38,038 yards of new paving was laid.

Merger Proposed

Plan Advance for Raising Money and Consolidated Suburban Lines at Cincinnati

B. H. Kroger, head of the Cincinnati, Milford & Lebanon Traction Company, Cincinnati, Ohio, according to the Cincinnati *Enquirer*, has confirmed reports that he has been considering a proposition to merge that traction line with the Cincinnati & Columbus Traction Company. The merger hinges upon one development—the ability of the citizens of Hillsboro, Ohio, acting in conjunction with Cincinnati business men, to raise $425,000.

On Oct. 25, acting upon permission granted by the Ohio Public Utilities Commission, the Cincinnati & Columbus Traction Company abandoned service between Hillsboro and Owensville, but continued to operate that part of the line between Owensville and Norwood. It is understood that if the merger is accomplished the connection at East Norwood will be abandoned and passengers will be brought to Cincinnate via Madisonville. In confirming the report Mr. Kroger is reported to have said:

> Citizens of Hillsboro submitted the merger proposal to me a few weeks ago. They were told that it would be necessary for them to raise $425,000 to bring about the rehabilitation of the Cincinnati & Columbus line and the installation of new light cars. This proposition was presented to the public utilities committees of the Chamber of Commerce and the Business Men's Club. The local committees were asked to see about raising $300,000 in Cincinnati and $125,000 in Hillsboro, with which to purchase the property of the Cincinnati & Columbus Traction Company.
>
> Under the plan the Cincinnati, Milford and Blanchester road would give as security $425,000 first mortgage bonds of the Cincinnati & Columbus Traction Company and $400,000 first mortgage bonds of the Cincinnati, Milford & Blanchester Company.
>
> If the merger is effected both the present power plants of the two lines would be abandoned and the current supplied by the Union Gas & Electric Company.

Shore Line Abandonment Before Superior Court

The Shore Line Electric Railway, Norwich, Conn., was recently ordered by the Public Utilities Commission to install and to supply at least hourly service daily in each direction between New Haven and Saybrook Junction. The inadequacy of transportation service between New Haven and Saybrook Junction was brought to the attention of the commission Oct. 15 in a petition from residents of Clinton, Madison, and Guilford.

In its finding the commission states that the Shore Line Electric Railway has never been excused or relieved from operating either by the commission or by the court and that no facts have been presented to the commission warranting a suspension of the service. The commission assumes that the temporary receiver is authorized by the court to operate the company's lines, "but has not the arbitrary power of operating only such lines as he may select and to refuse to render service on the other lines."

In commenting upon the order of the commission to restore at least hourly service in each direction between New Haven and Saybrook Junction, Receiver Robert W. Perkins of the Shore Line Electric Railway said:

> I suppose it is up to me now to satisfy the Public Utilities Commission that this section of the Shore Line cannot be operated without material loss to the company. Under the receivership the court has directed that there shall be no operation of divisions of the road except at a profit.

The order to the Shore Line did not become operative until Nov. 24.

Meanwhile an application was filed by Mr. Perkins with the clerk of the Superior Court of the New London County, asking for an order discontinuing service on the lines operated by the Shore Line Electric Railway between New Haven and Saybrook Junction. He stated that when the company ceased operating its lines on July 16 it had been operating with continual and large financial loss for sometime. He further says that the cost of operating these lines has not materially decreased since that date, and that a large financial loss would entail should any effort be put forth by the receiver to operate the line at this time. He has petitioned the court to pass an order authorizing the discontinuance of service on this line and each of its aforementioned branches. The court fixed upon Dec. 2 as the date for a hearing at Norwich, Conn.

Various United Railway Details

A report filed during the week ended Nov. 15 by Rolla Wells, receiver for the United Railways, St. Louis, Mo., in the United States District Court for last September shows that the cash on hand at the end of the month had been reduced by $349,086 over the amount on hand at the end of the previous month.

The balance on Aug. 31 was $1,010,543. Receipts during September were $4,423,509. Disbursements totaled $4,772,596. The balance on Sept. 30 was $661,456. The receipts included $2,254,000 from the sale of receiver's certificates, negotiated to replace a matured bond issue, $1,344,609 from conductors and $17,050 from employees as payments on Liberty Bonds. The disbursements include $2,521,484 for operating expenses, prior to the appointment of the receiver April 12, last, and $314,145 for operating expenses during September.

Special Master Lamm, who is inquiring into the affairs of the company subject to the court's sanction, has approved the application of the receiver to pay $667,550 bond interest due Jan. 1 and $83,165 bond interest due Feb. 1. He has also approved the expenditure of $621,910 for reconstructing about 25 miles of track; $2,427 for the construction of a snow sweeper, and $1,095 for the construction of fire escapes in the general office building of the company.

Judge Dyer denied the application of Attorney Ephrim Caplan, representing certain stockholders of the company, to have special counsel appointed to represent the company at a hearing before the Public Service Commission on Nov. 28, in regard to the increase in price of electric power under contracts with the Union Electric Light & Power Company. Judge Dyer told Attorney Caplan the hearing would be open and that he had no doubt the commission would be glad to receive any information that might be offered.

Foreclosure Bill Filed Against Aurora-Elgin

A bill of foreclosure against the Aurora, Elgin & Chicago Railroad Company, Wheaton, Ill., of which Joseph K. Choate was recently appointed receiver, has been filed in Judge Evans' court at Chicago by the Northern Trust Company, trustee for the holders of the underlying bonds of the company. Under the new order of the court Mr. Choate has been reappointed receiver. The same personnel of officials remains. No statement has as yet been made regarding the date of the sale of the property.

Poor Outlook for Brooklyn

Bankers Who Represent Security Holders See Little Hope for Some Time to Come Under Present Conditions

Kuhn, Loeb & Company and Kidder, Peabody & Company, New York, N. Y., comprising the protective committee for Brooklyn Rapid Transit 5 per cent and 7 per cent notes and New York Municipal Railway Corporation 5 per cent bonds, the Central Union Trust Company having resigned from the committee because of possible conflict with its duties as trustee of the first refunding mortgage, has sent out to bond and noteholders a report outlining the situation as represented by the report of Stone & Webster and Price, Waterhouse & Company, who were employed to investigate the properties and accounts of the system. The circular says in part:

> As a result of greatly increased costs due to the war, the city's delay in completing the new rapid transit lines and other causes, it became necessary to provide a large additional sum to meet the system's obligations under the city contracts, including both equipping the new lines and completing the addition to the power plant, which had been commenced to provide power for the new rapid transit lines. This money was provided by the issue and sale of $18,000,000 of the B. R. T. receiver's 6 per cent two year certificates. The proceeds of $5,000,000 of these certificates have been retained by the B. R. T. receiver mainly for power development, the proceeds of the remaining $13,000,000 being advanced for use by the rapid transit company's receiver under the city contracts. Against this advance the rapid transit companies' receiver has issued $13,000,000 of receiver's certificates secured by a lien upon all the properties of those companies prior to the subway bonds and junior to the underlying bonds, these certificates being in turn pledged to secure the B. R. T. receiver's certificates.
>
> Stone & Webster advise that, assuming that there will be no further important advance in wages or cost of materials, the proceeds of these certificates, with such part of the income as is available for the purpose under the decree, will be sufficient to meet the terms of the contract with the city and that, provided the city does its part with reasonable promptness, all of the rapid transit lines provided for in the city contracts should be equipped and in full operation before the maturity of the certificates.
>
> As a result of the investigation of Stone & Webster it became apparent that the surface lines of the system would be unable to earn their fixed charges, despite the 2-cent charge for transfers, recently allowed by the Public Service Commission, and they now report that with the increased scale of wages and disregarding the effect of the disintegration which has occurred these companies cannot earn during the current fiscal year, and probably for some time thereafter will be unable to earn even operating expenses and taxes.
>
> A receiver for the surface lines was appointed by the United States District Court in July and defaults in payment of the interest on practically all the mortgages resting upon those lines have occurred. Following default in the payment of rental to Brooklyn City Railway that company has taken possession of its lines, comprising about 40 per cent of the surface mileage of the system, which had been operated by a subsidiary of the B. R. T. Company under lease. The result has been a general breaking up of the system of surface lines formerly controlled by the B. R. T. Company. How far this will affect the earnings of the lines is still problematical.
>
> The activities of the receiver of the B. R. T. Company proper are now, in general, confined to completing the additional power generating facilities and furnishing power and doing repair and maintenance work for both the rapid transit and surface lines. Under a contract negotiated by the receiver he will also furnish power for the future operation of the Brooklyn city lines. Stone & Webster report that while this part of the system is earning and will probably continue to earn interest on the B. R. T. Company's investment therein there will be no substantial surplus over such interest.
>
> As appears from the reports of Stone & Webster, with the wages and other operating costs now in force and a 5-cent fare, the earnings of the rapid transit lines remaining after the payment of interest upon the receiver's certificates and the $22,967,000 of underlying elevated bonds, will fall considerably short of the interest upon the $60,000,000 of B. R. T. notes and subway bonds. As already stated, without an increased fare no substantial contribution toward your interest can be expected from the surface lines or from the properties of the B. R. T. Company proper.
>
> There have now been deposited with the committee about $30,000,000 of the three-year notes, which, together with the $16,544,700 of that issue held by the War Finance Corporation constitute over 80 per cent of the entire amount outstanding. The committee also represents the majority of the subway bonds outstanding.

War Finance Loan at New Orleans Unpaid

The future course of the War Finance Corporation with respect to the loan which it made some time ago to the New Orleans Railway & Light Company, New Orleans, La., will depend upon the tenor of the inquiry now being conducted by the corporation into the affairs of the railway. This has been made plain by A. W. McLean, managing director of the War Finance Corporation. The loan was for $1,000,000. It fell due on June 1, but was not paid. Up to the present time the interest has been paid, also $215,000 on account of the principal. The receiver of the New Orleans company is understood to have agreed, subject to the approval of the court, to pay an additional $50,000 on account of the principal by Dec. 15 and a further sum of $75,000 by Jan. 10, 1920. Mr. McLean is quoted as follows:

> Repeated negotiations have been carried on by the office of the War Finance Corporation with the receivers and other parties interested for the purpose of obtaining larger payments on the loan from the revenue derived from the increased fare ordinance adopted by the city, which expressly provided that the net increase in revenues arising from the increased fare should be devoted exclusively to paying the debt due the War Finance Corporation. The receiver claims that the return from the net fare ordinance was very small, while the officers of the War Finance Corporation claim that they have not received the total amount accruing from this source.
>
> At a conference held on Oct. 31 between the receiver and parties interested in the company's obligations and also the War Finance Corporation, it was understood that the War Finance Corporation should send public utility experts to make a full examination of the records, books and properties of the railway company and report to the War Finance Corporation in order to enable it to determine what additional amounts are due it from the increased fare. After the War Finance Corporation receives the report of its experts it will decide upon its future course of procedure.

$100,000,000 of Second Preferred Authorized

At the special meeting of the security holders of Cities Service Company held on Nov. 17, at Dover, Del., the stockholders approved the creation of an authorized issue of $100,000,000 of second preferred stock, of which $40,000,000 will be of $10 par, and will be known as preference B stock, and $60,000,000 will be of $100 par, and will be known as preference BB stock. The stockholders also approved the amendment to the charter of the company which provides that the company shall have the right to redeem all or any part of the present preferred stock at 112, and that all or any part of the second prefererd stock may be redeemed at 106. The third amendment to the charter of the company in respect to investments from the proceeds of securities junior to the present preferred stock, was approved.

Of the new preference B stock of $10 par, only $3,000,000 will be issued at present, this amount having already been offered to stockholders of Cities Service Company for their subscription at $7.50 a share. The board of directors of the Cities Service Company in offering this small amount of preference B stock did so with the idea of making this stock known to the investing public, establishing a market for it, and learning whether it would be as popular among investors as were the bankers' shares. The offering of 300,000 shares of this stock was largely over-subscribed, and subscriptions were received from more than 3500 persons, thus indicating an even more widespread demand for this stock than there was for the initial issue of bankers' shares, which were distributed to slightly more than 1000 holders of record on their initial offering, although since that time the number of stockholders of record of Cities Service Company bankers' shares has grown to almost 5000.

No Dividend Action Planned

With reference to a report in circulation that the Ohio Traction Company, Cincinnati, Ohio, would in the near future issue interest-bearing scrip for the accumulated back dividends on the preferred stock of that company W. Kesley Schoepf, president of the company is reported to have said:

> My attention has been called to this report regarding the possibility of the issuance by the Ohio Traction Company of scrip to pay the accumulated back dividends. No consideration has been given to such a procedure, nor is it in contemplation. The report has probably grown out of statements, although unofficially made, that the present rate of fare would prove sufficient to meet the requirements under the revised ordinance under which the Cincinnati Traction Company is operating.
>
> This may be true in so far as the current requirements are concerned, but there is an accumulation of quite a large deficit that must be taken care of in some way. Whether, with this deficit out of the way, the 7-cent fare is sufficient will be determined by the results of operation in the months of October and November, and even if this should prove to be true, the company has not developed any plans along the line reported.

Financial News Notes

Lake Shore Earnings Improve.—The Lake Shore Electric Railway, Cleveland, Ohio, reports gross earnings of $232,645 for September, 1919, compared with $216,052 for the same month of 1918 and a surplus of $35,831 for September, 1919, as compared with $29,593 for the same month of 1918. For the nine months from Jan. 1, 1919, to Sept. 30, 1919, the same company reports gross earnings of $1,940,762 as compared with $1,638,730 for the similar period of 1918 and a surplus of $225,409 for the nine months of 1919 as compared with a surplus of $145,937 for the similar period in 1918, or a gain of $79,471.

Municipalities Arrange to Run Road.—At a conference held in Attleboro, Mass., on Nov. 12, an agreement was reached whereby the operation of the Norton, Attleboro & Taunton Street Railway will be conducted by the towns of Attleboro, Mansfield and Norton and the city of Taunton. Each municipality will choose three men to form a council of twelve which will comprise the board of management. Until this board is named the operation will be conducted by the present management. The purchase price which will be raised by the municipalities is $120,000. The outstanding debts amount to $53,413. There are no court claims against the road.

Olean Company Without Resources.—The Western New York & Pennsylvania Traction Company, Olean, N. Y., has no financial resources, claims President Wilson R. Page. The claim was made in an examination of the company in supplementary proceedings to execution of a judgment against the company. Patrick S. Collins was referee. The judgment was obtained by Thomas A. Flynn against the company for $750 for injuries received in a wreck in Vandalia in December, 1917. The object of the examination was to learn whether the company has any property that can be reached to satisfy the judgment. The railway was tied up several weeks by a strike. The course that the labor troubles took were reviewed previously in the ELECTRIC RAILWAY JOURNAL.

Reorganization Plan Approved.—The Public Service Commission for the Second District of New York has approved the plan for and authorized the reorganization of the Buffalo Southern Railway, Buffalo, N. Y., under a petition by Robert B. Austin, William J. Wheeler and Edward L. Frost representing the bondholders' committee. The reorganization plan provides for a new company, the Erie County Traction Company, Inc., taking over the property and franchises of the Buffalo Southern Company. The new company proposes to issue $450,000 in capital stock and $100,000 in bonds. Application will be made by the new company to the commission for approval of operation and for authority to issue stock and mortgage bonds. The system of the Buffalo Southern Railway consists of 25 miles of road extending out of Buffalo.

$1,750,000 of Notes Offered.—William A. Read & Company and Tucker, Anthony & Company, New York, N. Y., are offering for subscription at 98¼ and interest to net about 6.75 per cent $1,750,000 of collateral trust 6 per cent convertible gold notes of the Manchester Traction, Light & Power Company, Manchester, N. H. The notes are dated Nov. 1, 1919, and are due Nov. 1, 1922. The notes are issued to refund $1,500,000 of two-year 6 per cent notes due on Jan. 1, 1920, and for other corporate purposes and are the direct obligation of the Manchester Traction, Light & Power Company, specifically secured by deposit with the trustee of $2,059,000 of first refunding mortgage 5 per cent bonds due in 1952. The bankers announce that they will take the 6 per cent notes of the company maturing on Jan. 1, 1920, in exchange at 100 and interest.

$4,500,000 of Notes Offered.—The Illinois Trust & Savings Bank, Chicago, Ill.; the Continental & Commercial Trust & Savings Bank, Chicago, Ill.; Montgomery & Company, New York, N. Y.; Bonbright & Company, New York, N. Y., and H. M. Byllesby & Company, Chicago, Ill., are offering for subscription at 99 and interest, to yield 7.5 per cent, $4,500,000 of 7 per cent convertible sinking fund secured notes of the Standard Gas & Electric Company dated Nov. 15, 1919, and due Nov. 15, 1921. Pledged as collateral security for the notes will be $2,280,000 par value, of bonds and notes, $1,160,000, par value, preferred stock, and $1,150,000, par value, common stock of Standard Gas & Electric's public utility properties, together with $1,000,000, par value, 7 per cent preferred stock and 110,000 common shares of no par value of Shaffer Oil & Refining Company represented by voting trust certificates. The common stock of the latter company so pledged as collateral represents a majority interest in that issue. The company places the value on the collateral of over $9,000,000, or twice the amount of the note issue. The notes are convertible at the option of the holder into either preferred or common stock of the Standard Gas & Electric Company at the rate of $100 principal amount of notes for $100 par value of preferred or common stock with adjustment of accrued interest and accrued dividend. The notes are in the denomination of $1,000 and $500.

Traffic and Transportation

Missouri Commission Enjoined

Federal Court Holds Joplin & Pittsburg Rate Confiscatory and Suggests One of 2.5 Cents a Mile

Federal Judges Stone, Van Valkenburgh and Wade, sitting at Kansas City, Mo., on Nov. 11 issued an injunction restraining the Public Service Commission of Missouri from enforcing a passenger rate of 2.12 cents a mile on the Missouri lines of the Joplin & Pittsburg Railway, Pittsburg, Kan. The company has been authorized to collect 2.5 cents a mile on condition that coupon slips be issued to passengers. The difference between that rate and the 2.12-cent rate will be impounded pending submission to the higher courts.

COMMISSION MAY BE ENJOINED

The court's order establishes the principle that a State commission may be enjoined from enforcing increased rates because the increase granted is inadequate. The court held that the 2.12-cent rate was confiscatory. While it is stated specifically that it had no power to fix a rate, the court said it could indicate a maximum rate, by which the company might be guided pending the fixing of a remunerative rate by the State commission. The court set the minimum remunerative rate at 2.5 cents a mile.

The Joplin & Pittsburg Railway operates 104 miles of interurban electric lines in Kansas and Missouri. In May, 1919, the Public Utilities Commission of Kansas established a rate of 2.5 cents per mile, an increase of 0.5 cent above the former Kansas rate. About the same time the Interstate Commerce Commission allowed an interstate rate of 2.6 cents. The company applied to the Missouri commission for relief on its Missouri lines and was granted a rate of 2.12 cents, as compared with the previous rate of 1.93 cents.

The company, contending that this increase was insufficient, then applied for the 2.5-cent rate. The application was denied. The company then turned to the Federal Court, and sought an injunction against the enforcement of the commission's order on the ground that the 2.12-cent rate was confiscatory, in that it failed to provide adequate revenue.

COURT UPHOLDS COMPANY

The court upheld the company's contention that the rate was confiscatory. In the ordinary course of events the issuance of the injunction would have re-established the former rate of 1.93 cents. But, since the court held that the 2.12-cent rate was confiscatory, it followed that the 1.93-cent rate fell under the injunction, being declared confiscatory also. This opened the way for the installation of the 2.5-cent rate at the direction of the court.

The court took the position that rates cannot fairly be established on the basis of pre-war costs, since present costs are not definitely known to be only temporary. In making its order the Missouri Commission had used a five-year average of costs before the war. While the court's findings with reference to the basis on which costs should be figured in arriving at equitable rates, are worded in such a way as to avoid criticism of the methods of state commissions, it intimates that the display of figures based on costs of several years ago, does not reflect present costs. On this the court said:

> It would manifestly be out of place here to disapprove the methods and standards adopted by the commission and its experts, but it may be pointed out that it appears upon the face of the report that great, if not undue, emphasis was laid upon the original cost of the property thus somewhat arbitrarily assigned to intrastate passenger traffic at a period greatly antedating that with which this investigation must deal; nor can we say that the present period of high prices is so temporary or abnormal that it may, practically, be disregarded in arriving at the value of complainant's properties. No one can say what degree of depression may ultimately come, but it is reasonably certain that the cost of the properties now under consideration will never again approximate figures prevailing in the years before the world war.

The company has installed the rate indicated by the court as the minimum under which it can operate remuneratively and is proceeding to take up with the State Public Service Commission the question of adjustment of its findings.

Jersey Abolishes Zone Plan

Modified Zone System Had Been in Effect Only Since Nov. 15—Under It Company Faced Bankruptcy

The State Board of Public Utility Commissioners of New Jersey on Nov. 29 announced that it would permit the Public Service Railway to abandon the present zone system of collecting fares and restore the old 7-cent flat rate, with one cent for a transfer. The change will become effective on Dec. 7. The board will file its report on Dec. 2. Commissioner Wright of the board dissented from the opinion.

The company asked the change on the ground that if the present system of 5 cents for the first zone and 1 cent for each additional zone was continued, the company would be forced into bankruptcy. Two previous applications for the abolishing of the zone fare system were refused by the Utility Board.

The announcement of Nov. 29 was made following a hearing on the company's application for the abolition of the system, before the Public Utility Commission. President Thomas N. McCarter of the railway company, declared at the hearing that the employees had given perfect co-operation, but that the public had failed.

Mr. McCarter explained why, when the 7-cent fare was in force, he had told the commission that the company would go into bankruptcy unless it was changed while he now declared that the company faces bankruptcy unless the flat 7-cent fare was restored, by saying that at first the results under the 7-cent fare were unsatisfactory owing to the influenza epidemic, but during the last month of the 7-cent rate the receipts increased and the company now believes the receipts would be heavier.

The so-called "five-and-one" plan of rates as proposed by the New Jersey Commission was put into effect on the lines of the Public Service Railway on Sunday Nov. 15. These rates provided that the fare for an initial ride on any car should be 5 cents, which entitled the passenger to a ride of two zones or less, with 1 cent for each additional zone. A charge of 1 cent was made for each transfer. These rates superseded those which became effective on Sept. 14.

Binghamton Increase Barred

Decision of State Supreme Court Holds New York Commission Has No Power to Grant Higher Rate

Justice Charles E. Nichols of the New York State Supreme Court has handed down an order restraining the Public Service Commission for the Second District from granting an increase in fares to the Binghamton Railway. The decision affects the company's Binghamton and Union lines. Justice Nichols has ruled that, because of provisions in the company's franchise which limit the rate of fare to 5 cents, the commission has no power to grant an increase.

CASE REVIEWED

The Binghamton Railway has been endeavoring to secure higher fares for more than a year. The City Council refused to pass an ordinance suspending for the duration of the war and two years thereafter, the franchise provision limiting the fares. Receiver Phelps then petitioned the Federal District Court for the Northern District of New York, alleging that there was no contract in existence between the company and the city of Binghamton or the town of Union, limiting the rate of fare which might be charged by the company. Attorneys for the town of Union and the city of Binghamton appeared before Judge Ray on the hearing held on this petition and objected to the jurisdiction of the court to determine this question.

The United States District Court overruled the objections and instructed the receiver to apply to the Public Service Commission for an increased rate of fare, sustaining the contention of the town of Union and the city of Binghamton, however, that the court had no power to increase the rate of fare. Upon this finding, the receiver applied to the Public Service Commission.

The city of Binghamton and the town of Union immediately appealed from the decision of the United States District Court to the Circuit Court of Appeals for the Second Circuit. The Circuit Court of Appeals sustained the contention of the city and the town that the District Court had no authority to fix the rate of fare and furthermore that the United States District Court could not decide that there was no contract limiting the rate of fare and that such a decision was beyond its power.

RECEIVER APPEALS TO COMMISSION

Attorneys for the receiver, then made application to the Public Service Commission to increase the fare, asking it to decide whether or not there was a contract between the company and the city of Binghamton and the town of Union which limited the rate of fare, which question the Circuit Court of Appeals had held could not be decided by the United States District Court. Last August, the attorney for the town of Union, and John Marcy, corporation counsel for the city of Binghamton, then made application to the Supreme Court, Albany County, presided over by Justice Nichols, for a writ of prohibition, preventing the Public Service Commission from proceeding with the hearing, basing their application on the contention that the Public Service Commission had no power to increase the rate which was fixed by contract. This decision has been fully sustained by the decision of Justice Nichols, just handed down.

Chicago Rate Reduced

Surface Lines Ordered to Sell Ten Tickets at Six-and-One-Half Cent Rate—Seven-Cent Cash Fares Stand

The Public Utilities Commission of Illinois in a decision rendered on Nov. 25 ordered the Chicago Surface Lines to sell ten tickets for 65 cents and 50-ticket books for $3. The ticket-rates as established by the commission are 6.5 cents and 6 cents respectively. The commission refused to order the discontinuance of the 7-cent cash fare.

REDUCTIONS WENT INTO EFFECT DEC. 1

The reduced fares became effective on Dec. 1 and will continue until May 1, 1920. The commission retains jurisdiction in the case, however, and reserves the right to make such changes as circumstances may warrant. Meanwhile the hearings on valuation were continued, and it was expected that the evidence on which a permanent rate is to be based would not be complete for more than a month.

The city authorities maintained their hostile attitude after the findings of the commission had been announced. They said the fight would not end until the 5-cent fare had been restored. They hope to achieve this result through injunction proceedings which have been pending in the courts for several weeks.

In addition to establishing the new fare schedule, the commission in its findings declared that present facilities of the surface companies are inadequate, and it directed them to purchase 200 additional cars of the type in use and to have these in operation if possible within five months. One hundred additional cars are to be purchased and added to the equipment annually. The commission also announced its intention to make further orders affecting service within a few weeks.

The commission declared that the surface lines are entitled to earn operating expenses, depreciation and a reasonable return on the investment. While the valuation proceedings are still pending, the commissioners hold that it is not reasonably possible to place upon the properties a valuation of less than $123,000,000, which was the amount fixed tentatively last April when certain items of the capital account were eliminated. The companies are in their opinion entitled to earn a return of 7 per cent upon this valuation of $123,000,000. They, therefore, find that the requirements for all these allowances are about $46,000,000. They estimate that a 5-cent fare would yield $37,700,000; a 6-cent fare, $45,000,000; and a 7-cent fare, $52,500,000.

STATEMENT OF COMMISSION'S ESTIMATES

They decided that an average rate of 6¼ cents would meet the requirements. From experience in other large cities where a considerable differential was established between cash and ticket rates it was estimated that the use of tickets would range from 65 to 93 per cent. and for this reason the several rates named above were fixed as apparently equitable.

In arriving at their total of allowances for operation, renewals and return on investment, the commissioners adopted the following from various estimates quoted in the evidence:

For maintenance	$ 6,300,000
For power	3,200,000
For conducting transportation	19,500,000
For damages, general and miscellaneous	3,200,000
For taxes	2,050,000
For renewals	3,000,000
For return on investment	8,600,000

Regarding the allowance for return on investment the decision said:

> This sum of $8,600,000, of course, is not to be taken as an allowance for return upon the fair value of those properties actually used in the public service made after full valuation. It is the amount which the companies are entitled to earn in order that it may not appear that they have been compelled to observe a confiscatory rate. In the orders which have been heretofore made, and in this order, the indication of this amount is without prejudice to the valuation proceedings. It is made upon the theory that beyond all doubt the companies are entitled to a return upon the lowest valuation that can reasonably be placed upon their properties, and that to allow them less would result in confiscation.

COMMISSION'S REASONS REVIEWED

In detailing the reasons for its decision the board said:

> With a 5-cent fare these companies will earn at the rate of about $37,700,000 a year, or more than $8,000,000 less than they are entitled to earn, in any aspect of this case. On the basis of a 6-cent fare the companies will earn at the annual rate of $45,000,000. On the basis of a 7-cent fare the companies will earn at the annual rate of about $52,500,000.
>
> It is plain, therefore, that adherence to the principles upon which the orders of April 25, 1919, and Aug. 6, 1919, were made [the first denied the companies permission to raise fares to 7 cents; the second sanctioned the increase after their employees had gone on strike and obtained pay increases of $8,750,000 annually] leads to an allowance to these companies of a return which will be represented by an average rate of approximately 6¼ cents per passenger.
>
> In prescribing a plan which will produce this result, it is fair and equitable that consideration should be given to the regular patrons of these companies, who make daily use of transportation over the lines in connection with their regular business.
>
> After carefully considering the evidence in the record as to the effect of ticket arrangements which have been established in various cities, we have reached the conclusion that the results above stated can be accomplished without injustice to the companies, by the establishment of a 7-cent cash fare, and by making provision for the sale of tickets, at places convenient to the regular patrons of the companies, at the rate of ten tickets for 65 cents, and for bearer ticket books of fifty tickets for $3.
>
> In formulating the plan consideration has been given to the fact that experience in other large cities shows that where there is a substantial differential in favor of purchasers of tickets, a very high percentage of passengers use the tickets instead of paying cash fares.
>
> These percentages range from 65 per cent to 93 per cent, and it is doubtful whether, under the plans herein provided, the companies will receive an average fare of more than 6¼ cents.

Plans to Abandon Bridge Service

The New York & Queens County Railway, Long Island City, N. Y., will cease operation of all cars across the Queensboro Bridge at midnight on Dec. 15. W. O. Wood, president of the company, has so informed Alfred M. Barrett, Deputy Public Service Commissioner. Mr. Wood states that his company is now preparing a new tariff schedule, which he will ask the commission to put into effect.

According to Mr. Wood, on June 12, 1919, he notified the Board of Estimate & Apportionment of New York City that his company would not exercise its right to renew the old contract for operation over the bridge. The terms of this contract are too onerous for present day operation, Mr. Wood declares. At the same time, he notified the Board of Estimate that his company was ready to negotiate for another agreement to operate across the structure.

The city of New York owns the tracks on the Queensboro Bridge, and the rails have only been leased from the city by the railroad. The New York & Queens County Railway has been operating for the past ten years over this structure through an agreement with the city of New York. This agreement expires on Dec. 16.

The Public Service Commission has appealed to Borough President Connolly to take action in the Queens transit matter and consult with the other members of the Board of Estimate & Apportionment to find if possible a way out of the muddle. President Connolly will follow the suggestion and expects to have conferences with representatives of the railway and with members of the board.

Seeks Fare Increase in Portland

According to officials of the Portland Railway, Light & Power Company, Portland, Ore., the recent wage increase to its employees, referred to elsewhere in this issue, will necessitate the raising of fares in Portland. The new wage scale, it is stated by Franklin T. Griffith, president of the company, will absorb practically all of the earnings of the concern, which under the previous rate scale, are said to be less than 3 per cent of the actual value of the railway properties. The matter is now before the Public Service Commission, but final hearing will probably be deferred until the middle of December. The application filed with the commission by the company does not ask authority to increase the fares to any fixed amount, but requests the regulative body to decide what the rate shall be.

Traffic Solution Sought at Pittsburgh

An organization known as the Citizens' Committee on City Plan of Pittsburgh, formed some time ago by a group of men who head some of the largest financial and commercial concerns in Pittsburgh, Pa., has announced that it will undertake, at once, an investigation of the entire matter of traffic in that city, with a view to rearranging traffic channels and electric railway lines and extending the facilities for vehicular travel. The scheme calls for a "major street plan," which will be an effort to co-ordinate thoroughfares, railroads and railroad terminals, traction lines and their terminals, and other public utilities. One of the intentions of the committee is to make the public realize the direct connection between traction facilities and the growth of various sections of the city.

More Safety Cars for Terre Haute

On the Terre Haute division of the Terre Haute, Indianapolis & Eastern Traction Company, all lines except one have now been equipped with safety cars of which there are thirty-eight in regular operation. Eight safety cars were added on Nov. 18 and eight on Nov. 23. The Terre Haute lines have had thirty safety cars in service for some time. These have proved so satisfactory and have met with such favor from the public that there was no difficulty in installing the additional cars. No special advertising was necessary. On one line the headway has been reduced from ten minutes to eight minutes and on the other from ten minutes to seven minutes. This has been accomplished by the installation of only two additional cars on the two lines. The Terre Haute division is now operating approximately 6000 car miles daily with safety cars.

Course Outlined for Los Angeles

Railroad Commission Advises One-Man Cars, Discontinuance of Paving and Prohibition of Parking in Downtown District During Day Time

A 5-cent fare is sufficient for Los Angeles, and there is no need for a charge for transfers, says the report of the engineers of the Railroad Commission filed Nov. 12 with the city authorities of Los Angeles. Supporting this contention the commission's engineers tell how the Los Angeles Railway Corporation can save $1,500,000 a year by better methods of operation. In this connection they recommend that one-man safety cars should be operated on most of the company's lines. The purchase of 400 of these cars at a cost of $2,800,000 is advised. It is estimated that these cars will save $625,000 per annum and will pay for themselves in about four years.

Rerouting Recommended

Recommending a complete rerouting scheme, abandonment of certain lines and services; special regulation devised to prevent street traffic congestion, such as parking of autos and street turnings of machines, the engineer's report urges a change in the method of management of the company and recommends "that the company use better methods in dealing with employees and with the public."

In connection with the company's treatment of employees the report recommends the establishment of a pension insurance plan, saying: "The financial condition of the company, in the economies which we believe are possible under our recommendations are effected, will permit of the institution of a pension insurance plan." The commission declares the determination of a just return for labor is just as much a matter of public concern as is the determination of just return for capital.

The report contains the further declaration that unless the recommendation of the Railroad Commission engineers are carried out it will be necessary to increase fares.

The report is a document of about 400 pages and contains the result of an exhaustive investigation carried on during the last nine months of all phases and branches of the Los Angeles Railway Corporation's operations. That portion of the investigation covering street railway service and the traffic congestion problems in the city streets was made by the Railroad Commission engineers jointly with H. Z. Osborne, Jr., chief engineer of the Board of Public Utilities of the city of Los Angeles.

Fare Increase Not Justified

The report of the commission's engineers is signed by Chief Engineer Richard Sachse. On the matter of fares the report says:

> An increase in fares for the Los Angeles street railway system is not justified and not necessary under present conditions. Conditions can be created under which it will be possible with the estimate of minimum savings to reduce operating expenses by $620,000 per annum, and simultaneously increase the depreciation allowance by $180,000 per annum, equal to a total saving of $800,000 a year. The showing under the maximum of estimated savings will result in a reduction of $1,105,000 per annum with a simultaneous increase of the depreciation allowance of $390,000 per annum, equal to a total saving of $1,495,000 per annum. This showing is made without taking into consideration any other large savings that may be effected by economies in paving construction and maintenance and other savings that can be brought about through a modification of franchise conditions and through other possible economies. The savings estimated will enable the company to meet all of its interest requirements and sinking fund obligations and will in each case leave a very substantial surplus.

Acceptance by the city and the railway of an "indeterminate resettlement franchise" is recommended. It is pointed out that this type of franchise should determine the condition under which the city may acquire the railway properties, the methods of determining value of property, disposition of revenues and provisions governing service and extensions.

Regarding street paving and its cost, the report says:

> It is unjust and not to the best interest of the city that this total paving expense should be paid for in fare by the car riders. In the early history of street railway operation the paving clauses were inserted in the franchises in an effort to have the company share some portion of the street railway profits with the municipality. No objections could be offered to such procedure if the old conditions still existed. They no longer exist, however. The speculative element has been entirely eliminated from street railway operation in the last years and it is now no longer a question of excessive profits, but rather one of finding the necessary revenue and funds to pay the operating expenses, depreciation and a moderate return on actual value of actual investment. The fact is that the paving between the rails and outside the rails is not used or worn out through the use of the electric street railway, as was the case with the horse cars. It is worn out—and to a greater degree than paving on other streets—by the use of other traffic. It can be demonstrated that the street railway patron in many instances is not only forced to pay the cost of paving which does not contribute to his benefit, but is forced to pay for paving that contributes to his detriment. This is true because of delays to street railway traffic in all paved streets that is caused by other traffic. Under present conditions the car rider pays from 40 to 50 per cent of the cost of paving on all streets on which there are tracks, the property owners on these streets both receiving the increase in property values, due to the proximity of transportation, and bearing lesser cost of paving the streets than the owners of property on streets not occupied by car tracks.

The engineers say that the problem of the relations between the company and its employees, including matters of wages and living conditions, is in some respects the most urgent and important matter before the company. On this point they say:

> When we find that during the past six years an average of 40 per cent of the entire number of platform men is changed annually, it is apparent at once that the problem of obtaining and keeping permanent and capable men requires the most serious consideration. The methods now being used by several utilities in the United States and notably in Philadelphia, in our opinion, lead in the right direction and are worthy of the most careful investigation and study by the owners and responsible officials of this property. It is possible, we believe, with methods of absolute frankness and absolute fair dealing to create a real and lasting partnership between all of the employees of this company and the owners of the property. The practical working out of a definite program should be left to the management and the employees of the company, but the commission and the city should insist upon such a program being formulated and lend every effort to carry it into effect.
>
> In the last analysis the determination of the just compensation for the services of the employees of an essential public utility is just as much a matter of public concern as is the determination of just compensation for capital (with a fixing of a fair return), and for property (in condemnation proceedings, for instance). Rates, as a matter of cost, must be so adjusted so as to enable the utility to pay this just compensation. And if the entire transaction and the entire determination of the question is carried on with broad publicity, and if the people of the community are, at all stages, kept reliably informed of what is being done, there is no doubt that the overwhelming majority of the community would be in fullest accord with such a procedure and would be ready to pay this first cost of the desired service.

One of the most important recommendations, in the report, is the prohibition of the parking of automobiles in the most congested part of the downtown district between the hours of 8 a. m. and 6 p. m., except on Sundays and legal holidays. Other traffic recommendations prohibit all left-hand turning of automobiles in this district at all times. These two recommendations, in the opinion of the commission's engineers, will relieve the great traffic congestion in the business district and will make it unnecessary to issue traffic regulations to force street car riding in one direction only, as has been urged by a number of people.

The report goes into the details of the company's organization and management and the engineers believe that great economies and improvements are possible and should be adopted. It is declared that the present operations of the company have outgrown the system or organization and that a modern one should be adopted with centralized authority definitely placed.

Missouri Commission Upheld

United States Supreme Court Upholds Fixing of Rates Regardless of Franchise Provisions

The United States Supreme Court in a ruling handed down on Nov. 10 dismissed the appeal of the city of Kansas City, Mo., from a decision of the Supreme Court of the State upholding the right of the State Public Service Commission to raise the fare in Kansas City. The court's action means, in effect, that the Missouri Public Service Commission has authority to fix rates regardless of franchise provisions limiting fares to 5 cents.

The franchise of the Kansas City Railways limits the fare to be charged by the company to 5 cents. In February, 1918, the company filed a petition with the State Public Service Commission, requesting the commission to inquire into the question of rates to be charged by the company, and to make an order fixing such reasonable increase in rates as the facts warranted. The city of Kansas City filed an answer objecting to the jurisdiction of the commission, upon various grounds, and among the defenses set up the claim that the franchise ordinance passed in July, 1914, constituted a contract between the city and the company.

Commission Fixed Fares

The commission overruled as to its jurisdiction, and after hearing the evidence, made an order fixing the rate of fare to be charged by the company at 6 cents for passengers more than 12 years old. The city then brought the case up for review before the Circuit Court of Cole County, Mo., and the order of the commission was reversed and set aside. The Kansas City Railways and the Public Service Commission of Missouri then appealed to the Supreme Court of Missouri. The Supreme Court reversed the judgment and order of the Circuit Court and affirmed the judgment of the Public Service Commission.

The city thereupon brought the case to the Supreme Court of the United States upon writ of error. Upon application of the company the Supreme Court dismissed the case, in effect upholding the decision of the Supreme Court of Missouri and ruling that the commission had jurisdiction in spite of the franchise.

Meanwhile the commission, acting on the plea of the company that a 6-cent fare was insufficient, in August of this year authorized the installation of 8-cent fares on the Kansas City lines. The commission ordered that the higher rate should become effective on Sept. 1. The company delayed putting the 8-cent rate in effect until it had secured a sufficient number of tokens, which, the commission ordered, should be sold at 7 cents each.

104,430,015 More Passengers

This Is Record of New York's Transit Lines for Year Despite 17,000,000 Passenger Loss During Epidemic

The Public Service Commission for the First District of New York on Nov. 24 made public its annual summary of passengers carried for the year ended June 30, 1919, on the transit lines of the greater city. The growth in traffic in the year recently closed was almost unprecedented in spite of the ravages of the influenza epidemic during the autumn months of 1918.

INCREASE FOR SEVEN MONTHS 122,500,000

This epidemic caused a falling off in October alone of more than 12,000,000 fares and for the period of July to November, inclusive, of 1918 of 17,000,000 fares. Based on the number of fares collected the figures show that during the year 2,079,942,604 passengers rode on the lines, an increase of 104,430,015 over 1918.

In December the conditions changed for the better, normal conditions for the year were resumed, and the number of fares increased 8,500,000 during the month. Each month after December showed increasing traffic, as follows:

December	8,500,000
January	15,700,000
February	13,200,000
March	15,800,000
April	20,600,000
May	23,100,000
June	25,600,000
Total	122,500,000

The report shows that the total increase of approximately 104,500,000 was divided between the various lines as follows: Rapid transit lines, 98,751,618; surface lines, 5,679,197. On the basis of percentages the total increase was 5.29 per cent, all of which went to the rapid transit lines except 0.65 per cent which went to the surface lines.

Details contained in the report disclose the fact that the largest percentage of gain was by the elevated lines of the Brooklyn Rapid Transit System, where the growth was nearly 20 per cent, which represented a total traffic of 308,879,791, or an increase of 50,712,478 over that of 1918. The heaviest traffic on any single system was on the subway lines of the Interborough Rapid Transit Company, where the grand total of passengers was 461,147,058, which represented a gain of 10.23 per cent, of 42,889,050 more than were carried in 1918.

There was a decrease of 1.27 per cent on the Interborough elevated lines, representing a loss of 4,472,059. These elevated lines carried a total of 348,188,600 passengers during the year. Figures of the business done by the Hudson & Manhattan Company disclosed a gain for the year of 12.70 per cent, or an increase of 9,701,817 passengers in a total of 36,050,815.

RECORD FOR THREE YEARS

Figures on traffic on the surface lines, divided among the boroughs, show that in Manhattan the total traffic was 370,085,099 passengers; a loss of 1,051,290, or 0.28 per cent less than in 1918; in Bronx there was a gain of 1.11 per cent in a total of 80,806,261; in Brooklyn there was a gain of about one-half of 1 per cent in a total of 362,103,192; in Queens the gain was 7.54 in a total of 3,275,369, while in Richmond the gain was 4.38 per cent and the total was 15,958,213.

A comparison of traffic for the last three fiscal years follows:

ELEVATED AND SUBWAY

	1918	1919
Interborough Subway	418,337,666	461,147,058
Interborough Elevated	352,660,669	348,188,609
B. R. T. Elevated and Subway	258,167,313	308,879,791
Hudson & Manhattan Tubes	76,548,998	86,050,813
Total	1,105,514,646	1,204,266,264

STREET SURFACE LINES

	1918	1919
Manhattan	371,136,389	370,085,099
Brooklyn	360,207,555	362,103,192
The Bronx	79,917,071	80,806,261
Queens (B. R. T.)	43,448,206	46,723,575
Richmond	15,287,922	15,958,213
Total by boroughs	869,997,143	875,676,340
Grand total all lines	1,975,511,789	2,079,942,604

The report says that the traffic problem in the city is exemplified by the fact that since 1903, a period of sixteen years, the traffic on all of the transportation lines has more than doubled, and that the billion mark was first passed in 1903. To illustrate the point the following table is submitted:

Year Ended June 30	Number of Passengers	Annual Increase
1903	1,000,767,483	61,717,519
1904	1,065,984,910	65,217,427
1905	1,130,982,696	64,997,486
1906	1,251,841,173	120,858,479
1907	1,315,381,388	63,340,213
1908	1,358,000,407	42,619,049
1909	1,402,417,642	44,417,235
1910	1,531,262,914	128,845,272
1911	1,603,001,397	72,638,483
1912	1,680,913,935	70,012,530
1913	1,709,876,508	88,962,573
1914	1,813,204,356	43,327,840
1915	1,807,632,726	*5,571,630
1916	1,898,735,615	91,102,889
1917	1,918,812,226	20,076,611
1918	1,975,482,316	56,640,087
1919	2,079,942,694	104,430,815

5,700,000 RIDE DAILY

It appears from the figures that the average traffic each day during the last fiscal year was 5,700,000, which about equals the population of the city. Toward the end of the year the daily averages of rides increased to 6,400,000. The fares per capita collected in 1860 were 43, and in 1919 the number had increased to 370 which shows, according to a comment in the report, that the habit of riding is growing steadily more popular. Then the report says:

> The increase of 104,430,815 passengers brought approximately $5,220,000 additional revenue to the railroad companies, which with revenue other than that gained by operation of the lines, yielded a total revenue for the year of $110,191,682, or $6,690,919 more than in 1918. Operating expenses increased greatly, however, the total of these increases being $15,267,181, which caused a deficit in net income of $8,085,819.
>
> The average cost of transporting each passenger (no allowance being made for taxes, interest, or dividends) was 3.446 cents in 1919, as against 2.293 cents in 1918, and 2.638 cents in 1916.

It is pointed out that because of the opening of the new subway lines the total increase in the length of track was 64 miles, and the number of passenger cars in service grew from 12,775 to 13,035.

Wants Columbus Service Improved

The City Council of Columbus, Ohio, has passed a resolution calling upon the Columbus Railway & Light Company to furnish service more nearly adequate to the traffic requirements of the city. C. L. Kurts, president of the company, in a letter addressed to Milton W. Westlake, the president of the Council, stated on Nov. 17 that the company could not improve the service at the present rate of fare. Mr. Kurts declared that the company had been forced to curtail the service to meet the wage increases and back pay awarded to the employees last year.

Views on Fare Question

Chicago "Daily News" Prints Series of Articles—Railway Operators Among the Contributors

Under the title of "How can Chicago get back the 5-cent fare?" the Chicago *Daily News* has been printing a series of articles on the fare question for several weeks past. The discussion was started with an interview with Thomas E. Mitten, president of the Philadelphia Rapid Transit Company, amplifying the statements he had previously issued concerning the 5-cent fare in Philadelphia. Another of the series contained the statement of L. A. Busby, president of the Chicago Surface Lines, which was printed in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 25, 1919.

AN ALDERMAN SUGGESTS RELIEF

Another view of the fare situation in Chicago was given by Alderman Henry L. Capitain of the Chicago Local Transportation Committee. In brief Alderman Capitain's opinion was that Chicago could get back its 5-cent fare only by assuming burdens it now lays upon the company. Upholding this view, he said:

> One method for securing a 5-cent fare would be for the city to make up arbitrarily any deficit from some other sources than car fares. The only other source that occurs to my mind would be general taxation. How much do the 5-cent fare advocates think the general public would relish seeing their taxes spent to make good deficits yawning between the receipts and expenses of running the street cars because the nickel isn't big enough to pay all the cost? The most practical plan would be to combine all our local transportation facilities and add to these combined systems whatever subways may appear necessary. The combination of the "L." underground and surface lines would do away with competition and enable large savings to be achieved in the cost of operation.

Mayor Thompson furnished one of the series of articles, devoting the space to a condemnation of the present management, an appeal for retention of the present fare ordinance and an explanation of his plan for municipal ownership for the city of Chicago which has previously been described.

THREE ARTICLES ON DETROIT

The Detroit situation was covered in three separate articles, one being an interview with Mayor Couzens, another with President Brooks of the Detroit United Railway, and another a review of present conditions in that city. Mayor Couzens referred to the deficiencies of the service on the lines of the Detroit United Railway in Detroit and insisted the only remedy lay in municipal ownership. He said:

> I am viciously opposed to any higher street car fare than 5 cents. I do not intend to be radical or to violate property rights. But neither do I propose, if it is humanly possible to prevent it, that a public utility which has taken away millions from the people of this city during fat years shall now come back on the public to make good at the first sign of increased costs or the possibility of losing money.

DETROIT PRESIDENT SAYS LIMIT HAS BEEN REACHED

President Brooks of the Detroit company was quoted as saying:

> It is utterly impossible to give up-to-date street car service for a nickel. In Detroit we are not getting by with a 5-cent fare by a whole lot. We can't go ahead much longer without reaching some settlement. By insisting upon a nickel as the maximum street car fare the people of the city of Detroit will soon find out that they have eaten their cake and the bakeshop is closed.

Mr. Brooks admitted that it was impossible to maintain the properties in good condition. He said that the average dividend of the Detroit United Railway since 1901 has been less than 4 per cent. The company there operates 538 miles of line, with more than 1800 cars.

Relief for San Diego

California Commission Orders Two-Zone System With Five-Cent Fare in Each Zone—One-Man Cars Urged

The Railroad Commission of California on Nov. 14 issued an order authorizing the San Diego Electric Railway to adopt a zone system under which the city of San Diego is to be divided into two zones, an outer and an inner, with a 5-cent fare in each. The commission stated in the order that the adoption of a zone system afforded the only solution of the electric railway problem in San Diego.

CITY AND SUBURBAN FARES READJUSTED

The zone system provides that the fare, including transfers between any points within each zone is to be 5 cents and the single rate, through two zones, 10 cents. Ticket books, four tickets to a book, good in both zones, at 7½ cents a ride are provided for, also monthly sixty-ride ticket books, good in both zones, at 6½ cents per ride. All other fares in outlying territory, including the cities of Coronado, National City, Chula Vista, East San Diego and Point Loma are readjusted.

The inner zone has a radius of approximately 1 mile, measured from the intersection of B Street and Broadway. The outer zone extends from the end of the inner zone to the ends of the various car lines and to the limits of National City.

The commission, in ordering the adoption of this plan, for the first time in its existence abandoned the one-fare principle in fixing the fare within the limits of a municipality. Commissioner Devlin, who wrote the order, stated that although he was of the opinion that the zone system could not be adopted indiscriminately, he considered the arguments of the commission's engineers in support of its adoption in San Diego, to be sound.

The commission recommend strongly that one-man cars be put in operation in San Diego. The commission refused to authorize the company to discontinue a number of lines in San Diego, in East San Diego and in Point Loma, holding that the proposed system of operation will produce sufficient revenue to justify their continuance. The commission did, however, authorize abandonment of service on the Fifth Street car line in Coronado and orders changes on certain lines in San Diego.

The city of San Diego is urged by the commission to change its paving requirements and to relieve the car riders from the burden of having to pay for some of the most expensive paving in the city. Appointment of a paving committee consisting of the engineers of the city and the company, who shall meet at certain times and decide what paving expenditures shall be incurred, is recommended by the commission, the decision to be made by the commission in the event of failure to agree.

DEPRECIATION FUND $18,000 A MONTH

The commission also ordered the company to set aside a depreciation fund of $18,000 a month.

The commission estimates that under the proposed zone system of fares there will be a decrease in passengers in the next year of 335,000 (about 2 per cent) and that there will be a decrease in earnings of about $10,000. The commission is of the opinion, however, that with conditions changed to meet the requirements of its order and proposed plan of operation, there will be a profit of $110,000 as against a loss of approximately $23,316 probable under the present method.

The company's case has been before the commission for many months. The company stated in 1918 that it was losing money, but refused to ask for a definite increase in fares until its condition had been thoroughly investigated by the commission. Richard Sachse, chief engineer of the commission, after a thorough investigation of the company's fares reported that the company was in need of more revenue and urged the adoption of the two-zone system.

In the valuation of the properties of the San Diego Electric Railway, the commission gives a figure of $4,726,693 as the reproduction cost less depreciation. The books of the company claimed $5,068,119 as the investment. Commissioner Devlin declares, in giving consideration to both figures, that it is impossible to base rates for this company on the value of the plant. He said:

> It does not seem to me that establishment of rate base is practical interest in this proceeding. I make this statement because it is evident to me that a fair return on a proper rate base figure is not here a controlling factor. It will become clear that conditions in San Diego and in the territory served by this street railway system are such that rates which theoretically and on paper might produce a fair return on a fair rate base cannot, as a practical matter be put into effect. If the fare exceeds a certain maximum, traffic will automatically decline to such an extent that the cure will be worse than the disease, and the result would be, in my opinion, the end of this transportation system.

Tokens Popular in St. Louis

The United Railways of St. Louis on Nov. 1 last put into effect an 8-cent cash fare, with two tokens for 15 cents, seven tokens for 50 cents, and fifty tokens or tickets for $3.50. The tokens sold at the rate of two for 15 cents are of bronze, and slightly larger than a cent. These are sold by the conductors only. The tokens sold at the rate of seven for 50 cents and fifty for $3.50 are slightly smaller than a dime and are sold only by agencies.

On the day when these fares became effective, the cash fares equalled 27.91 per cent of the total, while that of all classes of tokens combined equalled 72.09 per cent. On Nov. 15 cash fares had been reduced to 6 per cent with all classes of tokens combined equalling 94 per cent. It is believed that cash fares will be further reduced to at least 5 per cent, as the decrease has been steady since Nov. 1.

Tokens and tickets are at present sold by about 800 agents throughout the city. The principal agencies sellers are the department stores and banks, one store selling as much as $1,400 of tokens a day. No compensation is given the agents for selling the tokens with the exception that they sometimes break the packages of tokens sold fifty for $3.50 and sell them in small lots of seven for 50 cents. This is done more for the convenience of patrons of the stores than for any profit which is received.

The company has 4,080,000 tokens in circulation and could use many more if they could be obtained. To fill the demand, emergency paper tickets have been issued in books of fifty which are sold for $3.50 each. As Johnson fare boxes are used on the cars, these tickets together with children's tickets are at present being rung up on an overhead register. Enough tokens of the seven-for-50-cents and fifty-for-$3.50-variety have been ordered to bring the total of tokens up to 6,000,000, and it is believed that it may be necessary further to increase the order so as to place 10,000,000 tokens in circulation.

Safety Cars Considered

Atlanta Company Alive to Their Advantages, But Must Meet Local Traffic Requirements

Safety cars have not as yet been used in The Gate City of the South, but this does not mean that the management of the Georgia Railway & Power Company, Atlanta, is not keenly alert to the possibilities they offer. Two things have deterred the purchase of cars of the safety type. The first is that all lines in Atlanta pass through the downtown section and the riding is very heavy on all of them. There are no cross-town lines, or lines having light traffic or well distributed loading, where an initial installation of safety cars might be made under conditions which would give the public and operators a fair chance to become accustomed to the radical change. In other words, the initial installation must of necessity be tried out under the severe conditions encountered in passing through the very congested downtown streets. This fact has caused the officials of the company to proceed cautiously until fully convinced that all other factors entering into the operation of these cars could be properly met.

The second and more complex consideration which has delayed the use of the light-weight cars is the negro problem. Georgia is reputed to have more negroes than any other State, in proportion to the total population, and Atlanta has an aboundant share of them. Forty to 45 per cent of the population is black.

The problem has been found so serious that the use of pay-as-you-enter cars is a source of much trouble, and the intermingling of the two races in entering and leaving these cars is less than it is with the safety car.

Hence the officials have about reached the conclusion that if they do try out the one-man cars, the first cars at least will have to be built with doors at both sides of both platforms so that the cars will be suitable for two-man operation if they prove incapable of coping with the two races.

Opposed to Extension of Parking Time

A special committee of the retail merchants' bureau of the Merchants & Manufacturers' Association, Baltimore, Md., proposes to ask the City Council for an extension of the time allowed for parking automobiles in the afternoon from 4.30 to 5.30 o'clock.

In answer to the argument of the merchants' bureau that customers who come in automobiles to shop at 3.30 p. m. generally need at least two hours in which to make all their purchases properly, C. D. Emmons, president of the United Railways & Electric Company, states that they could as easily commence at an earlier hour. He says that the thousands of people who are finishing a day's work at that hour and are anxious to get home to the evening meal are the ones who have the right of way.

The company made complaint on Nov. 25 that the parking law was not being enforced as it should be, to which Marshal Carter replied that, while there may be some lack of vigilance on the part of the police, the ordinance is being generally enforced.

When the City Council committee on police and jails hears the merchants' proposition officials of the railway will oppose the proposed amendment.

Extra Fare Charge Abandoned

Brooklyn Hoodlums Make It Desirable for Company to Suspend Extra Fare Pending Court Ruling

The Brooklyn (N. Y.) City Railroad, formerly included in the system of the Brooklyn Rapid Transit Company, decided on Nov. 25 to collect only a single fare on its Flatbush Avenue line until the Supreme Court has passed upon the right of the company to collect two fares. The extra fare change was put into effect following the segregation of the old Brooklyn City lines from those of the rest of the Brooklyn Rapid Transit System following the default by the latter in the payment of rental charges. The second-fare point as at first established was recently moved farther out from the city, but a great deal of trouble attended the collection of the second fare.

COMPANY AND COMMISSION CLASH

The two fare scheme was abandoned just before the heavy traffic of evening set in and after a conference between Col. William N. Dykman, counsel for the road, and District Attorney Lewis. It came after two days of disorder on cars and constant fighting between passengers and the company's inspectors at Foster and Flatbush Avenues, the point where the two fare rule was being enforced.

The company in trying to collect two fares ignored an order of the Public Service Commission and obtained an order of certiorari requiring a review of the Public Service Commission's order by the Supreme Court. District Attorney Lewis appealed to by Flatbush residents promised he would begin prosecutions against officials of the road.

He discovered, however, that the Public Service Commission had not made personal service of its order on the railroad directors and took the view that he could do nothing until proper service was made. At noon on Nov. 25 the Public Service Commission made personal service on eight of the directors and Mr. Lewis at once called up Colonel Dykman and informed him that he would institute proceedings immediately if the order was not obeyed.

Colonel Dykman asked him to wait long enough for the directors to hold a meeting. The meeting was called within a couple of hours and at its adjournment orders were issued to employees of the Flatbush Avenue line directing them to carry passengers for a single fare.

It is said that about fifty passengers were forcibly ejected from cars during the day and that seventeen inspectors were arrested on charges of assault preferred by passengers.

The company was seeking a speedy ruling from the court on the points at law involved in the controversy and was prepared to issue rebate slips to protesting passengers.

Chicago's October Earnings

Figures on earnings, expenses and traffic of the Chicago (Ill.) Surface Lines for the month of October as filed with the commission by the railway companies show the following comparisons:

	Oct. 1919	Oct. 1918	Oct. 1917
Revenue passengers ..	64,022,273	55,548,262	60,367,237
Transfer passengers ..	46,562,648	40,267,932	43,765,971
Free passengers	2,767,869	2,245,543	2,546,705
Total passengers ..	113,352,790	98,061,737	106,679,913
Gross earnings.	$4,519,329	$2,821,389	$3,067,492
Total expenses.	3,440,036	2,341,882	2,020,170

Attorney General Brundage also filed with the commission an analysis of these figures. It was expected the commissioners would use his conclusions as a guide in fixing the new fare schedules. It was pointed out that the loss of traffic due to the influenza epidemic in 1918 should be considered in connection with the present favorable showing.

Transportation News Notes

Whitman Jitneys Under Ban.—The voters of the town of Whitman, Mass., have passed an ordinance imposing a fine of $20 upon the operation of a jitney bus within the town limits. A petition for the licensing of jitneys in Whitman has been rejected.

Seven Cents on Fitchburg Line.—The Fitchburg & Leominster Street Railway, Fitchburg, Mass., has been authorized by the State Public Service Commission to increase its fare from 7 cents to 10 cents and to advance its rate on strip tickets from 6¼ cents to 8⅓ cents.

Six Cents in Trinidad.—The Trinidad Electric Transmission, Railway & Gas Company, Trinidad, Col., has installed 6-cent fares on its lines under authority recently granted by the Public Utilities Commission of Colorado. Children's fares now cost 3 cents.

Jitneys Barred in Brockton.—The Board of Aldermen of Brockton, Mass., voted on Nov. 17 to revoke all jitney licenses within the city. The order was scheduled to take effect on Nov. 22 at midnight. Seven jitney lines and several bus routes are affected by the action of the board.

Seven Cents in Burlington.—Under authority of the State Public Service Commission, 7-cent fares went into effect on the lines of the Burlington (Vt.) Traction Company on Nov. 12. The company has applied to the commission for an increase in interurban fares between Essex Junction and Winooski.

Six Cents in Pueblo.—A straight 6-cent fare became effective on the lines of the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., on Nov. 11. The higher fare was installed following an agreement between company officials and the Pueblo city authorities. The company had previously applied to the State Public Utilities Commission for authority to charge 7-cent fares in Pueblo.

Seven Cents in McAlester.—The Pittsburgh County Railway, which operates the electric railway at McAlester, Okla., has been authorized by the Oklahoma Corporation Commission to charge a 7-cent fare with a 5-cent rate for children. The company has filed a protest with the commission against the zone system established on its interurban lines.

Eight Cents in Morgantown.—The South Morgantown Traction Company, Morgantown, W. Va., has received permission from the State Public Service Commission to raise its fare from 5 cents to 8 cents. The company, which is now in the hands of a receiver, had applied for the increase after it had been forced to discontinue service owing to lack of funds.

Higher Rates Asked on Interstate Line.—The Ohio Valley Electric Railway, Huntington, W. Va., has filed with the Interstate Commerce Commission an application for an additional 5-cent zone on its line between Huntington and Ashland, Ky. Under the proposed schedule the fare between the two cities would be raised to 25 cents.

Would Penalize Cash Fares.—The Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., has petitioned the Public Service Commission of Indiana for authority to collect a 5-cent penalty when a passenger pays a cash fare of 50 cents or less on board a train or one of 10 cents when the fare is more than 50 cents. The company proposes to refund the penalty at the nearest ticket office.

Traffic Districts for Dallas.—Owing to the constantly increasing volume of traffic on its lines, the Dallas (Tex.) Railway has divided its system into five operating districts, each district embracing a portion of the city of Dallas. Each district will be in charge of a supervisor of traffic, to whom a staff of inspectors will report. The five district supervisors will be under the immediate direction of C. A. Swanson, superintendent of transportation of the company.

Eight Cents Cash in Nashua.—On Nov. 1, 1919, the Nashua (N. H.) Street Railway increased the cash fare from 7 to 8 cents. Checks good for one fare are sold in quantities for 7 cents. In connection with this change the road has put into service the one-man type of car for the outlying districts. A new policy has been devised wherein the power will be obtained from the Manchester (N. H.) Traction Company instead of from the Lowell Power Company, as for many years.

Inter-company Transfers Abolished.—The Washington Railway & Electric Company, Washington, D. C., has discontinued the sale of 2-cent inter-company transfers on its suburban lines. The company formerly issued transfers on commutation tickets which entitled the holder to a ride on the lines of the Capital Traction Company in the city of Washington. Commuters from Maryland will now be required to pay an additional fare of 7 cents if they transfer onto the lines of the latter company.

Must Resume Service at Ballston.—The Public Service Commission for the Second District has directed the Kayderose Railroad Corporation, Ballston, N. Y., to restore service by operating a combined passenger and baggage car for two round trips daily. The company announced on Oct. 2 that, because of the shutting down of paper mills along its route as the result of a strike, its revenue had declined to $800 a month, while its operating expenses amounted to $2,500 a month. The cutting off of the service followed.

Interstate Fares Raised.—The Rhode Island Company, Providence, R. I., has received permission from the Interstate Commerce Commission to establish on its interstate lines the 6-cent zone fare granted some time ago by the State Public Utilities Commission on the company's Rhode Island lines. The order affects passengers on the Danielson and Taunton lines, which enter Connecticut and Massachusetts respectively. The company has been collecting 6 cents for each zone travelled on these lines and issuing refund slips.

Personal Mention

Mr. Pierce Joins Ivy L. Lee

Will Engage in General Publicity Work After Many Years of Newspaper and Corporation Experience

Daniel T. Pierce, who was executive assistant to the president, Philadelphia (Pa.) Rapid Transit Company, from 1906 to 1909, and has been a frequent contributor to this paper, has joined the organization of Ivy L. Lee. Mr. Pierce was graduated from the Columbian University Law School in 1894, and then became editor of *Public Opinion*. After a period of seven years with this paper, he became correspondent of various western papers, and in 1904 became associated with Mr. Lee.

In 1906, at the request of Charles O. Kruger, then president of the Philadelphia Rapid Transit Company, Mr. Pierce joined the forces of that company as assistant to the president and was associated with the company during the strikes of that period. He left the Philadelphia Rapid Transit Company in 1909 to join the McGraw Publishing Company, devoting his time to editorial work on the *Engineering Record*, *Electrical World*, and ELECTRIC RAILWAY JOURNAL.

In 1910 he returned to Philadelphia to become executive assistant with the General Asphalt Company, and remained with that concern until the outbreak of the war. He then acted for a short time as director of the information department of the American International Shipbuilding Corporation, but at the request of the Red Cross officials went to Paris to manage their publicity in Europe, as director of the department of public information of the American Red Cross. He remained in Paris during all of the latter part of the war, returning to this country last spring. Some of his observations on the effect of the war on French tramways were given in an article written by him which appeared in the issue of this paper for June 7, 1919.

Colonel Dillon Joins M. I. T. Staff

Col. T. H. Dillon, Engineer Corps, U. S. A., has resigned to accept an appointment as professor of electrical engineering at the Massachusetts Institute of Technology, Boston, Mass., where he will specialize in the problems of electric railways, steam railroad electrification and power transmission. Colonel Dillon is a graduate of West Point, class of 1904, and of the Engineer School of Application, United States Army, class of 1907. His pre-war experience embraced a varied career in engineering work in Cuba, the Philippines, the Pacific Northwest and the Panama Canal Zone. He was electrical engineer of the Panama Canal and superintendent of the Gatun Locks.

In 1918 he went to France as colonel of the 37th Engineers, a noted electrical and mechanical regiment, and in France served as Deputy Chief Engineer of the First Army of the A. E. F. during the St. Mihiel, the Aisne-Marne and Argonne-Meuse campaigns, in charge of electrical and mechanical work, water supply, army shops and engineers' supplies. At the conclusion of hostilities he was made deputy to General McKinstry, who was chief of the board of damages in Allied countries and had charge of estimates for the American Peace Commissioners of personal and property damages due to enemy aggression.

New Post for Mr. Rolston

Former Superintendent of Indiana Interurban Appointed Superintendent of Power at Kansas City

William E. Rolston, formerly superintendent of power and equipment of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., was appointed on Nov. 12 superintendent of power of the Kansas City (Mo.) Railways. T. W. Hogate will continue to act as power engineer of the company until Jan. 1, 1920, serving in a consulting capacity. No change will be made in the power plant organization, members of which will report to Mr. Rolston.

WILLIAM E. ROLSTON

Mr. Rolston was graduated from the Armour Institute of Technology in 1898. Three years later he joined the Dayton & Troy Electric Railway. During his connection with the company, which lasted five years, he served first as chief engineer of power plants and later as superintendent. In 1906 he became superintendent of power and shops of the Canton-Akron Railway, Akron, Ohio, now included in the system of the Northern Ohio Traction & Light Company.

In the following year he was appointed superintendent of power and shops of the Cleveland, Southwestern & Columbus Railway, continuing to act in this capacity until 1911, when he became general superintendent of the Des Moines (Ia.) City Railway. Later in the same year he was named superintendent of the Interurban Railway, Des Moines, in addition to his connection with the Des Moines City Railway. In 1912 he resigned from these companies to accept the position of superintendent of power and equipment of the Chicago, Lake Shore & South Bend Railway, continuing in this capacity until his appointment at Kansas City.

J. F. Winn has been appointed auditor of the Ottumwa Railway & Light Company, Ottumwa, Iowa, succeeding J. F. Canfield, whose appointment to be auditor of the Union Heat, Light & Power Company has been announced previously in this paper.

E. C. Macken has succeeded C. C. Moyer as train master of the Columbus, Delaware & Marion Electric Company, Columbus, Ohio. Mr. Moyer's appointment as superintendent of the company is noted elsewhere in this issue of the ELECTRIC RAILWAY JOURNAL.

Harold Bates, who has been associated in the construction engineering department of the Connecticut Company, New Haven, Conn., with Charles R. Harte for more than ten years, has resigned to go with the Winchester Repeating Arms Company, where he will be connected with the sales engineering department. At first his work will be of a general nature, with particular reference to developing marketing methods for the products of this company.

Arthur W. Thompson, president of the Philadelphia Company, Pittsburgh, Pa., holding company of the Pittsburgh Railways, was presented, on Nov. 15 a testimonial from the employees of the Baltimore & Ohio Railroad, of which he was formerly vice-president. The testimonal was in the form of an album, said to be one of the finest books ever made in this country. It is entirely of handwork. The covers are of lambskin done in blue, embossed in gold inside and out, with a silk lining. In the center of the front cover is the name of the recipient in gold.

C. C. Moyer has been appointed superintendent of the Columbus, Delaware & Marion Electric Company, Columbus, Ohio, succeeding J. H. Lahrmer, deceased. Mr. Moyer has been continuously connected with the company for the last seventeen years. He joined the organization in 1902 as a conductor on the Delaware, city division, later in the same year becoming a conductor on the company's interurban lines. In 1909 he was appointed train dispatcher. Two years later he was made chief train dispatcher, and in 1913, assistant train master. He became train master in 1917 and continued in that position until his appointment as superintendent. Mr. Moyer will make his headquarters in Delaware, Ohio. The system there consists of more than 60 miles of city and interurban lines.

Russell W. Stovel has been appointed a consulting engineer of Westinghouse, Church, Kerr & Company, Inc., New York engineers, and, as a member of that organization, will devote his entire time to the company's electrical and mechanical work. Mr. Stovel recently returned from France, where as Lieutenant-Colonel of Engineers, he served as chief of the Terminal Facilities Division of the Army Transport Service. He has had an unusually comprehensive experience in the electrical and mechanical problems connected with central power station and steam railroad electrification work. He was graduated from McGill University in 1897 with the degree of Electrical Engineer. He had direct charge of the Chestnut Hill electrification of the Pennsylvania Railroad, the Elkhorn Grade electrification of the Norfolk & Western Railroad and the electrification of the New York Connecting Railway linking up the lines operating into New York with those from New England.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Storm Reports Increase Sales of Sleet Cutters

Medium Sized Stocks Now on Hand Are Expected to Vanish With First Rush of Orders

Prospects of a coming cold snap are rapidly increasing the sales on sleet cutters according to the latest information received from manufacturers.

The Weather Bureau at Washington reports strong north west winds along the middle and north coasts with light local snows from the lake region and upper Ohio valley eastward, and this, it is believed, will be sufficient warning to the railways to prepare for snow and sleet.

SMALL STOCKS ON HAND

Stocks are only moderate and it is expected will be cleaned out by the first big rush of orders. Manufacturers are now engaged in adding to their stocks as rapidly as labor will permit, although up to this time, they were reluctant to do so, in order to keep their forces working on other products which were bringing a ready sale.

Sales of sleet cutters up to the present time have been fair, but not up to the mark of last year. According to one manufacturer, the railways would rather take a chance of operating throughout an entire winter hoping that nothing worse than a mild season would be encountered than expend a fairly small sum in anticipation of a condition they may not be called upon to face. Once the bad weather sets in, however, they are not slow to place comfortably sized orders, as has been evidenced recently, although it is claimed that they are willing to gamble up to the last minute.

Deliveries can be made from stock on medium sized orders. On large orders, partial shipments will be made on receipt of order and the remainder at a later date depending largely on shop conditions and orders on hand.

Hand-Brake Prices to Go Up

Good Deliveries if Ordered From Stock Otherwise Two to Three Months Is Required

Sales of hand brakes for the first six months of 1919 were almost double the sales for the corresponding period of 1918, according to reports received. Recent sales, however, show a decided falling off. This, however, is not unusual as a large volume of orders during the last quarter of any year is not expected.

BUYING IS IRREGULAR

The buying has been and still is irregular. A large car order will be given and later a hand-brake order will be placed. Again, numerous orders result from cars which are being rebuilt. There have been some large individual orders placed during the year, but not nearly so many as there should have been.

A price increase is looked for before the end of the present year. This is due to the increases granted foundry men and iron workers, which have been noted from time to time in these columns. Materials also are higher, but the companies are endeavoring to take up as much of the increases as they can absorb. Labor in addition to forcing up prices has also slowed up deliveries. At the present time deliveries can be made on standard equipment from stock. However, it is only from stock that any reasonable delivery can be made. One well-known manufacturer advises that on any type of brakes which are not carried in stock no quotation under three months will be given.

Payment by the railways has been slow of late although previously this condition was more satisfactory. Some of the roads are meeting their bills promptly while others are taking ninety days or longer.

At this time it is not known just what the price increase may amount to, but from present indications it is assured that a rising market will be effective for sometime.

Good Deliveries on Tie Tamping Tools

Fall Orders May Deplete Stocks—Every Effort Being Made to Increase Production

Hand tamping tools have advanced 10 per cent effective from Nov. 1. Production has increased during the past month in spite of difficulties in obtaining steel and coal, but must continue to increase if present stocks are to be built up. The supply on hand is decreasing at a lively rate and with normal sales, will last eight to ten weeks.

MECHANICAL TAMPER SALES LIGHT

Up to Oct. 15, several tool making plants were tied up with strikes which caused a curtailment in production and a delay of three to four weeks in shipments of orders. These plants are now making considerable headway toward completing orders accepted before the strike although deliveries, which were a week to ten days behind, are back two to four weeks. At the present it is doubtful whether manufacturers will be able to get enough stock ahead to fill spring requirements. If any further trouble develops, railway companies, which have not been forehanded in placing orders for their needs, probably will be seriously inconvenienced.

Owning to uncertainty as to the future status of the steam railroads and the decreased earnings of electric railways, orders have been unusually light for pneumatic tie tampers for the past few months. This has given the manufacturer an opportunity to catch up on orders, and deliveries can now be made in five to six weeks on complete sets, including the tampers and necessary tools. The tamping tools can be furnished out of stock.

The feature of recent sales of mechanical tampers has been the increasing number of outfits purchased by electric railways for tearing out asphalt and concrete paving, for drilling bond holes in rails, and for other uses supplementing the original purpose for which the outfit was designed.

Coal Shortage May Force Shut Downs in West

Bituminous Coal Production During Strike 29 Per Cent of Normal—Men Reject Operators' Proposals

Shut downs may occur in the Middle West during December unless conditions which are rapidly reaching a critical stage there are relieved within the next two to three weeks. Conditions in the east are slightly better although all surplus stocks are vanishing rapidly. Everywhere schedules are being reduced and many outlying localities are reported to be operating only from 50 to 70 per cent of their cars.

At one of the largest coal receiving companies in the Greater New York district, it has been learned that shipments of coal to tidewater were reduced 50 per cent during the week of Nov. 22-29, to permit all coal mined during a portion of this period to be shipped to the West and North. This may temporarily relieve some railways and public utility companies, but on the whole the amount shipped will scarcely be a drop in a bucket as every one is now in the market and it is a question of having the government fuel administrators distribute what little coal there is available.

RAILROADS CONFISCATE COAL

Railroads over which coal is being carried have in some instances started confiscating car after car for their own use. Three different companies within the past two weeks are reported as having lost as high as thirty cars of coal and in one instance sixty cars were taken.

Reports from the conference in Washington, D. C., where representatives of the coal miners and coal operators have been called before committees, are to the effect that coal operators claimed to have granted all that they possibly could in the increase of 15 cents a ton which would represent a 23.2 per cent increase to pick miners and a 35.1 per cent increase to machine workers. The miners, however, rejected this offer without making any counter proposal.

PRODUCTION AT LOW POINT

Production of bituminous coal, for the week ended Nov. 8, during which the strike was in progress, according to latest reports from the Geological Survey, is estimated at 3,477,000 tons, or approximately 29 per cent of the average for the four weeks ended Oct. 25, in which production was at the highest rate attained this year.

Production for the week of Nov. 8 was the lowest recorded in recent years, for no strike has ever before affected all union mines at the same time. The daily average output in the week, of 580,000 tons, was 54 per cent greater than on Saturday, Nov. 1, the first day of the strike.

For the second week of the strike production was 33 per cent of normal as compared with 29.4 per cent during the first week. From reports received since Nov. 15, it is believed the tonnage being mined is just about the same as was recorded during the first two weeks and that the final reports will show production not more than 35 per cent of normal for this period.

Deliveries on Track Brooms in Less Than a Week

Stocks in Good Shape and Fair Sales Being Made—Winter Season Creates Big Demand

Wire brooms and brushes in reasonable quantities can be delivered within two to three days of receipt of order. On rattan brushes, about a week is required, one company making up brushes to order in that length of time.

Up to the present time, sales have only been fair, probably due to the mild weather which has been prevalent over the country. As the first quarter approaches, sales usually take an upward spurt and hence good sales are expected within the next four to six weeks.

Production for the past month has been above normal although there was little done previously. Labor troubles have affected manufacturing to some extent, but all demands can be met out of surplus stocks which are sufficient to last a number of weeks with normal sales.

Prices have advanced slightly, but this evidently has not been a check to the buying, which although rather light so far, has been regular.

Bond Tester Sales Increase

Prices Now Lower Than Those In Effect at the Time Armistice Was Signed —Four Weeks for Deliveries

Sales of bond testers declined somewhat during the war, but business is now picking up again and seems to be rapidly nearing pre-war demand.

No attempt is made by manufacturers to carry a stock of bond testers except by branch offices and agents whose samples often are used to take care of urgent orders, since factory deliveries in virtually all instances can be made in four weeks. This, as a rule, is satisfactory to purchasers.

Bonds are usually tested during spring, summer and fall, but now there is an increasing tendency to test bonds during the winter months, due to recent mild winters and the realization that bonds must be maintained in the best possible condition to keep down operating costs. This tendency to test bonds during winter months has resulted in orders for bond testers.

Prices have not increased recently; in fact, prices were reduced shortly after the armistice was signed and these are still in effect.

Window Glass Scarce

Acute Shortage of Stocks Has Developed —Labor Troubles Keep Down Production—Long Deliveries Rule

Purchasing agents who failed to place orders for window glass requirements are now faced by long delivery quotations, if they are possible to obtain any at all, and by prospects of an increase in prices dependent upon the action of glass blowers and glass wokers who have been holding up production in some sections. Stocks are badly depleted especially those of heavy glass of which there is little or none to be had. The greatest demand is for heavy glass of the 39-oz. size or what is commonly called 3/16 in. Recently two car builders placed inquiries for large amounts but were unable to get any glass of this size. Heavy demands also have been made for the 34-oz. and for the 29-oz. variety. Delivery of from eight to twelve weeks on a limited supply of the lighter grades are being quoted by one large jobber.

Prices are firm. Quotations as of Nov. 18 are as follows: On car window glass, first three brackets, A and B quality, New York, there is a discount of 77 per cent; on car window glass, of double strength, AA quality, New York, 79 per cent off and on car window glass, double strength, BB quality, New York, the discount is 81 per cent from jobbers lists based on the official list of March 1, 1913.

Mr. Lincoln Joins Lincoln Electric Company

Paul M. Lincoln, for many years commercial engineer of the Westinghouse Electric & Manufacturing Company, has resigned from that organization, effective November 1, to take active charge for the Lincoln Electric Company, Cleveland, Ohio, of its motor application engineering.

Mr. Lincoln is a prominent figure in electrical engineering circles, having designed and installed the first hydro-electric power plant at Niagara Falls and subsequently directed its operation for a period of six years. He also developed the first high-tension voltage transmission line and is to-day one of the best known authorities on this subject. Among many other inventions, he perfected a synchronizer especially adapted by the Lincoln Electric Company for paralleling large electric alternators. For this he has received different medals and awards. Mr. Lincoln was president of the A. I. E. E. in 1914.

Scrap Iron and Steel Advancing

Short Lengths of Steel Rails in Fair Demand—Scrap Dealers Holding Out for Higher Prices

Within the past four weeks there has been a very appreciable stiffening in the scrap iron and steel market, with but little demand, except for cast iron, accompanying the advance in price. Scrap dealers who have been watching the pig iron market are reluctant to sell their holdings at present prices, but are waiting for a further advance.

A firm conviction that the steel strike is now virtually over but that, nevertheless, a lessening in production must inevitably result has been responsible for the renewed firmness in scrap. Besides, a number of gondola cars have been released to the dealers, offering an opportunity to move accumulated stocks.

Reports from Cincinnati are to the effect that short lengths of steel rails are being purchased in fair-sized tonnages. $22.50 to $23 per gross ton was quoted on Nov. 11 for steel rails for melting in this market. This price has held and in numerous instances $24 has been paid in the Chicago and Pittsburgh districts for heavy steel scrap.

Malleable scrap is becoming very scarce, it is reported, under a heavy demand.

Since Nov. 11, several scrap products have increased considerably. According to Pittsburgh quotations of Nov. 18, rerolling rails have advanced $1, at $29 to $30; heavy steel scrap $1, at $22 to $23; while railroad malleable is up $2 to $3 at $22 to $23. Old iron car wheels at $25 to $26 and steel car axles at $28 to $29 have not been affected by price increases.

No changes are recorded in any of the above quotations for Nov. 25, with the exception of those for car wheels, which in the Chicago and Philadelphia markets are up $2, although the price in Pittsburgh remains the same as last week.

Heavy Culvert Sales Predicted for Fourth Quarter

Producers Have Difficulty in Getting Steel —Deliveries Good Except in a Few Localities—Price Advance Likely

Recent sales of iron culvert show a very great improvement and although the Fall and Winter months are really the off-season, reports from a number of culvert jobbers indicate that for this period of the year more business is being booked than ever before. Sales reports for October and the first half of November indicate that the fourth quarter may break all records. Although there is little railway or railroad work now being done, buying of metal culverts is regular and a very healthy condition exists due to the influx of finances from the Government in its Federal aid work.

Due to the great momentum that the road work in the United States has taken on, it is believed that conditions will continue to improve. Sales for the first half of the year were approximately 10 per cent less than for the corresponding period last year. This, however, was a readjustment period and that condition was rather to be expected.

Prices are as firm as they have ever been in the culvert industry and due to the recent upward tendency in steel and iron it is expected that advances will have to be made. The prices have not advanced recently and it is believed the new schedule of prices, if such becomes necessary, will not be announced until after the first of the year.

Individual orders of considerable size are reported from different culvert companies, but these are confined mostly to counties which are contracting for considerable road work. Naturally the scarcity and high price of labor are two very important items and have had much to do with delaying needed work.

At the present time good deliveries can be obtained from stocks of different jobbers, but owing to the lessening of shipments of raw materials to the rolling mills, deliveries later are expected to be much extended, especially if this phase of the situation does not improve.

Rolling Stock

Beech Grove (Ind.) Traction Company, is in the market for three Birney safety cars.

Southern Michigan Railway, South Bend, Ind., has purchased one snow sweeper and one new trailer.

Washington (Ind.) Street Railway has purchased three safety cars from the National Safety Car & Equipment Company.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., is reported to have purchased ten safety cars for operation in South Bend.

Chicago, North Shore & Milwaukee Railroad Company, Highwood, Ill., is reported to have placed orders for ten cars and additional equipment totaling $800,000.

Los Angeles (Cal.) Railway Corporation is advised by the Railroad Commission of the State of California, in a decision handed down Nov. 12, to purchase 400 safety cars at a cost of $2,800,000. Reference to this decision is made on page 959 of this issue.

Track and Roadway

Montgomery Light & Traction Company, Montgomery, Ala.—The Montgomery Light & Traction Company plans a general rerouting of its cars and the elimination of about 2 miles of track.

Tidewater Southern Railroad, Stockton, Cal.—The Tidewater Southern Railroad will begin the construction of a line to Fresno, Cal., early in 1920. The right-of-way of the proposed line is now being surveyed.

Indianapolis (Ind.) Street Railway.—George Lemaux, member of the Indianapolis Board of Works, has announced plans for the construction by the Indianapolis Street Railway of a line from Virginia Avenue to Kentucky Avenue on South Street, and out Kentucky Avenue. The board will order the laying of double tracks in Ohio Street for the accommodation of interurban cars.

Arkansas Valley Interurban Railway, Wichita, Kan.—The Arkansas Valley Interurban Railway is reconstructing its terminal facilities at Wichita. A passenger and freight station is under construction and 5 miles of track are being laid to enable the company's cars to enter Wichita over its own right-of-way.

United Railways, St. Louis, Mo.—Rolla Wells, receiver for the United Railways, has applied to the Federal District Court for permission to purchase 300,000 granite paving blocks at 8 cents each. Mr. Wells has also asked permission to lease the property at 3108-12 Laclede Avenue to the Board of Education for three years at a monthly rental of $65.

Binghamton (N. Y.) Railway.—The Binghamton Railway is extending its lines from Hill Crest to the plant of the Universal Can Company at Hiresville.

Oklahoma Union Railway, Tulsa, Okla.—The Oklahoma Union Railway will extend its line to Okmulgee via Beggs and the Beggs oil district. The Okmulgee extension will be built early in 1920 if conditions continue favorable.

Dallas (Tex.) Railway.—The Dallas Railway reports damage amounting to $25,000 due to the excessive rain in Dallas on the night of Oct. 31. The downpour put out of commission seventy-five of the company's cars. Water in many places was 1 ft. or more deep on the tracks and the roadbed on unpaved streets was badly washed.

Saskatoon (Sask.) Municipal Railway.—The City Council of Saskatoon has voted to extend the Twentieth Street line of the Saskatoon Municipal Railway at a cost of $1,818.

Sherbrooke Railway & Power Company, Sherbrooke, Que.—The Sherbrooke Railway & Power Company is extending its railway lines at a cost of $50,000.

Toronto (Ont.) Civic Railway.—The Ontario Railway Board has approved plans for the construction of an extension of the Bloor Street line of the Toronto Civic Railway.

Toronto (Ont.) Railway.—The Ontario Railway Board has ordered the Toronto Railway to complete its Pape line extension by July 15, 1920. Construction is to begin not later than April 15 next.

Power Houses, Shops and Buildings

Pittsburgh (Pa.) Railways.—The receivers of the Pittsburgh Railways have received from the United States District Court permission for the purchase of a piece of property worth $3,000 in the Lebanon Heights' district on the Washington Street line, the property to be used for the making of improvements in the service. The property, the receivers agree, will be placed in trust.

Trade Notes

National Carbon Company, Inc., Cleveland, Ohio: Brush Bulletin No. 13 describing armature and field coil tests and methods for locating troubles.

Gaston, Williams & Wigmore, New York, N. Y., announce the addition to its staff of G. A. Trube, formerly export manager of the Westinghouse Airbrake Company.

Sanford-Riley Stoker Company, Ltd., Worcester, Mass., announces that G. Brennan has been transferred to the sales department of the Chicago office. He will be succeeded by Otis C. Sheldon.

Acme Electric & Manufacturing Company, Cleveland, Ohio, announces that C. H. Bunch, formerly chief engineer of the Electric Products Company, has become secretary and engineer of the company.

Pierce Fuse Corporation, Buffalo, N. Y., announces the appointment of P. S. Klees, as vice-president and sales manager of the company. He was formerly manager of the Franklin Incandescent Lamp Works, New York City.

Canadian Westinghouse Company, Ltd., Toronto, Can., announces that H. U. Hart, chief engineer of the company, has been appointed general manager, succeeding F. A. Merrick. Mr. Merrick is still vice-president and a member of the board of directors.

Chicago Mica Company, Valpariso, Ind., announces that L. P. Frederick, formerly of the research engineering department of the Westinghouse Electric & Manufacturing Company, is now consulting engineer and production manager for the company.

British Aluminum Company, Ltd., London, Eng., announces the appointment of Ernest B. Pannel as special sales engineer who will be located in New York City. For the past four years he has acted as manager to the Canadian head office of the company in Toronto.

Railway & Industrial Engineering Company, Pittsburgh, Pa., announces the appointment of Harold H. Rudd, as vice-president and secretary of the company. He has been with the Westinghouse Electric & Manufacturing Company since 1904, where he has spent most of his time in the commercial department.

Norma Company of America, N. Y., announces that O. P. Wilson, formerly assistant general manager, has been elected vice-president of the company. He was for many years one of the head buyers in the purchasing department of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Kelvin Engineering Company, Inc., New York, N. Y., has organized a new department to do general engineering and contracting work in this country and in Latin America. This department will be in charge of Carlos Lobo, formerly borough engineer, Department of Water Supply, Gas and Electricity, Brooklyn, N. Y. The company is now prepared to execute contracts for furnishing and erecting electrical and industrial machinery and equipment.

Handy Supply & Manufacturing Company, Cleveland, Ohio, announces that E. H. Martindale has accepted the position of president and general manager of the company. He graduated from Case School of Applied Science in 1908 and is widely known as a brush expert, having been with the National Carbon Company for the past ten years. He is a member of the board of directors of the A. I. E. E. and has served two years as chairman of the Industrial and Domestic Power Committee. During the war he was a captain of engineers and spent one year in France.

General Electric Company, Schenectady, N. Y., has leased the rigid-conduit business of the American Conduit Manufacturing Company, New Kensington, Pa. This business, which will continue to be operated at New Kensington, will be conducted by the Sprague Electric Works. The Galvanite and American brands of rigid conduit will be continued, and no change is contemplated in the terms or conditions under which the trade has been dealing with the American company. Plans are being made for the enlargement of the plant, and additional equipment will be installed. There will be no change in the personnel of the American Conduit Manufacturing Company, according to a statement by D. Hayes Murphy, president of the company, but the name will be changed to the American Wiremold Company, and it will concentrate upon the manufacture of "Wiremold" surface raceway and "Wireduct" non-metallic tubing at Hartford, Conn., where the company has taken over the plant of the Franklin Lamp Works. H. B. Kirkland, vice-president, will divide his time between the Sprague Works in New York City and the American Wiremold Company at Hartford.

New Advertising Literature

Harvey Hubbel, Bridgeport, Conn.: Circular No. 183 on Hubbell Current Taps.

General Electric Company, Schenectady, N. Y.: Bulletin No. 47530 superceding Bulletin No. 47503, and describing its type CP air circuit breakers.

Sprague Electric Works of the General Electric Company, New York, N. Y.: Bulletin No. 47942 on safety panel boards and cabinets.

General Electric Company, Schenectady, N. Y.: Bulletin No. 47702A superceding No. 47702 and covering rheostat and compensator operating mechanisms.

Westinghouse, Church, Kerr & Company, New York, N. Y.: Illustrated circular on shops, containing pictures of a large number of shops built for manufacturing companies and railroads.

Merrill Company, San Francisco, Cal.: Booklet describing and illustrating the Nordstrom lubricated plug valve, originally designed for use in mining and milling operations, but now being applied in the general engineering field.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, December 20, 1919 *Number* 21

New York Developments Indicate Possible Municipal Ownership

THE latest development in New York City traction affairs seems to be a movement toward municipal ownership, first of the rapid transit lines and later of the surface lines, or some of them. The basis of the transfer, if the present plan is carried out, is to be a fair appraisal of the properties on which the city will pay a reasonable rate of interest and then that fares will be charged sufficient to amortize the purchase price within about twenty years. At the time at which this statement is being written, the plan had reached only its preliminary stage and neither the Mayor nor representatives of the Board of Estimate had publicly expressed any comments on the proposal nor had it been before the boards of directors of the companies.

Such a plan would undoubtedly be welcomed by the owners of the securities, who have seen the value of their holdings greatly diminished during the past two years, because of the refusal of the city authorities to grant increases in fares. Just what the public will gain by the change, however, if it is carried through, is another question. It is too much to expect that the city will operate the system anywhere nearly as efficiently as has been done by the present owners, nor is it likely that the service will be as good. The ventures of the city into other commercial fields, such as ferry operation, are certainly not such as to encourage any further activities of a like nature. If the city authorities are wise they will arrange for the operation of the lines in such a way, if possible, as to preserve the advantages of private management, even if they cannot retain the benefits of private initiative. Whether this can be done with the New York transportation lines under the control of the city remains to be seen.

Synchronizing Revenues with Wage Increases

THE decision of the Railroad Commission of Wisconsin in the Milwaukee case, reported in the last issue of this paper, is the first order under the law enacted at the last session of the Wisconsin Legislature, which establishes a definite relation between wages and rates. Briefly, the law provides for arbitration of disputes in regard to wages on public utilities by the State Board of Conciliation, and then for a determination by the Railroad Commission of the State of the ability of the company to pay the increase, if one is granted. If the Railroad Commission finds, as a result of its inquiry, that the surplus of the company, after paying a fair return on the investment in its property, is insufficient to pay the increased wages awarded, the law places upon the commission the duty of supplying the company with sufficient revenues for this purpose. In other words, the law is the first practical application of the attempt directly to synchronize increases in revenues with increases in wages, which has frequently been suggested, and it should prove in this respect far more effective and satisfactory to all parties concerned than the condolences, recommendations and admonitions of the late War Labor Board.

The new regulation must also be of great satisfaction to labor because it provides for arbitration of labor's demands through a State board and insures the payment of the award of this board through all the powers of the regulating commission. It therefore makes strikes unnecessary, as the interests of the three parties—labor, capital and the public—are automatically reconciled. The new law has a further effect which is apparent from a reading of the appendix to the decision of the Railroad Commission of Wisconsin. Since it insures a fixed return upon the investment, it establishes a more or less automatic scheme of adjustment of fares, in other words, a service-at-cost plan, under State commission regulation. It is thus again unique because all previous electric railway service-at-cost plans in this country have been either under the direction of a municipal commission or, in the case of Massachusetts, of a special commission appointed by the Governor.

Actual Experience Data of Automatic Substation Operation

AUTOMATIC control of substation equipment has now been in use long enough to have permitted the "bugs" to be eliminated from the relay and switch design and to allow the operators to accumulate some reliable data that will be useful to themselves and others in future expansion along this line. In the issue of this paper for March 22, 1919, page 565, E. J. Nash, electrical engineer, Butte (Mont.) Electric Railway, told of the results of a year's experience with "automatics" on that property. He plans shortly to supplement this with the 1919 record. In the five-in-one combined number issued on Dec. 13, 1919, page 886, R. J. Wensley, a Westinghouse engineer who has had a great deal of experience in this matter from the manufacturers' side, gave a frank summary of the trials and tribulations of the inventor with the apparatus. This week we are pleased to give an abstract of a paper by C. L. Cadle, presented before the New York Electric Railway Association at its New York City meeting held last week. In this he gives some convincing statistics which will prove cheering in these days of high labor costs. These data will be appreciated by manufacturer and railway operator alike, for they show what can be expected in many other locations if moderate sums of money are invested intelligently.

In his tabulations Mr. Cadle estimates, in the cases of the two stations with which he has had personal experience, the number of years necessary for the control equipment to purchase itself. This number proves to be so small as to be considered negligible when compared with the probable useful life of the equipment. It ought then to be easy to "sell" the idea of automatic control to the executive officers of a railway company when the advantages are so self-evident. The industry is now too dependent upon labor and is not dependent enough as yet on automatic devices in several departments, of which the power distribution division is cited here as an example. The same service could be given with fewer men, or better service with the present force, if the same principle, that is the use of labor-eliminating equipment, were further and more diligently applied in the cars, on the track, in the power plant, in the counting room, etc. Give the engineer a fair chance in all of these fields and he will show results.

Planning to Combat Coal Famines

IN THE good old days "befo' de war," we as a people worried very little about the problem of our fuel supply. Coal, water, and air were on somewhat the same basis. They did not trouble anyone very much but were procurable at any time and in any quantity needed. Only a few scientists and other folk of the ilk who love to peer into the future, and whom the common people usually prefer to consider otherwise than seriously, were at all concerned about our coal supply. But now for a second time within two years the country has found itself in the throes of a fuel famine, and it begins to look as if vigorous action on the part of all the people, instead of dreaming on the part of a few, must begin. It is not our thought to discuss here the causes of these fuel shortages; it is sufficient for our purpose to point out that the immediate causes at least were not the same. Further, with labor conditions in the steam railway field as they are at present, future coal famines are not difficult to imagine.

Now the lifeblood of all industry in this age of machinery is motive power, and we know how to get motive power in bulk only in two ways, namely, from coal and from running water. If we are to have motive power when and where we need it we must so develop our motive power resources that war, weather or the selfish desires of one class of our people can have but a minimum influence on motive power production. The attainment of this end, so far as electric power is concerned, means that our steam electric stations to a considerable extent must move to the coal mines, our water power must be developed and our electric transmission systems must be interconnected.

It is beyond our purpose to outline the advantages of super-power stations at the mine mouth, hydroelectric power and interconnected electric systems. These advantages have been set forth at length time and time again in our technical press within recent years. The most notable proposal along these lines is the investigation recommended to Congress by Secretary Lane to determine what can be done in the way of a super-power tie line in the industrial district along the Northeast Atlantic Seaboard, but pioneer work of this kind under private initiative has already been done, notably in New England and among the great water-power companies of the West. It is our purpose here principally to emphasize that the electric railways, as big electric power producers and users, should by setting a proper example do their share in developing the power resources of the country along right lines and that we electric railway men as individuals must use our energy and our influence in moulding public opinion to the same end.

How Can Railways Train Men to Be Good Welders?

THE use of welding by electric railways for reclaiming worn parts and for reducing the cost of repair work has increased tremendously in the last few years. The necessity for some type of welding apparatus as part of the shop equipment is generally recognized, and many railways are now facing the problem of developing and training men who can be depended upon to carry on this work. If an attempt is made to draw trained men from other industries, it will be found that the supply of good welders is far behind the demand. When a carpenter, machinist or blacksmith is needed, an advertisement in a local paper is pretty sure to supply whatever help is required, but an advertisement for a welder is almost certain to go unanswered.

The operator's ability is now generally conceded to be the most important factor in producing good welds. The number of men who have had some experience in oxy-acetylene cutting and welding is more pronounced than those familiar with electric welding, and many roads which have previously operated gas welding outfits have used men familiar with this work for electric welding with good results. Where it is necessary to train a man with no previous experience, his former occupation must be carefully taken into account. Experience as a blacksmith, machinist, boiler maker, pattern maker, sheet-metal worker, moulder, electrician, or in several other kindred occupations, will in every case be found of great value. Any experience in handling metals as well as all mechanical experience is a valuable asset, and it has been found that men with such training take up the work more readily and become expert welders more rapidly. The man, of course, must feel an interest in the work, as it is this interest combined with ingenuity which will enable him to handle the new problems successfully and aid him in developing better and more efficient ways for carrying on the work.

During the war, the training of electric welding operators was taken up by the education and training section of the Emergency Fleet Corporation. Schools for training operators and for educating operators to become instructors were established in many sections. These training courses consisted of familiarizing the men with various parts and uses of welding equipment, of giving the men intensive practice in work to make good craftsmen of them, of explaining to them the various safety precautions and protection necessary, and, finally, a course in the theoretical characteristics of welding. The men thus trained were taken principally from the shipbuilding industry and were returned to their employers after the course was completed.

At present there is a need for good welders, not half trained men, and any training course adopted should aim to turn out a good welder who not only has manipulative skill but, in addition, is well versed in the theoretical knowledge of the subject. Various exercises and practices in the work will produce the required skill, and the interested worker will gladly read papers and books describing the theory of uniting metals by welding if these are readily obtainable. Manufacturers of welding equipment are naturally very anxious to have their apparatus efficiently handled and are in a position to furnish valuable assistance in training men for the work.

Will the Screw Spike Replace the Cut Spike on Electric Railways?

A RAILROAD spike seems to be a comparatively insignificant part of a track structure. In spite of this seeming unimportance, the spike is now receiving a great deal of study in conjunction with all other details of what are usually considered minor track fastenings, such as tie plates, rail braces and track bolts. For years our railroads knew no other rail fastening than the so-called standard hookhead or cut spike. Within the last few years, however, the demand for better fastenings and greater permanency has led to numerous experiments with, and adoption of, the screw spike.

This, at first, was hailed as the final solution of the spiking problem. Along with the steam roads, quite a few electric railways adopted it as standard. Nevertheless, a great many electric railway track engineers and not a few of their steam-road brethren have felt that the screw spike did not warrant its greater first cost. This view finds support in a recent report of the Pennsylvania Railroad engineers, covering extensive experiments with the comparative merits and maintenance costs of the two types of spikes, the results of which show that the screw spike is not only much greater in first cost than the cut spike, but also greater in maintenance cost, and less reliable as a permanent fastening. The chief trouble appears to be due to the fact that no satisfactory method has been found which permits the screw spike to obtain a firm hold in the tie, once it has been loosened.

One of the particular points advanced in favor of the screw spike has been its greater holding power or resistance to withdrawal. The Pennsylvania report states that while it does have a greater initial resistance to withdrawal, it ultimately becomes entirely loose under the continual raising action of the rail. Meanwhile, under similar circumstances, the cut spike will retain a considerable portion of its holding power.

In the electric railway field, a recent questionnaire covering the screw-spike question, circulated by one of the large Eastern companies, resulted in replies of which the majority indicated that electric railway engineers have not found the use of the screw spike justifiable for ordinary electric railway conditions either on private right-of-way or in paved streets. Here it may be noted that the screw spike is not used either in the New York subways or upon the elevated roads, except under certain conditions at stations and other special locations.

We are inclined to the belief that the cut spike will continue as the standard rail fastening for electric railways, but attention is called to the point that recent experiments made at the civil engineering laboratories of Columbia University indicate the value of preboring holes in the ties to receive the spikes. The crushing and bunching of the wood fibers are thus materially reduced and the elasticity of the fibers, upon which the resistance to withdrawal partly depends, is retained to a far greater degree and over a long period. It should also be noted that preboring should be done before creosoting or other treatment is applied. Attention is again called to the desirability of making new comparative tests of standard cut spikes made with the regular chisel point and with the Goldie point. The latter should prove the better of the two because its shape should lessen the crushing and bunching of the wood fibers, due to its better cutting action, and it is believed that the Goldie point will insure the best results when driven in prebored holes.

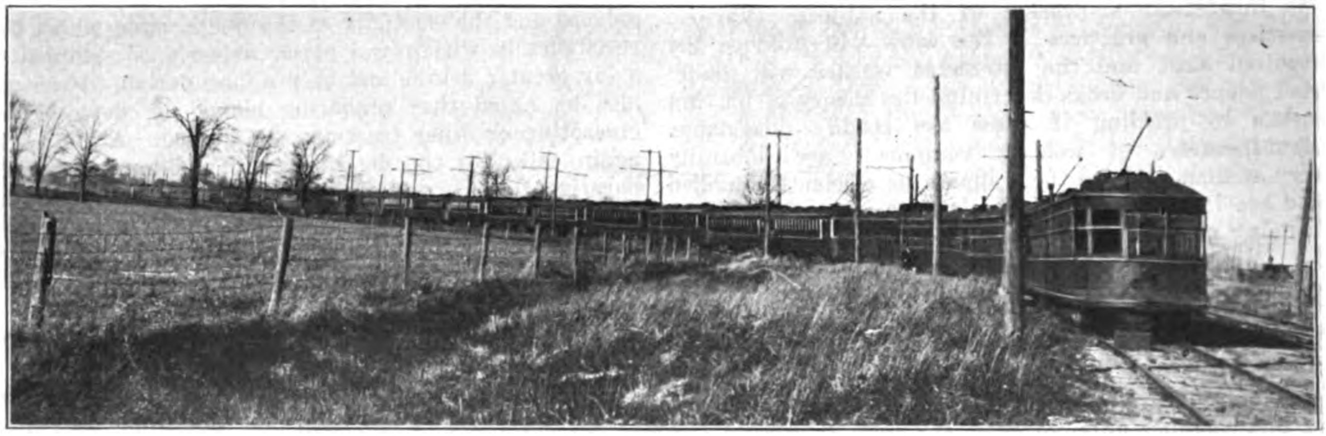
Upon occasion it may be necessary to resort to the practice of double spiking of the rails in order to reduce the load which each spike must sustain in resisting withdrawal, and it will be found advisable to give close attention to such details if the most effective use of the cut spike is to be obtained.

Co-operate With Those Who Need Your Riders

HOW much capital are electric railways making of the fact that the merchant and amusement purveyor need the electric railway rider even more than the electric railway itself? For every shopper or pleasure seeker that the electric railway carries, it does not make as much as one cent per round trip. On the other hand, the profit which this class of rider brings to the business or theatrical man is anywhere from twice that humble figure to several dollars! Therefore, these classes of the public have a very live and materialistic interest in the ability of the electric railway to maintain a high standard of service. In spite of this fact they are often the chief grousers, grumblers and grouches with no conception whatever of what they could do to help the railway along.

For this attitude we fear the electric railways themselves are largely to blame. They go on with the same, or declining schedules year after year under the impression that no one is scanning their actions with any degree of care. This is not so. The business or amusement fan who is at all observant can tell with disconcerting precision just why his west-side customers average more visits to his place than do his east-side customers. He will tell you that it is largely a difference in service. The patron who comes in on a five-minute line is around oftener than the one who lives on a route with ten-minute service. The latter is a lot more likely to telephone, thus buying less than in personal shopping, or to put off her purchases and pleasures until the Saturday peak when she cannot be served and sold so advantageously.

The attractors and exploiters of street railway traffic have so large a stake in the well-being of the railway that they should not be kept in ignorance of the great help that they can give to the railway and themselves if they will lend their show window space, picture screens and advertising copy to pushing any service-betterment plan that the railway may have, be it so small a matter as the sale of tickets or so large a matter as financing the purchase of new equipment with local money. Let the railway management but get close to these men, and it will be most agreeably astonished at their willingness to co-operate in the development of the transportation business, which is an important feeder for their own.



CARS IN STORAGE IN MICHIGAN

Toledo Walked While Cars Rested in Michigan

In Compliance With "Ouster" Ordinance Passed on Nov. 8, Toledo Railways & Light Company Removed All Cars From the City and No Wheels Turned Until Dec. 5

H. L. DOHERTY

F. R. COATES

FOR practically four weeks beginning Nov 8, citizens of Toledo, Ohio, walked to and from their business in the loop district or rode in buses while the street cars rested peacefully across the line in the State of Michigan. On Nov. 8 an ordinance was officially passed "ousting" the Toledo Railways & Light Company from the streets and at midnight the company quietly obeyed the public decree and placed its cars where they would be safe from injunction proceedings and the lawless element. Thus was brought to a close a long drawn-out chapter in the traction controversy history of Toledo. The next chapter opened almost a month later when the ouster ordinance was amended so the cars could come back. Immediately thereafter, on Dec. 5, service was restored, pending a permanent settlement of the controversy.

CARS CAME BACK ON DEC. 5

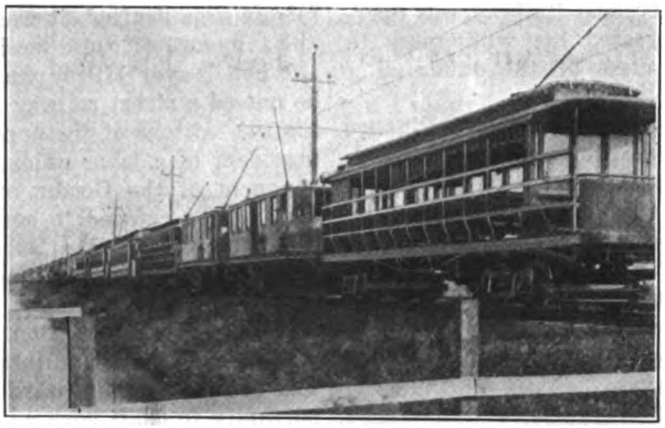
To be correct the railway resumed regular service at four o'clock on the afternoon of Dec. 5, twenty-eight days after the cars had been removed. The first car carrying passengers was cheered all along the street. Judge Killits, to whom the city had carried its case to require the company to resume service, acted as motorman on the first car in from Toledo Beach, where the cars had been stored, and piloted it through the downtown district.

By Dec. 6 the company was operating 100 per cent of normal service, and as regards passengers handled that day proved to be the most successful in the history of the company. Since the resumption of service the passenger revenue has been greatly in excess of that at any time previous to the lay-off. All but a very few of the trainmen returned immediately to service and showed an earnest effort to co-operate in bringing service back to 100 per cent.

The modification of the ouster measure so that the cars could return was not brought about, however, without considerable acceleration from outside influences. In this work the business men of the city played a prominent part, for early in the first week of December they started a petition for the recall of the Mayor, and certain members of his Council. Before this had progressed far enough to have any influence on the situation, however, five councilmen, without the knowledge of the Mayor, got together and called a special meeting of the Council to amend the ouster ordinance as suggested by Judge Killits. This was done, and immediately the city asked to have the car service restored.

On Dec. 5 Judge Killits named two commissioners to help city and traction officials in drafting the proposed ordinances to be submitted to a popular vote. Either of these ordinances, if accepted, will permanently settle the controversy. As previously suggested by H. L. Doherty, a municipal ownership and a Tayler-plan franchise will be drafted. The court also ruled that these franchises must be ready to submit to the people by Jan. 15, 1920, or that the cars could again be removed from service. Until that time the fares are to remain at 6 cents with 2 cents for transfers, the fare in effect when the cars were removed from service.

As soon as the cars resumed service the 2500 jitney buses cut their fare from 10 cents to either 6 cents straight or in a few cases to 5 cents and a free transfer. The latter service, however, is most unsatisfactory, and none of the jitney service is looked upon by



CARS STORED ON THE SEA BEACH LINE

the railway as offering serious competition to street-car service. Practically all touring cars have discontinued operation.

It is not expected that there will be any further important development in the Toledo situation until the two proposed franchises are submitted to the people on or before Jan. 15 next.

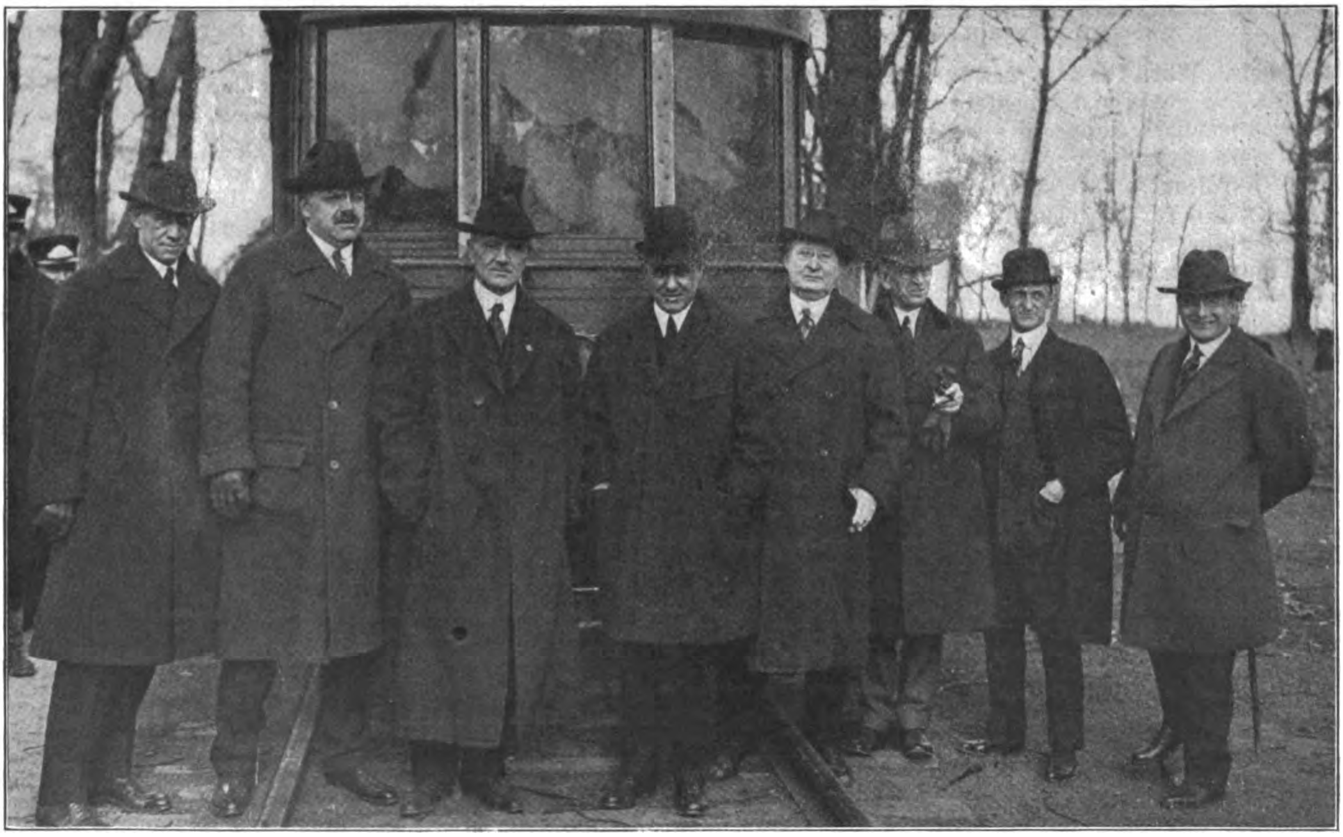
The electric railway situation in Toledo has been a source of dispute and a political football for many years. The past seven years have been especially turbulent and for the last two years some radical development has been imminent. The Toledo Railways & Light Company was incorporated in the State of Ohio on July 1, 1901, as a reorganization of the Toledo Traction Company, which the H. L. Doherty interests had acquired. On July 1, 1907, the property of the Toledo Gas, Electric & Heating Company was also acquired. Before the property was taken over by the Doherty interests there had been trouble between the former company and the city and this was inherited by the new organization.

F. R. Coates, the present operating head of the company, became president in 1911, at which time the franchises for various routes were expiring and negotiations were undertaken to renew them. The last of the franchises expired in January, 1914. At this time the fare was 5 cents with universal transfers, six tickets for 25 cents and 3-cent tickets for workingmen good for two hours morning and evening. The city politicians insisted on a straight 3-cent fare despite the fact that their own figures showed that it cost more than this to carry a passenger.

In March, 1914, the City Council, under the present Mayor, Cornell Schreiber, who was then the City Solicitor, without notice or discussion passed an ordinance making fares 3 cents and advised the people to pay no more, promising that police protection would be given the people if they would tender but 3 cents. The railway company put the case squarely up to the public by straightforward publicity methods and said that if the people did not wish to pay 5 cents they could ride free. In this manner trouble was avoided and nearly 80 per cent of the passengers paid a 5-cent fare. In September, 1914, in the Federal Court, the city was defeated in an attempt to force 3-cent fares and the 5-cent fare was restored.

COMPANY HAS HAD NO FRANCHISE SINCE 1914

Since January, 1914, the railway has been operating under a day-to-day franchise granted by the court, the city having the right to "oust" the company on twenty-four hours notice and the company having the same right to abandon operation. Late in 1914 the city railway committee began the drafting of a street railway franchise. A careful study was made of the Tayler



AN UNIQUE GROUP OF MEN WHO BROUGHT THE FIRST CAR BACK INTO TOLEDO

Left to right—Dewey C. Bailey, attorney for Mr. Doherty; Frank R. Coates, president of the company; Federal Judge John M. Killits; Cornell Schreiber, Mayor of Toledo; Chris Wall, director of safety of Toledo; James S. Martin, law director of Toledo; Dewitt Fisher, secretary to the Mayor; Charles A. Frueauff, legal adviser to Mr. Doherty.

franchise under which the Cleveland Railway was operating, and Mr. Doherty expressed his willingness to agree on a settlement regardless of the outstanding capitalization and bonded debt.

A proposed ordinance known as the Dotson ordinance was drafted and in this it was provided that the railways be operated at cost plus 6 per cent on the valuation. In order that the fare might be increased or decreased in units smaller than 1 cent it was provided that tickets could be purchased in certain quantities for certain amounts. This ordinance also provided for a commission to make a valuation of the property upon a fixed basis. When the fare was once fixed it was to prevail for five years and transfers were to be free.

JUDGE KILLITS, IN APPROPRIATE UNIFORM, AT THE CONTROLLER

It was popularly supposed at this time that Cleveland people were paying only a 3-cent fare and there was agitation in Toledo for the same rate. The Dotson ordinance provided for a try-out of this rate. For the first year the railway was to be completely under the management and direction of three city commissioners who were to control all property, moneys, records and operations and charge a fare of 3 cents with free transfers. During this first year the actual cost of operation was to be ascertained.

The proposed ordinance also provided that before the test began, improvements and extensions should be made and full equipment acquired by the company so that the test could be made under the best possible conditions. At the termination of the first probationary year the Council was to fix the fare for the first five-year period. Mr. Doherty announced publicly that the company was willing to accept this ordinance, although he thought the return to the stockholders should be 8 per cent.

PROPOSED ORDINANCE DEFEATED BY NEWSPAPERS

Two Toledo daily newspapers, notably the Scripps paper, had been bitterly attacking the railway and viciously opposed the ordinance. The ground of the opposition was that the people wanted municipal ownership and that the only way to get it was to defeat every proposed franchise. Although conservative people of Toledo believed this ordinance to be one of the best and fairest ever drafted, it was lost at the election through the influence of these newspapers and the radicals.

When Mayor Milroy was elected in November, 1915, he named a street railway committee which consisted of the two editors of the opposition newspapers, a former president of a labor union, a lawyer who was a violent opponent of the Dotson ordinance and H. L. Doherty. The lawyer refused to serve with Mr. Doherty and in order to eliminate Mr. Doherty the committee appointed a street railway commission consisting of the other four members and invited Mr. Doherty to attend the meetings and give information.

Although the two editors who had opposed everything that had been done toward a settlement now had the opportunity to draft such an ordinance as in their opinion Toledo should have, the result, known as the "community plan," was so impracticable that nobody ever considered its adoption. This plan was the old device of "trusteeing" stock in order that new owners might acquire it. A new company was to be incorporated and the capital stock was to be trusteed and placed on sale. A period of five years was given in which to sell the stock and any citizen might purchase. The money paid for the stock was to be used to buy the street railway, with the provision that the city might purchase from the new owners when it had the money. The proposed ordinance was filed with Mayor Schreiber, who was again in office, and he laid it away.

FARE INCREASE RESULTS IN OUSTER ORDINANCE

With constantly rising costs resulting from the war, the court in April, 1918, ordered a straight 5-cent fare and a charge of 1 cent for a transfer. In May, 1919, by mutual consent between the company and its employees, the question of higher wages was referred to the National War Labor Board. Large increases were granted and in June, 1919, the fare was increased to 6 cents with a charge of 2 cents for a transfer.

When the last fare increase was placed in effect Mayor Schreiber submitted to the Council an ordinance to "oust" the company from the streets. This passed the Council on June 30. In July the company submitted a proposed ordinance for operation at cost plus a percentage of the profits for the company, this being in effect the Tayler plan in use in Cleveland. In this proposed ordinance the city was given the right to purchase the property. This ordinance was shelved. The ouster ordinance would have become effective on July 31, but members of the local commerce club and other representative citizens initiated a petition for a referendum vote at the municipal election. This was held on Nov. 4, at which time the ordinance was passed by 800 votes out of a total of 39,000 cast. The city urged passage of the ordinance, saying that it would be a club over the railway.

The wording of the ordinance was as follows:

An Ordinance: Directing the Toledo Railways & Light Company to cease operating street cars in the City of Toledo and to remove from the streets of the City of Toledo all of its property devoted exclusively to street railway purposes.

Be it ordained by the Council of the City of Toledo:

Section 1. That the Toledo Railways & Light Company shall forthwith upon the taking effect of this ordinance cease operating street cars in the streets of the City of Toledo, and shall within a reasonable time remove from the streets of the City of Toledo all of its property devoted exclusively to street railway purposes.

Section 2. That the director of law shall secure the enforcement of this ordinance by appropriate legal proceedings.

Section 3. This ordinance shall take effect and be in force from and after the earliest period allowed by law and shall be subject to amendment or repeal, expressly or by implication, at any time at the will of the Council.

No campaign of any sort was made by either side other than such matter as appeared editorially in the newspapers. It is frankly admitted by some citizens that they voted for the ouster not because they were unfriendly to the company but because they saw in such action the only means of taking the traction matter out of politics and having it settled once and forever. On the other hand, it is said that those who voted for it because of unfriendliness to the company did so because they had been influenced by the unfriendly newspapers and because they had been led to believe by the administration that a plausible substitute plan was ready to be put into effect. In reality it is believed that the administration intended to use the ordinance only as a club and did not expect the company to cease operation.

COMPANY OBEYS ORDER AND REMOVES CARS

It will be noticed from the foregoing quotation of the ordinance that the company was ordered to "forthwith . . . . cease operating street cars." The official count of the vote was received at noon on Nov. 8. The company did not wish to inflict unnecessary hardship upon the public by leaving people stranded in the downtown district, so operated the cars the remainder of the day and at midnight, without further opposition to the mandate of the people, ran all the cars over the State line into Michigan.

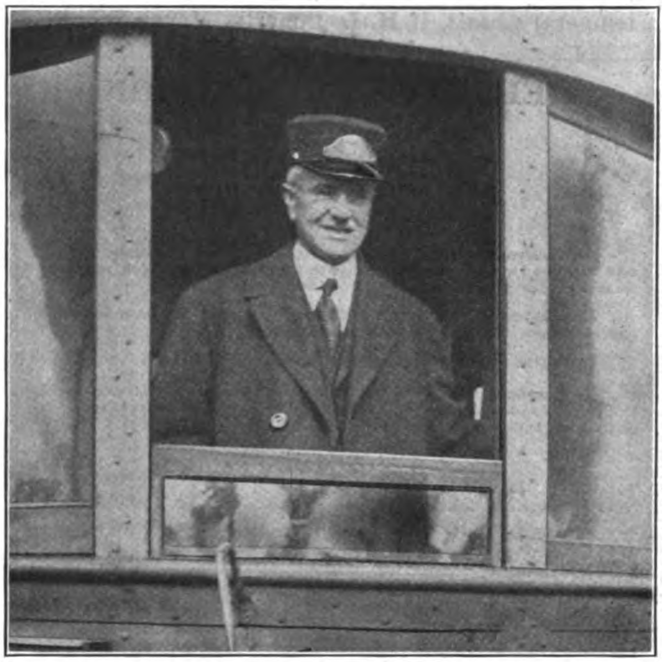
The company was advised by its attorneys and by outside lawyers that if the cars were operated after the ouster was passed the company would be a trespasser on the streets and there would be no limit to the amount of damage that might accrue in case of personal injury suits. Also, by placing the cars in a neutral state, delivery could be more easily made in the event that the property had to be salvaged.

Upon learning that the cars had been withdrawn Mayor Schreiber charged that President Coates had broken faith with the city. Apparently this was an attempt to shift the blame. It is reported that the city officials were planning to prevent the company from removing the cars in order that the city might take possession and operate them. The city officials say that they did not expect the ouster to drive the cars out of the city but merely to compel the company to enter into a franchise upon terms dictated by the City Council. Someone evidently overlooked the meaning of "forthwith" but it was not the railway.

Immediately after withdrawal of the cars there was talk, at the city hall, of repealing the ordinance. It was decided that such a repeal, before becoming effective, would have to be ratified by a public vote. Meanwhile the company, having no further privileges on the city streets, was obliged to cancel its contracts with interurban lines entering Toledo over the city tracks and refused to permit further use of the tracks.

The majority of the reasonable, fair-minded people of Toledo did not censure the company for its action. The merchants, who are the heaviest losers by the lack of service, unanimously voted to ask the company not to put the cars back until a permanent settlement is reached. Mr. Doherty personally did everything possible to bring about a settlement. He agreed that if the Council would pass both the Cleveland type of franchise and a municipal-ownership franchise and would get the sources of organized opposition to agree to vote "yes" on one or the other proposition when it came up for public vote, he would put the cars back in the interim until a vote of the people could be obtained.

In its desire for a settlement the city asked that the company lawyers meet the city lawyers to frame the two franchise ordinances, and this is now being done. In the meantime a valuation of the property is being made to help to defray the expenses, for which the company offered to put up $25,000. The company meanwhile is said to be circulating a petition for a vote on a Tayler franchise plan so as to be prepared in case no agreement is reached on either of the two franchise ordinances in question.


"CLOSE-UP" OF JUDGE KILLITS AT HIS NOVEL OCCUPATION

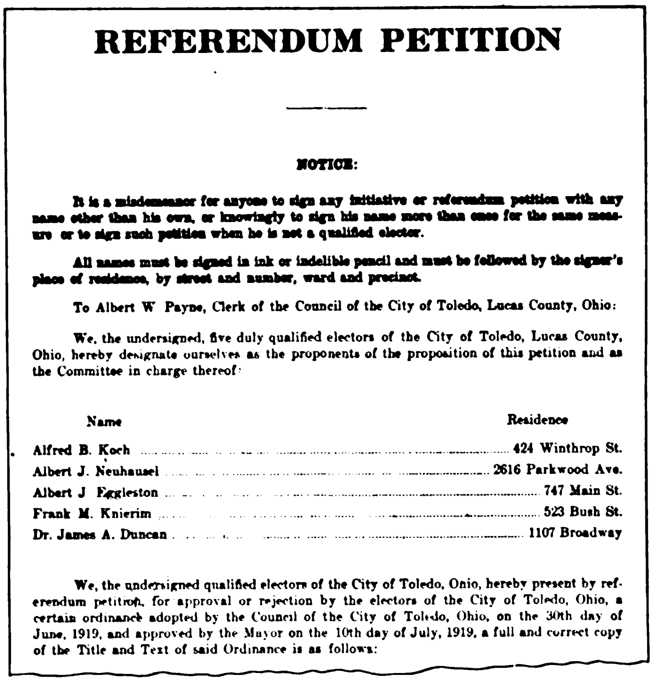
On Nov. 22 Mayor Schreiber introduced a motion before Federal Judge Killits for a mandatory order compelling the company to resume operation. This was based on the Miller law, passed last April and made effective in August. The Miller law provides that no public utility company shall abandon its lines or discontinue service without a hearing on the issue being held before the State Public Service Commission. The company and the commission both contended that the law did not apply to this case, inasmuch as the company has no franchise. Mr. Doherty announced that if Judge Killits issued the mandatory order he would carry the issue to the Supreme Court of the United States.

COURT SUGGESTS TEMPORARY SETTLEMENT

The case came before the court on Nov. 28. Judge Killits said he was ready to order the cars back to the streets immediately upon the formal order of Mayor Schreiber then in court, but he expressed the belief that the order of the Mayor lacked the sanction of the City Council. To this Mayor Schreiber declared he would call Council in special session. This the councilmen subsequently did themselves, but as a result of the suggestion of the court the purport of the meeting was changed and the ouster measure was amended so the cars could come back.

In his suggestion for operation of the cars immediately Judge Killits proposed to appoint a commission, composed of six or ten members, equally divided between adherents of municipal ownership and those favoring the Tayler service-at-cost plan. Under this plan, he said the cars could be operated at once as he would suggest appointing Frank R. Coates, president of the Toledo Railways & Light Company, operating head of the traction system, while the city officials and traction owners consider details of the franchise drafts they now are working upon. The plan proposed by Judge Killits was summarized at the time as follows:

1. Provides for resumption of car service at once, on temporary basis, if H. L. Doherty, Mayor Schreiber and Council accept court's suggestions for temporary and permanent settlement.



REFERENDUM PETITION

NOTICE:

It is a misdemeanor for anyone to sign any initiative or referendum petition with any name other than his own, or knowingly to sign his name more than once for the same measure or to sign such petition when he is not a qualified elector.

All names must be signed in ink or indelible pencil and must be followed by the signer's place of residence, by street and number, ward and precinct.

To Albert W Payne, Clerk of the Council of the City of Toledo, Lucas County, Ohio:

We, the undersigned, five duly qualified electors of the City of Toledo, Lucas County, Ohio, hereby designate ourselves as the proponents of the proposition of this petition and as the Committee in charge thereof:

Name	Residence
Alfred B. Koch	424 Winthrop St.
Albert J. Neuhausel	2616 Parkwood Ave.
Albert J Eggleston	747 Main St.
Frank M. Knierim	523 Bush St.
Dr. James A. Duncan	1107 Broadway

We, the undersigned qualified electors of the City of Toledo, Onio, hereby present by referendum petition, for approval or rejection by the electors of the City of Toledo, Ohio, a certain ordinance adopted by the Council of the City of Toledo, Ohio, on the 30th day of June, 1919, and approved by the Mayor on the 10th day of July, 1919, a full and correct copy of the Title and Text of said Ordinance is as follows:

PART OF THE REFERENDUM PETITION

2. Requires Council first to pass emergency resolution, ratifying Mayor Schreiber's application for mandatory order for resumption of car service under Miller law.

3. Judge Killits then to begin operation of railway for sixty-day period, preserving company organization intact, and appointing President Frank R. Coates operating officer. Court to determine fare, schedules, rerouting.

4. For permanent settlement, Mayor and Council must agree to accept assistance of a commission, to be appointed by Judge Killits and approved by Mayor and Council.

5. Commission to consist of either six or ten members, divided equally between municipal ownership and Tayler plan advocates.

6. Commission, Mayor and Council to work out ordinances providing for both plans to be submitted to popular vote.

7. Acceptance of court's proposal by either party not to be deemed final until order is framed and submitted designating exactly how cars shall be operated temporarily.

8. If both city and company refuse to accept court's suggested order, Judge Killits may abandon further attempt to help.

9. Court reserves judgment as to what will be done further if one party accepts and other refuses to accept suggested plan.

10. Judge Killits expresses opinion court has power to order resumption of transportation, under Miller law, but says this or any other order would be subject to appeal and indefinite delay.

2500 UNBONDED JITNEYS IN OPERATION

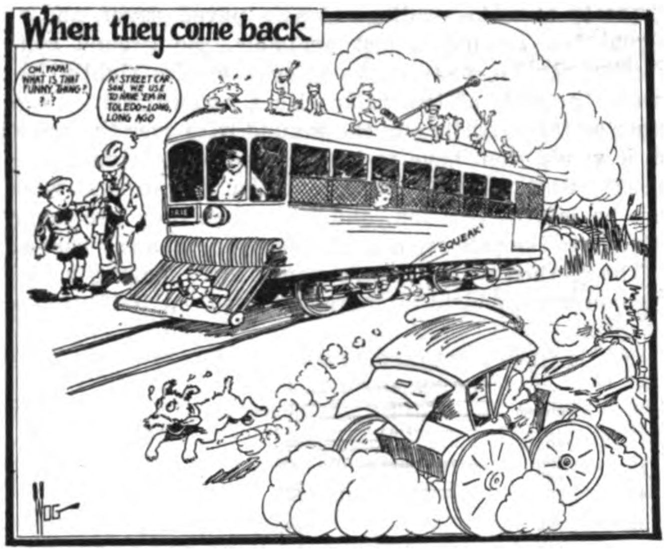
While the cars were "on vacation" the chief mode of transportation in Toledo was the automobile, either in the form of the private car, the jitney bus or the taxicab. The city issued a call for buses and 2500 were soon in operation. Each bus was registered free, received a number and picked out a route. A fare of 10 cents without transfer privilege was charged. The routes were short, keeping to the good streets, and many outside districts were practically marooned. Definite routes were laid out, but a driver could take his choice and change routes as often as he pleased. No bond was required for registration, so that the only recourse in case of accident was a personal suit. Buses were prohibited from operating in certain busy thoroughfares and an attempt was made to loop the routes following the street car lines as closely as possible. An amendment to the ordinance permitting bus operation was passed compelling all buses to operate the full length of the route instead of turning back as soon as all of the passengers were discharged.

To reach their places of employment many persons had to use two or more buses, paying 10 cents on each and then ordinarily there was a walk at each end. An interview with the City Commissioner of Transportation disclosed the fact that he would not have been surprised to have the city without street railway transportation all winter. He expressed no dismay at the possibilities of early snow, however, and believes it would have had no ill effect on the buses. His contention was that instead of traffic being benefitted by the railway in keeping the tracks clear, it would find the streets more passable with an even layer of snow than with the condition in which the railway snow plows leave the roadway. That the buses had a problem before them is clear from the fact that the railway company was transporting about 200,000 passengers a day with approximately 400 cars.

BUSINESS HOUSES AND THEATERS SUFFERED

In addition to interviewing the railway company officials, the Mayor, the City Clerk and the Commissioner of Transportation, a representative of this paper interviewed the secretary of the Chamber of Commerce and the managers of several large department stores, theaters and hotels. The general attitude of the business man was found to be a belief that the lack of transportation had a very demoralizing effect upon business, not especially due to the added cost of the bus service but because of the inconvenience of travel. He desired to see the cars back on the streets but would rather sustain a temporary loss of business and have the cars remain out of service until a definite and final settlement could be made.

It seemed to be the general belief also that the company did the proper thing in removing the cars. Some public opinion among the lower classes was crystallized against the company by the action. Many people seemed to believe that the Council had some miraculous power by which it could provide a substitute for railway ser-


When they come back
OH, PAPA! WHAT IS THAT FUNNY THING? ? ?
A' STREET CAR, SON. WE USE TO HAVE 'EM IN TOLEDO—LONG, LONG AGO
SQUEAK!

WHEN THE CARS RETURN
(Cartoon from one of the local papers while the cars were on their "vacation" in Michigan)

vice. These people, because of a dislike for public utility companies in general voted for the ordinance without investigating to see what the result would be.

The out-of-town business of the stores was especially hard hit by the withdrawal of the interurban cars from the city streets. Toledo is the center of many interurban lines which brought in considerable business. During the traction famine the cars turned back at the city limits and only a few lines provided bus service to the downtown district. Some of the department stores reported a decrease of about one-third in gross business.

The moving-picture theaters suffered more than the "legitimate" houses. The former reported a loss of about 30 per cent in attendance. This was noticed more at the evening shows than in the afternoon. The "legitimate" theaters reported a loss of about 12 per cent in attendance the first week the cars were off with an increase to about 15 per cent later. Contrary to the experience of the moving-picture shows the attendance at the matinees showed the greater reduction. There are several reasons given for this, among them being that there are fewer shoppers down town during the day while the evening attendance is largely made up of persons who drive to the show in their own cars.

The withdrawal of the cars threw out of employment some 1100 of the railway's 1400 employees, the remaining 300 being used to guard the cars in storage and perform other necessary work. Many of the men thrown out of work secured temporary employment elsewhere and were within easy reach when the ouster ordinance was repealed. The ordinance did not foster a kindly feeling on the part of the members of the street railway union toward the city administration.

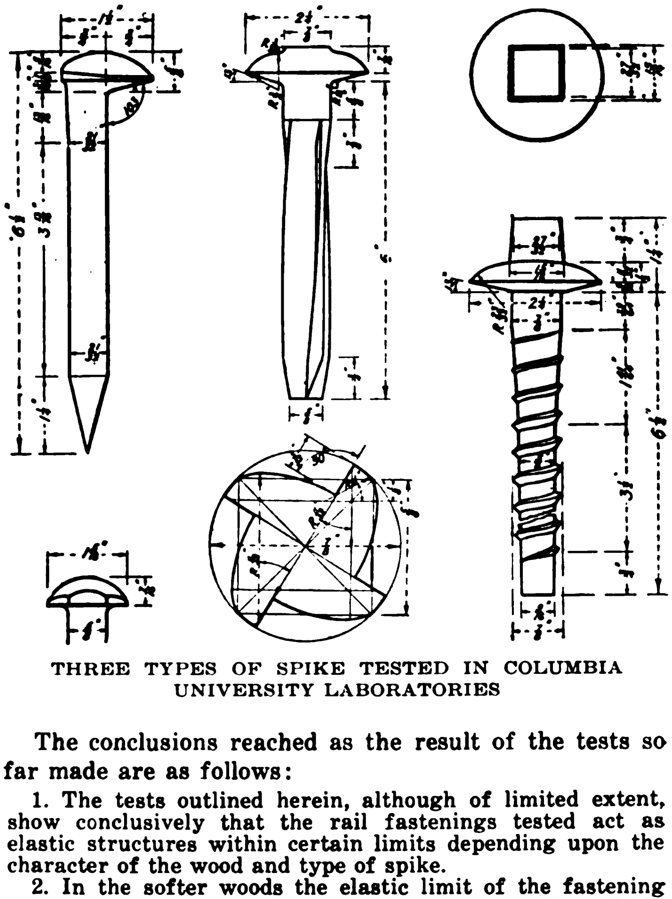
Fatigue of Metals

An investigation of fatigue phenomena in metals under repeated stress has just been started under the joint auspices of the National Research Council, Engineering Foundation and the Engineering Experiment Station of the University of Illinois. Plans are laid for a two-year program of tests, and it is hoped to secure data of various metals including results of a number of tests of each metal to 100,000,000 reversals of stress.

Tests on the Holding Power of Railroad Spikes

THAT there is room for much more extended study of the holding power of railroad spikes is indicated in the recent laboratory tests conducted by the civil engineering testing laboratories of Columbia University as reported upon in its Bulletin No. 1 recently published. The point is made in the report that the method of test used in the past appears to give erroneous results when checked with the more modern and accurate method used for these tests. Incidentally, some tests were made to cover resistance of the spikes to pull after redriving, which are perhaps as important as original pull tests because the former give data bearing upon actual track conditions where spikes pulled in service are redriven.

Three types of spikes are compared: A standard cut spike, a standard screw spike and a new design called the Sessler grip spike which is a quite radical departure from existing standards. All these are shown in the accompanying figure.



THREE TYPES OF SPIKE TESTED IN COLUMBIA UNIVERSITY LABORATORIES

The conclusions reached as the result of the tests so far made are as follows:

1. The tests outlined herein, although of limited extent, show conclusively that the rail fastenings tested act as elastic structures within certain limits depending upon the character of the wood and type of spike.
2. In the softer woods the elastic limit of the fastening is reached at very small withdrawals ranging from 0.004 to 0.006 in. In an oak tie these limits are higher.
3. Within the elastic range of the fastening the resistance developed by the fastening is directly proportional to the amount of withdrawal.
4. Small permanent withdrawals or sets have been recorded within the elastic range of the rail fastening but these are no greater than would be reasonably expected in a material such as wood.
5. A rail fastening to approach permanency must at no time be stressed beyond its elastic holding power, making due allowences for the fatigue and physical deterioration of the wood fibers during the life of the fastening.
6. In view of the importance of these facts to the railway profession a more complete investigation should be made definitely to establish the elastic behavior of various types of spikes, both without and with preformed holes of various sizes driven into deteriorated ties.

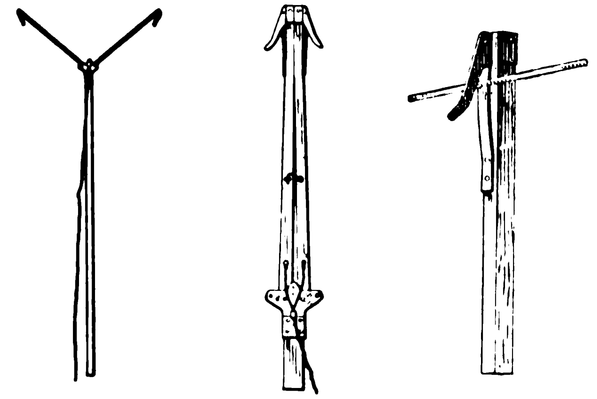
Voltage Surveys Give Information for Varying Station Voltage

A Pole Which Can Be Quickly "Knocked Down" for Portability, Provided with Suitable Contacts, Is Convenient for Use in Making Voltage Readings

By Harry Restofski
West Penn Power Company, Connellsville, Pa.

IN THE operation of a large railway system it is frequently desirable at intervals to check the trolley voltage at various points. Such information is necessary in order that the location of feeders and feeder taps, and the station voltage may be adjusted to the changing needs of the system resulting from extensions or from load variations.

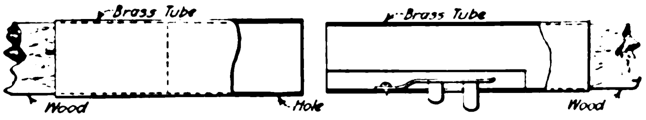
In making voltage surveys for these purposes the writer has found it convenient to use a standard three-section wooden pole made by the Western Electric Company, primarily for use in connecting portable telephones to the line from ground. Details of the construction of this pole are shown in the accompanying illustration. The sections are approximately 6 ft. long and are connected by inserting the brass-tipped end of one section into the close fitting brass sleeve on the end of another. The arrangement for locking the sections together to prevent them from falling apart when hanging on the wire, are shown in a second illustration. Ordinarily, three sections are used but the middle section may be omitted where the entire length is not required.



END SECTION OF POLE FOR MAKING CONTACT WITH TROLLEY WIRE

At left end with spreaders extended. Center, end with spreaders closed. At right, method of clamping to the wire.

The pole is equipped with 100 ft. of wire and with two hooks on which the wire is wound when not in use. The contact device gives a two-point contact and its effectiveness is increased by the spring pressure when clamped to the wire. When knocked down, the pole can be taken readily into a street car and can be conveniently carried.



JOINTS OF POLE AND METHOD OF FASTENING

The method of establishing a ground connection varies with the location. If the readings are to be taken near a signal box the connection is made on the ground wire from the signal box. Where stranded bonds are accessible, two or three strands of the bond are cleaned and the ground connection made to these. Where it is necessary to make readings along a paved street, and a signal box ground is not available, the ground connection can be made by wedging the wire tightly between the ends of two rails with a screwdriver. Care must be taken not to run the ground wire over the track as it would then have to be removed every time a car passes, while with proper precaution the ground wire can be left in position, and it is then only necessary to remove the pole from the trolley wire as a car passes.

The method which I have employed in making a voltage survey consists of taking readings at half-minute intervals throughout a complete cycle for each particular part. The accompanying tables show a series of voltage readings which were taken at Uniontown on Sept. 25, 1917. Notations are made to show the time that cars passed in each direction. The voltage readings are averaged and the maximum and minimum voltage determined. This information, together with the place and date of readings, is copied in permanent form and filed. To make the records more convenient, a tabulation showing the date and place of the average, the maximum and minimum readings, and any additional information desired, is made on separate sheets, or on a card record where this type of system is employed.

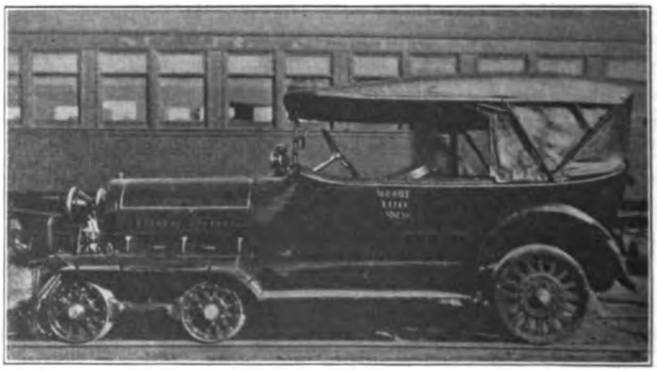
RAILWAY VOLTAGE READINGS—UNIONTOWN

September 25, 1917

Time	Voltage	Time	Voltage	Time	Voltage
12:41	700	1:05	680	29	695
	695		675		695
42	690	06	680	30	680
	680		685		675
43	705	07	675	31	695
	705		690		700
44	700	08	690	32	675
	710	To Uptown	690		675
45	695	09	685	33	675
	700		670		700
46	700	10	680	34	695
	700	Work Car	690		685
47	695	11	685	35	675
	700		690		700
48	710	12	690	36	705
	700		700		675

Automobile Arranged to Operate on Steel Tracks

THE Missouri River & Bonne Terre Railroad is operating over its lines a Buick car which has been rearranged to run on the track rails. This is a standard-gage road and the automobile, as shown in the accompanying illustration, is provided with a pony truck at the front and a single pair of driving wheels in the rear. The car as reconstructed weighs 5800 lb. and it is stated to be capable of making 12.8 miles on a gallon of gasoline. John Kehrman, master mechanic of the railway fitted up the car.



AUTOMOBILE CHANGED FOR RAILROAD USE

N. Y. E. R. A. Holds Fall Meeting

Higher Fares, Automatic Substations, Safety Cars, and Auto Bus and Truck Competition Were the Subjects Discussed at New York City Meeting Held on Dec. 10

THE fall meeting of the New York Electric Railway Association was held at the Hotel Astor, New York City, on Dec. 10, with President E. A. Maher in the chair. Major Gardner F. Wells read a paper on "The One-Man Safety Car," which is abstracted elsewhere in this issue. Following the reading of the paper the motion picture prepared by manufacturers of safety cars and equipment, which was shown at the Atlantic City convention, was demonstrated by C. H. Beck, Safety Car Devices Company, who explained the history of the film and stated that the American Association has made arrangement for its use by interested companies.[1]

J. S. McWhirter, Third Avenue Railway, New York City, then described the one-man or "auto" type of car with pedal control which is used at several points on the Third Avenue System.[2] Some of the cars have been operating more than eighteen months. The company now has twenty-five single-truck and twenty-five double-truck cars of this type in operation, and the management has authorized the conversion of seventy-five additional cars which will be put into service in a few months. Thirty of these will be double-truck cars arranged for one-man or two-man operation. The cost of converting a double-end car for pedal operation is less than $250. One feature of the car is that the operator's duties are very simple and he can be taught the details of the control devices in a very few minutes. Mr. McWhirter emphasized the fact that this is not a makeshift device of the type that has been condemned in some quarters. As a general proposition he favored the one-man car, which he said will take care of most operating conditions in practically all cities.

G. M. Wood, Westinghoue Electric & Manufacturing Company, then spoke of the emphasis that should be placed on the increase in receipts produced by the safety car due to decrease in headways. Although introduction of these cars sometimes increases expenses, receipts increase more rapidly because more cars are used.

J. C. Thirlwall, General Electric Company, was the next speaker, and he reiterated the statement of Mr. Wood as to the increase in receipts. His principal point was as to the wide-reaching effect of weight reduction. He said that it has been the custom to assume that a reduction in weight of 1 lb. will save 5 cents per annum in operating cost. This was true some years ago of cars in practically continuous service, but not of tripper cars. Now, the figure should be about 10 cents to cover power and track maintenance costs. As an example of savings due to weight, Mr. Thirlwall cited the case of a road using 20-ton cars with energy costing 1.4 cents per kilowatt-hour, where the average energy cost was 6.55 cents per car-mile, without heat, or say, $3,500 per year. This case would require safety cars in the ratio of three to two as compared with the older cars, but these three would weigh 16 tons less than the other two.

J. H. Ohlsson, The J. G. Brill Company, said that the first safety cars were too light and that in their use it had been a mistake to put a limitation upon the number of passengers. The cars are now being built to meet transportation requirements, and a weight of about 7½ tons is standard. It should not be much more than that, certainly not more than 8 tons. The Brill Company and its subsidiaries have to date built or are building a total of 1700 safety cars.

Referring to the subject of track maintenance on lines equipped with safety cars, R. C. Cram, Brooklyn Rapid Transit System, pointed out that it is very difficult to make any definite statement as to these costs. Very few companies, he said, know what it costs to maintain tracks with any kind of equipment. This fact must be kept in mind in weighing the merits of any claims as to reduction in track maintenance cost, and the live question before the way engineers now is as to how light track can safely be built for use under safety cars.

At this point the chairman, on behalf of W. G. Gove, Brooklyn Rapid Transit System, extended an invitation for the members of the association to visit Brooklyn and see the new safety cars in operation. He also said that the pedal-control car, described by Mr. McWhirter, could be seen at the shops of the Third Avenue Railway.

The second paper was one entitled "Automatic Substations," which was read by the author, C. L. Cadle, chief engineer New York State Railways, Rochester, N. Y. This paper is abstracted elsewhere. The discussion upon it was opened by G. H. Roosevelt, General Electric Company, who expressed appreciation for the data which Mr. Cadle gave. He said that it had been customary to assume that automatic control equipment would pay for itself in two and one-half years. This would seem to be conservative in the light of the cost figures given, especially under present labor charges. In paying for itself the automatic substation makes the greatest saving in labor, but there is also a saving of some 5 to 6 per cent in energy consumption.

Taking up the subject of interruptions in service, Mr. Roosevelt said that the causes of these have gradually been eliminated. Sometimes interruptions had resulted from over-confidence on the part of the operators. They must realize that an automatic substation is not a manual one made foolproof, and high-grade inspection is absolutely necessary. Relays are sensitive pieces of apparatus, but they can be kept in good condition without great difficulty by skilled maintainers. There are in the automatic substations but three relays that will keep it off the line and these operate only under conditions which might prove disastrous to the substation apparatus. Some purchasers of automatic substations have insisted that hand-operated circuit breakers of the older type be included as an extra safeguard. This is not necessary, and if installed they must not be considered a part of the automatic equipment.

Mr. Roosevelt showed that the greatest economy in applying automatic substations results when they are used on a system in which the "center of gravity" of the load is changing. This is due to their flexibility, because it costs very little more to distribute rotary converters over a system than to concentrate them in a few substations when automatic control is used.

---

[1] An article describing this film appeared in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 27, 1919, page 667.

[2] See ELECTRIC RAILWAY JOURNAL, May 18, 1918, page 977, and Aug. 10, 1918, page 249.

The discussion was concluded by T. R. Langan, Westinghouse Electric & Manufacturing Company. He said that many people cannot believe the automatic equipment capable of doing what it really can do. However, it is "not too good to be true," and the present rapid introduction of the automatic telephone shows how reliable labor-eliminating devices can be made. The automatic substation affords an excellent means for reducing the amount of overhead copper necessary to maintain good voltage distribution. A wonderful thing about this equipment is the speed with which a rotary can be put back on the line, the time required being only from six to seven seconds, whereas with manual operation from one to two minutes may be required. Mr. Langan backed up the previous speaker as to the importance of high-grade maintenance, and the labor saving made possible with the new equipment.

After the conclusion of the discussion on automatic substations the association adjourned for lunch, which was served in buffet style.

INCREASED FARES AND AUTO TRUCK COMPETITION

The afternoon session was devoted to the presentation and discussion of a paper by Harlow C. Clark, editor of *Aera*, on "Fare Increases in New York State" and one by C. L. Stone, vice-president and general manager Southern New York Power & Railway Corporation, on "Competition with Motor Vehicles." Mr. Clark's paper will be printed later. Abstracts of Mr. Stone's paper and three others contributed to the discussion are published in this issue.

After these papers had been presented, President Maher suggested that it would be interesting to hear something from the "other side," and asked Carl E. Lang, president Lang-Warden Motors, Inc., to give his views on motor trucks as a competitor to electric freight.

Mr. Lang said he realized that railway men think the motor bus is a pest, but he believed, and others who had studied the subject from the motor bus standpoint also believed, that it was here to stay. He did not believe in irresponsible individual operation, such as had been described, but where the motor bus was put in service as a merchandise proposition it would be profitable, both in passenger and freight service. Logically, the railway men should operate such lines because they have the organization to conduct them, as well as expert knowledge of transportation.

B. E. Wilson, general freight and passenger agent, New York State Railways, Rochester Lines, said the difficulty arose from the fact that "a sucker was born every minute," and that irresponsible individuals would engage in the motor-truck freight business with the expectation of making a profit, but would be unable to do so.

Myles B. Lambert, Westinghouse Electric & Manufacturing Company, emphasized especially the expense and the time required to pass freight through railway terminals. This made the auto truck useful for short-haul business, and this was its especial province. He said he had attended the Central Electric Railway convention at Grand Rapids, where the same subject was discussed. The principal conclusions there reached were: First, that the railways should make a scientific study of methods for reducing operating costs, and second, that they should give publicity to the advantages of their service and the burdens under which they were working. If the auto trucks should carry the same burdens, they would cease to be active competitors for the longer haul business.

C. E. Morgan, assistant general manager Brooklyn City Railroad, also urged scientific study of the cost of operation and adjustment of the service to the needs of the traffic so as to save unnecessary mileage and light loads. The field for the auto bus, in his opinion, was as feeders for the electric railways, and he thought that there was room for both car and truck, if co-operation in service could be arranged. He cited some of the long through hauls conducted in Central Electric Railway territory.

W. Tuke Robson, formerly general manager and engineer Southampton Corporation Tramways, England, said that the British electric railways had not engaged in the freight business, but that many of them operated motor buses in co-operation with their cars in passenger business. The buses were used in three ways. First, to operate as extensions from tramway termini and so to act as feeders; second, for crosstown or cross-country lines, and third, to test out the traffic on proposed tramway routes to determine whether it was worth while to lay rails. He thought that there would be considerable development of the motor bus business in Great Britain in the next few years by tramways, particularly in the way last mentioned, because of the high cost of tramway construction at present. He also spoke about the way in which the British tramways catered to the short-haul traffic, as a result of which there are no jitneys in England. In America he thought the short-haul rider was discriminated against, not only in fares, but through paucity of destination signs and directions as to what point on the street he should board a car and by what platform door. In fact, by the time the stranger discovered the door by which he was supposed to enter the car it would be shut in his face and the car would be in motion.

At the close of this discussion President Maher announced that the annual banquet would be held at 7:30 p. m.

Interesting Speeches at Banquet

THE dinner in the evening was held in the roof garden of the Hotel Astor, and President E. A. Maher, Jr., acted as toastmaster. There were three speakers. The first was a well-known entertainer in New York who was introduced under the name of "Senator Edward Ford of Wisconsin." The next speaker was Senator Charles S. Thomas of Colorado, who declared that the regulation of rates which did not include regulation as to expenditures would result in disaster. The greater part of his speech, however, was devoted to the labor situation, in which he thought the radical tendency should be corrected by legislation supported by a united public opinion. He said that the total number of strikers between the declaration of war by this country and the armistice, a period when there was supposed to be no strikes, was more than 2,000,000, and that the present discontent in labor was interfering greatly with production. He questioned whether combinations of labor should not be subject to legal restraints similar to those of capital, and said that he had reason to believe that much of the financing of recent strikes had come from Russia by way of Mexico.

The final speaker was Public Service Commissioner Lewis Nixon, who was introduced by the toastmaster as a man "whose mind and spine synchronized." At the opening of his speech Mr. Nixon, in commenting on a remark by Senator Thomas that the whole world was in a state of flux and change, said that he could show the Senator in New York a man with a most unchangeable mind. Speaking directly on the traction situation, he said that he had made every effort to get the city and railways to adjust their difference, but that the former had shown no disposition to do so. He proposed, however, to see the matter through and that he would naturally want to see it through to a solution as soon as possible. He said that the concessions which the companies had expressed themselves as willing to make were "almost unbelievable." He quoted the present situation in Toledo as an example of the dependence of a city on good transportation. In a visit there during the absence of street cars he had found the jitneys and buses were charging from 10 cents to 50 cents a ride and the whole city was in a state of demoralization. The merchants reported that their sales had fallen off not less than 50 per cent. In conclusion Mr. Nixon discussed fuel conservation.

Competition from Motor Vehicles*

Owners of Motor Vehicles Carrying Persons or Property for Hire Should Be Subject to the Regulations of Other Common Carriers

BY C. L. STONE

Vice-President and General Manager Southern New York Power & Railway Corporation, Cooperstown, N. Y.

WHEN a motor vehicle is owned or operated for the purpose of transporting persons or property for compensation it is perfectly plain that it should become a "common carrier," and as such it should be subject to laws and regulations similar to those which govern other common carriers within the State.

Public service commissions have been established for the purpose of regulating public utilities. The early plan of encouraging competition, in the end brought hardships upon the communities served by dual systems. It is now generally admitted that one strong lighting company, for example, will serve a community to better advantage than two systems. At present, motor vehicles transporting passengers and property for compensation are operated over the public highways in this State with practically no regulation and without paying anything like a fair license fee to compensate for the wear and tear of highways occasioned by the operation of these motor vehicles. To aggravate the situation from our standpoint, the taxes of the electric railways have been heavily increased during the past few years, and these funds have been used in part to build and maintain improved highways over which our competitors operate.

There is some regulation of motor vehicles transporting passengers for hire within New York State, but there is no provision in our existing laws for the Public Service Commission to regulate motor vehicles transporting freight for hire.

There was an amendment made to the transportation corporation laws on May 3, 1919, wherein it was provided that villages and towns may elect to place themselves under the provision of the transportation corporation law, and thereupon it would become necessary for motor vehicles carrying passengers for hire to obtain a consent from the local authorities before operating over the streets in the village or town, and in addition to this consent the owner or operator of the motor vehicle must procure a certificate of public necessity from the Public Service Commission. This amendment is a step in the right direction to protect electric and steam railroads from passenger bus competition, but it does not go far enough because it is often difficult to get village boards and town boards to place themselves under the provision of the transportation corporation law, and even if one set of officials does pass a resolution to this effect a succeeding village or town board could pass a resolution which would nullify the act of their predecessors.

A few years ago, a number of states and municipalities enacted so called "jitney" laws, but very little attention has been given to the protection of electric railways from competition with motor vehicles carrying both passengers and property, when these motor vehicles are operated outside the limits of cities. This statement applies not only to New York State but also to Pennsylvania, Massachusetts, Ohio, Indiana, Illinois, Wisconsin, California, Georgia and Washington, D.C.

The public service company law of Pennsylvania apparently regulates the operation of motor vehicles on public highways to a greater extent than any other public service company law which I have found, and a law in New York similar to the Pennsylvania law would be highly desirable. This Pennsylvania law, in the first place, defines clearly that the term "public service company" when used in the act, includes all railroad corporations, canal corporations, street railway corporations, stage line corporations, express corporations, baggage transfer corporations, pipe line corporations, ferry corporations, common carriers, etc., and the term common carrier, as used in the act, includes any and all common carriers, whether corporations or persons, engaged for profit in the conveyance of passengers or property, or both, between points within the State of Pennsylvania, by, through, over, above or under land or water, or both. In the second place, no public service company can lawfully begin operation until it has obtained a certificate of public convenience from the Public Service Commission.

To ascertain as definitely as possible the facts in regard to the practical application of this law I have written to the officers of several of the large electric interurbans in Pennsylvania and also to the counsel for the Public Service Commission.

One of the questions asked was: "Can owners or operators of motor vehicles transporting passengers or property or both passengers and property for hire within the State of Pennsylvania secure from the Public Service Commission a certificate of public convenience and necessity if the proposed route parallels an electric railroad, assuming that the electric railroad can prove it is providing good service?"

C. L. S. Tingley, vice-president American Railways Company, answered this question as follows: "The Public Service Commission will not grant a certificate of public convenience and necessity for the operation of motor vehicles except for fixed routes and upon fixed schedules. Schedules of runs and tariffs of rates have to be filed with the commission, and it will not grant such certificate where the route parallels an electric railway, if the electric railway is giving reasonable, adequate and sufficient service."

---

*Abstract of paper presented at quarterly meeting of the New York Electric Railway Association, New York, Dec. 10, 1919.

A question asked of the counsel for the Public Service Commission of Pennsylvania was: "Take, for example, an auto freight truck (large moving vans, etc.) engaged in transporting property for hire. The owner or operator "will transport anything anywhere" *i.e.*, there is no prescribed route or schedule. Is it necessary for owner or operator of truck to secure a certificate of public convenience and necessity before beginning operation?"

This question was answered by E. M. Vale, chief of bureau of public convenience, as follows: "Under the public service company law any person, partnership or corporation engaging in the business of a common carrier must secure this commission's approval before possessing a lawful right to engage in such business. It is not necessary that the business be conducted over a prescribed route or upon a schedule. If the business transacted is that of a common carrier, the commission's approval must be obtained. The question as to whether the operation is between fixed termiini and over a prescribed route is not material. The only question is whether or not the proposed business is that of a common carrier."

There has been a tremendous increase in the use of motor vehicles in New York State during the past few years.

In 1914, there were 17,193 commercial vehicles registered. During the first nine months of 1919, there were 88,051 commercial vehicles registered. This is an increase of 5 to 1, and 1919 is not complete. In 1914 there were 152,773 motor vehicles, in addition to the 17,193 commercial vehicles above. During the first nine months of 1919 there were 445,518 motor vehicles, in addition to the 88,051 commercial vehicles mentioned above. This is an increase of 3 to 1 during the first nine months of 1919, as compared with twelve months of 1914.

CONCLUSIONS STATED

Some of our government officials realize that the state, counties and towns, in the building of improved highways, are furnishing the owners and operators of motor vehicles engaged in transporting passengers and property for hire with the bulk of their plant. These owners and operators of motor vehicles are engaged in the transportation business in competition with existing carriers. They should be subject to the same regulations as steam and electric railroads, which, to date, are the only carriers which provide transportation for the public twelve months in the year. Furthermore, wherever a motor vehicle is engaged in transporting passengers or property for hire, the license fee should be adequate to cover not only wear and tear and depreciation of highway but a fair portion of fixed charges on the cost of the improved highways used by the motor vehicles.

There should be a law in the State of New York which will clearly designate all motor vehicles engaged in transporting passengers and property for compensation over public highways as "common carriers," and as such it should be compulsory for the owner or operator of these motor vehicles to obtain from the Public Service Commission a certificate of public necessity before these motor vehicles are operated over any public highways.

Motor Trucks and Electric Road*

Pick-Up-and-Deliver System Approved—Other Suggestions Made for Competing with the Motor Truck

BY F. W. WATTS
General Express Agent New York State Railways, Syracuse Lines

THE future of the freight and express business on electric railways depends upon the service that the companies can render. To secure more traffic, it is necessary to give better service than the motor trucks. This involves a pick-up-and-deliver service in cities and large towns, centrally located terminals large enough to care for all the business that is offered, efficient facilities for the prompt and economic handling of freight, courteous treatment to all patrons and prompt adjustment of claims for loss and damage. These factors should not be lost sight of.

Large shippers with a knowledge of traffic conditions favor giving their business to railway companies for the reason that they are responsible for loss and damage, that they operate their cars daily on schedule time and that the service in all ways can be depended upon.

About a year ago we were about to abandon our pick-up-and-deliver service because of the large number of motor trucks operating in our territory. Our general manager, who did not take kindly to the idea, advised that we separate the freight from the express business and ascertain what kind of service our patrons desired. New tariffs were made and filed, rates were advanced on the express service and a complete record of the operations was kept, and for the past nine months when trucks have had no difficulty in operating the report shows that 65 per cent of the total business has been pick-up-and-deliver service and that this service has yielded a profit even when every item of cost including depreciation is charged against it.

It appears to me to be the opportune time to campaign for less than carload business by electric lines. There is also a splendid opportunity for motor trucks to act as feeders for street railways in territories not covered by an electric line. As an example, we are now handling freight in connection with several truck lines operating in territory not covered by electric lines from Utica, and the service rendered is better than can be given by the steam roads.

The electric express and freight business has many warm supporters who may be depended upon to aid in securing necessary legislation to regulate the dangerous and unfair competition provided by motor trucks. It is of no benefit to electric railway carriers to have an individual decide to operate a motor truck parallel to the rail line, carry traffic at unremunerative rates, and then become bankrupt.

Another very unfair condition is that the truck operator can choose his traffic. If the consignee is in a remote part of a village, perhaps upon a hill entailing a long, hard trip for the truck, the operator decides that he does not want it and leaves that for the electric line.

Despite the competition to which we have been subjected our business has held its own, and while the tonnage transported is not as large as in former years the net revenue has been greater due to the better class of traffic carried.

---

*Abstract of paper presented at quarterly meeting of New York Electric Railway Association, New York, Dec. 10, 1919.

I would like to suggest the possibility of joint advertising on the part of all of the lines of the State to bring the superiority of the electric service to the attention of the shipping and receiving public.

Motor Truck Competition*

A Discussion of How It May Be Met—Three Things That the Railways Must Do

By W. J. Whiteside
Traffic Agent, International Railway, Buffalo

Motor truck service competition may be considered as of two classes: That operated to transport merchandise from one place to another for the benefit of the owner (usually a manufacturer or merchant), and that for revenue only, or designed to transport merchandise for others, a charge being made for such service.

In western New York State both classes of motor truck service have been increasing to an alarming extent, and the competition caused thereby has entailed a loss of large tonnage to the electric lines' freight service and a corresponding loss of revenue; and although considerable thought has been given by electric line operators as to what could be done to overcome this strong truck competition nothing of a definite nature has been accomplished.

It has been said "the motor truck operator for revenue only" cannot make it pay and will be compelled in time to quit. This, to my mind, is a big mistake, at least between short-haul points where the owner is favored in two ways: (1) By actively soliciting new business in the territory served and limiting the number of privately owned trucks for personal use and benefit, thereby securing full tonnage between short-haul points at all times; and, (2) being favored with good roads, seasonable weather and other conditions to permit regular daily truck service between the points covered.

I have found in the Buffalo territory that a 5-ton truck can operate at the same rate as charged by the electric line between short-haul points and make a good profit. For example, between Buffalo and the fruit belt of Lake Ontario, the truck would pick up a shipment at the packing house on a farm, haul it to the commission merchant's place of business in Buffalo, charging the same rate per 100 lb. as the electric line, with two handlings of the shipment, as against the farmer delivering the shipment to the freight house of the electric line, where it is loaded in a freight car, transported to Buffalo and transferred to a carting truck for delivery to the commission merchant's place of business, making four handlings of the shipment. The cost of operation and net return for one round trip per day, the truck capacity being 5 tons, is as follows:

Gross revenue, 10,000 lb. at 30 cents per 100 lb.		$30.00
Cost of Operation:		
One chauffeur	$5.00	
One helper	4.00	
Gas and oil	5.00	
Depreciation	5.00	
		19.00
Net profit		$11.00

Where the chauffeur is the owner of the truck, his daily earning would be $16. These figures were furnished to me by an automobile operator and he fixed the cost at a conservative figure. However, the depreciation of $5 per day is too high. Trucks of 1½-ton and 3½-ton capacity can also operate with profit, based on the same cost with the wage of helper eliminated.

At the present there are now operating between Buffalo and Lockport six trucks; between Buffalo and Erie, Pa., two trucks; Buffalo and Rochester, N. Y., five trucks; Buffalo and Jamestown, N. Y., one truck, and between Buffalo and Cleveland, Ohio, with a transfer at Erie, Pa., one truck, while between Buffalo and Niagara Falls, N. Y., where no electric line freight service is being operated, there are seventeen trucks. While on these various routes the schedules are not all daily, still the volume of traffic by truck is sufficient to take away from the electric lines tonnage of large amounts. Practically all trucks operated are of the 1½- to 5-ton capacity. These trucks are owned by motor truck operators for revenue only, and this service is augmented by trucks privately owned.

Manufacturers who have one or more trucks for use locally often figure that if shipments must be delivered to and received from the freight house of the electric line, they can make deliveries and receive shipments for themselves between short-haul points without inconvenience and delay, and in this way save freight charges as well as carting charges. As the number of such personally owned trucks is increasing, the electric lines are further menaced in the operation of freight service by decreased tonnage and revenue.

The motor truck service for long hauls, while it is and has been quite a factor in competition, is operated almost exclusively by the "motor truck for revenue only operators" and at the start dazzles the operator with its possibilities of great return, but sooner or later the halo of great return fades away, and the operator finds himself possessed of worn-out trucks and empty pockets and discontinues the service on account of poor return. This, I believe, is caused by lack of full tonnage on all long-haul trips, length of time in making trips, maintenance of trucks and delays caused by bad road conditions, weather and other factors, so that the patron of the truck becomes dissatisfied and either purchases his own truck or avails himself of the electric line freight service. The personally-owned truck does not figure very strongly in the long-haul service because it would mean the loss of the use of the truck locally for extended periods, and with large concerns the truck cannot be spared for practically the greater part of a day to save freight charges of the electric lines.

While operators of motor trucks "for revenue only" may lose money and discontinue, there will always remain the truck owner who thinks there is a fortune in the business and start service, believing he can make it pay, and in this way continues the competition which menaces the electric line freight service.

Remedies are badly needed, and from a freight agent's point of view, three plans are worth consideration:

1. *Solicitation of Business.* Electric lines should have live, soliciting freight agents, capable of meeting the shipper in such a manner that by putting before him the frequent service offered by the company, the reasonableness of the rates for the class of service operated and the responsibility of the company in the payment of just claims as against service offered by the truck operator, who in almost every case is irresponsible when it comes to paying loss or damage claims.

2. *Prompt Payment of Claims.* Where claims are

---

*Abstract of paper read at quarterly meeting of New York Electric Railway Association, New York, Dec. 10, 1919.

legitimate, payment should not be delayed, as otherwise the business of the shipper or consignee making the claim is likely to be lost to the company.

3. *The Maintenance of Schedules.* Shippers and consignees soon learn when shipments should go forward and arrive at destinations, and if schedules are not maintained, the consignees become dissatisfied and purchase their own truck or turn to some other transportation service.

I feel that the electric and steam lines are entitled to some relief and protection to their freight service against motor truck service, and that the cost of building state and country roads should be paid, in part at least, by motor truck owners according to the tonnage of the truck operated, and that motor trucks operated for revenue should be subject to the jurisdiction of the Public Service Commission of the State as to rates and schedules, and that they be financially responsible to shippers as to payment of any claims.

Handling the Freight Business*

Promotion of Business, Motor Trucks in Relation to Traffic, Freight Claims, Billing and Reporting Freight, and Cost at Terminal Stations

By H. C. Stanton
General Freight and Passenger Agent, Rochester & Syracuse Railroad

AN ACTIVE traffic manager is a most valuable asset in the traffic organization, for he will not only look after the development of freight business but will also see that there is adequate service properly to handle the business after it is once acquired. A good solicitor in the traffic organization is of valuable assistance, for he can acquaint shippers with the service and rates.

Electric railways are in a position to give service superior to that of their competitors, but many have failed to convince the public that the electric freight service excels other means of transportation. The most profitable service is carload business, but some electric lines are so situated that they cannot develop this traffic on account of paralleling steam lines. Therefore, their only revenue is derived from l.c.l. business which is the most expensive to handle. To secure and handle freight business, proper facilities are necessary, and also it is necessary to have and keep the confidence of the shipper. The fast and frequent service which electric railways furnish is worth a slight increase in rates over those of the steam roads.

I am a great believer in personal solicitation. We have a solicitor on the road who is constantly acquainting shippers with our service and rates. We do very little newspaper advertising for we believe, and our experience has proved that circular letters addressed directly to the traffic manager or the shipper are most effective.

We have on file in the traffic department a card index of all shippers and consignees on the line, giving names of persons in charge of freight traffic, which enables us to address letters direct to traffic managers and others in charge. It is our policy to keep patrons informed by means of circular letters regarding every new situation that arises. We also furnish all the principal shippers with copies of our freight tariffs and schedules.

We have joint rates with all electric lines west of Syracuse, and this enables us to accept shipments for points west as far as Buffalo. We have also developed a large tonnage during the past two years by accepting shipments for Detroit and Cleveland, transferring at Buffalo to water lines in the summer months and to steam lines in the winter months. Electric freight can be handled most economically at night. Early morning deliveries are the feature of the electric freight service.

We often hear that motor trucks are unfair competitors of the electric railways in the handling of freight. In my experience this is not entirely true as there are thirty-three trucks operating in and out of Syracuse, with which our company is co-operating. They are delivering some freight to us for points which they do not reach, and we in turn are delivering freight to them for points not located on our line. In other words, we are using them as auxiliaries to our service.

SETTLEMENT OF FREIGHT CLAIMS

The freight claim problem has become a serious one due principally to the following: (1) Theft of packages from cars and stations and abstractions from packages; (2) delivery of stray freight without due protection against claims for its value; (3) accepting packages not fully marked with name of consignee and destination.

I will give a brief outline of the method of handling freight claims on our line.

When a claim is presented our claim department acknowledges its receipt by a postal card, giving the claim number and requesting that future correspondence should refer to number given. After the claim has been acknowledged it is recorded on a card index, and the claim is placed on file in a separate folder under the file number given, and all correspondence in relation thereto is placed in this folder. In most cases when claims are presented, our investigation is complete for the following reasons: Our agents issue an O. S. & D. report for all "over, short and damaged" freight received at their stations. This report is then immediately sent to the forwarding agent for investigation. After the forwarding agent gives his statement, the report is sent to our claim department. On each freight car we have a traveling freight agent who sends our claim department a report of all freight over, short or damaged on his run. If no freight is over, short or damaged on his run, he makes a report with the notation "nothing to report" so that when these reports are received the investigation is complete, making an early settlement of claims possible. Prompt settlement of claims makes satisfied patrons and promotes business.

In addition to the investigation by agents, we have a special officer who receives direct information from the agents of all shortages and immediately starts personal investigation. In this way many claims are avoided.

BILLING AND REPORTING FREIGHT AND COST OF HANDLING AT TERMINAL STATIONS

I would like to bring up for discussion the method of billing and reporting freight and also the cost of handling freight at terminal stations. Various methods are employed. At present we are using the blanket way-bill and the received and forwarded register and by the use of carbon paper we make a copy of the waybills received and forwarded at the same time that the register is made up. Some electric railways are using the individual way-bill, making the freight bill and the copy for the cashier, auditor and forwarding agent at one time.

---

*Abstract of paper presented at meeting of New York Electric Railway Association, New York, Dec. 10, 1919.

At our Rochester freight station we handled during the month of November, 4,801,575 lb., or 2401 tons, with a force of eight day and seven night employees with a payroll of $1,302.03 at a cost of $0.542 per ton, and at our Syracuse freight station we handled for the same month, 5,389,063 lb., or 2694 tons, with eleven day and two night employees, with a payroll of $1,136.63 or at a cost of $0.422 per ton.

I should like to get the benefit of the experience of other companies in handling these matters.

Some Safety Car Objections Answered*

Operating Data from Widely-Scattered Points Refute Criticisms as to Inapplicability of One-Man Car for One Reason and Another

BY GARDNER F. WELLS
Consulting Engineer, New York City

MY FIRST experience with the one-man car dates back to the seventies. This was in Los Angeles, which at the time had a population of about 7,000. The cars seated ten or twelve people each and the motive power was one mule.

My attention was next called to the one-man car in 1915, at Fort Worth, Tex. One day the manager of the local street railway stated that a company had been organized to operate about twenty-five jitneys in competition with the street cars. The next day they began operation and at the end of two weeks there were more than 200 of them. At the end of a month the railway was losing about $2,000 per day.

It happened that C. O. Birney was in town at the time, and he advised the railway management to build some light-weight cars for one-man operation and to give frequent service with them. Mr. Birney was soon given the opportunity by Stone & Webster, the Brill Company and the General Electric and Westinghouse Companies to develop his idea. Today the Northern Texas Traction Company at Fort Worth is operating practically all city lines with safety cars. The company operates two interurban lines, but the city lines produce about 60 per cent of the gross receipts. Due to the good car service and regulation of the jitneys by the city the latter have practically disappeared. The company is prosperous, as is shown by the accompanying figures.

For the year ending September 30, 1919, the earnings and expenses were as follows:

Gross earnings	$3,093,226
Operating expenses and taxes	2,022,830
Net earnings	$1,070,395
Income from other sources	115,000
Balance	$1,185,395
Interest charges	299,995
Balance for reserves, replacements and dividends	$885,400

Thus the company is earning nearly four times its interest charges. The preferred and common stocks amount to $7,150,000 and after deducting interest charges there was left a sufficient amount to pay a reasonable return on them and to leave a balance more than enough to take care of all depreciation.

During 1917 the United States Housing Corporation financed the building of a number of safety cars for electric railway companies that served certain war industries. Among these was the Connecticut Company, in connection with which safety cars were introduced in Bridgeport on Feb. 2, 1919. The Oak Street-South Park line was completely equipped with them, requiring nine cars, replacing four double-truck cars which had been operated for a part of the day and five for a part. A ten and twelve-minute service was given with the large cars, whereas a five-minute service is now being given. The riding on the line has increased more than 100 per cent. The earnings per car-mile are about 30 cents, while total operating expenses and taxes amount to about 18.5 cents. The company is now planning to extend the use of safety cars as rapidly as is practicable.

That the cars have been well received by the public is evidenced by the following, from the Bridgeport *Herald:*

> When the Connecticut Company first announced that it was to put into use the one-man trolley system on the streets of Bridgeport there were some pessimistic individuals who claimed that the idea was not practical in the Park City owing to the crowded condition of the streets and the traffic congestion.
>
> Last Saturday the one-man trolleys made their first appearance and a week ago they started running regularly on the Oak Street-South Park lines.
>
> People now have had time to judge the value of these cars. Traffic officers state that traffic is easier to manage than it was with the big cars, and the general public seems to feel that it is getting more frequent and better service despite the fact that the cars have not been put on all lines.
>
> The police who do traffic duty point out the fact that rather than hold up traffic these cars facilitate it, as they pick up speed a great deal quicker than the average trolley which is bigger and more cumbersome.
>
> If the cars continue to be as great a success as they have the past week, there is no doubt that they will become a permanent feature of the Connecticut Company.

With further regard to increased earnings there is apparently a rule that receipts increase at the same rate as service. This rule would, of course, not apply in cases where from one to two-minute headway is being given, but does seem to work where the headway has been over five minutes, as is shown in the following tabulation, based on information obtained from the American Electric Railway Association, Nov. 1, 1918:

	Per Cent Increase in Car-Miles With Safety Cars	Eer Cent Increase in Receipts
Tampa, Fla., one one line	29	30
Tampa, Fla., on another line	51	51
El Paso, Tex., on one line	48	50
El Paso, Tex., on another line	40	36
Seattle, Wash	21.7	29
Tacoma, Wash., on one line	20	25
Tacoma, Wash., on another line	3	17
Gary, Ind	62	46

The American Electric Railway Association stated on Oct. 4, 1919, that six companies reported 51.1 per cent in receipts for 53.4 per cent increase in car-mileage, one company reported 71.2 per cent gain for 79 per cent increase and Bridgeport reports 100 per cent gain for 100 per cent increase.

The principal "stock" objections to the one-man car are: (1) the car is too long, (2) it is too short, (3) it is too light, (4) it is too heavy, (5) it cannot be operated in heavy snow storms, (6) it will delay traffic and cannot be operated through congested districts, (7) the door arrangement is wrong, (8) it is homely.

---

*Abstract of paper read at New York City meeting of New York Electric Railway Association, Dec. 10, 1919.

As to the first five of these items it was Mr. Birney's idea that a car should be built which would meet average rather than maximum conditions. The heavy double-truck city car with large drop platforms was built with only rush-hour business in mind and because it was so expensive to operate during non-rush hours the headway was cut down as much as possible. In the average city an individual car is usually overcrowded for only a part of one trip in the morning, and a part of one trip in the evening. Why, then, should several tons of useless weight be hauled around for the rest of the time?

A study of traffic conditions in a large city was made recently by the writer to ascertain the average and maximum car loads. Traffic checks were made on all lines at places where the heaviest riding occurs, and it was found that at the point of maximum travel on only slightly more than 6 per cent of the trips run did the cars carry more than sixty passengers, which is the total capacity of the Birney car. All of the lines were considerably under the saturation point as far as headway is concerned. It is therefore obvious that the traffic as now being handled by two-man cars, weighing 30,000 lb. or more, could easily be handled with one-man cars weighing 15,000 lb. with only a slight increase in headway. Furthermore, any increase in headway would increase traffic.

The objection that the Birney car is too long and too heavy has been made by those who want to swing to the other extreme from the old type of heavy car. It may be possible that a smaller and lighter car would do better than the present car in some isolated cases, but such a car would not take care of average conditions so well.

The chief objection made to the lightness of the car is that it could easily be damaged in a collision. Experience has proved, however, that there are not so many or so serious collisions with safety cars as with the old types of cars, owing principally to the ease with which they can be handled.

Before the safety cars were put into operation at Bridgeport great care was taken by the Connecticut Company to train the operators as to the proper handling of them. The men were especially drilled in the prevention of collisions. They have made an excellent record with respect to damaged front ends. The nine Bridgeport cars have operated more than 222,000 car-miles in six months with only six pull-ins on account of damage to front ends by reason of collisions.

As to the delaying of traffic it is noticeable that in congested districts wherever the safety cars have been operated there has been an entire absence of unfavorable criticism in regard to their ability to move readily over the most congested part of the lines. For example, in Seattle safety cars operate for about 1¼ miles on Second Avenue. This is the most heavily traveled street in the city and carried so much traffic as to have rendered desirable the rerouting of certain lines in the endeavor to relieve congestion. Safety cars, operating in conjunction with older types of cars on other lines, maintain schedule and crowd cars of other types.

In Kansas City a thirty- to forty-second headway is maintained through the congested district during the rush hours. The Kansas City Railway reports that "we have had no difficulty in making our schedule speed or our headway even in the hottest part of the downtown district."

In regard to Richmond, the following is an extract from the ELECTRIC RAILWAY JOURNAL of Nov. 1, 1919:

> In Richmond the eighteen safety cars in operation at present make up the complete equipment on two lines. For a distance of 1½ miles through the center of the city these two lines run over the same tracks as five other lines on which the cars are all of the double-truck type, and there is also a very heavy grade. These conditions have presented no difficulties and the safety cars have not in any way delayed the double-truck cars.
>
> In connection with this mixed service, Mr. Buchanan, the general manager, had some misgivings as to what might happen if one of the big cars (some of them weighing 57,000 lb.) should stall and a little safety car should be the next car to come along. This apprehension was completely dispelled by tests made at the shops and carhouses. It was found that one of the big cars stalled in the middle of a sharp curve could be coupled and moved with apparent ease by one of the safety cars.

In Bridgeport safety cars operate over about ½ mile of Main Street. The city has a population of approximately 175,000 and downtown traffic is concentrated along this one narrow street, producing very heavy congestion. A traffic check was made at the time of peak travel on an average day and it was found that there passed over the intersection of Main and Fairfield Streets a total of 1,261 vehicles per hour, including street cars. The distribution of travel was 58 per cent in one direction and 42 per cent in the other. The width of Main Street at this point is 38 ft. and of Fairfield Street 33 ft. Safety cars operate over this intersection, without "dragging the line." They are handled more easily than the double-truck cars that operate over the same tracks. There is apparently no reason why safety cars cannot be operated advantageously in the largest cities in the country, as far as street congestion is concerned, for there are few places where there is heavier street traffic than on Main Street in Bridgeport.

As to the door, the principal objection to the present type is that it is too small. The suggestion is that two doors would serve the purpose better, one for entrance and the other for exit. Now it is the maximum rather than average conditions upon which this idea is based. Taking into consideration all stops throughout the day, probably 95 per cent do not involve more than two or three passengers at one time. Why, then, should a complicated mechanism be installed to take care of the remaining 5 per cent of the stops, where there is heavy travel? As a matter of fact, even for handling heavy loading and unloading a single door is superior to two doors on a safety car, for more time would be lost through the manipulation of double doors and the confusion caused by simultaneous loading and unloading and the consequent inability of the operator properly to collect his fares than through the simple single-door operation and the queue system of loading and unloading. In any event the places where there is heavy loading and unloading are usually congested points, where the cars are as a rule delayed longer by street traffic than by passengers. Again, the addition of second doors on double-end safety cars would increase the weight of the car by about a ton, and it would double the maintenance of doors and door-controlling mechanism.

With further regard to the operation of safety cars through snow storms, the matter is very well disposed of in a statement recently made by the management of a property situated in the extreme Northeast, where safety cars are being operated and where there is plenty of snow. In this the opinion is expressed that passenger cars should not be bought with the idea of operating them successfully as snow plows. Even in such a climate as this the percentage of time per annum when cars operate under conditions that require them to remove any considerable amount of snow is small. In this region the railway operators propose to protect the cars by removing the snow, and it is their belief that this is the proper way to protect the equipment of passenger cars no matter what the type is.

Finally, as far as the appearance of the car is concerned a street car at best is not usually considered a work of art. However, the comparative smallness of the safety car is an advantage from this standpoint.

To return to Los Angeles (after a lapse of forty years), according to a report of the California Railroad Commission just issued, the engineers of that commission have recommended that 400 one-man cars be purchased and put in operation on most of the lines of the Los Angeles Railway Corporation. They estimate that these cars will save $625,000 per annum and will pay for themselves in about four years. I assume that these savings do not take into consideration any additional revenue that would be procured by increasing the service with safety cars, so that presumably still better results can be looked for if the service is increased.

The foregoing is written with the idea of showing, in a general way, how the safety car will improve net earnings and how it will work under severe conditions. As has been pointed out many times, however, it is not a cure-all. It has shown remarkable results though and it is believed that it will prove to be one of the principal factors in helping to put the urban electric railway business on its feet again.

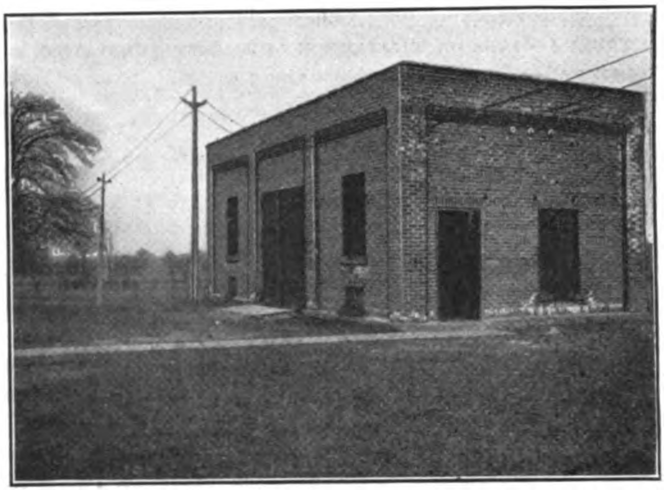
"Automatics" on the New York State Railways*

A Résumé of Experience With Automatic Substations at Williamson and Manlius Center, Showing Annual Savings of More Than $3,000 Each

BY C. L. CADLE

Chief Engineer New York State Railways, Rochester, N. Y.

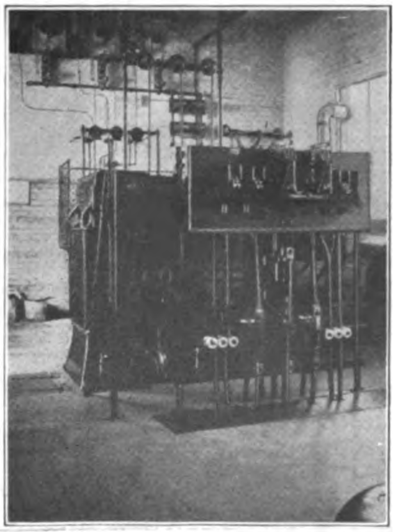
ABOUT the middle of 1916 the New York State Railways planned the installation of an automatic substation to replace a floating storage battery on its Rochester & Sodus Bay line at Williamson, N. Y., and contracted in May, 1917, for this equipment. About the same time it contracted for similar equipment for its Manlius substation on the Oneida line, the West Shore electrification between Syracuse and Utica.

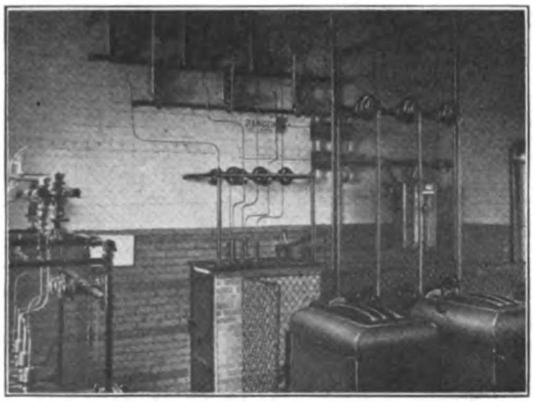


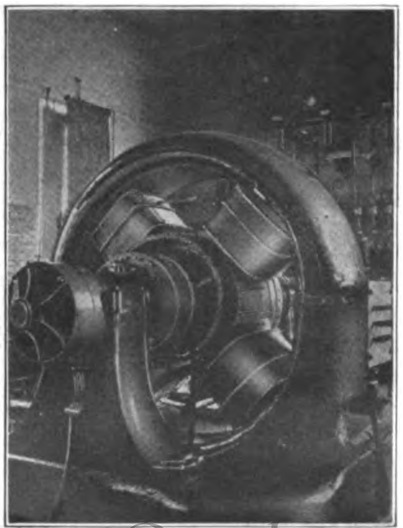
WILLIAMSON AUTOMATIC SUBSTATION, NEW YORK STATE RAILWAYS

To obtain a satisfactory location at Williamson it was necessary to choose a site other than that used for battery purposes on account of the location of the transmission line with relation to the railroad. The building which now houses this equipment was designed specifically for automatic equipment, and the cost data following give a good indication what a substation completely new costs, at 1916 prices. The railway had previously lost one of its substations by fire, but had on hand, after the insurance adjustment, the frame of a 300-kw. rotary converter. This frame, together with a spare armature and three transformers, constituted the basis of the substation equipment. It was supplemented by the purchase of field cores, brush-holders, oil switches and the automatic control apparatus.

Shortly after the station was put into operation it was found economical to install a remote-control connection with the dispatcher's office in Rochester, approximately 30 miles away. This was accomplished by using the relay of a Gill selector in conjunction with the dispatcher's telephone line to permit the cutting out of the station during the night hours when no cars were in operation. This will account for a number of cases in the accompanying "interruption statement" where the station was in operation all night due to failure of the dispatcher to cut the station in or out at the prescribed time.







VIEWS IN WILLIAMSON SUBSTATION
AT LEFT, BANK OF TRANSFORMERS.
ABOVE, OIL SWITCH AND AUXILIARIES. AT RIGHT, REHABILITATED
ROTARY CONVERTER

---

*Abstract of paper read at New York City meeting of New York Electric Railway Association, Dec. 10, 1919.

TABLE I—DATA ON WILLIAMSON AUTOMATIC SUBSTATION

Non-automatic substations on line operates hours per day	18
Automatic substation operates (as for week ending Nov. 29), hours per day	9
Saving in operating time, hours per day	9
Per cent. of time automatic station operates, as compared with non-automatic stations	50
Cost of land	$553.50
Cost of building	5,424.63
	$5,978.13
Cost of automatic substation equipment	$7,593.55
Cost of labor to install	1,746.71
Total	$9,340.26
Annual charges, exclusive of land and building:	
Fixed charges and depreciation at 10 per cent	$934.02
Repairs to equipment, estimated	200.00
Inspection 1½ hours per day at 45c. per hour	246.60
Total yearly expense	$1,380.62
Annual gross saving:	
Labor of three men at 45 cents per hour, eight hours per day	$3,942.00
Relief operator, seventy-eight days per year, eight hours per day at 47½ cents per hour	296.40
Saving in power, estimated:	
Nine hours per day, running light, at 8 kw.-hr. per hour, or 72 kw.-hr. per day; 72 kw.-hr. per day for 365 days, or 26,280 kw.-hr. at 0.9 cents per kilowatt-hour	236.52
Total gross saving	$4,474.92
Annual charges	1,380.62
Annual net saving applicable to automatic equipment	$3,094.30
Number of years to cancel original cost	3

TABLE III—DATA ON MANLIUS CENTER AUTOMATIC SUBSTATION

Substation operated non-automatically, hours per day	20½
Substation operated automatically, hours per day	13
Saving in operating time, hours per day	7½
Per cent of non-automatic running time substation operates automatically	63.5
Cost to install automatic equipment	$3,400.00
Freight	42.00
Miscellaneous material, conduit, wire, etc.	275.42
Total	$3,717.42
Labor cost	483.20
Total cost to install	$4,200.62
Annual charges:	
Fixed charges and depreciation, at 10 per cent	$420.06
Repairs to automatic equipment (estimated)	100.00
Labor cost to inspect, one and one-half hours per day, at 45 cents	246.60
Annual yearly expense	$766.66
Annual gross saving:	
Labor of three men at 45 cents per hour, eight hours per day	$3,942.00
Relief operator seventy-eight days per year, eight hours per day, at 47½ cents per hour	296.40
Saving in power estimated, 7½ x 8 kw., 60 kw.-hr. per day, 21,900 kw.-hr. per year at 0.92 cent	201.48
Saving in coal for heating substation	200.00
Gross saving	$4,639.88
Annual charges	766.66
Net annual saving	$3,873.22
Number of years to cancel original cost	1.1

TABLE II—INTERRUPTIONS AT WILLIAMSON AUTOMATIC SUBSTATION FROM AUG. 1 TO NOV. 30, 1919

Date	Time From	Time To	Duration of Interruption Hr.	Duration of Interruption Min.	Cause of Interruption
8-14	5.45 a.m.	8.00 a.m.	2	15	Relay trouble.
8-6	5.20 a.m.	7.33 a.m.	2	13	Overspeed device tripped out d.c. breaker.
8-7	8.10 a.m.	8.35 a.m.	..	25	Oil switch clutch out of adjustment.
8-17	7.35 a.m.	8.00 a.m.	..	25	D.c. contactor did not close, cutting machine on line.
8-19	12.29 a.m.	15.57 a.m.	..	28	Overspeed device tripped out d.c. breaker.
8-20	8.30 a.m.	12.00 m.	15	30	Operating coil on oil switch burned out.
8-21	5.20 a.m.	11.30 a.m.	6	10	Operating coil on oil switch burned out.
8-23	5.20 a.m.	12.00 m.	18	40	Operating coil on oil switch burned out.
8-29	5.20 a.m.	8.00 a.m.	2	40	Overspeed device tripped out d.c. breaker.
Total interruptions for Aug.			48	46	
9-7	5.20 a.m.	7.35 a.m.	2	15	Overspeed device tripped out d.c. breaker.
9-26	5.20 a.m.	7.35 a.m.	2	15	Remote control not cut in by dispatcher.
9-29	7.00 a.m.	12.00 m.	15	00	Rotary armature grounded.
9-30	5.20 a.m.	12.00 m.	18	40	Rotary armature grounded.
Total interruptions for Sept.			38	10	
10-4	5.20 a.m.	7.40 a.m.	2	20	Remote control not cut in by dispatcher.
10-5	6.45 a.m.	11.00 a.m.	5	15	Open in 1 external, resistance of No. 29 relay.
10-15	5.20 a.m.	7.45 a.m.	2	25	Remote control not cut in by dispatcher.
10-15	1.25 p.m.	12.00 m.	10	35	Open circuit in rotary armature.
10-16	5.20 a.m.	11.00 a.m.	5	40	Open circuit in rotary armature.
Total interruptions for Oct.			26	15	
11-19	5.20 a.m.	7.55 a.m.	2	35	Remote control not cut in by dispatcher.
11-11	12.50 a.m.	5.35 a.m.	4	35	No. 2 relay stuck in, allowing rotary to run.
11-11	8.05 p.m.	12.00 m.	3	55	No. 2 relay stuck in, allowing rotary to run.
11-12	12.00 m.	1.30 a.m.	1	30	No. 2 relay stuck in, allowing rotary to run.
11-15	12.57 a.m.	5.40 a.m.	4	33	No. 2 relay stuck in, allowing rotary to run.
11-16	5.20 a.m.	7.40 a.m.	2	20	Remote control not cut in by dispatcher.
11-22	1.00 a.m.	5.20 a.m.	..	..	Machine cut in and out several times as dispatcher did not cut out remote control
11-28	5.20 a.m.	8.05 a.m.	2	35	Armature in No. 2 relay stuck open
11-29	8.45 p.m.	12.00 m.	3	15	D.c. breaker out
11-30	12.00 m.	7.30 a.m.	7	30	D.c. breaker out
Total interruptions for Nov.			32	48	
Grand total			146	9	

TABLE IV—INTERRUPTIONS AT MANLIUS CENTER AUTOMATIC SUBSTATION

MAY 1, 1919, TO DEC. 2, 1919

Caused by opening of d.c. circuit breaker (non-automatic)

	Hr.	Min.
5-13	..	5
5-15	1	48
5-18	13	0
5-23	1	23
6-4	..	12
7-6	2	50
7-15	2	50
8-31	..	55
9-1	1	32
9-3	1	41
9-17	1	7
10-3	1	3
10-12	3	44
10-18	1	6
11-9	1	15
11-11	1	25
11-16	1	17
11-17	1	44
11-20	1	9
11-30	1	3
Total	41	9

Caused by armature shaft sticking in bearing

	Hr.	Min.
7-14	..	26
7-15	2	50
7-17	5	40
7-18	1	5
7-20	2	40
7-31	2	53
8-9	3	0
8-20	4	20
8-21	1	45
8-22	..	20
Total	24	59

Due to trouble with automatic equipment

	Hr.	Min.	
5-14	2	24	Thermostat on resistance grids opened due to too low setting.
6-1	7	46	Resistance in relay No. 36 circuit burned out. See note.
6-14	..	26	Relay No. 26 stuck.
Total	10	36	

NOTE.—Resistance furnished with polarized relay too low; 4,000 ohms substituted for 3600 ohms.

The Manlius substation, which is located approximately 5½ miles east of the Syracuse city line, was equipped at the time of the West Shore electrification with two 300-kw. rotaries. After it had been in operation for a few years changed condition of the traffic load dictated the removal of one rotary to another location. This remaining machine was operated, previous to the installation of the automatic equipment, by three men working on eight-hour shifts.

These two stations are of particular interest due to one having been built especially for an automatic operation, while the other is an adaptation of a manually-operated substation to automatic control.

The automatic equipment at Williamson eliminates the operation of the rotary 50 per cent of the time during which it would otherwise have been operating and at Manlius 36.5 per cent. At Williamson this produces an annual saving of $236.52 in power cost and at Manlius $201.48.

Between May 1 and Dec. 2, 1919, there was a total of about seventy-seven hours' interruption at the Manlius station, forty-one hours of which was due to the opening of the direct-current circuit breaker from sudden overloading; twenty-five hours was due to electrolysis of the armature bearing causing the bearing babbitt to adhere to the armature shaft, and ten and a half hours was chargeable directly to the automatic equipment. At Williamson there were interruptions totaling 146 hours between Aug. 1 and Nov. 30, 1919. These, while affecting the station, were not serious and did not require the immediate attention that would have been given had the station been in a more important location. However, it is to be expected that, with the installation of new equipment, troubles will occur during the first few months of operation, but these will be eliminated through experience with the apparatus.

The principal items of interest at this time in regard to automatic substations are: (a) cost to install, (b) reliability of operation and (c) saving in operating expenses. These data for the New York State Railways are summarized in the accompanying tables. The illustrations give a general idea of the equipment in the substations and the layout of apparatus.

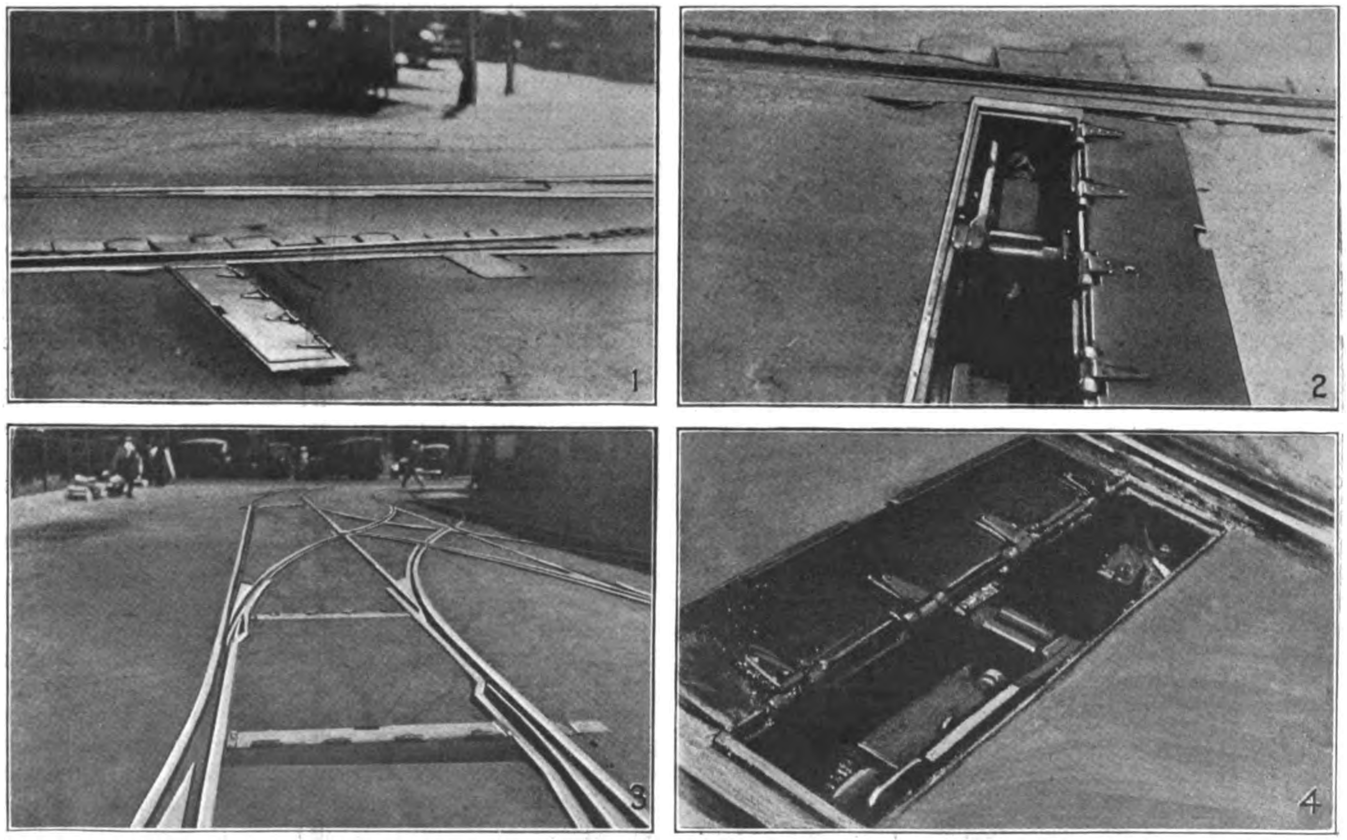
Using Lever Throw-Type Track Switches for Safety

At Locations Where Traffic Conditions Make It Dangerous to Use a Switch Which Must Be Held in Position, the Use of a Throw-Over Switch Has Advantages

By Clifford A. Elliott

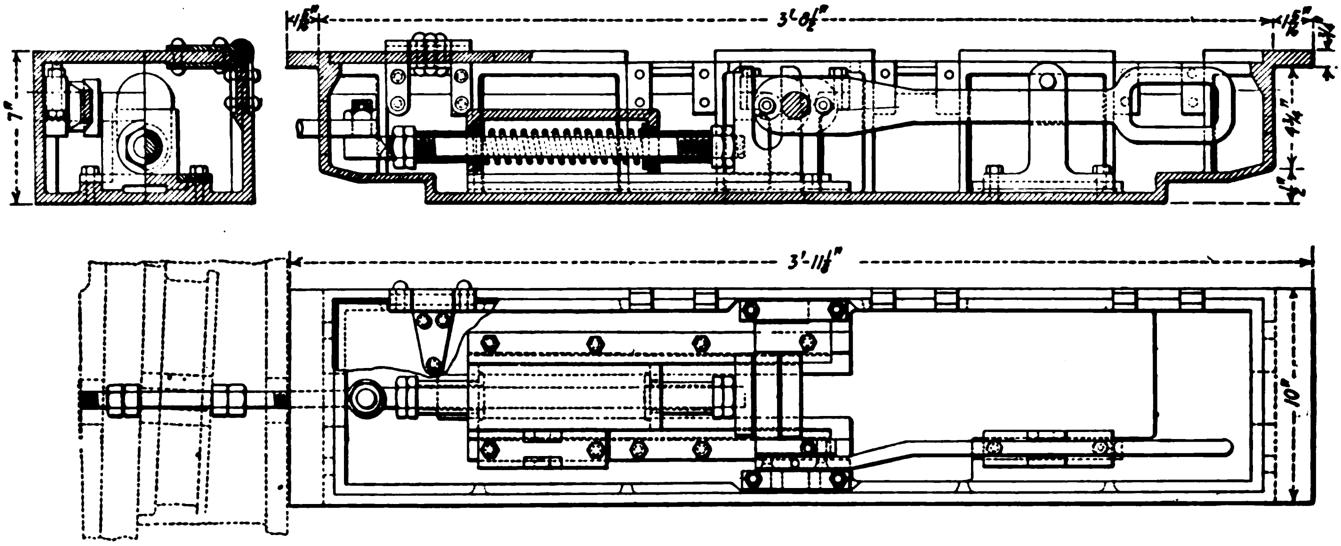
Cost Engineer, Pacific Electric Railway, Los Angeles, Cal.

SEVERAL years ago the Pacific Electric Railway found it advisable to adopt a type of switch on its tracks different from the type, commonly known as the chain-pull type, then in use. This change was rendered necessary due to the rapid increase in the number of automobiles passing the points where switches were installed and to meet increasingly difficult operating conditions. Where large special track work layouts exist at busy street intersections the trainmen are placed in a hazardous position while holding switches of the chain-pull type, especially where train operation is used. At many locations the space between the pull-box and the curb line is very limited and as it is necessary for the trainmen to hold the chain-pull switch in position



INSTALLATIONS OF LEVER-TYPE THROW-OVER SWITCH

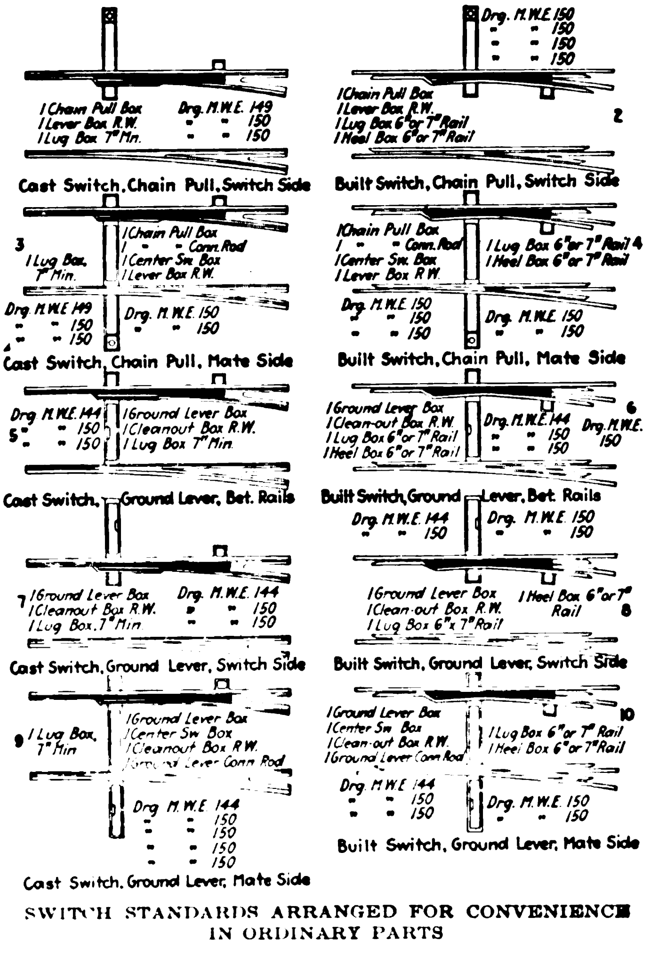
1—Switch Box Outside of Track. 2—Interior of Switch Box Outside of Track. 3—Switch Boxes Located Between Rails at Passenger Terminal. 4—Interior of Switch Box Between Rails.


1⅛"
3'-6½"
1⅛"
7"
4¼"
3'-11½"
10"

ASSEMBLY OF GROUND THROW-OVER SWITCH

from the box until all trucks of the train have cleared the turnout, he frequently has to keep this position for a considerable time. His position prevents any attempt to guard himself against auto speed violators who are liable to misjudge his position in the street and run him down. If to avoid injury the trainman releases the chain-pull switch before all tracks of the train clear the turnout derailment is unavoidable.

To provide for these conditions a new lever throw-type of track switch was designed by the railway engineering department and was made in the company's shops. The accompanying views illustrate this type of switch. The switch mechanism is made of cast steel, the housing box of wrought iron or steel, and the box cover of a steel plate. The switch-box shown in the illustration is 4 ft. long, 10 in. wide and 7 in. deep.


1 Chain Pull Box Drg. M.W.E. 149
1 Lever Box R.W. " " 150
1 Lug Box 7" Min. " " 150
Cast Switch, Chain Pull, Switch Side
Drg. M.W.E. 150
" " 150
" " 150
" " 150
1 Chain Pull Box
1 Lever Box R.W.
1 Lug Box 6" or 7" Rail
1 Heel Box 6" or 7" Rail
2
Built Switch, Chain Pull, Switch Side
3
1 Lug Box, 7" Min.
1 Chain Pull Box
1 " " Conn. Rod
1 Center Sw. Box
1 Lever Box R.W.
Drg. M.W.E. 149
" " 150
" " 150
Drg. M.W.E. 150
" " 150
Cast Switch, Chain Pull, Mate Side
1 Chain Pull Box
1 " " Conn. Rod
1 Center Sw. Box
1 Lever Box R.W.
1 Lug Box 6" or 7" Rail 4
1 Heel Box 6" or 7" Rail
Drg. M.W.E. 150
" " 150
" " 150
Drg. M.W.E. 150
" " 150
Built Switch, Chain Pull, Mate Side
Drg. M.W.E. 144
5 " " 150
" " 150
1 Ground Lever Box
1 Cleanout Box R.W.
1 Lug Box 7" Min.
Cast Switch, Ground Lever, Bet. Rails
1 Ground Lever Box
1 Clean-out Box R.W.
1 Lug Box 6" or 7" Rail
1 Heel Box 6" or 7" Rail
Drg. M.W.E. 144
" " 150
" " 150
6
Drg. M.W.E. 150
Built Switch, Ground Lever, Bet. Rails
Drg. M.W.E. 144
" " 150
Drg. M.W.E. 150
" " 150
7
1 Ground Lever Box
1 Cleanout Box R.W.
1 Lug Box, 7" Min.
Drg. M.W.E. 144
" " 150
" " 150
Cast Switch, Ground Lever, Switch Side
1 Ground Lever Box
1 Clean-out Box R.W.
1 Lug Box 6"x 7" Rail
1 Heel Box 6" or 7" Rail
8
Built Switch, Ground Lever, Switch Side
9
1 Lug Box, 7" Min
1 Ground Lever Box
1 Center Sw Box
1 Cleanout Box R.W.
1 Ground Lever Conn Rod
Drg M.W.E. 144
" " 150
" " 150
" " 150
" " 150
Cast Switch, Ground Lever, Mate Side
1 Ground Lever Box
1 Center Sw Box
1 Clean-out Box R.W.
1 Ground Lever Conn Rod
10
1 Lug Box 6" or 7" Rail
1 Heel Box 6" or 7" Rail
Drg. M.W.E. 144
" " 150
" " 150
Drg. M.W.E. 150
" " 150
Built Switch, Ground Lever, Mate Side

SWITCH STANDARDS ARRANGED FOR CONVENIENCE IN ORDINARY PARTS

For the convenience of all concerned in ordering the proper type of switch for any definite location, a standard drawing has been prepared giving the different parts that are necessary to be ordered to meet different arrangements and conditions. Each arrangement is given a symbol number and when placing a requisition with the store department the roadmaster is required only to specify the symbol number and all necessary detailed parts are furnished.

This company uses the positive type of threw-over switch extensively in terminal yards where the clearance between operating tracks is insufficient to permit switchmen safely and efficiently to perform the switching operations. In such cases the lever throw-type of switch is installed between the rails. Yard men are provided with iron hooks which enable them to lift the switch-box covers quickly and to throw the lever over to the desired position with the least possible delay. Accompanying views show the lever throw-over switch applied between the rails and also located outside the rails as is necessary at busy street corners. Where local and interurban service is given over the same line the switch is set positive for the local line, while the less frequent interurban service requires operation of the lever-throw switch before the train can turn into the track as scheduled. In such a case the trainman would first throw the lever and then step onto the curb so as to be clear of vehicles, while the train clears the switch. He then can return and throw the lever back to its former position.

The maintenance and care of this type of switch has been found to be comparatively slight.

Franklin T. Griffith, president Portland Railway, Light & Power Company, Portland, Ore., has just been appointed chairman of the committee on water-power development of the N. E. L. A. The committee proposes to undertake an investigation of the water-power resources of the country, both developed and undeveloped. The study will be made respecting the practical application of pending national legislation on the subject and of the economic advantages which could be obtained through a more general interconnection of water-power systems.

C. E. R. A. Holds Two-Day Session

Important Subjects of Electric Railway Express and Economy of Car Operation Considered at Central Electric Railway Association Convention, Held at Grand Rapids, Mich.

THE Central Electric Railway Association met at Grand Rapids, Mich., for its fall meeting on Thursday and Friday, Dec. 4 and 5. A report of the meeting follows and abstracts of some of the papers appear elsewhere in this issue.

The executive committee met during Thursday forenoon and elected two new supply members to the association. A. Swartz, general chairman of the Interurban freight and motor truck competition committee, reported progress in the work of his committee. The Indiana sub-committee made its report at the summer meeting of the association in June. The Michigan subcommittee has reported to Mr. Swartz, and the Ohio sub-committee has not yet reported, but is making progress. Mr. Swartz urged the management of the various interurban properties to look well to their short-haul freight, as this is most likely to be taken over by truck competitors. At the invitation of Harry Reid, president, Interstate Public Service Company, Indianapolis, the executive committee set the place for the annual meeting of the association as Louisville, Ky., and the date as Feb. 26 and 27.

On Thursday afternoon the convention was called to order by President J. F. Collins, general manager Michigan United Railways, Jackson, and the delegates were officially welcomed to the city by the mayor of Grand Rapids. The secretary of the local Chamber of Commerce then gave a brief address of welcome, during which, among other things, he said, "Franchises must no longer be a political football but must be a business transaction." The mayor and the Chamber of Commerce of Grand Rapids believe in a square deal to public utilities. If the various utilities throughout the country are to be placed upon a satisfactory basis and are to obtain the financial income which they need, assistance must come directly through the Chamber of Commerce of a city and through no other local organization.

E. B. Burritt, secretary of the American Electric Railway Association, extended greetings to the Central Association on behalf of the national organization. Mr. Burritt said he believes the officers of the American Electric Railway Association should attend the Central Electric Railway Association and other state association meetings almost as faithfully as those of the national association. He spoke of the worka accomplished by the American Association at Washington. The resulting publicity was most helpful. The work carried on in the conduct of these hearings has been a big strain on the association, and at the Atlantic City meeting a committee on dues was appointed. This committee has since reported and suggests that the dues to the American Association be based upon a percentage of the operating revenue. Nobody wishes to see the American Association go backward, but wants it to maintain its leadership of the industry. Mr. Burritt also announced the midyear meeting of the American Association to be held at Cleveland, Ohio, Jan. 8, at the Hollenden Hotel.

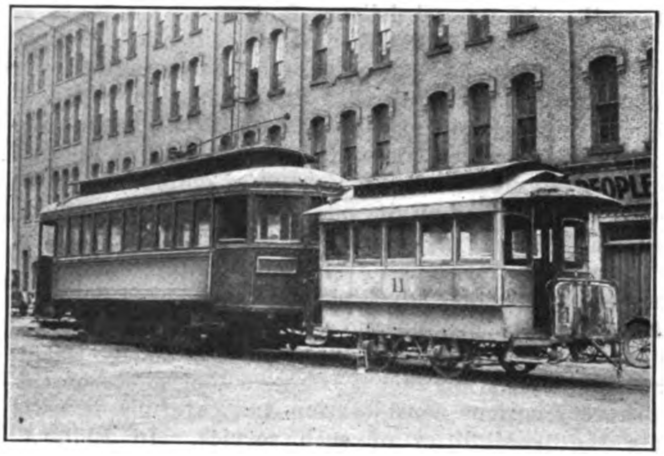


EXHIBIT OF HISTORIC CAR TYPES AT GRAND RAPIDS

Following the regular business, a nominating committee was appointed to report at the next meeting of the association. It included F. D. Carpenter, chairman, president Western Ohio Railway Company, Lima; C. L. Henry, president Indianapolis (Ind.) & Cincinnati Traction Company; W. S. Rodger, general traffic manager Detroit (Mich.) United Railway; S. D. Hutchins, Westinghouse Traction Brake Company, Columbus, Ohio, and W. H. Bloss, Ohio Brass Company, Mansfield, Ohio.

DIVISION OF OPINION ON ADVISABILITY OF PICK UP AND DELIVERY

"Electric Railway Express" was the subject of a paper presented by C. J. Munton, general manager, Fort Wayne & Northwestern Railway, Kendallville, Ind. and written discussions on the paper were presented by S. L. Vaughn, trainmaster, Grand Rapids, Grand Haven & Muskegon Railway, J. F. Starkey, general passenger agent, Lake Shore Electric Railway Company, Sandusky Ohio, H. A. Nicholl, general manager Union Traction Company of Indiana, Anderson, and C. J. Laney, traffic manager Northern Ohio Traction & Light Company, Akron. Each of these discussions appear in abstract elsewhere in this issue.

Following the presentation of the written discussions, the meeting was thrown open for general discussion. F. W. Brown, traffic manager Michigan Railway, Kalamazoo, said that the handling of express in the manner followed by the old-line express companies was very unsatisfactory. The handling of package express as outlined by Mr. Laney may be more feasible. Mr. Brown believes, however, that the pick-up and delivery feature is a mistake, as such service is foreign to the average electric railway man. This end of the express business should be handled by a separate company. The handling of packages on passenger interurban cars has in many cases largely overcome the loss incurred by the withdrawal of the American Express business. The rate of this class of service on the

Michigan Railway is double the first-class freight rate, but the handling of packages has not in any way interfered with passenger service. Also, there is no direct cost attributable to this service, as the same number of men are required in a crew as is usual for handling baggage, etc.

W. S. Rodger said that the class of business outlined by Mr. Brown is very profitable for those roads which have the proper facilities. Mr. Rodger does not favor the pick-up and delivery feature.

C. L. Henry said that the subject is one of the most important that has come before the association for a long time. He hopes that the association will continue the study of express handling and would like to see all the papers presented on the subject printed in pamphlet form. The consensus of opinion, he said, seems to be that if all the interurban roads were under one management, or were combined into one company, the handling of through freight and express could be worked out to great advantage. Mr. Henry is not convinced that the pick-up and delivery feature is a good thing, but believes that it does not necessarily follow that the association should not give that phase of the work very serious consideration and carefully investigate the possibilities of such service. In Indiana, Mr. Henry believes the interurbans have already made up the loss of the business taken away by the American Railway Express Company by the station-to-station service now in effect.

ORGANIZATION OF A SINGLE ELECTRIC RAILWAY EXPRESS COMPANY FAVORED

He suggested that an organized express company to handle the freight and express of all the interurban lines in the Central Association might be formed, and such possibilities are well worth investigating. He then said he would like to see President Collins put in motion an organized effort to see what actual physical obstacles stand in the way of through express service and to have published a full and intelligent statement of the results of the investigation.

Later President Collins announced that a committee to carry out this suggestion would consist of H. A. Nicholl, chairman, W. S. Rodger, E. F. Schneider, F. W. Brown, and J. H. Crall.

ORGANIZATION OF ELECTRIC EXPRESS COMPANY DISCUSSED

E. F. Schneider expressed himself on being opposed to the idea of handling baggage and express on passenger interurban cars. He believes this interferes with passenger service. There is no question but that interurban express business is profitable. C. L. Henry said that the greatest trouble now existing is in the fixing of rates for through business. The formation of a single interurban express company would eliminate this. C. J. Laney said that another difficulty with handling through express is that many small interurban roads do not operate their sub-stations after 2 a.m. These properties would not realize sufficient income on the express passing over their tracks to warrant the addition of several extra men to the substation force.

C. J. Munton stated that the indications are that an interesting investigation will result from the papers and discussions presented on the subject of electric railway express. The situation as outlined by the written discussion of C. J. Laney is probably true at the present time. The interurban lines should, however, begin now to put their properties in such order that through express business can be handled without any transfer of the commodities. With the nucleus which the interurban roads of the Central Association now have, E. F. Schneider believes that a single electric railway express company could be formed. Such a company could determine the connections and other changes in tracks, etc., which would be necessary to handle through express to the best advantage.

Closing the discussion on electric railway express M. B. Lambert, Westinghouse Electric & Manufacturing Company, said that it is up to the railway companies to give the local chambers of commerce and other business interests the facts. The American Association is doing a big work along this line. The information which it collects is sent throughout the country over the Associated Press wires. The American Association wishes to pick out men all over the country to whom publicity material may be mailed for local distribution.

At the close of the Thursday session President Collins announced that on the track adjacent to the hotel several cars had been placed for the inspection of the delegates. Included in these was a horse car of the bygone days, one of the first electric cars of the Grand Rapids Railway, and one of the latest type of steel city cars of that company. There was also one of the first interurban cars purchased twenty years ago by the Michigan Railway and in comparison with this one of the latest type of steel interurban cars purchased by that company.

ELECTRIC RAILWAY EXPRESS ALSO SUBJECT AT BANQUET

On Thursday evening a banquet followed by an informal dance was held at the hotel. The speaker at the dinner was L. G. Macomber, traffic commissioner of the Toledo Commerce Club. Mr. Macomber first outlined the interurban situation in Toledo while the city was without street-car service, and then gave some comprehensive figures relating to the possibilities of motor-truck competition in the handling of express. In June of this year the interurban lines emanating from Toledo, exclusive of the Ohio Electric Railway, handled out of Toledo 16,000,000 lb. of merchandise, and 12,000 passengers. During the period in which the interurban lines were not allowed to enter the city reports show that practically all of this merchandise business was handled in some other manner.

Mr. Macomber paid a high compliment to the cooperation which the Toledo Commerce Club has received from the officials of the interurban companies. As soon as it was known that the street cars had been removed from Toledo and that the interurban cars would not be permitted to enter the city, steps were taken to find a terminal at the city limits into which all lines could be brought. This could not be accomplished, and an effort was then made to locate a terminal within the city where freight could be received and dispatched to the city limits by means of motor trucks. The Highways Transport Committee agreed to furnish the motor trucks, and the rate was set at 8 cents per 100 lb. Tariffs were also arranged through the Interstate Commerce Commission, and had the street cars not resumed service in Toledo, it was expected to begin handling of express and freight in this manner on Dec. 8.

Passing on from the Toledo situation Mr. Macomber said that the interurban railway is in a position to serve a small city better than is the steam road. The growth of a community depends upon its transportation facilities. The interurban has gradually replaced the steam road for jobbing service. Today, it is not a question of cost of express service as much as it is a question of the service itself. For a reasonable haul the interurban need expect no competition from the steam road, as the steam lines cannot make any money on express or freight hauled a distance of less than 60 miles, and this service does not become attractive to the steam lines for a distance of under 120 miles.

INTERURBANS HAVE REASON TO FEAR COMPETITION OF 5-TON TRUCK

Mr. Macomber quoted some figures on motor-truck service for a 25-mile haul, with a 2-ton truck, at 22 cents, this being the average for the first four freight classifications. In this case the cost of operation would amount to $15.52 and the cost of gas, oil, tires, etc., $5, or a total of $20.52, leaving a balance of $1.50 for investment, expenses of driver and helper, etc. If a full load could be carried in both directions the truck operators might make money, but in general the interurban lines need fear no competition from the 2-ton truck.

Interurban railways have reason for apprehension from competition with the 5-ton motor truck, which is the usual truck used for this purpose. To fight this competition the interurbans must improve their service, especially as concerns terminal facilities. The average business man is now figuring the cost of handling goods from his warehouse rather than giving consideration only to the amount of the railway transportation charge. Delay at the warehouse is extremely expensive to the manufacturer. Trucks are sometimes delayed at interurban terminals as much as four hours, which represents a loss to the manufacturer of $20.

The interurban railway operator should make a very careful study of the actual cost of handling freight and express and of the elements which enter into this cost. The time is opportune to invite into conference the traffic men of the localities through which the companies operate and to secure their co-operation. Consideration must be given to two very important subjects: First, the quality of the service, and second, the cost of the service.

ECONOMIES IN CAR OPERATION CONSIDERED

"Economies In Car Operation" was the subject of a paper presented on Friday morning by F. R. Phillips, superintendent of equipment, Pittsburgh (Pa.) Railways Company. Following Mr. Phillips' paper, written discussions were presented by very nearly every interested department. "A Conductor's View" was presented by Charles Connely, conductor Grand Rapids, (Mich.) Grand Haven & Muskegon Railway, "A Motorman's View" by J. A. Sunderland, motorman Terre Haute, Indianapolis (Ind.) & Eastern Traction Company, "A Dispatcher's View" by R. E. Harris, train dispatcher Michigan Railway Company, Jackson, "A Master Mechanic's View" by Terence Scullin, master mechanic Cleveland (Ohio) Railway Company, "A Claim Adjuster's View" by J. W. Giltner, assistant claim agent Northern Ohio Traction & Light Company, Akron, and "A Superintendent's View by A. G. Snell, superintendent Union Traction Company of Indiana. Abstracts of these papers will be printed next week.

The papers show a marked interest, on the part of the men who directly control the details of operation, in the possibilities of obtaining notable economies. They give the impression that if the several departments will co-operate along the lines outlined by Mr. Phillips and continued by the contributors to the discussion there is warrant for belief that operating expenses can be materially reduced.

Following the papers and written discussions, F. R. Phillips stated that he feels that other associations could well initiate the example of the Central Electric Railway Association as regards enthusiasm and co-operation. He believes the electric railway situation is much brighter in aspect and that the silver lining of the cloud is beginning to show.

M. B. Lambert said that T. Scullin in his written discussion left an important thought. Mr. Lambert moved that the Central association appoint a committee, to include a representative of each department of the railway company to study the subject of possible economies in car operation and to issue a printed report. In answer to a question from President Collins concerning what the return circuit should be, Mr. Lambert replied that the amount of feeder and return depends entirely on the analysis of the problem. The cost of feeder, bonding, etc., must be determined, and as a rule it is economy to have the least drop possible both in feeder and return.

Electric railway companies must resort to a scientific analysis of operating problems and to publicity, said Mr. Lambert. The thing that most affects the operating cost is the maintenance of equipment. The average general manager apparently does not have a complete appreciation of this. The position of the master mechanic must be lifted out of the rut. This is the mechanical age, and provision should be made in every shop for the technically trained man to advance through the mechanical department.

ECONOMY IN POWER CONSUMPTION AT CAR VERY IMPORTANT

L. E. Gould, Economy Electric Devices Company, emphasized the ability of the motorman to keep the energy consumption at a minimum both in acceleration and retardation. The curves for each are about the same.

Fast application of the brakes above a certain point is not profitable from a power-saving standpoint and will not increase the speed of operation. The urements taken in a test on a line of 100 cars with all cars equipped with Economy meters and with power stations also so equipped has shown that from 8 per cent to 30 per cent of the power was being lost at the car before the meters were installed. The installation of the meters on a line of 8000 cars with sixty cars equipped and power measured has shown a saving of 25 per cent in brake shoes and 16 per cent in energy on the cars equipped with the meters.

C. L. Henry suggested that all of the papers presented at the Thursday and Friday sessions be printed in the form of a pamphlet and circulated among the member companies. Secretary Neereamer was instructed to carry out this suggestion. After an expression of thanks to all who had delivered papers at the meeting, the convention was adjourned until the next meeting of the association at Louisville, Ky., on Feb. 26 and 27.

C. E. R. A. Papers on Freight Haulage

Symposium of Opinions by Authorities in Central Electric Railway Association Territory, Initiated by a Paper by C. J. Munton—The Contributors Include Managers and Passenger and Freight Agents

THE feature of the Dec. 4 afternoon session, of the Central Electric Railway Association meeting, held at Cleveland, Ohio, on that and the following day, was a paper prepared and read by C. J. Munton, on "Possibilities of Electric Railway Express Service." It was discussed by representatives of several departments of the electric railway. Abstracts of the paper and written contributions to the discussion are given below.

Possibilities of Electric Railway Express Service

Extension of Service Now Given Would Be Profitable—The Results of a Recent Questionnaire Are Published

By C. J. Munton
General Manager Fort Wayne & Northwestern Railway

INTERURBAN electric railways in general have but one commodity to sell, and that commodity is transportation in all its forms from limited passenger service to the switching of steam railroad carload shipments which are occasionally turned over to us.

In my discussion of this subject, I shall view the existing interurban electric railways in the Central territory in the light of one system rather than an aggregation of many railways, each with its management and complement of officers functioning as best they may under existing conditions. It is my unqualified belief that were it possible to combine and centralize the management of the electric railway companies now operating in the Central States under four or five managements, it would be of benefit to the public and of profit to the owners. The territory now being served by the existing electric railways would gain by reason of the broader policy of management which would surely obtain in the way of co-orodinated transportation service in all its phases, and the owners would profit by the economies to be obtained under centralized management.

This, however, is entirely aside from the purpose of this paper, and I believe a system of electric railway express service can be established under proper conditions which will provide express service similar in character to that now being provided by the American Railway Express Company.

Electric railway companies already have their investment in tracks, terminals and power-house equipment, and with some additional express equipment could undertake the handling of a large volume of those commodities usually shipped by express. A large number of interurban electric railways operate some form of package freight or express service, and a considerable number of electric railways provide both classes of service.

It is unnecessary to discuss the existing system of dispatch freight which provides in a limited manner for the shipment of nearly all articles of commerce over one or more connecting electric railways by means of through billing, in accordance with provisions of public tariffs approved by proper regulating commissions. We are all more or less familiar with this class of service and I believe will agree that with increased terminal facilities and rolling stock and in some cases a modification of existing franchise restrictions, this class of service can be greatly extended and expanded to the mutual benefit of the public and the industry.

EXTENT OF SERVICE POSSIBLE

In considering the subject of electric railway express, let us visualize for a moment the territory served by continuous lines of electric railways in Ohio, Indiana and Michigan and extending into Kentucky, New York, Pennsylvania, Illinois and Wisconsin. This system of electric railways connects a greater population and larger industrial and commercial centers than is connected in the same manner in any other country in the world. Why should not electric railway carriers make a strong bid for the business of the shipper who wants an express package delivered from Buffalo or Pittsburgh to Cleveland, Toledo, Detroit, Grand Rapids, Columbus, Cincinnati, Indianapolis, Chicago or Milwaukee?

Take a map of the Central electric territory and glance at the large industrial centers located on electric railway lines which could act as feeders to the main trunk lines. Why should there not be established a system of trunk express lines operating between the principal cities in the Central States, let us say from Pittsburgh to Cleveland, from Cleveland to Cincinnati via Columbus and Dayton, from Cleveland to Detroit via Toledo, from Detroit to Grand Rapids, from Toledo to Indianapolis, from Indianapolis to Chicago and from Chicago to Milwaukee. With the establishment of such a system of trunk express lines, other lines would act as feeders and bring in a large volume of express business.

There are those who have given some study to the subject and believe that it would not be profitable to establish a pick-up and deliver service in every town and hamlet in which there might be an express office. It is undoubtedly true that it would not be profitable to establish a pick-up and deliver service in towns of less than a certain population. Even in large industrial cities such a service could well be confined to certain districts beyond which, if it were established, there would have to be a system of zone charges for such service. It ought to be entirely feasible for electric railway express service to enter into competition with existing express service and it should be possible to provide a better service at rates not in excess of those now charged.

During the month of October a brief questionnaire was mailed to a number of electric railways in the Central Electric territory. The questions and answers received are as follows:

Does your company handle express shipments under contract with the American Railway Express Company?

In answer to this twenty-nine companies, of which nine had never handled old-line express, replied that their contracts had been cancelled after the express companies had been consolidated under the American Railway Express Company. Five companies replied that they were still handling express under contract with the American Railway Express Company but that the revenues received had been very largely reduced and in some cases had nearly reached the vanishing point.

What were the earnings from this service for six months ending June 30, 1918, and six months ending June 30, 1919?

Of thirty-four companies replying, twenty gave their total earnings for six months ending June 30, 1918, as $127,796 and for six months ending June 30, 1919, as $17,938 or a decrease for the two six-month periods compared of $109,758, nearly $220,000 annually. It must be born in mind that most of this express business was carried upon the regular passenger cars of the companies providing the service.

Does your company handle "local" express shipments?

Twenty-four companies replied yes; ten, no.

If so, do you operate pick-up-and-deliver or station-to-station service only?

Twenty-four companies replied they were handling station-to-station service only.

Is this service handled on passenger cars or on express cars provided for the purpose?

Twenty-four companies replied that the service was provided on passenger cars.

How frequent is your express service?

As a rule the answers indicated that the service was provided on all regular passenger cars.

What were the earnings from "local" express service for twelve months ending June 30, 1918, and twelve months ending June 30, 1919?

Of twenty-four companies handling "local" express, twelve gave their total earnings for twelve months ending June 30, 1918, as $138,995, and for twelve months ending June 30, 1919, as $200,454, an increase for the year ending June 30, 1919, of $61,459. To my mind, these figures are highly significant.

The average revenue derived under contract with any of the old-line express companies provided that the electric railways were to receive 40 or 45 per cent of the gross revenue accruing to the railway on a basis of the number of miles it carried the express matter, as compared to the entire mileage the parcel was hauled. In other words, if a parcel traveled 1000 miles and was carried over four roads and if the revenue from carrying the parcel was $10, the earnings accruing to the railways on a basis of 45 per cent of the gross revenue would be as follows:

First road, 400 miles, $1.80; second road, 500 miles, $2.25; third road, 30 miles, 13½ cents, and fourth road, 70 miles, 31½ cents. On the basis of receiving 45 per cent of the gross revenue, twenty electric railways in the Central States received approximately $220,000 annually for providing space on their passenger cars which was used by the old-line express companies.

I believe the time has come when we owe it to the properties with which we are connected that we carefully consider some plan by which we develop an express service on the electric railway properties intrusted to our care. I believe that it is a subject which should be carefully investigated by competent authorities and that this association should take active steps to cause such an investigation to be made. Because of the fact that electric railways operate more frequently, they should be able to provide a more flexible service which should appeal to the public.

We have service to sell and why should we not wholesale it in large quantities rather than retail it in small amounts?

Interurban Express*

Future Field of This Service Is Outlined—Pick-up and Delivery Service Not Recommended

By H. A. Nicholl

General Manager Union Traction Company of Indiana

Expedited freight shipments, being consignments forwarded at rates and under conditions that are familiarly known in Central Electric Traffic Association territory as "merchants' dispatch freight" but designated by the public as "interurban express," are now designated in Indiana by tariffs filed as "express freight."

Express freight carried on passenger cars differs from the ordinary freight to the extent that the hourly passenger service of the average interurban line is open to this traffic, and it differs from express, as the word is commonly used in connection with the old-line express companies, to the extent that it has no pick-up or delivery service in connection with such shipments.

This service, in some form, has been rendered by traction lines for many years and, in fact, its inception probably came with the operation of the first interurban car. As early as 1900 it had gained some recognition as a transportation means superior for certain kinds of merchandise to any other form. As long ago as 1898, express service, with pick-up and delivery, was given by some electric lines, and to a degree was profitable.

The service has rapidly gained favor with the public, the demand being constant and persistent. In fact, the business obtained by the traction lines has been so great as to tax the facilities available for this purpose. The reason for this is the excellent service rendered by the operation of small units at frequent intervals, the lack of details in office routine, cumbersome checking, multi-billing and other such transactions, which make possible a quick and informal delivery, and a dependable, every-day service which is so recognized by the commercial and industrial world.

Great care must be exercised in order not to burden the traffic with such details of operation as would tend to slow up the service and thus destroy the very thing that is so highly prized by the shipping public. It has its limitations, and in order to maintain the advantages now enjoyed, efforts should be made constantly to secure rapidity of transactions, economy in manner of handling and improvement of facilities for taking care of the business.

Rates

The rates allowed in Indiana are now uniform, being based on one and one-half times the first-class local freight rate for the same distance. Where a shipment moves over two or more lines, an additional 20 per cent may be added to the rate, and as freight rates under the Disque scale have become uniform all over the country, express rates as a consequence may be uniform for like distances in all sections. It would seem to the writer that the rates now in effect approach very nearly the ideal basis as an acceptable proposition to the shipping public, being higher than parcel post but not as high as those of the old-line express companies.

---

*Abstract of paper presented at meeting of the Central Electric Railway Association, Grand Rapids, Mich., Dec. 4 and 5, 1919.

Progress is being made toward the broadening of "express freight" (without the pick-up and delivery service). Recently, after a hearing before the Public Service Commission of Indiana pertaining to the uniform basis for express rates, and at the time the present rates and conditions were granted, a meeting of the operating and traffic officials of the various Indiana lines was held. At this meeting it was decided to place in effect a joint express freight tariff to cover all the connecting electric lines in the State for the purpose of handling through traffic. The compilation of rates was placed in the hands of a committee. It was further arranged at this same meeting that a complete set of division sheets or percentages be compiled to cover all of the connecting lines within the State, to be used as a uniform set of divisions jointly by all lines. This subject was also placed in the hands of a committee, and it is hoped that this committee will shortly be able to make a report. Therefore, it will be seen that extension of rates and divisions to other states will be a comparatively easy matter.

REVENUES AND EXPENSES

As to the proportion of revenues received which may be considered net profit, few, if any, of us can at present make any positive statement. The profitableness of the traffic can only be gaged, comparatively speaking, with its big brother the freight service, as I do not believe that today many roads attempt to apportion operating expenses to the extent that "express freight" service is charged directly with its proportion of operating costs. This will undoubtedly come in time, when it may be possible to gain a reasonable knowledge of earnings and expenses properly belonging to this class of traffic. However, it should cost but little, if any, more to carry a ton of express matter than it does a ton of freight, as the transaction is practically the same in both instances. At the present time it is costing our company $3.07 per ton for freight, and our revenues for express are $11.15 per ton. Therefore, it seems reasonable that there is a nice margin of profit in the handling of express matter without the pick-up and delivery service.

In looking over some figures recently obtained covering old-line express operations for the period of six months ended Dec. 31, 1918, we find that direct costs chargeable to the pick-up and delivery system of the old-line express company amount to 28 per cent of the gross operating expenses, not counting any portion for loss and damage, superintendence, maintenance of buildings, rents of buildings, miscellaneous and other expenses. This being the case, it would seem to the writer that a larger per cent of costs than indicated might be saved to the old-line express companies, and is being saved by the electric lines, by not having the pick-up and delivery service.

BEST FIELD FOR ELECTRIC EXPRESS

The electric express freight for short hauls has a great advantage over the old-line express companies, but for longer distances it would appear that the old-line express companies have the advantage over the electric lines, on account of the operation of through trains on fast schedules. This advantage should be particularly marked now when all the express companies are operated under one head and are able at junction points, on account of their consolidated facilities, to handle and transfer express matter more quickly and cheaply than it would be possible for the electric lines, without a vast expenditure of money on the part of the electric lines and without closer affiliation and co-operation.

Another advantage which the steam roads have over the traction lines for the handling of express matter between points distant to each other is the fact that the steam road trains are operated continuously night and day without any break in the service, which does not occur on electric railways, which have only an accommodation day service for the territory served.

Old-line express companies have such a volume of business on account of their operation all over the country that they can use the pick-up and delivery system more profitably than the electric lines, who only have the territory covered by their own lines to draw from. They also do a considerable amount of their business in the transportation of valuable packages; also of money, either by travelers' checks, money orders, or by the actual shipping of the money itself. This business they are able to handle in a very satisfactory and practical way, which in my opinion would not be possible by the electric railway, first on account of the operating service described, and second, because we do not have the high-grade, experienced agents and officials to take care of the business. If we entered the field to compete fully with the old-line express companies, we should be expected to take care of this part of the business, and a failure to do so would weaken our position.

CO-OPERATION NECESSARY FOR THROUGH BUSINESS

In reference to co-operation, this is a very vital factor in the handling of through business by more than one line. It has been the writer's experience that there are so many conditions prevailing on various electric lines that it is difficult to perform through service of any kind under 100 per cent co-operative conditions.

At the present time none of the electric lines, to my knowledge, has sufficient equipment, nor is the equipment in general so standardized that it can be operated with dispatch and economy in interline service. On account of the nonstandardization of the electrical equipment, it is not an easy matter for proper repairs to be made on foreign cars. It is true we have our interchange agreements for the operation of through cars, which not only cover the per diem and mileage charges and in some instances cover the cost of making repairs, still, under the conditions now prevailing, even these standards and charges are not sufficient to cover the situation and permit the operation of through trains with any degree of satisfaction. Of course we understand that between the larger terminals it might be desirable and thought necessary by some that the express business be handled in individual trail cars that could be pulled by regular passenger or freight trains, and in this way some of the aggravating difficulties such as the repairs of motors and other electrical apparatus be done away with; but if this method were followed, on account of the location of connecting tracks and the schedules prevailing on the different lines, the delay in transferring the trailer from one road to another would be so great that the service would not be of much value as compared to the old-line service.

COMPETITION OF MOTOR TRUCK

Another factor to be considered, not only by the electric lines with the service they are offering but also to some extent by the old-line express companies, is the motor truck as it is operating today. From the strides made in this class of transportation in the past few years, neither we nor the old-line express companies dare pass over the matter lightly. We try to make ourselves believe that the operators of those trucks cannot exist on the revenues they are now receiving and with the expenses they are under. The fact remains, however, that they not only do exist, but that they are increasing their business rapidly throughout the country, the number of vehicles employed in this class of service probably having increased in the last few years several hundred per cent. The same theory was used as regards the existence of the jitney, but this pest is still in evidence, and possibly to as great an extent as ever in certain localities. Details of motor truck operation which we have been able to gather indicate the lowest possible operating cost is about 25 cents per ton-mile haul, which is far in excess of the revenue received by the electric railways. The motor trucks not only charge the same rates as the electric railways do for freight, but as an additional inducement, they perform the duties of the dray at both ends of the line. This service, which is becoming more dependable and reliable every day, cannot be otherwise than attractive to and be favored by the shippers, but it is difficult to understand how it can be performed at a profit.

CONCLUSIONS STATED

In conclusion I will state that I believe in the extension of the present express freight business to all electric lines, and that it eventually will prove a profitable source of revenue.

Let's put in the system as far as we can with the facilities at our command, and see what results we obtain. If there should be any considerable through business between important terminals, of course through motors or trail cars with messengers can be installed as the occasion demands.

I am opposed to the proposition of pick-up and delivery service in connection with our express freight service at the present time;

First, because of the expense of the service.

Second, because the volume of traffic is not great enough to justify the installation of this feature.

Third, because we can get all the business we can handle without it.

[NOTE.—It will be interesting to compare Mr. Nicholl's arguments against pick-up-and-delivery service with the points made "pro and con" at the New York City meeting of the New York Electric Railway Association last week and repeated elsewhere in this issue. While this feature of the electric railway express business was not as fully discussed as at Grand Rapids the general tenor of the discussion seemed to favor the auxiliary service. One speaker, F. W. Watts, said that his company, which gives this service, thought of abandoning it, but after careful analysis found the business profitable.—ED.]

Possibilities of Electric Express Service*

The Author Recommends a Pick-Up and Delivery Service and Gives Statistics of the Business of His Property

BY J. F. STARKEY
General Passenger Agent
Northern Ohio Traction & Light Company

THERE is no chance for an argument that it is the desire of those financially interested in electric properties to work out some method by which added revenues may be obtained, and naturally we turn our attention to the express service and the revenues derived thereby as the theme for thought and discussion. Originally all properties placed their tariff rates, not only on express but for freight and passenger as well, at altogether too low a figure, and in many instances it has been a real fight to obtain the advanced rates we now enjoy. Many of these are still inadequate, considering the fearful ascent of operating cost, the summit of which I fear is not yet reached.

Mr. Munton cites the fact that the gross sum received by twenty companies for the six-month period ending June 30, 1918, was about $128,000, and for the six months ending June 30, 1919, it was about $18,000 or a total for the twelve months of approximately $146,000, these figures representing the revenues from the operation of the American Railway Express. Further on he gives us the total revenues from twelve companies under the "local" express plan for the year ending June 30, 1918, as about $139,000, and for the year ending June 30, 1919, as approximately $200,000. These figures indicate either that these lines are not doing a large enough volume of business or else their rates are ridiculously low.

Mr. Munton quotes some lines as believing that it would not be profitable to institute the "pick-up-and-deliver" form of express. With those who so reported I beg to take issue. True, very little revenue is derived from those places we term as "hamlets," yet this is true of other forms of transportation, because the business is not there to be had by any form of transportation. Yet we believe that it is well to have a uniform method of doing this, as well as any other part of our business, at every station, whether great or small.

Let me quote briefly some figures from the electric package service on our line. During the month of October, 1919, the pick-up-and-delivery service yielded a gross income of $54,385, the operating expenses being $18,413. The net revenue was $35,971, and this on a mileage of about 160 miles. We have an interstate service (carload) between Akron and Canton, Ohio, on the N. O. T. & L. Ry. to Detroit, Mich., using motors and trailer, leaving Akron about 6 p.m. every day in the week, Sunday excepted, and arriving at Detroit about 9 a.m. the following day. The rate per hundredweight for this service is, from Canton $1.35 and from Akron $1.25. Our proportion is 60 cents, the remainder going to the other lines interested. This service has proved satisfactory to the shipper and profitable to us. I might add that there is no delivery beyond the station at Detroit.

I feel that there is little chance of success or satisfaction in the matter of long-distance express service unless through service be established, and even in this event the utmost care must be exercised that no unnecessary delays in transit occur. It is better not to accept consignments than to disappoint the consignor and consignee and discourage them to the extent that they feel like withdrawing even the local shipments. It is not so much the cost of shipment as it is service.

---

*Abstract of paper presented at meeting of Central Electric Railway Association, Grand Rapids, Mich., Dec. 4-5, 1919.

I do not believe that it is a wise thing to use limited trains for merchandise shipments, because if any considerable tonnage is handled there must necessarily be delays at stations, and for patrons of limited trains nothing is more annoying than delays. Oftentimes they are content to be moving slowly—but they do want to be moving.

I agree with the author of our paper today in most he has said, and especially in that we must be constant in our efforts to bring added revenue to the coffers of our respective properties. Let us not allow the sentiment to die with this meeting.

Obstacles to Electric Express*

Slow Running Time and Many Interchanges Are Cited as Difficulties to a Comprehensive System

By Charles J. Laney

Traffic Manager Northern Ohio Traction & Light Company

FOR sake of argument, let us take issue with Mr. Munton's paper and point out some reasons why this is not the time that the organization of an electric railway express company would be a profitable venture nor beneficial to all interurban lines that operate in the Central Electric territory. It is true that the pick-up and delivery feature added to our freight departments would attract additional business to some of the larger roads, but I cannot see that the organization of an electric railway express would be the final answer on account of the numerous small electric lines that make up the routes between large commercial centers. These small lines are not financially able to maintain the equipment and service necessary to make the electric express a financial success. The proportion of rate that the small lines would receive would not compensate them to the extent of warranting the financing of any new project.

In establishing the electric railway express the chief factor in its success, after all of these operating conditions are made uniform, is competition with the old line express companies or the steam roads. Mr. Munton has pictured to us several trunk-line arteries that would make the electric railway express the main line to be fed by small intersecting interurban lines. Let us take his first route, and analyze the operating conditions.

Cleveland to Pittsburgh

Cleveland to Ravenna via the Northern Ohio Traction & Light Company, 48 miles, time, three and one-half hours, on account of the slow operation in Cleveland and through Akron. The Cleveland, Alliance & Mahoning Valley from Ravenna to Warren, 28 miles, one hour. The Mahoning & Shenango Railway & Light Company, Warren to Youngstown, 16 miles, time, one hour. The Youngstown & New Castle Railway, Youngstown to New Castle, 15 miles, one hour, where a connection is made with the Pittsburgh-Harmony Line, and all express matter must be transferred because that line has a 5-ft. gage. If one hour is allowed for transfer and three hours to Pittsburgh, we have consumed ten and one-half hours and operated over five roads.

The time of the old-line express company over the Pennsylvania between Cleveland and Pittsburgh is three and one-half hours. Now, what is the answer? The shipper will not recognize the electric railway express on this trunk line.

Cleveland to Cincinnati

The Big Four Railroad operates a direct line from Cleveland to Cincinnati, a distance of 253 miles, in seven hours. The electric route is as follows:

Cleveland, Southwestern & Columbus Railway to Bucyrus, 113 miles, six hours.
Columbus, Marion & Bucyrus to Marion, 18 miles, forty-five minutes.
Columbus, Delaware & Marion to Columbus, 51 miles, two and a half hours,
    allowing thirty minutes for loading and unloading at Delaware. At Columbus we should allow at least one hour for loading and unloading.
Ohio Electric Railway to Dayton, 75 miles, three hours,
    where we should allow one hour for loading and unloading.
Cincinnati & Dayton Traction Company to Cincinnati, 45 miles, two and three-fourths hours,
    allowing thirty minutes for loading and unloading at Hamilton.

This is a total of 322 miles, time sixteen hours fifty minutes, and then the cars arrive only at the city limits of Cincinnati.

What is the answer to this route? These two trunk-line routes cannot be changed to speed up an express service on account of physical conditions, and individual policies of the separate lines, due to different managements. These conditions, to a certain extent, will obtain on the other trunk-line routes mentioned by Mr. Munton.

WILL CONDITIONS BE MORE FAVORABLE LATER?

We cannot compete with steam road operation on long-haul express service. You will say that the unsatisfactory operation of steam roads through federal control and the embargoes and delays of express matter by the old-line express company make this the opportune time for the electric railways to establish their own express system.

When the steam lines and express companies return to their separate owners, which will be in a very short time, the traffic departments of those companies will effect a new organization, and as a result competition will be keener, and every pound of freight and express matter will be solicited and the public be advised of electric railway difficulties.

Mr. Munton points out that he has been advised that it would not be necessary to establish a pick-up and delivery service in all of the towns and probably in only the large commercial centers.

If you establish the electric railway express and are in competition with the old-line express companies, you must place in effect the same service as they offer or you won't get the business.

After all, the public regards express service as that having the pick-up and delivery features at origin and destination, together with quick dispatch.

There is in existence an agency which handles express matter on electric lines only, known as the Electric Package Agency, which operates on all interurban lines, except one, diverging from Cleveland. This is not an electric railway express company, incorporated and having power to make contracts, but an agency operated by five lines on a co-operative basis and is a success financially to the roads for whom it acts as agent. It was established twenty years ago as the only freight carrying method of the interurban roads radiating from Cleveland.

---

*Abstract of paper presented at meeting of Central Electric Railway Association, Grand Rapids, Mich., Dec. 4-5, 1919.

It is a success because its business is a part of each road, its executive committee being the general manager of each road represented. The electric package revenue of each road is the earnings of each road after operating expenses have been deducted. So you can see that it is a department, so to speak, of each road represented.

Investigation was made several years ago, and it was found that the income to one road of this agency was more than the equivalent of 50 per cent revenue contract with the old-line express company. This agency is so operated at the present that I doubt very much if a contract offered by any electric express company would be attractive enough to discontinue its operation.

In the State of Michigan where three roads constitute the bulk of the electric railway mileage, the electric express might probably be profitable. Indiana could possibly operate such an express company on its large lines, but to take in the whole Central Electric territory I agree with Mr. Munton that if it were possible to combine and centralize the management of all interurban lines under four or five heads, then the electric railway express would be an added source of revenue on account of broader policies obtained and co-ordinated transportation service. Until then I cannot see where the small roads, operated by existing policies and under individual local conditions, will be benefited financially by the establishment of an electric railway express.

Possibilities of Express Business*

Expand Express Business to Include Fast Freight and Baggage Service, Both with Pick-up and Delivery

By S. L. Vaughan
Traffic Manager, Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich.

Let us see when the express business first came into being. In 1839 William Harnden started in the business between New York and Boston. He arranged with the railroad and steamship lines to carry his messengers and their packages, and soon after extended his service between New York and Philadelphia. By 1850 he was operating in some of the Southern states. In 1840 Alvin Adams started in to compete, and in 1854, through a consolidation of four small companies, the Adams Express Company came into being. The American Express Company came into existence in 1850, and Wells Fargo & Company started in 1852. In April, 1915, the mileage of steam road, electric road, steamboat lines and stage lines in the United States covered by the express companies was 290,000 miles, 50,000 miles of which was steamboat, electric railway and stage. The Great Northern and Northern Pacific Railways have express companies in their own organizations.

SERVICE ON ELECTRIC LINES

Of course, we are most vitally interested in Michigan, Ohio and Indiana. I am known among a great many of my shipping friends as "Express service at freight rates," for the reason that in times past that was my slogan in advertising my freight service, both locally and to and from Chicago and Milwaukee. I am not using that slogan now, but I really believe we are doing as well as the express companies, in time and service, for the rates paid. The terminal service of our new company is one of the problems to be worked out. I believe that we should have freight at certain rates as now, which the consignor delivers to us and the consignee calls for; another class high enough to cover the cost of pick-up and delivery between slow freight and the higher express or passenger train rate. The middle class would meet our truck competition. We are handling now, every night out of Muskegon on freight train at freight rates, shipments that leave Grand Rapids at 11:30 p.m. via express on the Michigan Central. You will ask the reason. Because the last express train on the steam road out of Muskegon is at 3:30 p.m.

In April, 1909, we made a contract with the American Express Company to handle its business between Grand Rapids, Grand Haven and Muskegon; the Adams was operating on the Grand Rapids & Indiana and Grand Trunk Railways. Our first-class freight rate at that time was 17 cents per hundred and our contract called for 25 cents per hundred. The first nine months our earnings on this business were $243; the first year, 1909, $835; in 1910, $2,074; in 1911, $3,843; in 1916, $11,491; 1917, $20,578. In 1918 for the first six months (the contract was canceled on July 1) our earnings amounted to $11,506. We want this business back! How can we get it?

As a comparison, I must not overlook our local express business at the present time. Our rates are 75 cents for a package weighing 1 lb. to 100 lb. between any stations. The earnings on this business for six months ending Oct. 30, 1919, were $1,584, not much in comparison to our earnings on the American Express. It has been hinted that there is no excuse for express companies as an organization, because, as they now exist, they are a wheel within a wheel, and the express business should be handled by the railroads.

COMPETITION FROM PARCEL POST

A strong competitor of the express business is the parcel post, a great amount of which consists of shipments which formerly were handled as freight on which the electric lines received regular freight revenue and which now fill up our space as parcel post, on which the revenue is very small. We are compelled by law to make it possible for a competitor to use our service at a much less revenue than we derive from our regular freight business. Let us get the parcel post and mail into the express classification.

Parcel post was established on Jan. 1, 1913, and limited to 11 lb. In August, 1913, the limit was increased to 20 lb., in 1917 to 50 lb. and in 1918 to 70 lb., so you will see that the government is engaged in the express business under an assumed name.

Another line of work for the Electric Railway Service Company, which I think might be made very profitable and I am sure would be appreciated by the traveling public and not hard to accomplish, would be the picking up and delivering of baggage from the house in one city to the house in another. Think this over as a new asset.

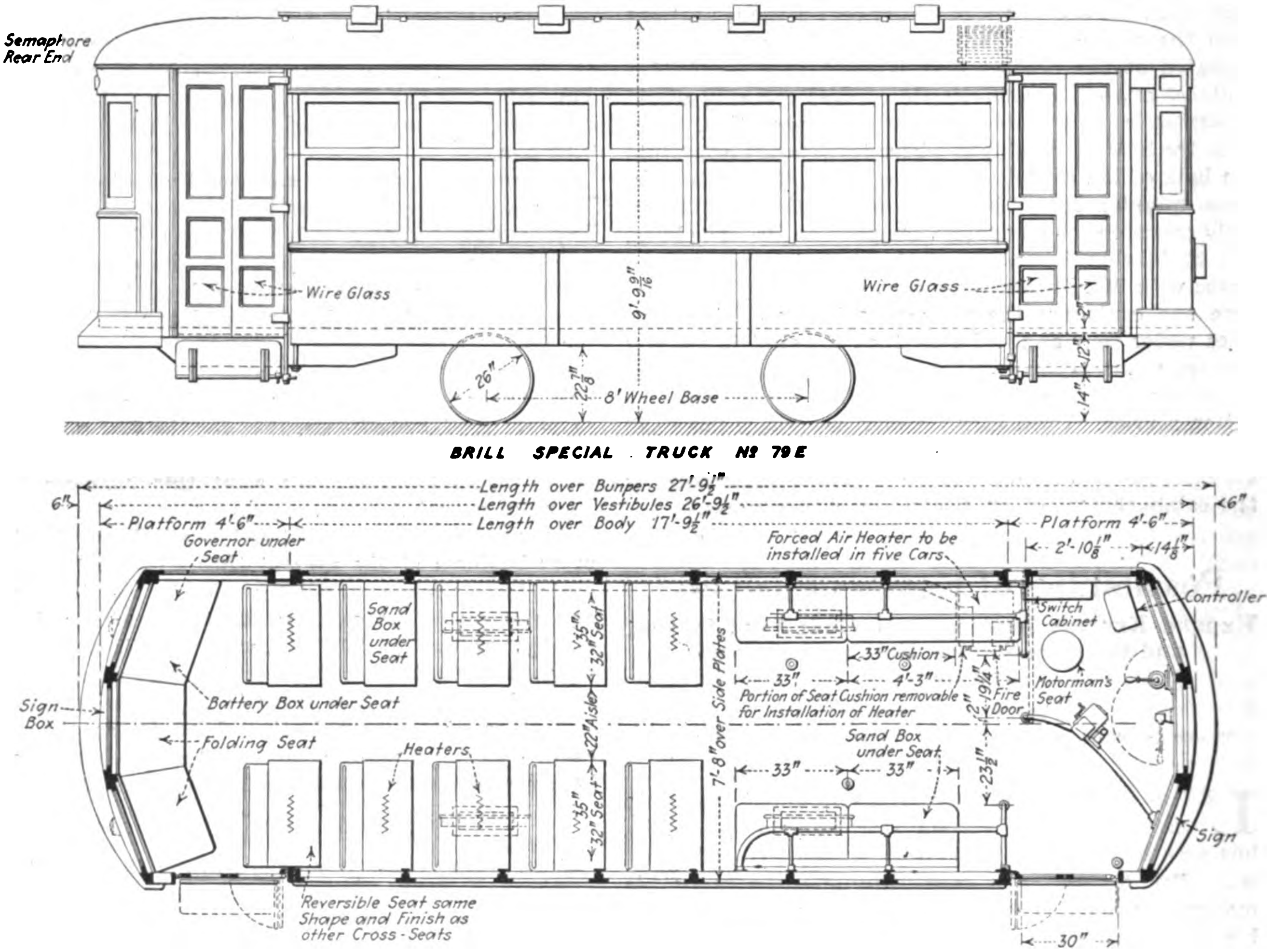
---

*Abstract of paper presented at meeting of Central Electric Railway Association, Grand Rapids, Mich., Dec. 4 and 5, 1919.

Changes in Kansas City Safety-Car Design

Sixty-five Cars Which Are Soon to Be Delivered Will Differ in Some Details From Those Now in Service

REFERENCE has been made several times in the columns of the ELECTRIC RAILWAY JOURNAL to the installation of twenty-five safety cars at Kansas City, to the success of their operation and also to the changes which were to be incorporated in the design of the sixty-five new cars now on order. Plan and elevation drawings for these sixty-five cars, delivery of which was expected to begin about Nov. 20, are given here and will indicate the interesting changes which have been made.


Semaphore Rear End
Wire Glass
Wire Glass
9'-9 9/16"
26"
22 7/8"
8' Wheel Base
14"
BRILL SPECIAL TRUCK Nº 79E
Length over Bunpers 27'-9½"
Length over Vestibules 26'-9½"
Length over Body 17'-9½"
6"
6"
Platform 4'-6"
Platform 4'-6"
2'-10⅛"
14⅛"
Governor under Seat
Sand Box under Seat
35"
32" Seat
22" Aisle
35"
32" Seat
Battery Box under Seat
Sign Box
Folding Seat
Heaters
Reversible Seat same Shape and Finish as other Cross-Seats
7'-8" over Side Plates
Forced Air Heater to be installed in five Cars
33" Cushion
33"
4'-3"
Portion of Seat Cushion removable for Installation of Heater
2'-19¼"
Fire Door
Switch Cabinet
Motorman's Seat
Controller
Sand Box under Seat
33"
33"
23½"
Sign
30"

ELEVATION, FLOOR PLAN AND INTERIOR ARRANGEMENT TO NEW KANSAS CITY SAFETY CARS

Mentioned briefly a few of the alterations from the previous design include the use of a 28-in. rather than a 26-in. wheel. The distance of the first step above the rail is reduced from 16 in. to 14 in. by placing wheel housings under the seats and by the use of a very slight ramp in the floor of the front platform. Some of the structural members have been strengthened by the use of gusset plates and additional cross-bracing. The front and rear decks have been slightly altered so as to cover the bumpers and thus prevent passengers from riding thereon. The truck bolster bearing arrangement has also been changed.

As for inside details the seating arrangement has been changed so that longitudinal seats 7 ft. long on one side and 5 ft. 6 in. long on the other have been placed at the front end. It is believed that this arrangement will help to eliminate congestion at the entrance and exit. Because of the hilly condition of Kansas City stanchions for the use of standing passengers are placed in front of the longitudinal seats. These stanchions are made of aluminum as is also the railing which prevents passengers from crowding the motorman and interfering with the operation of the car. The usual type of seat has been replaced by a cushion seat, the cars will have inside sheathing and there will be headlining. It is believed by the arrangement that these alterations will increase the comfort afforded to the passengers and make the cars more attractive to the public.

It will be noted from the drawings that provision has been made for a stove heater at the front of the car. It is planned to make a trial of such heaters on five of the cars while the remainder will each utilize twelve electric heaters. The length and width of the standard safety car has been maintained but the Kansas City car will weigh approximately 16,000 lb.

From 500 to 600 lb. additional has been placed in the underframing and the coupling arrangement has been changed so that the coupler is concealed. A 5-in. channel has been added to either end of the car for a bumper instead of the original 3-in. bumpers and a covering of thin sheet steel has been added to prevent boys from riding on the rear of cars as they did with the previous type of construction.

Philadelphia Conditions Analyzed

City Director of Transit Twining Criticises Recent P. R. T. Proposals and Discusses the Five-Cent Fare Situation in That City — Comparative Figures Are Given with Previous Years and Other Cities

ON NOV. 14, City Transit Director William S. Twining of Philadelphia presented an extended report to the joint Councilmanic committees of finance and street railways, giving his reasons for opposing the leasing of the city's Frankford elevated railway to the Philadelphia Rapid Transit Company and the proposed amendments of the 1907 contract. In this report, Director Twining includes a discussion of the 5-cent fare situation in Philadelphia which has attracted so much attention recently. On this point he said, in part:

DISCUSSION OF SERVICE AND FARE

"Mr. Mitten declared before the Federal Electric Railways Commission in Washington that 'co-operative effort is here found adequate to overcome obstacles seemingly insurmountable elsewhere.' As showing evidence of such effort he has stated, 'passengers carried per trainman increased 120 per cent—1910 to 1919. Public patronage increased from 288 to over 400 rides per capita.' Number of trainmen employed decreased 15.6 per cent. Total passengers per annum increased 72.3 per cent. Maximum number of cars operated increased 17 per cent. Passenger receipts per revenue car-mile increased from 27.2 cents to 38.4 cents, or 42 per cent. If we analyze these data we find the key to the 5-cent fare.

"Let us take the 120 per cent increase since 1910 in passengers carried per trainman, which Mr. Mitten points out as showing efficiency of management and co-operation of the trainmen. This increase in Philadelphia can be ascribed to the following changes:

"1. Larger, more modern and inviting cars. The average number of seats per surface car operated in 1910 was approximately thirty-four. At present the average is approximately forty-seven and one-half, an increase of 40 per cent.

"2. Increase in average speed of cars from 8 m.p.h. to 9 m.p.h. This increase in average speed was accomplished by cutting down the lay-over time and running time, the skip stops, etc.

"3. Elimination of lines of light traffic, thus raising the average of the other lines. Some of these lines are Race and Arch Streets lines, Callowhill Street line and Green Street and Fairmount Avenue line. Besides the elimination of these lines, in many cases routes were shortened and free transfer privileges given in lieu of the former direct route. This device contributes to the reduction in the average rate of fare, upon which Mr. Mitten has laid so much stress in his recent statements.

"4. Arrangement of runs and tripper service so as to reduce the total number of trainmen employed to a minimum.

"5. Rerouting and turning back of lines and withholding of service so as to reduce car mileage to a minimum. The expense of operation and therefore the net income vary quite naturally with the number of cars operated and car mileage; therefore, if the service be **deficient in any particular, the net income as reported will be higher than it should be. The comparison of cars operated and car mileage in Table I bears upon this question:**

TABLE I—SHOWING CARS OPERATED AND CAR MILEAGE IN PHILADELPHIA

Years	Gross Earnings	Per Cent Increase Over 1913	Normal Maximum Cars Operated	Per Cent Increase Over 1913	Car-Miles Passenger Service	Per Cent Increase Over 1913
Year to June 30:						
1913	$23,927,179	.....	2,101	.....	82,941,432	.....
1914	24,255,813	1.37	2,126	1.19	82,911,808	0.04
1915	23,843,606	†0.35	2,019	†3.90	79,598,337	†4.03
1916	25,839,344	7.99	2,072	†1.38	80,184,402	†3.32
1917	28,553,614	19.34	2,215	5.43	84,058,042	1.35
1918	30,443,951	27.24	2,172	3.38	84,918,481	2.37
Year to Dec. 31:						
1918	31,704,428	32.50	2,174	3.47	84,892,061	2.35
1919*	35,000,000	46.28	.....	.....	87,000,000	4.89

* Partly estimated. † Decrease.

"This shows that while street railway travel has increased about 46 per cent since 1913, the company has increased its service only 5 per cent.

TABLE II—GROSS REVENUE AND INCREASE PER ANNUM PHILADELPHIA RAPID TRANSIT COMPANY

Years Ended June 30	Gross Revenue	Annual Increase	Per Cent Increase Over Preceding Year	Average Per Cent Increase Since 1903	Average Per Cent Per Year Increase Since 1915
1903	$15,436,573	....	.....	....	....
1904	16,096,363	$659,790	4.27	4.27	....
1905	16,374,626	278,263	1.73	3.00	....
1906	17,711,599	1,336,973	8.16	4.72	....
1907	18,292,080	580,481	3.28	4.36	....
1908	18,557,503	265,423	1.45	3.78	....
1909	18,797,993	240,490	1.30	3.36	....
1910	18,501,357	396,636*	1.58*	2.66	....
1911	21,529,469	3,028,112	16.37	4.36	....
1912	22,700,692	1,171,223	5.44	4.49	....
1913	23,927,179	1,226,487	5.40	4.58	....
1914	24,255,813	328,634	1.37	4.29	....
1915	23,843,606	412,207*	1.70*	3.79	....
1916	25,839,344	1,995,738	8.37	4.15	8.37
1917	28,553,614	2,714,270	10.50	4.60	9.43
1918	30,443,951	1,890,337	6.63	4.73	8.50
1919	33,730,414	3,286,463	10.78	5.12	9.07

* Indicates decrease.

"6. A change in the riding habit of the public due to the great changes in living conditions, making people ride more often, thus creating loading of cars at all hours. It is stated by the company that the rides per capita upon its system had increased from 288 in 1910 to more than 400 at present; in other words, each man, woman and child rode on an average 400 times in 1919 against 288 times in 1910. Besides this big increase in the riding habit, the population itself has been greatly increased since 1910. The company has not provided the facilities and service to keep up with this rapidly growing traffic (see Table I), and it is a fact that the overloading of cars is just as acute as in 1910, when Mr. Mitten 'found a lot of junk on the streets.'

"A traffic count of the loading of the company's cars taken during the Christmas rush of 1910 shows that of the passengers carried out of the central business district 45 per cent were required to stand. A similar count in October, 1919, shows that 40 per cent of the riders stood. This percentage will, of course, be increased during the Christmas rush of the present year. Rush-hour loading conditions, therefore, are little better now than during the heaviest period of 1910, when conditions were notoriously deplorable. The large number of passengers who are required to stand during the non-rush hours of the day is a noticeable feature of present loading conditions. A comparison of loading conditions in 1915 and 1919 shows that the company is now carrying 44.7 per cent more passengers out of the business district during the maximum evening rush hour with only 14.5 per cent more seats. The result is that while 24.5 per cent of the riders were required to stand in 1915, 40.1 per cent were required to stand in October, 1919.

"7. Counting of all double fares and transfer passengers twice. The data which the company has presented as to passengers carried average fare per passenger and rides per capita are based upon counting all free transfers, exchange, double fare and joint fare passengers twice and including employees riding free as passengers. Mr. Mitten in his answers to questions claimed that the 'average fare per passenger' has decreased from 4.13 cents in 1910 to 3.98 cents at the present time, having dropped to as low as 3.91 cents in the years 1915, 1916 and 1917. He claims also that during this period the saving to passengers by this 'reduction in fare' amounted to $7,941,983. These figures are of course entirely fanciful, as all know that the rates of fare are 5 and 8 cents and the average somewhat more than 5 cents. The calculation of a reduction in the 'average fare per passenger' from 4.13 to 3.98 cents is possible principally because a greater proportion of the passengers are now required to use two cars to reach their destination than in 1910. As a matter of fact, the average fare is higher now than in 1910, as shown in the following statement:

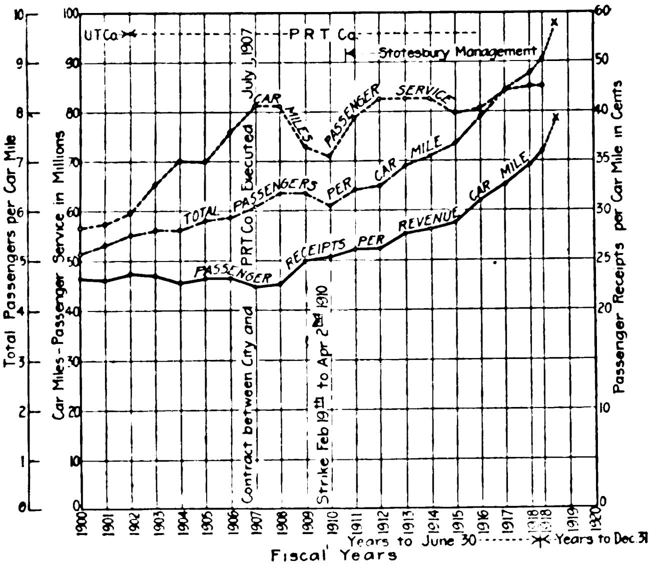


DIAGRAM SHOWING OPERATING STATISTICS OF PHILADELPHIA RAPID TRANSIT COMPANY

"In 1910, 333,253,830 passengers paid a 5-cent fare. In 1910, 97,846 passengers paid a 4.167-cent fare (six tickets for 25 cents). In 1910, 21,285,569 passengers paid an 8-cent fare. The average fare paid in 1910 was 5.18 cents.

"In 1918, 545,082,641 passengers paid 5 cents. In 1918, 43,791,710 passengers paid 8 cents. The average fare paid in 1918 was 5.223 cents.

TABLE III—COMPARISON OF TRAFFIC AND FACILITIES ON ALL SURFACE AND SUBWAY-SURFACE LINES OPERATED IN BUSINESS DISTRICT FOR MAXIMUM HOUR (EVENING RUSH) IN YEARS 1915 AND 1919

	North Philadelphia Lines	South Philadelphia Lines	West Philadelphia Lines	Total All Lines Operated in Business District
Passengers:				
1919	59,363	29,734	21,049	110.146
1915	39,911	20,373	15,776	76,060
Increase, 1919 over 1915, per cent.	49.0	46.0	33.5	44.7
Cars:				
1919	758	345	256	1,376
1915	611	310	240	1,161
Increase, 1919 over 1915, per cent.	24.0	11.3	6.7	18.5
Seats:				
1919	37,160	16,972	12,916	65,748
1915	29,768	15,464	12,173	57,405
Increase, 1919 over 1915, per cent.	24.8	9.6	6.2	14.5
Passengers per seat:				
1919	1.60	1.75	1.63	1.67
1915	1.34	1.32	1.30	1.33
Increase, 1919 over 1915, per cent.	11.9	32.8	25.5	25.5
Per cent of total passengers not provided with seats:				
1919, per cent	37.5	42.8	38.6	40.1
1915	25.4	24.2	23.1	24.5

Data from Street Corner Observations by Department of City Transit in May 1915, and October, 1919.

"In order to determine the amount of service being rendered to the riding public upon the Philadelphia Rapid Transit Company's surface system the Department of City Transit has made observations which are of interest, especially when compared with similar observations of previous years. These observations have been taken in the evening rush period and include all routes operated in the business district. Since the maximum traffic hour is included in this period a comparison of the facilities and traffic of the system under peak load may be made.

"The total number of passengers carried from the business district during the maximum hour in May, 1915, was 76,060. They were transported on 1161 cars having 57,405 seats, hence 18,655 or 24.5 per cent of the total passengers were standees. In October, 1919, the total number of passengers carried from the district had become 110,146 in the maximum hour, an increase of 44.7 per cent over 1915, while the number of seats provided increased from 57,405 to 65,748, or only 14.5 per cent. It is therefore evident that the rate of increase in traffic has been about three times the rate of increase in service. The number of standees in 1919 has mounted to 44,398, which is 40.1 per cent of the total riders. These figures serve to show the decrease in the amount of service per passenger over a period of the present management of the company.

"It is also interesting to compare the present maximum conditions with those existing under the former management in 1910, when conditions were generally declared deplorable and have been repeatedly made example of by the present management.

"In the report submitted to the Pennsylvania State Railroad Commission by Ford, Bacon & Davis after investigation of the system compelled by numerous complaints, comparable figures are given. (Vol. II, page 143). This report shows the results of a traffic count taken from Dec. 19 to 23, of 1910. These figures therefore represent conditions existing during the Christmas rush, the heaviest traffic period of the year. The number of passengers carried from the business district during the maximum evening hour was 58,841 and the number of seats operated 29,220, and thus the number of standees was 24,621, or 45.7 per cent of the total passengers. It is therefore shown that with the present ratio of 40.1 per cent of passengers standing, the car-loading conditions during the maximum rush hour are little better than those existing during the heaviest period of a year when the service was deplorably deficient."

Comparison of Investments in Transit Facilities, Philadelphia and Boston

In commenting on the question of capital investment in transit facilities, Mr. Twining points out that the Philadelphia Rapid Transit Company from Jan. 1, 1911, to June 30, 1919, had invested capital to the extent of $21,500,000, of which about $2,500,000 has been in rapid transit, while during approximately the same period (July 1, 1910, to Dec. 31, 1918) the Boston Elevated Railway increased its capital investment by $35,129,610, of which $31,401,014 was for rapid transit facilities. From the tabulation of these data, Mr. Twining points out that a comparison of the increased revenues and additional capital investment in transit facilities in these two cities would be as shown in Table IV.

TABLE IV—SHOWING COMPARISON OF INCREASED CAPITAL TO INCREASE IN GROSS REVENUE, BOSTON AND PHILADELPHIA

	Increase in Annual Gross Revenue, 1910-1919	Increased Capital on Investment Supported	Ratio of Increase in Investment in Facilities to Increase in Gross Revenue
Boston Elevated Railway	$5,081,985	$35,129,110	$6.91
Philadelphia Rapid Transit Company	12,200,945	21,475,000	1.76

Continuing, Mr. Twining said:

"It is seen from the above table that in Boston the investment in the period has averaged $6.91 for each dollar of increase in revenue. while in Philadelphia the Philadelphia Rapid Transit Company has invested only $1.76 for each dollar of increase in revenue. On the basis, therefore, of increase in revenue, the Boston investment has been at a rate nearly four times as great as Philadelphia Rapid Transit.

"If the Philadelphia Rapid Transit Company had provided capital at the rate shown above for Boston, the investment for the period instead of being $21,475,000, would have been more than $80,000,000, and the fixed charges upon the additional $60,000,000 at 5 per cent would have been $3,000,000 per year. The addition of $3,000,000 to its present fixed charges would make operation upon a 5-cent fare impossible. Besides increasing the fixed charges, the operation of the added facilities would have been accompanied by increased operating expenses. These might have been easily as much as $6,000,000 per year, or a total of $9,000,000, requiring the company to earn $44,000,000 this year and calling for a fare of at least 7½ cents, assuming no loss of riding from increase of fares.

"This comparison shows conclusively that the 5-cent fare in Philadelphia is due to an almost complete stoppage of transit development as compared with Boston and other large cities.

The Effect of Dead Capital on the Fare

"In my judgment, public utility companies should keep the total amount of borrowed money in the business at all times as low as possible and should be forced to divide all surplus earnings which result from a reasonable rate of fare between a dividend fund and an amortization fund. By the action of such a fund the cost of service should require the minimum proportion of the fare for the support of the capital. That I am not alone in this view I quote from a recent article by Prof. Dexter Kimball:

" 'We are now beginning to look upon industry as a means to support human life, not as a source of private, corporate or State profit.'

"Judge Gray, of Massachusetts, in 1869 expressed the same view in regard to the functions of street railways as follows:

" 'The accommodation of travelers, of all who have occasion to use them at certain rates of fare, is the leading object and public benefit for which these special modes of using the highway are granted, and not the profit of the proprietors. The profit to the proprietors is a mere mode of compensating them for their outlay of capital in providing and keeping up this public easement.'

"All capital invested in obsolete or superseded apparatus or equipment should be amortized, and only such money as is now active in the carrying on of the business should be entitled to draw interest or dividends. In other words, dead capital, like the superseded equipment, should not burden a public utility business and hamper the working capital. In the Philadelphia Rapid Transit Company much equipment and apparatus—horses, cars, rails, etc., purchased and their cost capitalized during the horse car, cable car and early electric periods, have long since disappeared, but the capital invested in those discarded facilities, although actually dead and representing nothing but a memory, still rides on the back of the capital now working. The active capital is forced not only to earn its own interest but must carry a load of dead capital besides. In the Philadelphia Rapid Transit Company's capitalization there exists today at least $40,000,000 of dead but unamortized capital drawing from the net earnings of the system an average of at least 10 per cent, or $4,000,000 annually. Is it any wonder that the company finds it difficult to increase its working or active capital when the old capital must be given its pound of flesh before the new and active capital can be fed. In addition to being inactive capital, a part at least of the Philadelphia Rapid Transit capitalization is what is known as 'water.' This only aggravates a bad matter, and with this load, whether it be dead capital or water, the company finds itself unable to support the necessary capital burdens which the increasing traffic demands. New capital can only be supported by unencumbered profits, and such profits are now exceedingly speculative on 5-cent fares.

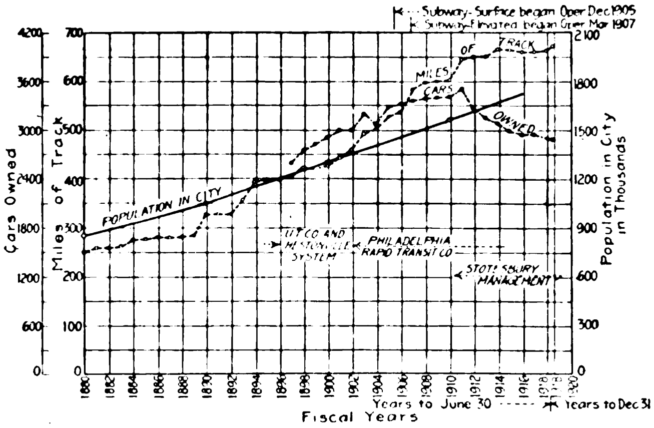


DIAGRAM SHOWING POPULATION OF PHILADELPHIA AND MILES OF TRACK AND CARS OWNED BY P. R. T.

"Since Mr. Mitten came here eight years ago, he has discarded at least 1000 cars, six or more power plants, five battery substations, carhouses and considerable mileage of track and distribution system, amounting in the aggregate to several millions of dollars, but aside from comparatively small renewal appropriations, this capital invested by the underlying companies still draws the same return as when this equipment was active and used in the service of the public.

"The reason why the company must ask the city to buy up its exchange business, why the contract-lease was rejected by the Public Service Commission and why so much difficulty is contemplated in arriving at a new lease, is because the company's capitalization has been allowed to pile up, property deteriorate and disappear without the establishment of depreciation or amortization funds and a pyramid of leases built up which, for 999 years, make the superseded property more potential in controlling the company's service and fares than the property now used in public service."

Mail Pay Hearings in Washington

Interstate Commerce Commission Listens to Arguments For and Against Increase of Payment to Electric Railways

FINAL argument was heard at Washington, D. C., on Dec. 5 by the Interstate Commerce Commission in the appeal by the electric railways for additional compensation for handling the United States mails. The American Electric Railway Association was represented by S. S. Ashbaugh. The post office department was represented by Joseph Stewart. In all, there was an attendance of twenty-eight, but the appearances except for counsel were not formally noted. All of the commissioners except Mr. Eastman were in attendance. The morning was given over to the presentation of the case of the railways. At 2 o'clock the session was resumed with Mr. Stewart presenting the case for the Post Office Department. After he had concluded, Mr. Ashbaugh was heard in rebuttal.

MR. ASHBAUGH EXPLAINS RAILWAY'S POSITION

In opening Mr. Ashbaugh referred to the very serious condition which confronts the electric railways and cited a number of specific cases. He also referred to the general social unrest. He said that the proceeding in which he appeard was not an ordinary lawsuit. It was a congressional hearing. Congress had found the Interstate Commerce Commission in existence and had referred the matter to it for settlement. Mr. Ashbaugh said that carrying the mail was a government obligation. It was not a matter of contract. The electric railways felt themselves unjustly dealt with, but they had not begun suit because they desired to keep the matter out of the courts. The railways were not obliged to carry the mails at a loss. The pay they received for carrying the mails was a matter of negotiation. The statute of 1918 did not increase the Interstate Commerce Commission powers, but merely modified the penalties with respect to refusal to carry mails. He said the jurisdiction of the Commission was fixed (1) by statute and (2) by the act of the Postmaster General in 1896. Mr. Ashbaugh made no complaint against any individuals. He did not impugn anybody's motives. As regards parcel post, Mr. Ashbaugh said that parcel post limits were fixed by law at 11 lb., but that under his discretionary powers the Postmaster General raised the limit to 70 lb. Mr. Ashbaugh questioned the postmaster's authority to do this. He said, however, that if the postmaster had this authority, then the Interstate Commerce Commission had some rights in the premises.

The mails carried on electric railways had never paid their way. The whole drift of the argument at the sessions held through the summer was that the railroads merely wanted fair play for a fair service. Mr. Bamberger at Salt Lake City had said that he would not consider mail service at present rate, but that he would gladly do so at fair rates and under proper regulations. This was the crux of the whole matter. In referring to a specific instance, Mr. Ashbaugh said that the Connecticut Company had stopped its railway mail service. That company had been paid $6,000 a year by the government for the service, and the postmaster was now paying $18,000 a year for the same kind of service by other means. Mr. Ashbaugh went into a long disquisition about the handling of mails in cities and the inconvenience which resulted to passengers. He said there was no authorization for side and terminal service, but that the electric railways had been called upon to perform a great deal of such work. This side and terminal service was much more costly to the electric railways than was similar service to steam railroads.

The Eastern Massachusetts Street Railway had been relieved of such work by the Post Office, but only because its men had threatened to strike. One of the commissioners asked if there would be any objection to side and terminal service if it was adequately paid for. In reply Mr. Ashbaugh said that the railways had no objections to performing this service if the companies had control of the work. The companies wanted only what they actually paid out for this kind of service.

Mr. Ashbaugh contended that the Post Office had burdened the electric railways by their appeal to farmers and others to ship by mail. In consequence, legitimate express business had been reduced considerably. Mail trains were used to put this class of matter through to terminals to the detriment of regular business of the railways. On passenger cars the electric railways were willing to carry three pouches of 50 lb. each. If the car facilities would permit, the companies would be willing to carry seven pouches. They were, however, opposed to carrying mail sacks during rush hours. The electric railways wanted to co-operate with the Post Office Department. Mr. Ashbaugh also cited the specific case of unreasonableness by the Post Office Department in Kansas City. In Indianapolis parcel post had been given precedence over all other matter, and the companies there had been deprived of the express business.

Mr. Ashbaugh said that the mails should be carried under reasonable regulations and the pay should be three times what it was at present. The electric railways wanted a rate for passenger cars covering the cost of operation plus a return on the equipment used in the service.

Baltimore, Kansas City and Omaha were the only cities that still had independent mail cars. An electric railway could not be properly paid at weight for a haul of, say, 1.5 miles. Mr. Ashbaugh said that to his knowledge copper, salt, sugar and other commodities had been shipped by parcel post, thus making the service a nuisance to the railway. The specific rates of pay suggested by the electric railways were referred to on pages 57, and 59 of the brief of the railways. In Kansas City, the Kansas City Railways was paid $25,000 a year for independent mail operation. Mr. Ashbaugh said that the cost for motormen and conductors alone in that city was $5,000 or $6,000 more per year than the operating income. For the year 1919, the electric railways asked retroactive pay at three times the present rate.

Mr. Ashbaugh pleaded for experimental service at the new rate for a period of six months. The electric railways were entitled to retroactive pay. In conclusion, Mr. Ashbaugh said that it was not worth the time of the electric railways to go into the matter if the brief of the Post Office Department represented what the department considered as a fair statement of its side of the case.

Exhibits bringing the matter down to the latest date were introduced as documents 156 and 157. The rates proposed by the Post Office Department viewed operating costs in the wrong way.

MR. STEWART SPEAKS ON BEHALF OF POST OFFICE DEPARTMENT

Mr. Stewart for the Post Office department reviewed the recent Post Office legislation. He said that the parcel post act had been passed by the Congress after a country-wide agitation. Congress knew what it was doing. The rates were fixed, and the conditions were generally known. The Post Office Department acted merely in an administrative way. All this legislation, however, was past history. The Post Office department was a servant of the people. The postmaster has some discretion, but he worked under the rules laid down by the statutes. No officer of the department so far as Mr. Stewart knew, had ever sought to justify the payments made to the electric railways. The policy of the department had been to relieve the companies of side and terminal service. In many cases the electric railways had appealed for relief to the local post office instead of going direct to the department. Mr. Stewart said that where appeal had been made direct to the department, the disposition was to correct the matter complained about.

At this point, Mr. Ashbaugh repeated that even where appeal had been made direct, relief had not been forthcoming. Mr. Stewart said there might be some such cases, but that the disposition of the department was to be fair. He admitted the absurdity of some of the present rates. When testimony was being taken throughout the country in the present case many things were disclosed that had not previously been known to the Post Office. According to Mr. Stewart there had never been a time when all the companies had come before Congress. In 1916 and 1918, however, Congress did act. At present the necessary machinery for a satisfactory adjustment of the matter is in existence.

Mr. Stewart then said there were three classes of service, city, suburban and interurban, and then described them and the basis of the present pay. He said there were 279 routes at the 3-cent rate and nineteen at the 4-cent rate. There was much misunderstanding about the 4-cent rate. He said that it would naturally appear that all lines would think they were entitled to the extra rate. Haulage must be very heavy and the number of points must be great to justify any increase in rate. Nineteen electric railways were on the steam railroad rate basis of pay. The carrying of the mails was an incidental service to the electric railways. In fact, in most cases it was so incidental that it was usually coupled up with other service, such as freight. He said that some of the electric railways wanted steam railroad line rates, claiming similarity to steam railroad service. In this they were not justified. Mr. Stewart contended that the evidence of the carriers was persuasive and suggestive but not conclusive. He thought the reports on file with the Interstate Commerce Commission ought to be taken as a basis for cost rather than facts brought out at hearings. Defects were radically apparent.

The government was ready to take up side and terminal service. The department was also willing to cooperate with respect to the character of the mail. The Post Office had tabulated I. C. C. records for nineteen carriers that submitted general statements and had concluded that the figures of cost were too great. The matter of compensation by the Post Office department was one of deduction. If a loss were involved to the carrier in any particular case, the carrier should receive more. He did not think the commission had any retroactive authority.

In rebuttal, Mr. Ashbaugh said that the trouble with the conclusions of the Post Office Department was that it had taken such figures as would get a low rate and fortifying itself with testimony here and there, had come to the conclusion that the rates should even be reduced. It was difficult, he said, to determine the pouch compensation on passenger cars but it was not difficult to determine the compensation for the individual car. In Baltimore, Kansas City and Omaha, the companies operating individual cars paid out more for wages and actual operation than they receive as compensation, not taking into consideration overhead and other charges. It seemed to him that when the government had not offered any other testimony than that of Mr. Prentiss, apparently prejudiced, the Post Office had not proved its case.

ABSTRACT OF RAILWAY BRIEF WHICH WAS PRESENTED BY MR. ASHBAUGH

Mr. Ashbaugh in his brief, which consisted of seventy-nine printed 6-in. x 9-in. pages, reviewed the situation, covering in detail the issue involved, side and terminal service, pouch, sack and parcel post in both city and interurban service, cost of operation in city and interurban service and proposed compensation for services rendered. He also took up the cost of operation of independent and apartment car service and proposed new rates of compensation.

The electric railways as outlined in the brief—asked:

First. That the rule of the Post Office department—requiring the railway companies to perform side and terminal messenger service be wholly abrogated.

Second. That the Postmaster General be directed to pay to each electric railway such sums of money as have since July 1, 1916, been paid out directly by it in compliance with the order to perform such service, and to charge the same as a part of the expenses of the fiscal years respectively.

The basis and rates proposed and urged for pouch, sack and parcel post service on both city and interurban lines by the electric railways are:

Rate 1.—Closed pouch and sack service.—Basis to be three pouches or less on one passenger car, except by agreement with the railway. Each loose parcel if carried to be counted as one pouch or sack, each pouch or sack, or loose parcel over three, counted together, carried under agreement on one passenger car at one time, is to be transported at one-half the rates given per pouch. The minimum annual compensation for any route to be $300.

Length of route	Rate per Pouch or Sack
3 miles or less	20 cents
Over 3 and less than 6 miles	22 cents
Over 6 and less than 8 miles	23 cents
Over 8 and less than 10 miles	24 cents
Over 10 and less than 12 miles	25 cents
Over 12 and less than 14 miles	26 cents

For each additional 2 miles or fraction thereof, 1 cent increase per pouch.

Rate 2.—Parcel Post on Express and Freight Cars.—Rate to be 75 per cent of that proposed for closed pouch sack service on passenger cars. The limit of weight for any single piece to be 70 lb. The weights of pouches and sacks for Rates 1 and 2 shall not be more than 50 lb. and their dimensions shall not exceed—

Pouches (Cylindrical)	Sacks (Rectangular)
No. 2....15 x 36 in.	No. 1....11 x 19 x 32 in.
No. 3....12 x 30 in.	No. 2....11 x 18 x 20 in.
No. 4....11 x 22 in.	No. 4.... 8 x 13 x 15 in.

Rate 3.—Independent Cars.—A rate of 2.5 cents per linear car foot mile, plus an annual charge of $500 per car was suggested.

Rate 4.—Apartment Cars.—A rate of 2.5 cents per linear car foot mile, plus an annual charge of $250 per car was proposed.

Publicity Bureau Assumes New Duty

THE Illinois Committee on Public Utility Information which was inaugurated about April 1, 1919, under the auspices of the Illinois Gas Association, the Illinois State Electric Association and the Illinois Electric Railways Association, has been obliged to form a new department to meet requests for reliable public utility information from public schools, universities and colleges of the State, as well as from civic organizations, commercial clubs and public speakers. This department will furnish information dependable both scientifically and historically free of charge, but will take no part in controversies, or controversial subjects.

Since the formation of the committee all classes of public utility information has been collected and indexed for the use of the various utilities throughout the State, and a weekly bulletin has been sent out to hundreds of newspapers with the idea of keeping the public utility conditions constantly before the public, and through the columns of the newspapers to educate the public to the financial needs of the utilities and to the magnitude of these industries.

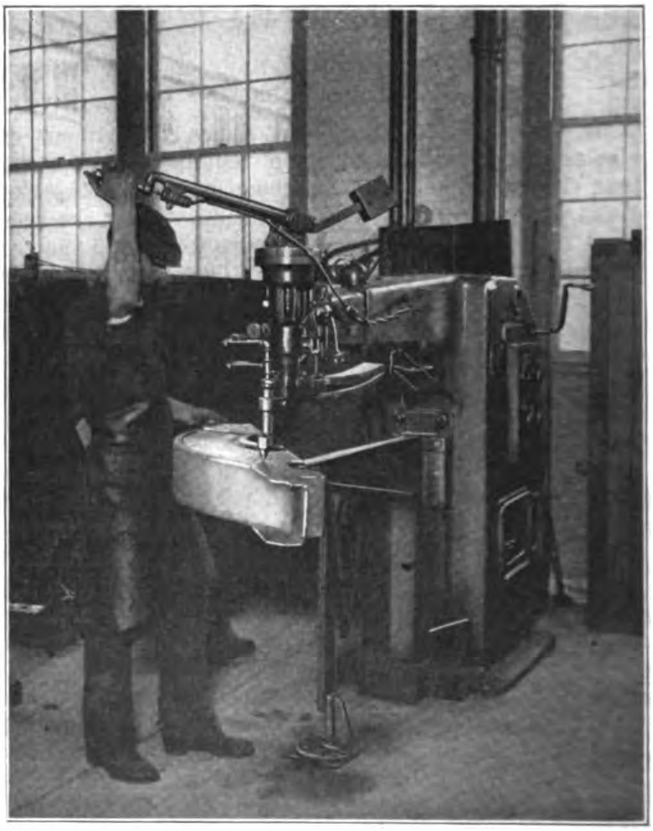
A series of informational bulletins is now being issued also for school purposes, and supplementing this the committee is having prepared authoritative brochures upon each branch of the utility industry. The school bulletins are being prepared with the idea that they may be used by debating societies and in English and current topic classes. The scope and importance of the work may be gaged by the fact that 345 public school principals in Illinois as well as universities and colleges have requested the Illinois Committee to send them copies of these bulletins.

Reinforced Suspension for Sheet-Steel Gear Cases

By Interlocking and Welding Together the Sides, Cover and Reinforcements, a Channel-Shaped Suspension Is Built Up To Provide Increased Strength

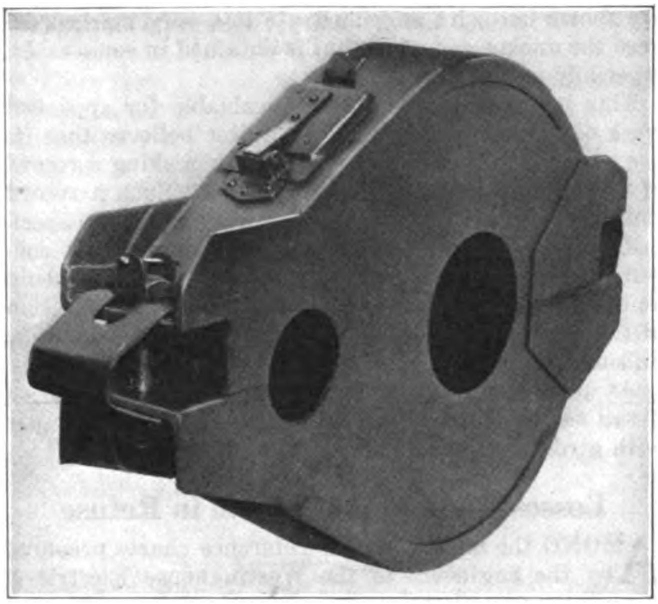
THE use of sheet steel for gear cases came into favor in the campaign that was started several years ago to reduce the weight of electric cars. Manufacturers of railway motors were anxious to comply with their customers' demands for lighter equipments, and the malleable iron gear case in use at that time appeared to offer a fruitful field for reducing weight.

In design and construction the sheet-steel gear case has presented problems that were not thought of with the old malleable iron type. A gear case for an electric railway motor must of necessity be overhung and supported from the end of the motor. The necessary brackets or lugs for effecting this support are subjected to severe shocks and stresses from the jolting of the car over crossings, special track work and track in run-down condition, and often receive severe blows from the pavement or roadbed when clearance is small. The severity of these conditions is the determining factor in the life of gear cases and they must be designed so as to withstand the most severe conditions.



SPOT WELDING REINFORCEMENT TO GEAR CASE

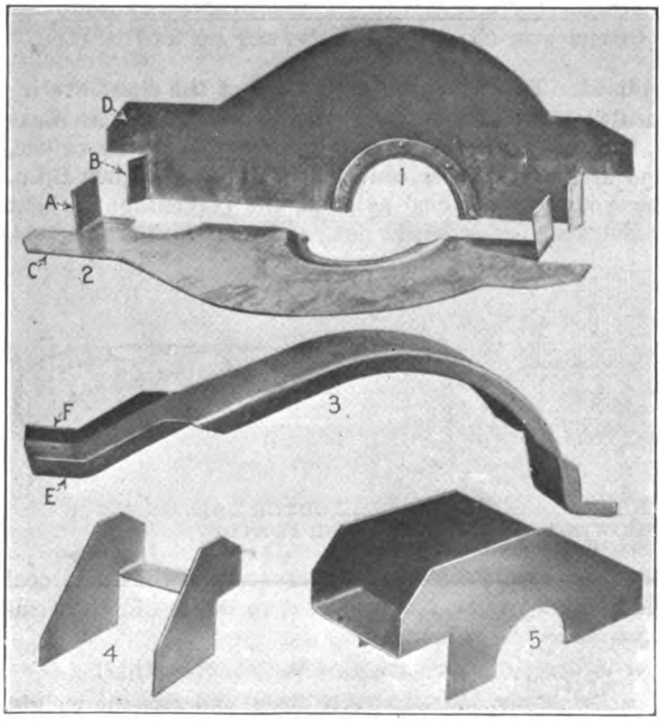
The method of suspension and the construction of the suspension members of gear cases have an important bearing on their ultimate life. The two-point end suspension which is now universally used with late-type railway motors, throws less strain on the gear case and its supports. This comes about through the increased flexibility provided for the case, effective if it should strike an obstruction, and through the elimina-



A COMPLETED GEAR CASE

tion of excessive lateral vibration. The accompanying halftones show the latest type of gear case as constructed by the Columbia Machine Works & Malleable Iron Company, which illustrates the points made above. Several new features have been incorporated in its design to overcome the trouble of breakage at the points of support. Increased strength at these points is obtained by extending the sides and cover so as to form the suspension members and reinforcing these with sheet-steel brackets and plates so shaped as to interlock with the sides and cover. By spot-welding all parts together and by additional welding along the entire edges a strong construction is obtained.

All parts are punched from sheet steel and are then bent to the shape desired. The two sides of each half of the gear case are split at the suspension ends. The bottom parts of these end portions are turned inward as indicated at *A* and *B* in the illustrations. These turned-in portions abut against each other in the assembled case and increase the strength as well as effectively closing the ends to keep out dirt and water. The upper portions of the ends *C* and *D* are left extended so as to serve as supports for the case when assembled.

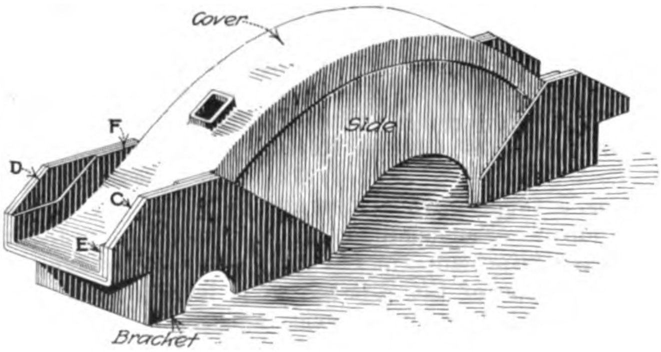


PRINCIPAL PARTS OF GEAR CASE
Nos. 1 and 2, sides; No. 3, cover; Nos. 4 and 5, reinforcements

The cover is notched and bent so as to provide flanges in two directions along the edges. The flanges of the center portion extend down and outside the side members and are fastened to them by welding or riveting. At the ends the flanges are bent up as indicated at *E* and *F* and fit inside the sides.

As a reinforcement to this end construction of the sides and cover a bracket is employed which extends back along the sides of the gear case and crosses over underneath the end portion of the cover. This bracket is made in one piece as indicated in the accompanying illustrations. By splitting the bracket near the end, the sides are turned up leaving a channel shaped support as a reinforcement for the suspension. An insert plate is fitted across the end between the cover and the bracket so that three thicknesses of metal are provided at this point.

After the various parts are assembled and welded together, the suspension ends of each half of the gear case take the form of a channel-shapped support which has three thicknesses of steel on each side and across the end. As the sides and top are extended to form this channel the weight of the gear case and any strains resulting from vibration or shock are transmitted through uninterrupted supports and not through joints which may loosen at seams or through the shearing off of rivets.



DETAILS OF GEAR CASE

The construction of the suspension for the two halves of the gear case and for each end is substantially the same with the exception of the shape and dimensions of the parts concerned. Safety straps are provided at each end to support the lower half of the gear case should the nut come off the connecting bolt.

Volt-Ammeter for Signal Maintenance

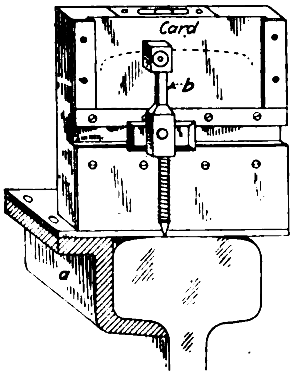
A new form of volt-ammeter especially designed for signal engineers, supervisors and other work where a highly accurate instrument is not considered warranted has recently been placed on the market. The Roller-Smith Company, New York City, has brought out such a little instrument, which weighs 20 oz. and is only 5 x 4 x 2 in. in dimensions. This is a direct-current instrument with uniform scale division, and "dead beat" needle characteristics. It has a simple zero adjuster and is entirely self-contained.

Making Accurate Measurement of Rail Wear

Description of an Instrument* to Provide a Means of Plotting the Outline of the Surface of a Rail While in Position in the Track

BY ALEXANDER D. FERGUSON
A. M. E. I. C.

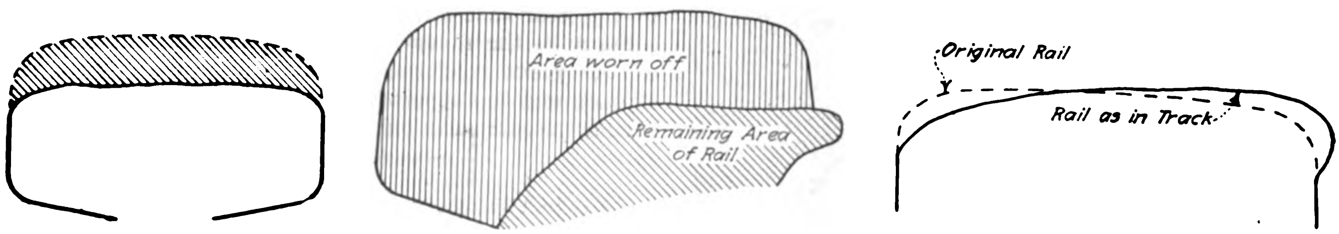
DURING the appraisal of the properties of the Winnipeg Electric Railway and subsidiary companies, it was necessary to determine the depreciation of the tracks, especially in regard to rail wear. After a complete inventory of the track had been finished, it was decided that an accurate measurement of the wear should be made. This measurement was rendered particularly difficult as the rails were set in strong sets. To measure the rail wear accurately without necessitating the removal of these sets, the writer devised the instrument shown in an accompanying sketch, which consists essentially of a framework on which is mounted a vertical rod, the lower end of which is pointed and the upper end provided with a block for holding a pencil. Horizontal movement of this vertical rod takes place by having a support which operates in a slot across the instrument. For holding the instrument in position a casting is provided at the bottom which fits against the underside of the rail head. A level gage at the top shows when the instrument is level.



INSTRUMENT FOR RECORDING GRAPHICALLY THE SURFACE OF A RAIL

The instrument is set, as indicated in the accompanying illustration, by means of set screws. A plain card is inserted in the card rack at the top of the instrument and a pencil record of the top of the rail section is obtained by moving the movable portion horizontally across the instrument, free vertical motion being had at the same time. The pencil records an exact tracing of the top of the rail as it is in the track.

This operation is repeated on a new rail section of the same weight as the one first measured, using the same card, so that the new rail surface will be superimposed on the first as indicated in the second illustration. The shaded area between these two lines represents the rail wear and a record of it can be accurately taken off by a planimeter.



AT LEFT, REGULAR WEAR OF RAIL SECTION: CENTER, WEAR FOUND ON 70 LB. A.S.C.E. OUTER RAIL ON A CURVE: AT RIGHT, SECTION OF 60 LB. A.S.C.E. RAIL, SHOWING ROLLING ON OUTER PORTION

In the course of making the measurements referred to, many interesting charts were obtained. Three of these are shown herewith and illustrate to a very marked degree the unexpected wear that is obtained in some cases, especially on curves.

This instrument has proved invaluable for appraisal work of this character, and the writer believes that its use would be of value to companies for making a record of track conditions over their systems. Such a record could be arranged to show the rail wear at certain specified points, and by taking these measurements at convenient intervals a record of the rate of rail wear would be obtained. A graphic representation of the condition of the track could also be arranged without considerable difficulty.

At present the instrument has been used only on T-rail sections, but it can be readily remodeled for use with girder sections.

Losses Due to Combustible in Refuse

AMONG the many valuable reference charts prepared by the engineers of the Westinghouse Electric & Manufacturing Company, particularly for use in connection with boiler-room practice, the accompanying illustration is very instructive in showing how the combustible in the refuse carries off energy that should be utilized. Two examples of the use of the chart are indicated by the heavy lines with arrow heads. In Case 1, starting with 12 per cent combustible in the refuse, and assuming 20 per cent ash in coal and 11,000 B.t.u. per pound in the coal as fired, the percentage of heat in the combustible works out as about 3.7. Similarly, 34 per cent combustible in the refuse with the same coal shows 13.6 per cent of the heat to be lost in the combustible in the refuse.

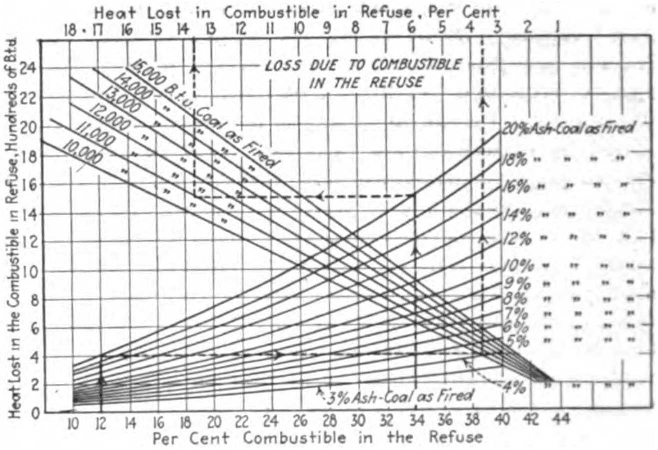


CHART FOR CALCULATING EFFECT OF ASH IN COAL

The basis of calculation of the chart is this:

Let x = per cent of coal as fired, and also the weight of ash in 1 lb. of coal as fired.
y = per cent of combustible in refuse.

---

*Other similar types of rail head scribers were described in issues of the ELECTRIC RAILWAY JOURNAL for Nov. 20, 1915, page 1042, May 12, 1917, page 876 and March 22, 1919, page 592.—Eds.

Then the per cent of ash in the refuse is 1-*y*, and the ratio of combustible to ash is *y* ÷ (1-*y*).

Since from 1 lb. of coal there is in the refuse a weight of ash equal to the weight of ash in the coal as fired (neglecting the ash carried over into the boiler) the weight of combustible in the refuse is

$$\frac{y}{1-y} \times x.$$

The combustible in the refuse may be considered as carbon, of which the thermal value is 14,550 B.t.u. per pound. Then the number of heat units lost per pound of coal is

$$\frac{y}{1-y} = x \times 14{,}550.$$

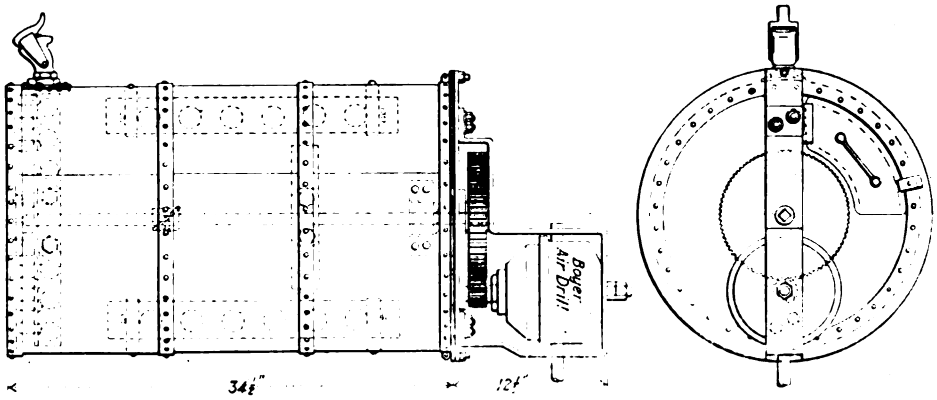
The per cent loss, referred to the coal as fired is

$$\frac{x \times y \times 14{,}550}{(1-y) \times B.t.u. \text{ in coal as fired}}.$$

Paint Mixer Driven by Remodeled Air Drill

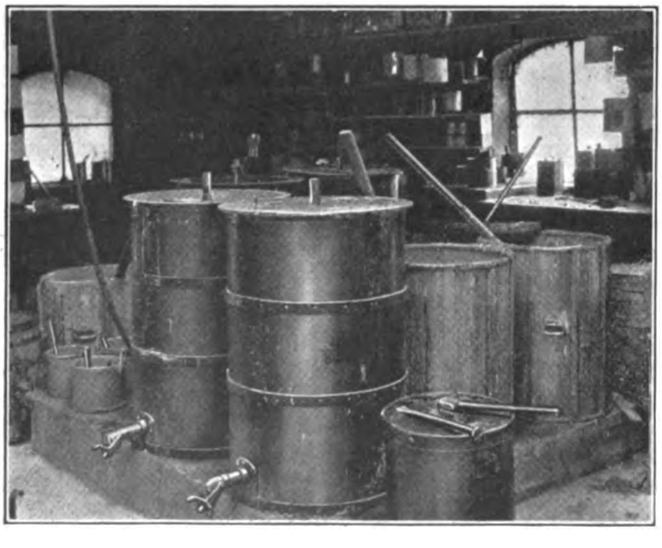
By Using a Self-Contained Device Driven by an Air-Drill Mechanism, Paint-Mixing Has Been Made Attractive in Brooklyn

THE mixing of paint for car painting is considered as a somewhat tedious job, especially when it is necessary to perform the various operations by hand. For several years the Brooklyn Rapid Transit Company has had paint mixers operated by central broached shafts upon which an ordinary controller handle was fitted to rotate the interior parts. These tanks were of sheet-iron construction with riveted bands, and were 34½ in. long by approximately 2 ft. in diameter. Their capacity is 50 gal. each. The construction of the interior stirring mechanism is shown in an accompanying illustration. Two baffle plates extend out from the sides of the tank. These are 23¾ in. long by 3 in. wide and are perforated with 6 holes, 1¾ in. in diameter. The center paddle shaft is 1¼ in. square, except at the points which are used as bearings at the top and bottom. The bottom is turned down to 1 in. diameter and rests in an angle iron support. The top bearing is 1 13/16 in. diameter, and consists of a hole in a flat piece of strap iron. The center paddles are mounted on this shaft and the construction of the center portion is arranged to clamp the square part of the shaft firmly.

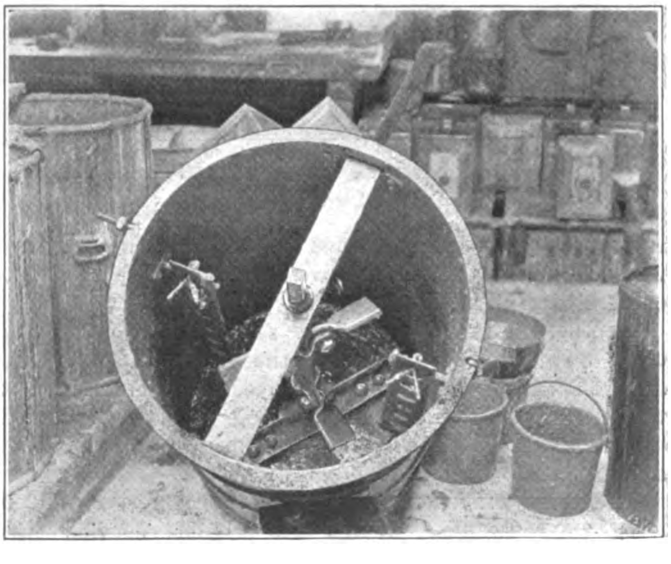


AIR DRILL DRIVING MECHANISM FOR PAINT MIXER

As already stated, the first construction of these paint mixers provided for hand operation by the use of an ordinary controller handle. In an endeavor to reduce the tediousness of the operation and make paint-mixing more attractive, the assistant superintendent of the Fifty-second Street "surface" repair shop conceived the idea of using the mechanism from a Boyer air drill to drive the paint-mixing paddles. This air drill is mounted in a strap-iron framework, and arranged to drive the rotating paddles through a pinion and gear. This is necessary in order to provide for the best operating speed of the air drill, and at the same time insure against too rapid stirring. The air-drill frame is constructed of strap-iron ⅜ in. thick by 3 in. wide. The air drill pinion and gear are so mounted in this that the entire driving mechanism is self-contained. The base strap which fits to the top of the tank extends over the edges and is slotted to receive two latches. These latches consist of a threaded I-bolt and nut. The center of the gear is broached to fit the top of the driving shaft, and the entire driving mechanism can be readily lifted off and fitted to another tank as desired. An air connection



GROUP OF PAINT-MIXING TANKS



INTERIOR OF PAINT-MIXING TANKS

is provided convenient to the stand on which the paint mixers are located, and a short length of hose will reach any tank and provide for the operation of the air-driving mechanism. One air-driving mechanism thus serves for all of the tanks and the man in charge can perform other duties at the same time that the paint is being mixed.

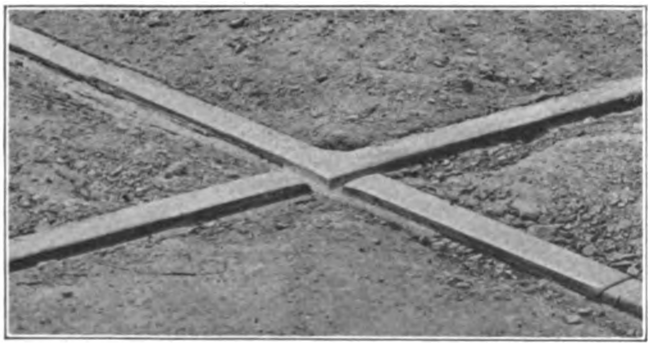
As evidence of the effectiveness of this mixer, it is possible to break up and prepare for use 265 lb. of white lead and color pigment together with 17 gal. of oil turpentine and japan after one hour's mixing.

Milwaukee Thermit-Welded Crossings Are Long-Lived

Crossings Are Welded in Company's Shops in Halves to Facilitate Handling and Reduce Number of Welds Required in Field

MARKED savings, both in lower first cost and longer life, have been effected by the Milwaukee Electric Railway & Light Company in reclaiming old and building up new crossings by means of thermit welding, as compared with installing new special work. This company, which was the pioneer railway to make Thermit welded crossings, has installed a considerable number of them in Milwaukee. A recent inspection showed that, after service tests extending in some cases for more than five years, these crossings are standing up in fine shape.

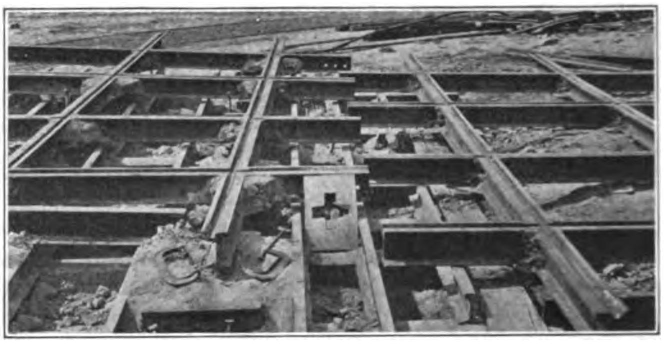
The Milwaukee method of making up a double-track square crossing without bolts or joints is shown in one of the accompanying illustrations. The two halves of the crossing were first separately built up at leisure at the railway shops in order to facilitate handling and reducing the number of welds to be made in the street. The half-crossings were constructed by building up each component cross by Thermit welding, thus requiring eight welds for each half-crossing. These halves were then transported to the job, thus leaving only four remaining joints to be welded to complete the crossing, in addition to the sixteen welds which connected the crossing to the adjoining ordinary track.



THERMIT FROG AFTER FOUR AND ONE-HALF YEARS SERVICE

Another illustration shows a series of chrome-nickel electric-steel frogs welded by the same company into a half-crossing. It will be noticed in this case that the rail arms of different unit frog pairs were welded together instead of the crosses themselves, so as to form a half-crossing from four units.

The third illustration shows another Thermit-welded frog in Milwaukee, where the 4½-year service test speaks for itself. The frog was installed in April, 1915, in a crossing over which double-truck cars were operated at from a one-half to a three-minute headway. In April, 1917, this frog was removed from the crossing and installed in another crossing to replace a broken cast-steel frog which had been installed in 1915, the same date as the original installation of the Thermit frog.

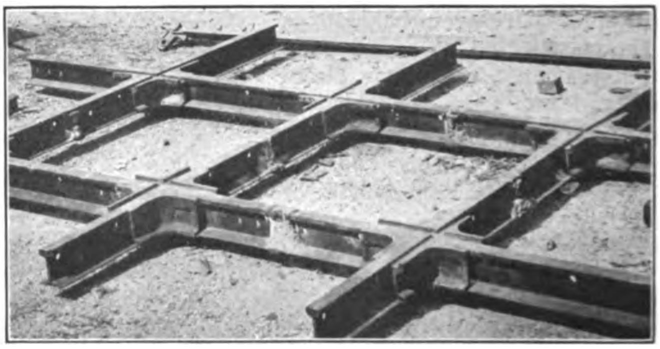


DOUBLE TRACK SQUARE CROSSING MADE IN HALVES WITHOUT JOINTS

The cost of building up double-track crossings by Thermit welding averages around $30 to $40 per frog, including cost of rail, labor and welding material, or about $480 to $640 for the complete crossing.

Measuring Boiler Draft Conditions

MUCH desirable information regarding the working of boilers can be obtained from an accurate knowledge of draft conditions. Thus a knowledge of the difference of pressure above and below the grate will aid in obtaining the best results from any particular class of fuel. Similarly, an increase in the pressure difference between the combustion chamber and the dampers will indicate that the boiler is becoming dirty. Draft measurements can of course be obtained by means of U-tubes connected to suitable points. These readings, however, are often rendered unreliable as evaporation and condensation vary the quantity of water present in the tube.



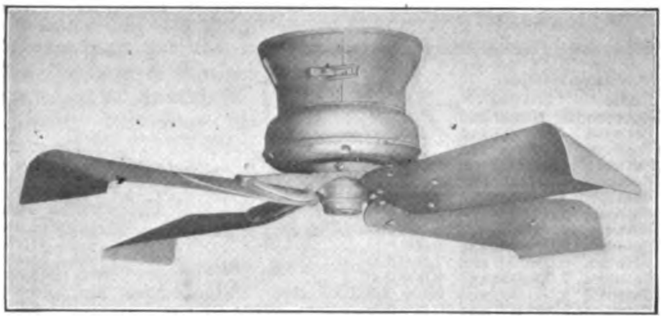
CHROME-NICKLE ELECTRIC STEEL LAYOUT WELDED INTO HALVES

Among the newer draft indicators is one recently placed on the market by the Underfeed Stoker Company, Ltd., of Coventry House, South Place, London, England. This instrument gives accurate direct readings without the use of mechanism. The units are inclosed in a dust-tight case provided with a plate glass window. Each unit consists of a central glass tube connected at its upper end to the point at which it is desired to measure the pressure. The lower end of this tube is open and dips into a large test-tube which is about half-filled with water and surrounds the central tube for the greater part of its length. To overcome the objection to a form of scale which will be affected by evaporation of the water and by condensation of the vapor, a floating scale in the form of a hydrometer tube is employed in the instrument. This scale, which is divided into inches and tenths with a central zero, is inclosed in a glass tube weighted so that it will float vertically in the water with the zero of the scale at the water level. This float tube rises and falls with the water in the tube so that the position of the surface of the water in the outer tube relatively to the floating scale is at all times a reasonably accurate measure of the pressure in the central tube. The float tube is kept central and prevented from adhering to the inner tube by a number of projections formed on the glass.

4000 Fans Ordered for Subway Cars

THE New York Municipal Railway Corporation recently placed an order for 4000 fans to be used in ventilating its subway cars, with the General Electric Company, Schenectady, N. Y. These fans are especially designed for railway service, which requires a particularly rugged construction to withstand shocks, jolts, and current surges resulting from gaps in the third-rail. The general outline and surfaces of the fan have to be smooth, also, in order to minimize the collection of dust and dirt and facilitate cleaning.

Each car is equipped with five single-coil fans connected in series across the line. The maximum line voltage specified is 750, the minimum 450, with an average of 575. Each fan is wound for 115 volts, and the watt-input is not to exceed 150. The speed of these fans is approximately 300 r.p.m. They will deliver air at a maximum velocity of 500 ft., measured 3 ft. below the center of the blade, and at a maximum of 300 ft. when measured 3 ft. from the floor of the car. This air velocity is required when operating under a normal voltage of 575.



SINGLE-COIL-TYPE 38-IN. CEILING FAN FOR N. Y. M. SUBWAY CARS

The motor frame is designed for direct attachment to the car ceiling and, as already stated, crevices and external surfaces are eliminated to provide for convenient cleaning. A metal canopy completely incloses the top part of the motor, which contains the commutator brushes and brush rigging. All leads and connections inside the motor are securely anchored to prevent movement due to the vibration of the car, and all screws are provided with lock washers to prevent them from working loose. Both field and armature windings are made with pre-treated cotton-covered enamel wire, thoroughly impregnated and baked with insulating varnish. Each motor has four steel poles and the field windings are series connected with the drum type armature. The commutators are slotted to a depth of 3-64 in.

The armature rotates on hardened steel thrust bearings completely immersed in oil, and the stationary shaft is lubricated by means of a spiral groove on the armature spider. A drilled hole in the spider casting provides for the return of oil to the main reservoir; consequently there is a continuous lubrication of the bearing. The motors can be readily oiled by removing the blade holder. All fans are finished in white enamel with nickel-plated trimmings to harmonize with the car interior.

Association News

American Executive Committee Approves Increase in Dues

A MEETING of the executive committee of the American Association was held at headquarters on Dec. 2 with First Vice-president Richard McCulloch in the chair, President J. H. Pardee being out of the country. Besides the chairman there were present C. Loomis Allen, W. I. Bartholomew, E. B. Burritt, J. K. Choate, W. H. Collins, Thomas Finigan, S. B. Hare, General George H. Harries, C. L. Henry, I. A. May, J. D. Mortimer, L. S. Storrs and T. S. Williams.

The principal business before the meeting was consideration of the proposed increase in dues. Plans for increasing the income of the association to meet the greatly augmented expenses had been prepared by a committee of which P. J. Kealy is chairman. After full discussion it was decided to submit to the mid-winter meeting a plan for a scale of dues for railway members, based on a minimum fee of $50 with a maximum fee of $2500 and a graduated scale between. For the year 1920, it is proposed that the dues be $50 plus the factor 0.0002 multiplied by the gross income; and for the year 1921 and thereafter, $50 plus the factor 0.00025 times the gross income. It is further proposed that payments be put on a quarterly or semi-annual basis if possible. Appended is a draft of the sections of the constitution as it is proposed to amend them to provide for the new scale.

The committee also discussed the matter of enlarged quarters for the association, but deferred action until the January meeting.

Secretary Burritt submitted a financial statement covering the association's fiscal year ended Oct. 31, 1919, which showed a gross income of $115,411 and gross expenses of $119,339, and this was approved.

The mid-winter dinner and meeting then came up for attention, and the program committee, through J. D. Mortimer, chairman, outlined the plan for the meeting. The meeting and dinner will be held at the Hotel Hollenden, Cleveland, D. B. Dean being chairman of the dinner committee. Local committees have already been appointed in Cleveland.

The question of the I. C. C. hearing on electric railway mail pay to be held on Dec. 6 was then discussed.

Among other items discussed, but without definite action, were co-operation between the association and interurban railways in promoting express traffic, the publication of a directory of manufacturer members and their products together with a list of electric railway officials and a possible association employment exchange, Mr. Mortimer then gave a short summary of the brief prepared by the committee of 100 covering its testimony presented before the Federal Electric Railways Commission in the Washington hearings. This brief was prepared by Bentley W. Warren, counsel for the association during the hearings.

INCOME AND EXPENSE STATEMENT
ONE YEAR ENDED OCT. 31, 1919

Revenues		
Admission fees:		
Railway companies	$ 200 00	
Manufacturing companies	880.00	
		$ 1,080.00
Annual dues:		
Railway companies	$42,193.50	
Manufacturing companies	9,818.50	
Individuals	1,431.00	
		$53,443.00
Miscellaneous income		
Interest on deposits	$ 324.58	
Interest on investments	134.79	
Sale of year book and proceedings	162.53	
Sale of "Engineering Manual" and binder	81.30	
Sale of "Cost of Urban Transportation Service"	35.00	
Sale of "Bibliography on Valuation"	5.00	
Sale of miscellaneous pamphlets	208.68	
Sale of convention exhibit space	27,998.55	
Sale of dinner tickets	7,495.00	
		$36,445.43
Aera:		
Advertising	$15,630.39	
Subscriptions:		
Railway companies	3,494.00	
Manufacturing companies	1,569.00	
Individuals	954.00	
Company section members	2,579.96	
Paid subscriptions	170.27	
Sale of extra copies	40.85	
Sale of binders	4.25	
		$ 24,442.72
		$115,411.15
Expenses		
American Association:		
Salaries	$29,371.71	
Rent	4,562.06	
Postage	3,157.97	
Office supplies and expenses	1,514.30	
Express	73.02	
Telephone and telegraph	3,050.83	
Stationery and printing	4,490.06	
Repairs to furniture and equipment	68.10	
Traveling expenses of secretary	1,134.35	
Traveling expenses of special engineer	106.62	
General expense	1,963.80	
Exchange	104.04	
1918 Conference	62.85	
Miscellaneous pamphlets	1,596.69	
Mid-Year meeting	630.54	
Mid-Year dinner	6,109.90	
"Engineering Manual" and binder	242.21	
Proceedings (Engineering Association)	225.58	
General convention expense (1919)	9,500.23	
Convention exhibit expense (1919)	17,320.89	
Convention entertainment expense (1919)	3,203.67	
Executive committee	422.23	
		$88,911.55
Aera:		
Salaries	$12,203.27	
Postage	165.03	
Rent	678.00	
Telephone and telegraph	367.49	
Miscellaneous	71.50	
Discount	199.22	
Traveling expenses of staff	1,903.00	
Magazine expense:		
Printing	8,973.98	
Paper	3,236.97	
Cartage	32.43	
Mailing	558.33	
Cuts	486.65	
Express	38.46	
Binding	60.00	
		$28,974.33
Claims Association:		
Hooper Holmes Bureau	$ 1,424.85	
Expenses of representative attending executive committee	14.00	
		$ 1,438.85
Accountants' Association:		
Expenses of representative attending meeting of National Association of Railway and Utilities Commissioners	$ 14.00	
		$ 14.00
		$ 119,338.73

PROPOSED REVISED FORM OF SECTION XIV—FEES

XIV. (a) Companies seeking company membership in the Association shall pay an admission fee of $10.

(b) Railway company members shall, for the year beginning Nov. 1, 1919, pay in advance, annual dues in accordance, except as to minimum and maximum, with the amount of their gross earnings from electric railway operation, during the preceding fiscal year of the respective members as follows:

Companies having gross receipts of $50,000 or less, shall pay fifty dollars ($50) per annum; companies having gross receipts of more than fifty thousand dollars ($50,000) shall pay fifty dollars ($50) plus 0.0002 times their gross receipts per annum provided that no company shall be called upon to pay more than $2,500.

For the fiscal year beginning Nov. 1, 1920, and thereafter railway member companies shall pay in advance annual dues in accordance, except as to minimum and maximum, with the amounts of their gross earnings from electric railway operation during the preceding fiscal year of the respective members as follows:

Companies having gross receipts of $50,000 or less, shall pay fifty dollars ($50) per annum; companies having gross receipts of more than fifty thousand dollars ($50,000) shall pay fifty dollars ($50) plus 0.00025 times their gross receipts, provided that no company shall be called upon to pay more than $2,500.

Manufacturer member companies shall for the fiscal year beginning Nov. 1, 1919, pay in advance, annual dues in accordance, except as to minimum and maximum, with the amounts of their gross earnings derived from the business of manufacturing or selling material or furnishing services to electric railways during the preceding fiscal year of the respective members as follows:

Gross receipts:				Rate
Under	$50,000			$50
Between	50,000	and	$100,000	70
Between	100,000	and	250,000	100
Between	250,000	and	500,000	150
Between	500,000	and	1,000,000	250
Between	1,000,000	and	2,000,000	450
Between	2,000,000	and	3,000,000	650
Between	3,000,000	and	4,000,000	850
Between	4,000,000	and	5,000,000	1,050
Between	5,000,000	and	6,000,000	1,250
Between	6,000,000	and	7,000,000	1,450
Between	7,000,000	and	8,000,000	1,650
Between	8,000,000	and	9,000,000	1,850
Between	9,000,000	and	10,000,000	2,050
Between	10,000,000	and	11,000,000	2,250
Between	11,000,000	and	12,000,000	2,450
Over	12,000,000			2,500

For the fiscal year beginning Nov. 1, 1920, and thereafter, Manufacturer member companies shall pay in advance, annual dues in accordance, except as to minimum and maximum, with the amounts of their gross earnings derived from the business of manufacturing or selling materials or furnishing service to electric railways during the preceding fiscal year of the respective members as follows:

Gross Receipts:				Rate
Under	$50,000			$50
Between	50,000	and	$100,000	75
Between	100,000	and	250,000	110
Between	250,000	and	500,000	175
Between	500,000	and	1,000,000	300
Between	1,000,000	and	2,000,000	550
Between	2,000,000	and	3,000,000	800
Between	3,000,000	and	4,000,000	1,050
Between	4,000,000	and	5,000,000	1,300
Between	5,000,000	and	6,000,000	1,550
Between	6,000,000	and	7,000,000	1,800
Between	7,000,000	and	8,000,000	2,050
Between	8,000,000	and	9,000,000	2,300
Over	9,000,000			2,500

Bulletin News Page

Summary of the Principal Happenings of the Industry of Current Interest Since the Last Issue of This Paper Was Published

PRINTED DECEMBER 19, 1919

At the hearing before the Connecticut Public Utilities Commission on Dec. 8 and 9 on the zone fares charged by the Connecticut Company, the company produced evidence to show that during the first month of zone fares its revenue had increased $128,000.

Dallas has recorded its first surplus under its new service-at-cost grant.

Abandonments of railway lines are announced from Idaho, Indiana and Louisiana.

Under the reorganization plan adopted by the Buffalo (N. Y.) Southern Railway the interest requirements have been cut from $32,000 to $6,000 a year.

The City Commission of Memphis, Tenn., has ordered the Memphis Street Railway to abandon the skip stop. The company has secured a temporary injunction restraining the city authorities from enforcing the order.

The Railroad Commission of California has confirmed the proposed changes in the plan for the reorganization of the Oakland & Antioch Railway. The attitude of investors toward electric railway securities made the change imperative.

The City Council of Oswego, N. Y., has authorized the Empire State Railroad to charge 7-cent fares in that city.

The Second Avenue Railroad, New York, has been unable even to pay the interest on its receiver's certificates. The holders of these securities are therefore asking for a receiver for the receiver.

The sale of the property of the ill-fated Southern Traction Company of Illinois under foreclosure has at last been confirmed.

The Cummins railroad bill laying down a general policy for the government with respect to the railroads will be rewritten. Electric railways are not included in the provisions of the measure.

Engineers reporting to security holders of the Chicago (Ill.) Elevated Railways see little hope for the company in the immediate future despite the present 8-cent fare.

The California Railroad Commission has denied the application of the Pacific Electric Railway for an increase in the rate for transporting petroleum and its products.

A municipal ownership referendum petition is being circulated in St. Louis, Mo.

The street railway commissioner of Youngstown, Ohio, has recommended the purchase of twenty-five one-man cars.

The suburban lines of the Detroit (Mich.) United Railway were damaged to the extent of $250,000 in the recent severe storms in the Central West.

The Boston (Mass.) Elevated Railway has established a 5-cent fare on its line in Charlestown, Mass.

Pittsburgh's Mayor advocates that the present transit commissioner be displaced by a board of three with broader powers and jurisdiction.

The city of Ashtabula, Ohio, has purchased the local electric railway. The line will be operated under the direction of M. H. Turner, city manager.

The Columbus Railway, Power & Light Company, Columbus, Ohio, is preparing to ask for a 6-cent fare, according to a statement made on Dec. 12 by L. D. Hutchins, chairman of the board which is arbitrating differences between the company and its employees.

The Supreme Court of Massachusetts on Dec. 12 handed down two decisions in which municipal and state authorities were supported in their right to regulate jitney operation.

The Council of Detroit, Mich., has sustained Mayor Couzens in his veto of the procedure advocated by the local Street Railway Commission for the settlement of the local railway situation.

The Massachusetts anti-strike bill has been defeated. The committee on legal affairs of the House recommended such action. President Mahon of the Amalgamated Association opposed the measure.

The Minneapolis service-at-cost grant was defeated at the election on Dec. 9. There is much difference of opinion in regard to the reasons for the failure of the legislation.

The Canadian border towns opposite Detroit, Mich., have voted in favor of taking over the lines of the Detroit United System operated there.

The conference of Mayors, called by Mayor Couzens of Detroit, Mich., to be held at Toledo for the purpose of talking over the issues involved between the cities and the railway companies has been postponed.

Seven-cent fares went into effect on Dec. 1 on the lines of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo. The fare was formerly 5 cents. At the same time the trainmen received an increase in wages of 8 cents an hour.

A plan has been drawn up at conferences of the Public Service Commissioner of Greater New York, the Transit Construction Commissioner and representatives of the railways for eventual municipalization of the roads. The next step is to have the directors of the companies pass on the proposal. After that it is expected a formal proposal will be made to the city.

Stone & Webster report that even with an 8-cent fare there will be no surplus for the Interborough Rapid Transit Company, New York, before 1922.

The Pittsburgh valuation hearings have been closed by the Public Service Commission.

Another dividend has been passed. This time it is the Public Service Corporation of New Jersey. The payment is the one ordinarily made on Jan. 1 on the common stock of the company. President McCarter puts the losses of the company under the zone system at $1,500,000.

Two million dollars is the amount at issue between the city and the company in the valuation proceeding involving the system of the Houston (Tex.) Electric Company.

The return allowed to the stockholders of the Cleveland (Ohio) Railway under the service-at-cost grant there has been advanced by arbitration from 6 per cent to 7 per cent.

The Public Service Railway of New Jersey began charging 7-cent fares on Dec. 7 under authority of the New Jersey Board of Public Utility Commissioners. One cent is charged for a transfer.

John Bauer, formerly chief of the bureau of accounts of the Public Service Commission, First District, has been appointed expert adviser on transit matters in the office of the corporation counsel of New York City.

The Cleveland (Ohio) Railways on Dec. 15 reduced its ticket rate from 11 tickets for 50 cents to six tickets for 25 cents. The cash fare remains at 5 cents.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Municipalization Suggested

New York Companies Expected to Make Proposal to City Along Lines of Commission Suggestion

As a result of conferences held by Public Service Commissioner Lewis Nixon of New York City and Transit Construction Commissioner John H. Delaney with representatives of the local railways a plan has been drawn up for the settlement of some of the problems confronting the company. Included in it is a proposal to transfer title to the roads to the city. The matter now will go before the directors of the companies for consideration.

TRANSFER OF TITLE TO CITY

In the proposal are contained many of the suggestions advanced publicly on previous occasions by Mr. Nixon. In substance the plan entails:

> Transfer to the city of all titles held by the companies in railroad properties.
>
> Guaranteed payment by the city of a reasonable rate of interest on fair appraisals.
>
> Setting aside of 1 per cent for the purchase of the properties at the expiration of the thirty-eight years.
>
> A sufficient increase in fares to meet these requirements.
>
> All else connected with the plan are matters of detail, which it was agreed could be worked out if the companies agreed to relinquish control of their properties.

Mr. Delaney said there had been several conferences with representatives of the transit companies, and that Commissioner Nixon had been present at most of them. Mr. Delaney wanted it expressly understood that no proposal had been made by the companies, that what the city thought was the solution of the traction problem was set forth, and that if the concessions suggested were presented to the Board of Estimate they would have to be presented by the companies themselves.

WAY OPEN TO CITY

Mr. Delaney explained that Article X of the dual system contract under which the city rapid transit lines are now operated points the way the city may travel in acquiring complete municipal ownership of all the rapid transit lines without overlapping the debt-incurring capacity of the city, and without violating restrictions placed upon the city in this respect by the State Constitution. He explained that this article permitted the Interborough Rapid Transit Company to obtain possession of the partly completed Steinway tunnel and to assign it immediately to the city.

Mr. Delaney said:

> This principle could be applied to the acquirement by the city of the elevated railroads or any other transit property and complete municipal ownership be obtained on a basis which might be characterized as on credit terms, and full payment be spread over the period of amortization. Any contracts made on this basis should also secure to the city the privilege of taking possession at any time it saw fit by payment of the full purchase price agreed upon.

Concerning the surface lines Mr. Delaney said:

> Representatives of these lines are asking the city to permit them to change an 8, 9 or 10- cent fare in order that owners of some of these lines may continue receiving as high as 18 per cent dividends. Large amounts of money have been spent in improving these lines which will revert to the owners if these excessive payments are not continued. The lines are hiding behind holding companies, and are enmeshed in a tangle of red tape. There is no doubt that the time has come when all of the wrongs committed against the interests of the people should be corrected.

Sounded previously on the general traction situation and the prospect of overtures being made for the settlement of the present difficulty, Mayor Hylan was quoted as follows:

> Any proposition the transit interests may have to make to the city should be submitted to the Board of Estimate. They will find that the board is ready and willing to listen to them. Any matter of that sort will, of course, receive the most careful consideration.

Conference of Mayors Postponed

The conference on electric railway matters suggested by Mayor James Couzens of Detroit to be held in Toledo on Dec. 8 was postponed because of the fuel crisis. The Mayors of a number of cities where electric railway matters are up for settlement were invited to attend. It is hoped a joint policy of procedure may be mapped out. Among the Mayors expected to be present were Mayor Couzens of Detroit, Mayor Schreiber of Toledo, Mayor Thompson of Chicago, Mayor Hoan of Milwaukee, Mayor Babcock of Pittsburgh, and a representative of Mayor Davis of Cleveland.

Henry L. Doherty, operating head of the Toledo Railways & Light Company, which took its cars off the streets of Toledo about a month ago, signified his intention to attend the conference and discuss the railway situation in general and Toledo's problems in particular.

Mayor Couzens has been giving much thought to the railway difficulties in Detroit, Cleveland and other cities recently and believes he will be able to unfold a plan of considerable magnitude. It is expected that Mayor Thompson of Chicago will make public at the conference, his so-called "People's Plan." In the opinion of Mayor Couzens the electric railways through the federal commission, have attempted to crystallize and nationalize their side of the question and he believes the municipalities should make an effort to unify the people's side.

Transit Plans Outlined

Mr. Van Sweringen Shows Highly Developed Scheme for Handling Cleveland's Future Traffic

As a witness before the board of arbitration, hearing the request of the Cleveland (Ohio) Railway for an increase in dividends to stockholders from 6 to 7 per cent, O. P. Van Sweringen, of the Cleveland Union Terminals Company and the Cleveland & Youngstown Railway, gave considerable information in regard to the rapid transit plans, as developed by himself and associates.

Basing his statements on the belief that the population of Greater Cleveland will increase from 1,000,000 to 1,500,000 in ten years, he said the city's growth would require an addition of from 30,000 to 35,000 acres of land, 70 miles of rapid transit track construction and the expenditure of about $50,000,000 for the work.

He said rapid transit was the only real solution of the city's transportation problem. The city's proposal to build a subway was not so much a matter of transportation as it was for the relief of the surface highway. Cleveland had reached a point where people must be carried from the residence districts to the center of the city by subway.

SUBWAY COSTS ESTIMATED

The cost of subways to meet Greater less time than is now taken by the Cleveland's rapid transit needs, he said, would be between $2,000,000 and $3,000,000 per mile, while the cost of elevated railways would be about $1,250,000 per mile.

The private right-of-way plan, adopted by the Cleveland & Youngstown road, was the most economical means of furnishing rapid transit facilities.

Mr. Van Sweringen said that interests with which he is connected do not expect to develop the entire transportation system for Greater Cleveland, but are willing to co-ordinate their interests with the Cleveland Railway or any other company, or the city, in case a subway is built. He further pointed out that certain sections of the city may be served by tracks on the rights-of-way of various steam roads which radiate almost from a common center in the city.

He declared, however, that the proposed new union station would receive attention first. That matter is in hand now. It will be developed as laid out in the franchise which the people have granted. Preliminary construction work will be commenced early in 1920.

Minneapolis Grant Fails

Voters Reject Cost-of-Service Plan by Large Majority—Five-Cent Fare Will Continue.

The voters of Minneapolis, Minn., at the special election on Dec. 9, defeated the cost-of-service franchise proposed for the Minneapolis Street Railway, subsidiary of the Twin City Rapid Transit Company. The majority against the franchise was 7,572. The total number of votes cast was only 3000 less than the number cast in the last mayoralty election. The vote in favor of the franchise was 22,977, while that against it was 30,549.

Present Fare to Continue

Defeat of the franchise means that the company must content itself, for the present at least, with a 5-cent fare. Under the proposed plan the company would have been guaranteed a return of 7 per cent, and the fare would have been adjusted accordingly. The fare was to have remained at 5 cents for a three-months period, after which it was to have been advanced, if necessary.

An analysis of the company's records recently made by Marwick, Mitchell, Peat & Company, certified public accountants, indicated that under the cost-of-service plan the average fare for the first ten months of 1919 would have been 5.30 cents and for the month of October 5.22 cents. The company was prepared if the plan had been approved, to install a 6-cent cash fare with a ticket rate of 5.4 cents.

The election marked the culmination of efforts on the part of Mayor Meyers and the Socialist party to defeat the franchise. The Mayor opposed the plan from the start, contending that, while he favored the cost-of-service principle, the valuation of $24,000,000 fixed for the company's property was too high. This valuation was lower, however, than the appraisal of the city engineer. Since he lacked power to veto the franchise ordinance, which was passed by the City Council early in September, Mayor Meyers applied to the District Court of Hennepin County for an injunction to prevent its submission to the voters. The application was denied, the court's decision being affirmed on Nov. 21 by the Minnesota Supreme Court.

Campaign Was Spirited

An active campaign was carried on both for and against the measure. The company issued numerous statements in its magazine, the *Rapid Transit News*, in which it explained its position and analyzed the proposed franchise. Several municipal organizations, notably the People's Franchise Bureau and the Car Riders' League, also advocated the measure, while the Anti-Franchise League opposed it.

The opponents of the measure centered their attack on the section of the franchise which provided that the city might purchase the railway property at the end of any five-year period. They contended that too much power would thus be placed in the hands of the City Council, and that under the franchise a group of fourteen Aldermen could combine to buy the property for the city at any time without referring the matter to the people.

The Socialists formed the only solid element against the franchise. In a general way the vote followed the usual political lines, the strong Republican districts giving majorities for the franchise and those of Socialist sentiments going heavily against it. The third ward, which is suffering for want of new car lines, gave good majorities for the franchise in the upper precincts, but these were overcome by the adverse vote in the river districts.

Commenting upon the result of the election the Minneapolis *Journal*, which supported the franchise, said editorially:

> The great mistake of the campaign just ended was that it was not longer in opening and longer in closing. There was not time for the people to study the issues carefully and make up their minds with cool consideration. Too many postponed study of the franchise until a few days ago, and then found themselves bewildered in the final storm of charge and countercharge. When the people vote again on franchise or charter they should have from three to six months in which to familiarize themselves with all the details.

Municipalization Authorized

As a result of the special election held on Dec. 6 in Windsor and eight other border towns, the Sandwich, Windsor & Amherstburg Railway, a branch of the Detroit United Railway that serves these border municipalities, will be taken over by the Ontario Hydro-Electric Power Commission.

Six of the nine municipalities concerned voted for the plan with sweeping majorities, while one only, the town of Anderdon, refused to support the proposed by-law providing for the purchase of the railway.

As the financial obligation to be assumed by each municipality was worked out proportional to its population, Anderdon's portion was less than 10 per cent of the total. This town's failure to ratify the by-law will not interfere with the purchase plan. The other municipalities concerned will assume Anderdon's financial obligation, the greater part to be borne by the city of Windsor. In Windsor the ratepayers' votes cast were practically forty to one in favor of municipal ownership.

Sir Adam Beck, chairman of the Ontario Hydro-Electric Power Commission, arranged matters with the Detroit United Railway officials, the purchase price agreed upon being $2,100,000. This is exclusive of the power plant which furnishes electric light and power to the residents of Windsor and Walkerville in competition with the service of the Hydro-Electric Commission. Arrangements are being made in the Windsor Council providing for a vote on the proposed plan of taking over the power plant by that city at a cost of about $190,000.

Detroit's Mayor Sustained

His Veto of Railway Commission's Recommendations Upheld by the City Council

Mayor Couzens of Detroit, Mich., exercised his power to veto, and thereby defeated the action of the majority of the City Council by which they went on record at a previous meeting in favor of adopting the report of the Street Railway Commission. The Council favored authorizing the Board of Street Railway Commissioners to present a plan of settlement to the Council after negotiating with the Detroit United Railway with regard to extensions, and a plan of operating the system similar to the Tayler plan as it is now in force in Cleveland.

Protect the People

As a two thirds majority was necessary to pass the resolution over the chief executive's veto, the attempt failed, five members voting for and four voting against the resolution.

In his veto message, the Mayor summarized his reasons for not favoring the rides-at-cost plan. He said in part:

> As a responsible agent of the people I feel it my duty before presenting any proposition to them to analyze its every detail. I have conscientiously tried to ascertain how the recommendations of the Board of Street Railway Commissioners would meet with the people's wishes, as indicated in their various votes upon railway settlement, and fail to find where they agree in any instance.

The results of six votes of the Detroit electorate on various railway propositions, since November, 1906, were reviewed. In summarizing the Mayor stated that three of these agreements involved franchises; two were agreements providing for the purchase of the lines and both of these received a greater affirmative vote than the three proposals for franchises.

The message further stated that the Mayor believed it futile to submit another plan to the voters If an affirmative advisory vote indicates that the public wants a Tayler plan franchise, it is proposed by the Mayor to negotiate while construction work is being carried on.

In reviewing conditions in Cleveland, the claim was made that the much needed extensions have not been obtained under the Tayler plan, and it was pointed out that the matter of extensions is paramount in Detroit.

$15,000,000 for Construction

Two propositions are now before the Council. One is the proposed ordinance providing for an issue of public utility bonds to the amount of $15,000,000 for the piece-meal construction and the operation of a railway system. The other proposition calls for an advisory vote on the revised Tayler plan.

The old railway commission having resigned, the Mayor is without a commission. In regard to the appointment of a new commission, the Mayor says that such a commission will probably be named when the Council has determined upon a plan that will require the services of a commission.

Anti-Strike Bill Killed

Massachusetts Measure Is Lost—Cambridge Subway Purchase Measure Passed—Jitney Regulation

Notable among the electric railway measures discussed before the present special session of the Massachusetts Legislature are bills concerning the relation of the electric railway employee to his employer and a measure which affects the affairs of the Boston Elevated Railway.

LABOR OPPOSED BILL

The former bill was termed the anti-strike bill. It has been called revolutionary. Briefly the plan provided for continuity of service for lines under public control, the abolishment of strikes, and the arbitration of disputes. The terms of the proposed act were published in the *Electric Railway Journal* for Nov. 8, page 873.

W. D. Mahon, international president of the Amalgamated Association, and James H. Vahey, counsel, appeared in opposition to the bill. Quoting from President Wilson's speech of Dec. 2 "that the right of individuals to strike is inviolate and ought not to be interfered with by any process of government," Mr. Mahon intimated further that "there is no need of this legislation, because the street car men are filled with the American spirit, recognizing their duty and will not strike."

In rendering an opinion concerning the legality of this bill, the committee on legal affairs of the House concluded that it would be wise and expedient at this time to reject this measure and accordingly the anti-strike bill has been withdrawn.

It is worthy of special attention that the discussion of the so called anti-strike bill brought out little support on the part of the railways.

Of special interest to the city of Boston, as it concerns the welfare of the Boston Elevated Railway, is the bill providing for the purchase of the Cambridge subway. After the rejection of the Cambridge subway rental bill, which provided for the assumption of the subway rental by the communities served by the Boston Elevated Railway, a rental amounting to $1,500,000 per annum, a bill providing for the purchase of the Cambridge subway was introduced and after special endorsement by Governor Coolidge was passed 114 to 34 by the House to be engrossed.

DOUBLE BENEFIT SECURED

The bill provides for the purchase of the subway from the Boston Elevated Railway at a cost not to exceed $8,000,000, the subway then to be rented to the elevated railway at a rate equivalent to 4½ per cent on the bonds to be issued by the State on account of the purchase of the property. The $8,000,000 received by the Boston Elevated Railway is to be used for the purchase of rolling stock and other equipment, which otherwise could not be obtained. The Boston Elevated Railway, on the other hand, benefits by the difference between the interest of 4½ per cent it will pay as rental and the relative high rate which it would be obliged to pay on bonds and stocks issued for new capital, necessary for maintenance and future development.

The committee on ways and means of the Massachusetts Legislature has reported favorably on a bill to regulate the operation of jitneys within the State and also similarly on a bill which provides for special permission for street railways to initiate fare changes, subject to approval by the Department of Public Utilities. Such a bill if passed will be of great benefit since delay in obtaining official sanction of fare schedule changes has in the past imposed considerable losses on the railways.

$621,715 in Improvements Authorized

Special Master Henry Lamm has authorized Rolla Wells, receiver of the United Railways, St. Louis, Mo., to expend $621,715 during 1920 for the purchase of materials and the reconstruction of tracks. At the same time he allowed the receiver to pay a total of $750,715 interest due on bonds on Jan. 1 and on Feb. 1. He also authorized Mr. Wells to buy 10 acres of land at Natural Bridge Road and the Kirkwood-Ferguson line at a cost of $35,000 for the purpose of constructing loops on both Kirkwood-Ferguson and Natural Bridge lines, construct a fire escape at the company's offices at a cost not exceeding $1,095, and construct a double-truck snow shovel.

Recommends Transit Commission of Three

Mayor E. V. Babcock, in presenting the annual budget estimates to the City Council of Pittsburgh, Pa., on Dec. 8, urged that Council create a transit commission of three members to handle all city activities relating to transportation companies. To give the matter added force, the Mayor made it a special recommendation. The city of Pittsburgh now has a transit commissioner, but the Mayor recommended that he be displaced by a board of three with broader powers and jurisdiction.

In the budget estimates, an appropriation of $22,200 was suggested for the commission. Of this amount, $10,000 is proposed for an advisory service in connection with the subway which the people of Pittsburgh, at a bond election, authorized. If the Mayor has his way, the commission would be empowered to consider the future needs of the city, as well as present problems.

Mayor Babcock has in mind as one of the commissioners Attorney Charles K. Robinson, special counsel for the city in the traction litigations now pending. Engineers would probably compose the rest of the board.

E. K. Morse, the present transit commissioner whose position would be displaced by the board of three, recently issued his annual report. He attacked the proposed subway, which is an administration measure.

Railroad Bill to Be Rewritten

Amendments Desired by Electric Railways Understood to Have Been Accepted

Interest in the Cummins bill is being dulled somewhat by the knowledge that the measure is to be practically rewritten in conference. The Esch Bill—the railroad measure which already has passed the House—was put through in half-baked form with the frank admission that the bill would not be recognizable when it emerged from conference.

While the Senate is making a conscientious effort to perfect the Cummins measure, it is a matter of common knowledge that many of the provisions, adopted after solemn and lengthy debate, must be sacrificed to meet the ideas of the House of Representatives. Every effort is being made at this writing to procure a vote on the bill on Dec. 20.

Section 10 of the Cummins bill provides for the consolidation of the railway properties of the United States into not less than twenty nor more than thirty-five systems. This provision has been vigorously assailed, but in all probability will stay in the bill. That section of the bill contains a proviso excluding electric railways from the scheme. Originally the proviso read "that street railways and interurban railways whose chief business is the transportation of passengers" shall be excluded. The wording was changed, however, and the following inserted: "That street, suburban, and interurban electric railways which are not operated as a part or parts of a general steam railroad system of transportation" shall not be included in the organization of railway properties which is proposed.

Winnipeg Men Accept Wage Award

The employees of the Winnipeg (Man.) Electric Railway have decided to accept the award of the Mather's commission on the demand made by the men for an increased wage scale.

The schedule submitted to the conciliation board on behalf of the union was 60 cents an hour for the first six months; 65 cents an hour for the second six months, and 70 cents an hour for the second year and thereafter.

The award, which the men have accepted, gives 46 cents an hour for the first six months; 49 cents for the second six months; 52 cents for the third year and thereafter. It also provides for an eight-hour day, instead of nine hours as heretofore. The nine-hour rate was 39 cents, 41 cents, 44 cents, and 47 cents, respectively.

Would Municipalize Guelph Road

The Ontario Hydro-electric Commission has made an offer in writing to the City Council of Guelph for the purchase of the Guelph Radial Railway at $150,000 as on July 1, 1920, the road to be handed over free of all encumbrances. The offer is to be considered at a special meeting of the Council.

News Notes

Library for Its Employees.—It is announced that the Monongahela Valley Traction Company, Fairmount, W. Va., will purchase a library for the use of employees who want to become proficient in the fine points of the relations of an electric railway to its public.

Mayor to Push Subway Plan.—The present Mayor of Cleveland, Ohio, has recently been re-elected. He has announced his proposed subway plan as the most important construction work of the coming two years of his administration. The city will probably be asked to approve bonds for this work at a special election early next year.

City Purchases Railway.—The City Council of Ashtabula, Ohio, passed an ordinance on Dec. 8 to purchase the property of the Ashtabula Rapid Transit Company. The purchase price is $296,000. There will be a bond issue for $350,000 secured by a first mortgage with interest at 6 per cent. The operation of the road will be under the direction of M. H. Turner, city manager.

Buses for Broadway?—Directors of the Broadway Association at their regular meeting on Dec. 15 appointed a transportation committee and voted in favor of the use of motor buses as the best solution of the transportation problem on Broadway, New York. The committee will make a report "concerning the street surface transportation on Broadway with a view of submitting the information to the entire membership of the association for a referendum vote and later to submit the question to the entire business population of Broadway."

Cincinnati Linemen's Strike Quickly Adjusted.—A brief strike of the linemen of the Cincinnati (Ohio) Traction Company, which went into effect on Oct. 18 after several days of unsuccessful negotiations between union representatives and company officials, was settled satisfactorily in two days' time. A 35 per cent increase was asked over the old wage agreement which was made just prior to the War Labor Board's award in 1918 and expired on Nov. 15, 1919. The men were granted a 20 per cent increase, which places them on practically the same basis as the men in other departments.

Wants City to Take Line.—The City Council of Seattle, Wash., has been asked by residents of the Greenwood Avenue district to buy the Greenwood Avenue line owned by the Western Washington Power Company, or to provide a good service arrangement under the 5-cent fare. Thomas F. Murphine, superintendent of the Seattle Municipal Railway, recently discontinued the transfer arrangement between the Ballard North line and the Green Avenue line, asserting that the service was too irregular and that the city was getting the long end of the haul on a 50-50 basis. Since that time residents of the district have been forced to pay a 10-cent fare.

Municipal Ownership Petition Circulated.—Initiative petitions for a new railway municipal ownership ordinance are being circulated by members of the Citizens' Referendum League of St. Louis. The ordinance provides for the purchase or lease of the railways by the city and their operation without charge to passengers. A "competent person" with at least five years' experience must be appointed by the director of public utilities to manage the system. Employees are to be in the classified service. The cost of operation is to be met by general taxation.

I. C. C. Recommendations Repeated.—The annual report of the Interstate Commerce Commission was made public on Dec. 4 by Clyde Aitchison, chairman of the body. As many of the functions of the commission were curtailed by the Federal control of railroads during the last year, the report repeats mainly the recommendations of other years. These recommendations are that the power to award reparation for unreasonable or unlawful charges be vested entirely in the courts; that the powers of the commission be extended to holding corporations as well as those which actually operate interstate transportation lines and that railroad operating rules be standardized.

Changes in Power Contract Too Drastic.—At a hearing before the Public Service Commission of Missouri on the application of the Union Electric Light & Power Company to increase its rates of selling current to the United Railways, St. Louis, Mo., T. E. Francis, attorney for the railway, said his company also would ask for a modification of the contract. The power company is asking for an increase of $178,750 a year. A recommendation by Byllesby & Company, Chicago, engineers employed by both companies, was offered in evidence. They suggest an increase of $130,000. Mr. Francis said the railway would ask to have modified that provision of the contract which compels the railway to pay heavy penalties for overloading in peak hours.

City Commission Recommends One-Man Cars.—Street Railway Commissioner William L. Sause of Youngstown, Ohio, has recommended in a letter addressed to the City Council the purchase of twenty-five one-man safety cars to be used on the local lines. In addition to this Mr. Sause recommends that a fund be raised to rebuild lines and other equipment which come under the direction of the city under the new service-at-cost system. Mr. Sause thinks it very essential that the new cars should not replace the present larger cars in the ratio of one to one, but that one or more lines should be fully equipped, on which safety cars should be installed in the ratio of about three new cars to two of the old.

Washington Company Announces Labor Policy.—Quoting from a decision of the War Labor Board in support of its position, the Washington Railway & Electric Company, Washington, D. C., has refused to deal exclusively with the Amalgamated Association or any other organization of which its employees are members. There will be no discrimination against any employee because of his membership in any labor organization, President William F. Ham of the company told a committee of the Amalgamated Association. This means the Brotherhood of Employees, of which a number of employees of the company are members, and other labor organizations that may come into existence through the action of the employees, is guaranteed an "open-door" policy in dealing with the company.

Franchise Changes Requested at Cincinnati.—A request has been made of the City Council of Cincinnati, Ohio, to repeal the franchises granted the Interurban Railway & Terminal Company by the former villages of Kennedy Heights and Pleasant Ridge and pass an ordinance granting the Cincinnati Traction Company the right to use the track. This would give the company the right to operate its North Norwood cars over the track without delay. The plan has been agreed upon between C. W. Culkins, Street Railway Commissioner, and the officials of the railways. The new franchise would give the Cincinnati Traction Company the right to operate more than 700 ft. of track on Montgomery Pike, between Kennedy Avenue, and the present terminus of the interurban line, so that the city service may be extended from Kennedy Avenue, if it becomes necessary to do so at some future time.

$250,000 Storm Damage at Detroit.—By far the worst storm ever encountered by the Detroit (Mich.) United Lines, with attendant destruction of property and suspension of service, was that of the hurricane on the afternoon and evening of Nov. 29. Never before was the territorial area affected so extensive as this time. The financial loss to the company is roundly estimated at $250,000. Within the city of Detroit the Detroit United Railway's lines escaped much serious damage. Service suspensions, while numerous, were not of long duration and were largely due to falling trees and limbs. The situation in respect to the interurban lines was decidedly worse. Out in the country the wind had full sweep and in addition to the damage and delays through the company's own overhead system collapsing in spots the condition was made much worse by poles of other utilities, heavily ladened with wires, falling across the tracks of the company and breaking through its overhead system. The storm struck the Rapid Railway a terrific blow. This division was paralyzed for five days with the exception of service between Detroit and New Baltimore.

Financial and Corporate

Engineers Report on "L"

Even With Eight-Cent Fare More People Must Use Chicago Lines to Make Them Successful

The preliminary report has been made by the engineers who were retained by the protective committee representing the holders of the notes of the Chicago (Ill) Elevated Railways and instructed by the committee to make an independent investigation of the operating and physical condition of the system. In spite of the increased revenue derived from the present 8-cent fare, the engineers recommend that no part of the increased earnings be used for payment of the 6 per cent interest on the $14,000,000 of notes. Principal and interest on these notes was due on July 1. The notes are secured by collateral and the holders face the alternative of waiting an indefinite time for payment of the principal and interest or of taking action to sell the collateral. The engineers say in part:

We have made no audit of the company's books, nor have we attempted to analyze its accounts. The results of operation for the system from January to September, 1919, inclusive, and estimates for October, November and December, prepared by the company, are herewith presented. The estimates appear to us to be reasonable.

The table shows that the four companies will earn, over bond interest, etc., of underlying companies, about $500,000 for the year 1919. No allowance, however, has been made for accrued depreciation and nothing has been provided for interest on Chicago Elevated Railway notes.

While on the basis of present earnings, with 8-cent fares on the elevated and 7-cent fares on the surface lines, and with the present wage scale, it would seem probable that for 1920 the balance after paying bond interest, etc., of the underlying companies, would be about $1,500,000.

This balance is not applicable for interest on Chicago Elevated Railway notes for the following reasons:

It is our understanding that for a number of years the company has taken care of its current maintenance charges out of operating expenses. It also charged certain large renewals to the rehabilitation account, then a part of surplus account. The company has now closed its rehabilitation account, and all renewals are charged direct to operation. An adequate maintenance charge for this year would be about $2,500,000, which, we understand, is about $500,000 more than will be expended.

While the $2,500,000 would probably take care of current maintenance and normal rehabilitation, it would not provide any funds for a replacement reserve. We believe such an account should be built up and that with a company of this size it should not be less than $1,500,000, from which large replacements should be made and the fund kept practically constant.

INTEREST MUST BE DEFERRED

It would seem, therefore, from the above, that it would be impossible to attempt to pay the 6 per cent on the $14,000,000 notes at present. Even with the retention of the 8-cent fare the operating companies must look for increased riding on present facilities and must practice the greatest economies in operation to enable them in the near future to resume interest payment on the Chicago Elevated Railway notes.

The property as a whole is in first-class operating condition. The track and elevated structures were found to be mechanically sound. The cars and equipment, most of which are old, have been well cared for. The car repair shops, while of adequate capacity, are not equipped with modern machines.

The capacity of the loop is the limiting factor in the peak service. Our brief study would indicate that perhaps 20 per cent more people might be carried than at present by running additional cars on some of the trains and by lengthening some of the platforms. The growth of industry is now taking place outside, rather than inside the loop, which will help the company's earnings and will entail little, if any, increase in operating expenses and will call for practically no additional capital expenditures.

When the capacity of the loop is reached, drastic measures for handling the rapid transit traffic will have to be resorted to, and the shaping of plans for them can be undertaken none too soon. This company should take an active part in these negotiations, in order to protect its present large investment. While some of the lines have severe curves, where the possibility of derailment of cars, with serious results, always exists, still the company has had a fortunate experience in the matter of accidents.

The noteholders' protective committee is headed by Charles E. Mitchell of the National City Bank of New York. The Chicago members are R. Floyd Clinch of Crerar, Clinch & Company and George M. Reynolds, president of the Continental & Commercial National Bank. It is said that the committee will await the final report of the engineers and possibly the outcome of the pending litigation on fares between the Chicago Surface Lines and the city before recommending definite action to be taken by the noteholders.

City Wants Service But No Responsibility

The city of Merrill, Wis., has petitioned the Railroad Commission for an order to prevent the Wisconsin Valley Electric Company from discontinuing the operation of its railway property in that city. Operation is now being continued under a thirty-year franchise granted in 1889. This franchise expires on Dec. 31. Early in the present year the company notified the city that it would not ask for a renewal of the franchise at its expiration. In fact, it offered to sell its entire railroad property to the city.

The company operates a number of utilities in the Wisconsin River Valley, including a railway in Wausau, and maintains several hydroelectric generating stations. Merrill is a city of about 10,000 population. The company says that the railway there does not produce sufficient revenue to pay operating expenses and cannot be made to do so at any reasonable rate of fare. The present fare is 7 cents.

The city of Merrill is asking that the company be compelled to continue operation on the grounds that the franchise does not expire on Dec. 31; that the thirty-year limitation applied only to the exclusive feature of the franchise; and that the company should not be allowed to discontinue service on a part of the utility when the property as a whole is a profitable one.

Interborough in Dire Straits

Even With Eight-Cent Fare No Surplus Possible in New York Before 1922, Experts Say

Federal Judge Mayer on Dec. 16 gave out the report of Stone & Webster, the engineers, on the financial and physical status of the Interborough Rapid Transit Company and the New York Railways. It is pointed out in the report that the subway and elevated lines of the system will fail to earn their fixed charges during the fiscal year ending June 30, 1920, by $8,778,000, as against a surplus in 1917 of $8,885,359.

MORE THAN $500,000,000 OF SECURITIES OUTSTANDING

It is pointed out that the securities outstanding in the hands of the public amounts to $500,448,881 and 932,626 shares of no par value. The report says in part:

We have completed our examination of the properties of Interborough Rapid Transit Company, including the surface lines in the Borough of Queens, stocks and obligations which it owns, and also our examinations of the properties of New York Railways. Of the stock of Interborough Rapid Transit 97 per cent, and of the stock of New York Railways 86 per cent, is owned by Interborough Consolidated Corporation, of which Jomes R. Sheffield is trustee in the bankruptcy proceedings pending before you. The properties of New York Railways are in the custody of Job E. Hedges as your receiver.

In the preparation of this summary we have followed in general the lines of the summary of our reports on the properties of the Brooklyn Rapid Transit System in order that the two summaries may be the more readily compared, and, taken together, give a picture of the condition of all of the properties directly in the custody of the court or in which the court's officers hold substantially all the capital stock.

MORE REVENUE ESSENTIAL

In our opinion there is no escape from the following conclusions:

1. The rapid transit (subway and elevated) lines during the fiscal year ending June 30, 1920, will fail to earn their fixed charges by $8,778,000, as against a surplus for 1917 of $8,885,359.

2. With an increased fare the rapid transit lines will earn only a small part of the charges upon the bonds and notes, aggregating $147,000,000, which represent fresh capital invested or to be invested in those lines under the supervision of the Public Service Commission subsequent to March 19, 1913, the date of city contract No 3.

3. Even an 8-cent fare will not, prior to 1922, provide any substantial surplus over the company preferentials, and even in 1922 such a fare will provide little more than half of the city preferential.

4. Unless there is an immediate increase in fares, the further disintegration of the surface system in Manhattan is inevitable and the operation of many of the lines will have to be discontinued because of their failure to earn operating expenses and taxes.

5. Nothing less than an 8-cent fare with a charge of 2 cents for transfers will provide a sufficient margin above mere operating expenses and taxes to permit of the operation of the surface lines as one system, with reasonable provision for upkeep

6. Even an 8-cent fare with a 2-cent charge for transfers will not yield a fair return upon the actual investment in the surface lines or upon their reproduction value. For that purpose, a higher fare will be necessary.

7 Neither the rapid transit lines nor the surface lines can be permanently maintained and developed by the operating companies without an assurance of sufficient earnings to justify the investment of the additional capital that will from time to time necessarily be required to keep up with the increasing demands of the traffic of the city.

A statement was published showing the variety of interests that will be affected by defaut of the company in the payment of any of its obligations.

Hear Pittsburgh Valuation

City and Railway Differ Over Pittsburgh Railway Figures—Commission Closes Case

Counsel for the city of Pittsburgh and the Pittsburgh Railways completed arguments on Dec. 2 on what elements should be included in the physical valuation of the Pittsburgh traction system. The arguments were before the Pennsylvania Public Service Commission. They were of unusual importance, inasmuch as they will determine upon what basis the company will be reorganized, and what rate of fare should be charged. In the closing argument for the company, Attorney E. W. Smith declared the valuation placed upon the company must be high enough to attract some person "with say, $10,000,000" to finance the rehabilitation of the company.

REPORTS IN CONFLICT

The case before the commission followed the filing of conflicting reports by the several sets of engineers employed in the valuation of the property. The engineers for the city placed the company's legitimate value at $48,000,000, while the engineers representing the company on the valuation board maintained that about $73,000,000 is the proper figure.

The arguments opened on Dec. 1. Attorney George E. Alter, for the company, asserted the present fare of 7½ cents for tickets and 10 cents cash is fair and that no successful complaint had been lodged against it. The estimated operating expenses for a year, as allowed by the engineers, were $14,086,000, he said, and that the recent increase of wages allowed by the National War Labor Board added another $1,000,000 to that. Taking the city's estimate of a $48,000,000 valuation, and allowing upon it 7 per cent as the legitimate profit, the total gross revenue necessary would be $18,446,000, he said. The best estimate for earnings in 1920, Mr. Alter held, was only $17,093,403, or less than the revenue the company should have. If deprived of a fair return, the company would be driven into the sheriff's hands. Mr. Alter urged that the valuation be based on present-day values.

A. W. Robertson, also for the company, said the traction system hauled 232,000,000 revenue passengers in 1918. He traced the fare increases of the company, and declared that the last advance when the fare system was changed from a zoning scheme to a flat rate, had not been accompanied by any decrease in traffic. He pleaded that the commission permit the inclusion in the valuation of the cost of consolidating the lines in Pittsburgh.

C. K. Robinson, special attorney for the city, took issue with Mr. Robertson's assertion that the resumption of the flat fare had relieved the housing congestion that followed upon the zoning system. He contended that the new rates had decreased riding. There is no real unification, he said, but a confusion of corporations and interlocking relationships working under operating contracts. He objected to the inclusion of the cost of consolidation in the valuation, and opposed also the use of the superseded property values in the valuation. The superseded property value, he said, has accumulated for years, and the company has continued to earn on it each year; from a point of earning power, he said, it should be eliminated.

Mr. Robinson claimed $48,000,000 was a generous figure on the values, and that 7 per cent is a fair return. He pictured Pittsburgh as "looking with great interest on the valuation in the hope that it may be a foundation stone for a new era in transportation and development affairs." He asked that depreciation costs of $16,845,200, usless property estimates of more than $2,000,000 and financing, organization and developing costs of more than $5,000,000 be eliminated.

George N. Munro, Jr., for the city, claimed that more than $15,000,000 was represented in the valuation under the heads of consolidation costs, going concern costs and developmental costs, which were one and the same thing.

$72,000,000 IN SECURITIES OUTSTANDING

Attorney Smith, speaking in rebuttal for the company, pointed out that the company now has $41,000,000 in bonds, $16,000,000 in stock, $5,000,000 in unfunded debt and $10,000,000 in debentures outstanding, and that it must have a valuation to take care of its securities. He protested against limiting the company's revenues when other investors demanding from 8 to 10 per cent.

The commission took the case under advisement. The attorneys for the city have been allowed two weeks in which to prepare further briefs. A decision is expected shortly after the first of the year. Upon this decision will depend whether the fare remains at 7½ and 10 cents, or goes, as had been officially suggested to 8½ or 9 cents.

New Jersey Company Suspends Dividends

The Public Service Corporation of New Jersey has announced that the directors deem it prudent to omit the declaration of what would have been, under normal conditions, the last quarterly dividend on its common stock for the year, owing to the many difficulties which the company is encountering in the operation of both the electric railway and the gas branches of the company's business. It is stated, however, that the electric branch of the company is prosperous, but the profits from the sale of electric light and current are not sufficient to offset the losses recorded elsewhere. This in spite of the fact that only recently the company has been granted an increase in gas rates. The dark side of the situation at present, state the directors, is the electric railways.

Houston Valuation Argued

Company and City About $2,000,000 Apart on Amount on Which Company Is Entitled to a Return

The Houston (Tex.) Electric Company, continuing its contest for higher fares, has filed suit in the Federal Court asking an injunction to restrain the city in its efforts to prevent collection of higher fares. The company alleges that the 5-cent fare is confiscatory, in that for the twelve months ended Sept. 30, 1919, after proper deduction for depreciation is made, there is not one dollar of return for the year.

SPECIAL MASTER TO HEAR CASE

Judge Otis Hamblen has been appointed as master in chancery to conduct a hearing and to take testimony bearing on the question of whether the 5-cent fare is inadequate. In this hearing the question of valuation was of chief importance, and the figures presented by the company's engineers and by the engineers employed by the city were carefully examined and the difference analyzed. The company maintained that present costs and prices of material should be considered as permanent, while the city contended that the present were only emergency costs and would not continue indefinitely.

During the hearing several well-known rate experts testified, among them William E. Tucker of Boston, general counsel for Stone, & Webster; Halbert P. Gillette, editor of *Engineering and Contracting;* C. R. Wharton, Houston, and W. J. Hagenah, Chicago. Reports of other valuation engineers were presented to the master.

Mr. Gillette, who made a valuation of the property last January for the company, found the original cost was between $5,000,000 and $6,000,000 and the cost of reproduction new $7,000,000 to $8,000,000. The latter valuation is that which the company maintains is correct in view of the prevailing high prices of material and labor.

Another report, presented by Hagenah & Erickson, Chicago, gave practically the same figures for original cost and the cost of reproduction new. This firm was also employed by the traction company. Mr. Hagenah appeared for the company to explain his firm's figures.

ADEQUATE RETURN A QUESTION

The report of Lamar Lyndon, valuation engineer of New York, who was employed by the city of Houston to make a survey and whose report was made as of date of July 1, 1919, gave a total valuation of $4,983,342, with discounts of $127,529 allowed on preferred stock, making the grand total $5,110,771. This is the valuation which the city seeks to establish.

The question of adequate return also figured in the hearing, the company maintaining that the property should yield from 7 to 9 per cent. The city maintained that any return that is not confiscatory should be regarded as adequate, and that a return of 4½ to 5 per cent is not confiscatory.

In explaining his figures, Mr. Gillette went into detail regarding unit costs, reproduction values, straight line depreciation, sinking fund depreciation, enhancement of property values and other angles. The record cost of the property, he said, was $6,803,508 and the estimated cost totaled $6,752,584, both of these figures using a development cost of $2,422,118 with deduction of $877,210 for depreciation. Mr. Gillette said four-fifths of the present plant had been built since the present owners took charge of the property in 1901, adding that since that date the records were complete as to costs, but that prior to that time the date must be largely estimated.

The city contends that the question of property enchancement due to the operation of the property should be taken into consideration in passing on the question of allowing an adequate return on invested capital.

Arbitrators Increase Cleveland Dividend

By a majority of two to one, the arbitrators conducting the inquiry into the request of the Cleveland (Ohio) Railway for a dividend increase from 6 to 7 per cent have awarded the increase, effective Jan. 1.

City Light Commissioner W. E. Davis, representing the city, was the dissenting member of the board. Joseph R. Nutt, president of the Citizens Savings & Trust Company, appointee of the railway, and Attorney A. A. Stearns, named by United States District Judge D. C. Westenhaver as the independent arbitrator, signed the report granting the company stockholders a 7 per cent dividend.

John J. Stanley, president of the Cleveland Railway, when told of sentiment expressed in favor of a referendum declared:

> We shall not oppose a vote on the amendment to the grant making the award effective if petitions are filed after Council acts. Personally, however, I doubt if such petitions will be filed.
>
> I believe the city generally appreciates the ten years of good service and low fare which the Cleveland Railway has furnished, and that our patrons know the difficulties we have faced in the last few years of increasing cost and the impossibility of securing money at rates ample ten years ago.
>
> Further, I have supreme confidence in the good faith of the city. The City Council and the administration are already pledged to the award. No referendum was asked on the legislation passed by Council last July, of which this award is the result. The tacit approval by the city will, I am sure, be reaffirmed now.

The preamble of the award is as follows:

> The parties hereto, the Cleveland Railway and the city of Cleveland, are hereby advised that the board of arbitration has heard the testimony and the arguments of counsel and upon consideration of the same they find that the rate of dividend on the capital stock of the Cleveland Railway should be 7 per cent, effective Jan. 1, 1920, and that the franchise ordinance should be amended to conform thereto. Finding and recommendations based upon the testimony submitted and memorandum opinions are filed herewith.

Under the Tayler service-at-cost grant the Cleveland Railway was entitled to a guaranteed return of 6 per cent on its stock. Under war time conditions the company appealed for an increase in the rate of return as being only fair to the investors and as essential if additional capital were to be obtained from time to time for further development of the company's railway property.

Communities Must Help Toward Restoring Service

The Berkshire Street Railway, Pittsfield, Mass., will not be required to operate the line between the towns of Lee and Huntington, which was abandoned in 1918 because of labor conditions. This is the decision of the Public Service Commission of Massachusetts.

Representatives of the communities formerly served asked the commission to require the road to resume operation. The commission in rendering its decision states:

> This commission recognizes that the abandonment of electric railway service in practically every case involves hardships to the communities which have heretofore enjoyed this service, and even where the company is within its rights in proposing to discontinue its service, the commission has endeavored from time to time by conference with the parties to work out some arrangement which would permit of the retention of the service. * * * * Where a line is operated at a loss and this loss is not made good from the receipts from other portions of the company's system, a public demand for continued operation is equivalent to a request for a voluntary contribution or subsidy from the company. Such a request, we believe, cannot fairly be made of an impoverished company unless the communities which are the sole beneficiaries of the service are prepared to share in the responsibilities and the burdens.

Service on the Pittsfield-Great Barrington branch of the Berkshire Street Railway was resumed on Nov. 17.

Ask Receiver for Receiver

George E. Warren, Albert A. Jackson, George E. Barstow, Jr., Herman E. Kountze and John F. B. Mitchell, as holders of $2,787,000 of the $3,140,000 of receiver's certificates of the Second Avenue Railway, New York, N. Y., have brought suit in the Supreme Court against that company and its receiver, Andrew E. Kalbach, for payment of the interest due on Oct. 1. As failure to pay interest on time makes the principal also payable, the plaintiffs demand that all of the rights, property, franchises, etc., of the bankrupt road be sold to satisfy the debt.

The Second Avenue Railroad went into the hands of a receiver in September, 1908, along with other surface lines in the city. Two receivers, Messrs. Lynch and Beaver, died while trying to restore the system to a paying basis. Mr. Kalbach was appointed receiver in March, 1917. He was overtaken by war-time conditions.

The Second Avenue Railroad was once a part of the Metropolitan Street Railway, but as it was merely leased, the Metropolitan relinquished it when trouble began for the surface lines in 1907.

Maryland and West Virginia Properties Merged

The Public Service Commission of Maryland, sitting at Baltimore, on Nov. 28 approved the consolidation of seven large gas and electric companies in Northern and Eastern West Virginia and Western Maryland by the Potomac-Edison Gas & Power Company. The properties taken over by this corporation consist of the oil wells, plants, pipe lines, etc., of the Eastern Oil Company, Buffalo, N. Y., the Central West Virginia Gas Company, West Virginia & Maryland Gas Company, the Grafton Light & Power Company, the Grafton Gas & Electric Light Company and the Grafton Traction Company, and the majority of stock of the Hartland Power Company, together with the power plant, electric light, traction and electric railway lines, which center in and about Cumberland, Md.

The merger brings together the power plants and railway lines of Western Maryland and Northern West Virginia, from the Potomac to the Ohio Rivers and it is said will eventually include the Wheeling and Morgantown properties owned by the Barstow interests.

The principal offices of the company will be at Grafton, W. Va.

As explained on page 1019 of this issue the creditors of the Grafton Traction Company held a final meeting recently. Releases will be executed and the property turned over to the new owners in accordance with the instructions for this proceeding which have been laid down by the court.

Sale Under Foreclosure Confirmed

The sale of the uncompleted railway between Belleville and East St. Louis, Ill., originally owned by the Southern Traction Company, to C. B. Cox, president of the Aluminum Ore Company and the Alton & Southern Railroad, has been approved by Judge English in the East St. Louis Federal Court.

The road was sold on July 10 last by the master in chancery of the United States District Court for $400,000 to Mr. Mepham. Under the terms of the master's sale, Mr. Mepham had until Dec. 17 to complete the purchase, but he transferred his right to Mr. Cox. Of the purchase price $325,000 has been paid and Judge English cancelled the order requiring the completion of the sale by Dec. 17 and extended the time for payment of the remaining $75,000 until Jan. 15.

The Aluminum Ore Company owns coal property near Tilden, Ill., 45 miles southeast of East St. Louis. The Southern Traction Company's right-of-way runs within a short distance of this property. Rails were laid about ten years ago from Fourth Street and Broadway, East St. Louis, to Belleville, but passenger service was never installed. Freight trains have run over the line from a point in the east section of East St. Louis to Belleville.

Grafton Properties Taken Over

What is supposed to be the final meeting of creditors of the Grafton Traction Company and the Grafton Light & Power Company took place during the second week of December at the office of Hon. O. E. Wyckoff, referee, at Grafton, W. Va. An amicable agreement was reached by the representatives of the creditors and representatives of the prospective purchasers, whereby the Potomac-Edison Gas & Power Company, referred to elsewhere in this issue is to take over the properties at Grafton upon conditions and for the consideration stated in said agreement.

An order was then drawn up which will be presented to Judge A. G. Dayton at Martinsburg confirming the transfer of the properties at private sale. It is understood this order will be entered at once as Judge Dayton has already been advised of its contents, and has consented to a confirmation of the sale upon the terms contained in the order.

In the meantime the creditors of the two concerns have been busy preparing and executing releases of all claims that constitute liens on either of the properties. Armed with these and a certified copy of the order confirming the sale, Referee Wyckoff and Dr. T. F. Lanham, trustee in bankruptcy, will meet the purchasers and their representatives in New York, where the releases will be delivered upon the purchasers paying over to the trustee $100,000 in cash, and $100,000 in bonds of the new company, some of the larger creditors having agreed to accept bonds in part payment of their claims.

This meeting in New York was for Dec. 12, but as the consummation of the deal depends upon the celerity with which the court order is entered, it was decided to leave the date of that meeting open until the order is entered, but not later, however, than Jan. 15.

Details of Oakland & Antioch Reorganization Modification

In an order issued by the Railroad Commission of California the changes in the plans of the reorganization committee having in charge the affairs of the Oakland & Antioch Railway are approved. The order by the commission modifies an order previously issued so as to permit the San Francisco & Sacramento Railroad, the new corporation formed to take over the affairs of the Oakland & Antioch line, to issue not exceeding $4,000,000 of common stock, $1,330,000 of 6 per cent preferred stock and not exceeding $2,100,000 of five-year 7 per cent bonds.

The original plans of the reorganization committee provided for a twenty-year 6 per cent bond issue. The change to the five-year 7 per cent bond, according to the reorganization committee, is due to the present financial conditions and the small demand for bonds of street and interurban railways.

Approximately $800,000 of the bonds will be sold for cash at not less than 90 per cent of par and the proceeds used for the following purposes:

Payment of first liens and interest thereon	$300,000
Payment of non-assenting bondholders, estimated	75,000
Additions and betterments, including among other things one-half of the cost of branch to Pittsburg, completing ballast on entire line, concreting tunnel, purchasing five cars and constructing two warehouses,	203,500
Working capital	141,500
Total	$720,000

As much of the common and preferred stock as may be necessary and not exceeding $1,300,000 of bonds are to be distributed to the bondholders of the Oakland, Antioch & Eastern Railway, Oakland & Antioch Railway and San Ramon Valley Railroad, as provided in the original reorganization plan.

The reorganization plan was declared operative in February last. The details of the plan as presented to the Railroad Commission by the company were reviewed in the ELECTRIC RAILWAY JOURNAL for May 17.

First Surplus for Dallas

The Dallas (Tex.) Railway for the first time since its operation under the service-at-cost franchises earned the full 7 per cent return authorized under the terms of this franchise, during October, according to the report of Grover C. Bland, chief accountant in the office of the supervisor of public utilities.

The return after all necessary and authorized appropriations were made was $59,607. The agreed property valuation, plus authorized additions for betterments and improvements, is $8,560,749, on which the authorized return of 7 per cent would amount to $49,937. During the twenty-five months of operation under this franchise there has accumulated a deficit in authorized return of $430,713.

The franchise provides that after a certain part of the surplus over the authorized 7 per cent return is added to the maintenance and repair fund each month, surplus may then be used to wipe out the accumulated deficit. There is a deficit in the maintenance and repaid fund and none of the October surplus can be used toward wiping out the accumulated deficit.

In explaining this feature of the franchise, Mr. Bland said:

> Attention is called to the fact that the balance remaining after the payment of the 7 per cent authorized reserve was added to the repair, maintenance and depreciation reserve, and not applied against the accumulated deficit in the authorized return. The franchise provides that each month, after paying operating expenses, making appropriations of 16 per cent and 6 per cent of railway gross earnings, respectively, to the repair, maintenance and depreciation reserve and accident reserve, and paying the 7 per cent authorized return, the surplus earnings remaining shall be added to the repair, maintenance and depreciation reserve until the total additions thereto from all sources for the period subsequent to Jan. 1, 1918, shall amount to 18 per cent of the total railway gross receipts derived during such period. The total appropriations to the repair, maintenance and depreciation reserve during this period have been only about 11 per cent of the railway gross earnings, and this deficiency must be made good before any of the surplus earnings could be applied against the deficit in the 7 per cent authorized return.

Toledo Bonds Called for Payment

The Toledo Traction Light & Power Company, Toledo, Ohio, has called for payment on Jan. 1, 1920, the outstanding principal amount of second lien 7 per cent three-year gold bonds, dated Jan. 1, 1918.

Under the terms of issue the holder of these bonds will have the right to convert on or prior to Dec. 26, 1919, into Cities Service Company preferred and common stocks on the following basis: Each $100 principal amount of Toledo Traction Light & Power Company second lien 7 per cent three-year gold bonds may be converted into $85, par value, of Cities Service Company preferred stock and $15, par value, of Cities Service Company common stock with adjustment of interest.

The conversion privilege will apply only to such bonds as are presented and surrendered on or before Dec. 26, 1919. On and after Dec. 26, 1919, the conversion value of these bonds will cease and holders who do not convert will receive on Jan. 1, 1920, only the principal amount of the bonds and accrued interest thereon.

The Cities Service Company preferred and common stocks issued in conversion of Toledo Traction Light & Power Company second lien 7 per cent three-year gold bonds surrendered for conversion prior to Dec. 15, 1919, will be entitled to the dividends payable on Jan. 1, 1920, but stocks issued in conversion after Dec. 15, 1919, will not be entitled to the dividends payable Jan. Jan. 1, 1920.

The Toledo three-year second lien bonds were sold to investors at 97. Computing the cash and stock dividends to be received on the stocks into which these bonds will be converted, the holder of Toledo convertible 7's will receive a net return of approximately 16 per cent per annum after conversion.

Since the above announcement there has been offered for subscription at 99 and interest, to yield over 7½ per cent, an issue of $10,000,000 Toledo Traction, Light & Power Company, first lien, 7 per cent, two-year bonds.

Philadelphia Net Increased

The Philadelphia (Pa.) Rapid Transit Company reports earnings as follows:

November	1919	1918
Operating revenue	$ 3,055,953	$ 2,717,880
Operation and taxes	2,065,139	1,785,521
Operating income	$ 990,814	$ 932,359
Non-operating income	42,029	47,041
Gross income	$ 1,032,844	$ 979,401
Fixed charges	813,854	808,535
Net income	$ 218,989	$ 170,866
Eleven Months Ended Nov. 30	1919	1918
Operating revenue	$32,216,937	$28,253,423
Operation and taxes	22,094,180	18,669,287
Operating income	$10,122,756	$ 9,584,135
Non-operating income	483,341	567,522
Gross income	$10,606,098	$10,151,657
Fixed charges	8,923,349	8,825,994
Net income	$ 1,682,748	$ 1,325,663

Financial News Notes

Kansas City Sale Postponed.—The disposition of the Kansas City Outer Belt Railroad, which was to have been sold under foreclosure a few weeks ago, has been indefinitely postponed.

New Boston Elevated Director.—Henry S. Lyons has been elected a director of the Boston (Mass.) Elevated Railway, succeeding E. V. R. Thayer. Mr. Lyons has been secretary of the corporation for a number of years.

Indiana Road Abandoned. — C. J. Dunn, general superintendent of the Indiana Utilities Company, Angola, Ind., writes that the Lake James Railroad has been abandoned and that it did not operate during 1919.

Abandonment Authorized.—The Caldwell (Idaho) Traction Company has been authorized by the Public Service Commission to discontinue its Lake Lowell branch. The branch is less than 2 miles long. It was built to serve a resort that has been abandoned.

Refunding Issue Authorized.—The Public Service Commission of Massachusetts has authorized the Worcester & Webster Street Railway, Webster, Mass., to issue $150,000 of first mortgage 5 per cent twenty year bonds, the proceeds to be used to take up a like amount of bonds due on Dec. 1.

Loan Granted to Cincinnati Traction Company.—The City Council of Cincinnati, Ohio, has passed, by a majority of twenty-five, an ordinance authorizing the Cincinnati Traction Company to borrow money to pay outstanding deficiencies and to grant the company an extension of twenty-five years in which to repay the losses.

Winnipeg Value $12,934,293.—The present value of the Winnipeg (Man.) Electric Railway's holding, exclusive of land, rolling stock, gas properties and "intangible capital," according to the appraisal just completed by the Manitoba Public Utilities Commission experts, is $12,934,293. To replace the holdings, however, would cost $15,724,501.

Suspension of Line Authorized.—Job E. Hedges, appointed receiver of the New York (N. Y.) Railways by Federal Judge Mayer, has been authorized by the court to suspend operation on the Canal Street line, on which service has been continued for some time past to comply with the provisions of the franchise. It is said that the cost of operation has greatly exceeded the revenues from the line.

Pascagoula Property Being Scrapped.—E. J. Ford, who recently bought the property of the Pascagoula Street Railway & Power Company, Pascagoula, La., has sold it to A. Patterson and associates, who are taking up the rails. The rolling stock and other material have already been sold. It is stated that the light, water and ice properties will be continued in operation.

Common Stock Dividend Increased.—The Eastern Texas Electric Company, Beaumont, Tex., has declared a semi-annual dividend of $4 a share on the common stock, payable on Jan. 2 to stock of record of Dec. 15. This places the outstanding $1,400,000 of common stock on an 8 per cent annual basis. Previous dividends have been at the rate of 5 per cent per annum.

Eastern Massachusetts Abandons Line. — The Eastern Massachusetts Street Railway, Boston, Mass., has discontinued service on its lines from Bridgewater to New Bedford and has abandoned all but 3 miles of the line from Taunton to Bridgewater. Cars which have been operating between Providence and Bridgewater now make their eastern terminus at the monument in Raynham Center.

Temporary Receiver at Brunswick.—Samuel C. Steinhart and Oliver Lisman, New York, N. Y., have been appointed temporary receivers of the City & Suburban Street Railway, Brunswick, Ga., by order of Federal Judge Evans, under a petition of Columbia Trust Company, New York, and the Mutual Light & Water Company, of Brunswick. A hearing for a permanent receivership will be held on Dec. 22.

Permanent Receiver of Company.—The appointment of William L. Doyle, Easton, Pa., as receiver for the Northampton, Washington & Easton Traction Company has been made permanent by Judge Rellstab in the United States District Court. The temporary appointment was made upon application of the Bankers' Trust Company. The affairs of the company were reviewed briefly in the ELECTRIC RAILWAY JOURNAL for Nov. 15, page 953.

Judgment Against Interurban.—Judge M. J. Wade, in the Federal Court, recently handed down a judgment against the Clinton, Davenport & Muscatine Interurban Railway, in favor of the Tri-City Railway & Light Company, Davenport, Ia. The decision gives the Tri-City Railway a chance to sell the entire Muscatine line and thus collect the amount of the judgment. The Muscatine lines have been idle since Aug. 1.

Protective Committee for Corpus Christi. — A committee consisting of John Gribbel, chairman; Louis J. Kolb, J. C. Neff, John J. Anderson and John S. Bowker has been formed in the interest of the bondholders of the Corpus Christi Railway & Light Company, Corpus Christi, Tex., placed in the hands of receivers as noted in the ELECTRIC RAILWAY JOURNAL for July 20. Deposits of bonds are to be made with Fidelity Trust Company, Philadelphia, Pa., which will issue certificates of deposit.

Massachusetts Road in Liquidation.—The Swansea & Seekonk Street Railway, Swansea Centre, Mass., has surrendered its charter for the appointment of a receiver to wind up its affairs. Dr. E. C. Kellogg, president, Willard C. Gardner and Herbert H. Marble, comprising the executive committee of the board of directors, have immediate charge of the business of closing the company's affairs. They will carry out the two sales of company property contemplated. The railway equipment is to be sold to the McGovern & Company, of New York City, and the real estate which includes the carhouse, to George H. Waring.

Receiver Discharged.—John T. Coghlan, receiver of the Northern Electric Railway, Chico, Cal., was discharged from that post on Dec. 1 by Federal Judge William C. Van Fleet. Mr. Coghlan reported to the court that the affairs of the company had all been successfully wound up and that there were no further duties for him to perform. The Northern Electric Railway and allied companies were placed in the hands of Mr. Coghlan as receiver on Oct. 5, 1914. The sale of the properties under foreclosure was made on May 28, 1918, to the Sacramento Northern Railroad.

Foreclosure Sale Dec. 29.—All property of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., will be placed on sale at public auction at Fort Wayne on Dec. 29. The company has been in the hands of a receiver for two years and the court of Allen County has ruled that the sale shall be held on the date named. The plan for carrying out the financial rehabilitation of the company is that advanced by the committee representing the holders of the thirty-year first consolidated 5 per cent bonds of the Fort Wayne & Wabash Valley Traction Company under terms outlined in the ELECTRIC RAILWAY JOURNAL for Aug. 30, page 450.

Reorganization Effective Jan. 1.—The property of the Buffalo Southern Railway, Buffalo, N. Y., which has been in the hands of N. A. Bundy as receiver, was sold recently to interests representing the Erie County Traction Company, which will take possession on Jan. 1. The system consists of 25 miles of road extending out of Buffalo. A receiver was appointed on Sept. 26, 1913. The old company had outstanding $547,000 of stock, $600,000 of funded debt and $41,800 of receiver's certifications. The new company will have outstanding $450,000 of stock and $100,000 of bonds. The reorganization plan as proposed by the representatives of the bondholders has been approved by the Public Service Commission. Under it the amount of securities outstanding per mile of track will be reduced from about $46,000 to $22,000. Interest requirements, moreover, are cut from about $32,000 to $6,000 a year.

Traffic and Transportation

St. Joseph Fares Increased

Missouri Commission Grants Seven-Cent Rate—Eight-Cent Advance for Trainmen

Fares on the lines of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., were raised from 5 cents to 7 cents on Dec. 1 under authority of the State Public Service Commission. On the same date a new wage scale became effective for conductors and motormen. The question of wages for linemen remains to be settled.

The commission's ruling is to remain in force until Jan. 1, 1921, when an application to extend the time or to make the rate permanent will be in order. The company will sell tickets at the rate of two for 13 cents. Fare for children is raised to 4 cents, with eight tickets for 26 cents.

Return of 5.9 Per Cent

The commission estimated that the new rates would produce enough revenue to give the company a return of 5.9 per cent on the present value of the property after allowing 3 per cent, for depreciation. The company's request for an increase in light and power rates was denied. The company, which filed its application for a 6-cent fare with the commission a year ago, later asked for one of 8 cents.

In fixing the rate at 7 cents the commission said:

> We find that the above rates are about all that the traffic can bear. All of the street railway lines of the St. Joseph Railway, Light, Heat and Power Company are short. An increase in fares over the above schedule would only result in decreased net revenue. There are three parties in this matter—the public, the company and the employees. It was after the full and careful consideration of all that this award was made.

The new wage scale, which will give the employees an estimated increase of $112,000 a year, is satisfactory to the men, according to B. F. Kohler, president of the union. The question had been submitted to the commission by agreement between the company and its employes. The settlement of the wage dispute between the company and the linemen will now be taken up.

Eight-Cent Wage Increase

The new scale for conductors and motormen follows: First six months, 40 cents an hour; second six months, 46 cents; second year, 48 cents; third year and thereafter, 50 cents. One man car operators are to receive 4 cents above the scale.

A year ago the federal war labor board awarded the men the following scale: First three months, 38 cents an hour; next nine months, 38 cents an hour; next nine months, 40 cents; thereafter, 42 cents.

The new scale is an increase of 2 cents an hour for beginners and 8 cents an hour for employees who have been with the company more than two years.

The scale which the motormen and conductors had asked was as follows: First three months, 55 cents an hour; next nine months, 60 cents an hour; thereafter, 65 cents an hour. The maximum of the new scale is 15 cents less an hour than the maximum asked by the men.

Massachusetts Jitneys Lose

Two important decisions in what was virtually a test case between jitney bus owners and the Eastern Massachusetts Street Railway were rendered on Dec. 12, by Judge Carroll of the Supreme Bench of the State of Massachusetts. These decisions were handed down in the case technically known as Burgess vs. the city of Brockton, Burgess being the owner of a jitney bus formerly operating in the city of Brockton and who had been forced to cease service as the result of the decision of the Brockton City Council abolishing jitney operation.

The first decision pertained to the legality of the hearing given to jitney owners concerning the abolishing of operation of jitney service within the limits of the city of Brockton. The testimony developed that while no published legal notice had been circulated, ample publicity concerning the proposed action of abolishing the jitneys had been given through the local papers and that the authorized agent of the jitney owners had appeared before the City Council and had asked for a hearing. Furthermore a letter from the agent as well as one from the president of the jitney drivers' union concerning the proposed public discussion had been received by the Council.

City Council Upheld

Judge Carroll in his decision held that when the authorized agent appeared before the City Council for the discussion of jitney matters the association was legally represented and that the decision of the City Council in abolishing the jitney service is valid.

The second decision was rendered on the motion of the attorney representing the jitney bus owners, to appeal to a full bench of the State Supreme Court, and petitioning for an order to allow the jitney service to be resumed pending the outcome of the appeal.

In this case Judge Carroll declared that he could not consider an order to restore the jitneys to the streets of Brockton since he presumed that the City Council had acted legally in establishing an ordinance abolishing operation within the city limits.

Portland Needs Relief

Report of City's Engineer Urges the Granting of Higher Fare to Save Company from Bankruptcy

A higher fare is imperative for the Portland Railway, Light & Power Company, Portland, Ore., if the company is to be saved from bankruptcy. This is the conclusion arrived at by J. P. Newell, an engineer employed by the city authorities to investigate the company's affairs, who has just filed his report. Mr. Newell declares that to preserve the financial integrity of the company, a small charge for transfers may be required in addition to a fare increase.

The company some time ago presented arguments before the State Public Service Commission for an increase in fare from 6 cents to 8 cents. The commission has as yet given no decision in the case. Mr. Newell's report indicates that the company is operating at a monthly loss, estimated at approximately $85,000. It is pointed out that unless relief is granted, the company cannot avoid receivership.

Disintegration Threatened

Mr. Newell expresses the opinion that the prospect of putting the company through bankruptcy proceedings presents a grave situation, as the railway system is made up of three principal companies, besides scattering small ownerships. Each of the properties is covered by separate bond issues, and in case of default Mr. Newell expresses the opinion that a vigorous plea will be made to secure the appointment of a separate receiver for each of the constituent companies. If such a request were granted, the three systems would be operated independently, with consequent curtailment of the transfer privilege.

Mr. Newell's report was based upon an investigation of several months which included every phase of the company's affairs. Not only were the company's records probed, but separate investigations were made to ascertain the facts in the case. Mr. Newell's report shows that the company's statements to the Public Service Commission in regard to earnings and expenses have been verified. It shows that the company will be required to expend $45,000 each month on track maintenance next year. Moreover, operating expenses have been greatly increased by the wage advance of 6 cents an hour recently granted to trainmen and announced in the ELECTRIC RAILWAY JOURNAL for Nov. 15, page 949.

Mr. Newell recommends for relief to the company, the following program:

> A small charge for transfers; establishment of a central zone for free transfers, with a transfer charge on all traffic originating outside of it.
>
> Authorization of such fares on lines built to develop land values in thinly-settled districts as will pay the cost of operation, or, failing that, their abandonment.
>
> Establishment of one-way traffic, re-arrangement of loops in center of city to avoid unnecessary crossings, and adoption of traffic regulation which will facilitate the movement of cars without undue increase of maximum speed.

$128,000 Increase in November

This Is Result in Connecticut for First Month Under Zone Fares—System Protested

The Public Utilities Commission of Connecticut began hearings on Dec. 8 on the petitions of various cities and towns served by the Connecticut Company in opposition to the zone system as recently adopted. The company concluded its case on Dec. 9, when cross-examination of its witnesses began. It was expected that this would be finished on Dec. 15. The petitioners were to begin the presentation of their case on Dec. 18.

Although the company would have been within its rights in requiring the petitioners to specify their objections and prove that the rates now in effect are unreasonable or the service inadequate, it waived these rights and immediately presented its justification of the new system and the rates charged under it.

Up to date there has been nothing to show what the petitioners want, or what they object to. The public interest in the hearings has not been keen, and the only attendants at the hearings have been the witnesses, lawyers for the company and the petitioners and newspapermen, with an occasional spectator.

The chief opponents to the zone system are certain residents of the town of Manchester, who for years have enjoyed a commutation rate for rides between Manchester and Hartford. When the zone system was put in effect on Nov. 2, the company abolished all reduced rate tickets, and the Manchester commuters organized a committee which raised money to engage an attorney to fight the zone system. Boards of Aldermen and City Councils in Bridgeport, New Haven, Stamford and other places also filed protests against the new system, although they specified nothing in their complaints. At a conference of the attorneys representing the different petitioners it was decided to allow the attorney for the Manchester commuters to do the cross-examining of the company's witnesses.

COMPANY'S CASE PRESENTED

Evidence was submitted by the company to show that the zone system was established after a very careful survey of traffic and other conditions on the company's lines, and that the zone system was in fact a suggestion of the people, whose representative in the 6-cent fare case in 1917 advocated the retention of a minimum base fare for riding in city territory and the division of outlying territory into zones, with charges to be made according to the distance traveled by the rider.

Lucius S. Storrs, president of the Connecticut Company, asserted that the system had proved satisfactory and popular. He testified that in November, the first month of its trial, the company's income had increased $128,000 over the same month in 1918, or about 17 per cent. This was not enough to make possible the payment of back taxes and other obligations of the company, but it was very encouraging. He testified as to the manner in which the zones had been determined, and asserted that in his opinion the zone system was the fairest method of charging for electric railway transportation.

Under cross-examination Mr. Storrs asserted that it was not to the advantage of the company to grant a preferential commutation rate to any riders, holding that electric railway service in itself is a commutation service, and that the company could not afford to carry passengers at a loss.

J. K. Punderford, vice-president and general manager of the company, said that the company "hoped" for an increase of about $1,500,000 a year in its revenues through the zone system. Asked if he thought the company had given the 6-cent fare a "fair trial," Mr. Punderford said it had given it a dangerously long trial.

Walter J. Flickinger, assistant to the president, testified to the manner in which the company prepared for the zone system. He presented maps illustrating the studies of population, traffic flow, density of traffic and other features and described fare collection systems in use in other parts of the country.

Thomas J. McGreevy, assistant comptroller of the company, testified to certain financial statistics of the company. Mr. Flickinger and Mr. McGreevy were to be cross-examined on Dec. 15.

So far the hearing has developed no serious opposition to the zone system except in a general way, some of the opposition being described as "political" by one of the witnesses.

The commission announced that after the testimony had been presented regarding the general features of the zone system hearings would be held in Hartford and New Haven, and possibly in Bridgeport, when local complaints such as the location of specific zone limits, etc., would be taken up.

Witnesses for the company all expressed appreciation of the co-operation of the employees and the public in putting the new system in effect, and asserted that were it not for this co-operation the new plan would have been far less satisfactory.

Flat Fares Restored in Jersey

Seven Cents Cash, One Cent for Transfer, Authorized—Commission Says Zone Plan Had Insufficient Trial

Faced with the prospect of receivership unless some means were found of immediately increasing its revenue, the Public Service Railway on Dec. 7 abandoned the zone system and returned to a flat fare of 7 cents, with 1 cent for a transfer. The change was permitted under an order of the New Jersey Board of Public Utility Commissioners issued on Nov. 29. The board's action was announced in the ELECTRIC RAILWAY JOURNAL for Nov. 15, page 957.

The Public Utilities Commission issued its order after Thomas N. McCarter, president of the company, had declared at a hearing that the five-and-one plan, under which the fare was 5 cents for the first two zones and 1 cent for each succeeding zone, with 1 cent for a transfer, was resulting in a loss of $3,000 daily as compared with the former "three-and-two" zone plan and of $12,000 daily when compared with the flat 7-cent fare.

For the first seven days under the plan, which became effective on Nov. 16, the company's revenue was $378,198. The receipts under the "three-and-two" plan during the last week of its trial were $400,387. The estimated receipts that would have accrued under the flat 7-cent fare with 1 cent for a transfer would have totaled $462,206.

Mr. McCarter told the commission that to avert the chaos which would result if the Public Service Railway went into receivership, the financial backers of the company would advance the $750,000 needed on Dec. 1 to meet bond interest payments. They insisted, however, that the zone system be abandoned and that a flat 7-cent fare be restored. He stated that, unless the flat fare was restored, the loan would be unavailable and that a receivership would follow.

COMMISSION FAVORS ZONE PLAN

Although permitting the company to abandon the zone system, the commission stated in a memorandum made public on Dec. 2, that in its opinion the zone plan had not received a fair trial. The trial under existing conditions, said the board, had been insufficient and unfair, and had not received the full support either of the company or of the public. The commission did not sustain the contention of platform men that the system was impracticable from an operating standpoint. The memorandum said in part:

> We believe that with co-operation the plan proposed would at least have had a fair trial. It does not follow that the plan proposed would be adaptable in all its details or solve fully the problem satisfactorily either to the public or to the company. With a fair trial of the plan proposed, however, adjustments could be made, and the experience which could be obtained would furnish data which could be submitted to and studied by the experts engaged by the public and the company. Some plan acceptable to the public and the company might thus have been evolved. That the plan has not had a fair trial, however, must be conceded.
>
> The circumstances which were present during the experiment of the plan with the schedule of rates first permitted to be charged were sufficiently dealt with in our former report to avoid the necessity of repetition here. As a sequence to these

> circumstances may be assigned the attitude of the platform men in applying for the abrogation of the system since the recommendation of this board of the present schedule of rates thereunder. The board is not convinced that the details to which the platform men objected present difficulties that make the plan impractical from an operating standpoint. Reasonable support and co-operation on the part of the platform men as well as the public are important, if not essential, for the success of the plan. It is evident that this co-operation will not be given and the board cannot compel the same.
>
> We are, therefore, of the opinion that neither a sufficient nor a fair trial of the plan under the existing rates has been had or under present conditions is practicable. The trial, however, has alike been costly to the company as well as to the principle involved. By its calculations, the company shows that under the present plan with the present rates at the end of the present year it will have an actual operating loss of $750,000, after the payment of fixed charges and taxes, exclusive of any sum whatsoever for depreciation reserve.
>
> A careful analysis of these figures is not necessary, as it is evident that neither rate under the zone plan has yielded as much as the flat rate of seven cents would have yielded had it been continued in effect. Neither is it necessary to determine whether the flat rate of 7 cents with 1 cent for a transfer will yield the amount of revenue which the company estimates it will yield. The company's officials believe that it can "pull through" until the pending proceedings are finally determined and are satisfied to be permitted to make such a change.

The commission, while it indorsed the zone plan in principle and believed that, given a fair trial, it would work successfully, stated that the continuation of the system under present conditions was inadvisable. Of the financial aspects of the case it said:

> It is evident that the company's receipts under the zone plan are not sufficient for it to remain solvent. The bankruptcy of an important public utility is always accompanied by adverse conditions which affect not only investors in its securities, but the public served by it. That a public utility may remain solvent is not controlling in fixing its charges, but the board cannot, with the knowledge that bankruptcy would likely result, insist upon a rate unless it clearly appears that the rate is just and reasonable and should be imposed without regard to its effect upon the securities of the company.
>
> As has been stated heretofore, the board is now conducting a proceeding which will result ultimately in the fixing of a rate just and reasonable to the public and which will afford a fair return to the company upon the value of its property used and useful in the service of the public. The board does not have sufficient evidence to justify it in determining that the existing rate is one which can be ordered continued without regard to the imminent insolvency of the company.
>
> In view of all the facts and circumstances involved, the board regrets that for the time being, at least, the zone plan, the principle of which has commended itself to our judgment, must be discontinued and the rates of fare in effect before its adoption again charged.

The return to a flat fare was accomplished with little confusion. The company has changed its cars back from "pay-as-you-leave" to the "pay-as-you-enter" type. Cash registers and other equipment used under the zone plan have been removed and will be sold.

The commission will continue the valuation hearings as a result of which it hopes eventually to fix a permanent fare.

Mr. McCarter on Dec. 17 announced that the total loss sustained by the company under the zone system amounted to approximately $1,500,000. He stated that, under existing conditions and with a 7-cent fare the company should prove self-supporting. He believed that the valuation proceedings would be concluded early in 1920.

Columbus May Ask Six-Cent Fare

L. D. Hutchins, chairman of the board which is arbitrating wage differences between the Columbus Railway, Power & Light Company, Columbus, Ohio, declared before the City Council on Dec. 4 that the company was preparing to ask an increase in fare. According to Mr. Hutchins the company is drafting an ordinance providing for a 6-cent cash fare with six tickets for a quarter. Mr. Hutchins appealed to the Council to support the ordinance when it was submitted, since he said, the board of arbitration could grant no wage increase until higher fares were authorized.

The average wage of employees is now 43 cents an hour. Mr. Hutchins intimated that the arbitrators had agreed on a new scale, but were waiting for the city authorities to take action on the fare question before announcing their decision. To grant higher wages, he said, would lead to bankruptcy at the present fare of 5 cents with eight tickets for a quarter. He declared that operation of the railway department had resulted in a loss of $199,361 for the first eight months of 1919 and that, at the present wage scale, the loss for the year would amount to $265,814. He stated that if the fare were increased the company should be able to expend $500,000 annually on street improvements.

Transportation News Notes

Tokens in Bloomington.—The Bloomington & Normal Railway, Bloomington, Ill., has adopted the use of metal tokens, which are sold four for 25 cents. The tokens replace the strip tickets formerly issued. The cash fare is 7 cents.

Eighteen Cents on Vermont Interurban.—The City Council of Montpelier, Vt., on Nov. 28 authorized the Barre & Montpelier Traction & Power Company to charge 18-cent fares between Montpelier and Barre. The fare in the cities is 6 cents.

Five Cents in Charlestown. — The Boston (Mass.) Elevated Railway has established a 5-cent fare on its line between Sullivan Square and Hanover Street via Haymarket Square and Sudbury Street, Charlestown. The new fare became effective on Nov. 29.

Back to the Skip-Stop.—The skip-stop system has been put into effect on the United Railways, St. Louis, Mo., as a coal conservation measure. Supervisors reported that there was little confusion. Most persons remembered where stops were made under the system during the war.

Seven Cents in Charleston.—The City Council of Charleston, S. C., has ratified an ordinance granting the Charleston Consolidated Railway & Lighting Company the right to charge 7-cent cash fares. The higher rate went into effect on Nov. 12. Four tickets are sold for 25 cents. Transfers continue to be given free.

Wants Seven Cents in Chattanooga.—Attorneys for the receiver of the Chattanooga Railway & Light Company, Chattanooga, Tenn., have asked the federal court for permission to apply for an increase in fares from 5 cents to 7 cents. In addition to raising the fare the company would charge 2 cents for transfers.

Would Raise Zone Fares.—The Omaha & Southern Interurban Railway, which operates lines between Omaha and Fort Cook, has filed an application with the Railway Commission of Nebraska for an increase in fares from 5 cents to 7 cents in each of the three zones. The company would sell four tickets for 25 cents.

Higher Petroleum Rate Refused.—The California Railroad Commission has denied the application of the Pacific Electric Railway, Los Angeles, for an increase in rates for transporting petroleum products in car-load lots. The company asked permission to install rates on a parity with those charged by the roads under Federal control.

More One-Man Cars in Brooklyn.—The use of one-man safety cars in Brooklyn, N. Y., has been extended to the Montague Street lines of the Brooklyn City Railroad. Additional cars are being received from time to time. A description of the technical features of the cars was published in the ELECTRIC RAILWAY JOURNAL for Oct. 25.

Seven-Cent Zones on Interurban.—The Public Service Commission for the Second District has granted the petition of the Geneva, Seneca Falls & Auburn Railroad, Seneca Falls, N. Y., to increase fares. The fare on the zones outside of Geneva will be 7 cents. In Geneva the 6-cent fare, which has been in force for some time, will be continued.

Higher Fares in Burlington.—The voters of Burlington, Ia., at a special election on Nov. 24 approved an ordinance granting the Burlington Railway & Light Company permission to install a fare of 7 cents with four tickets for 25 cents. At a previous election in October the ordinance was rejected. The increased rate became effective on Nov. 27.

Another Eight-Cent Road. — The Southern Pennsylvania Tracton Company, which operates the city lines in Chester, Pa., and connects Wilmington and Darby, has filed with the State Public Service Commission a new tariff raising fares from 6 cents to 8 cents. The increase is asked to meet the wage advance of 10 cents an hour recently granted to the employees.

City Agrees to 7-Cent Fares.—The City Council of Oswego, N. Y., has agreed to suspend the present franchise of the Empire State Railroad for a period of two years, thus permitting the company to charge a 7-cent fare on the Oswego city lines. The company will be asked to furnish ten-minute service during rush hours. An 8-cent fare had been asked.

Skip-Stop to Go in Memphis.—The City Commission of Memphis, Tenn., has ordered the Memphis Street Railway to abandon the skip-stop on its lines. Several thousand persons signed a petition asking that the company be compelled to stop its cars at all street intersections. The company has obtained a temporary injunction restraining the city authorities from enforcing the order.

Fares Up in Alabama Towns.—The Alabama Public Service Commission has authorized the Alabama Power Company and the North Alabama Traction Company to raise fares on their lines in Huntsville, Decatur, Anniston and Albany. In Decatur and Albany a 7-cent fare will be charged, while a two-zone system will be established in Anniston with a 5-cent fare for a ride within each zone and a 10-cent fare for one in the two zones.

Seven Cents in Quebec.—A 7-cent cash fare was approved for the Quebec Railway, Light & Power Company, Quebec, Que., on Nov. 24 when a contract providing for the increased rate was signed by the Mayor of the city and by W. J. Lynch, general manager of the company. The company will sell four tickets for 25 cents and seventeen tickets for $1. Limited tickets will be sold at the rate of six for 25 cents. School tickets will be sold ten for 25 cents.

Tickets for Danbury.—The Danbury & Bethel Street Railway, Danbury, Conn., has put in use books of twenty-one tickets, each ticket good for the 7-cent fare, which are sold at a saving of one fare. Books of twenty-two tickets, each good for a 10-cent fare, can be purchased at a saving of two fares. The 10-cent ticket is good for a ride between Bethel and Lake Kenosia, while the 7-cent ticket will be accepted for a ride within the first fare district.

Skip-Stop Ended in Dallas.—The City Commission of Dallas, Tex., has passed an ordinance formally abolishing the skip-stop system on the lines of the Dallas Railway within the city limits. The skip-stop has not been in use for several months, during which time the public was given a sixty-day trial of the former system of stopping at every block. A referendum was then taken on the question, which showed the patrons were overwhelmingly opposed to the skip-stop.

Cleveland Ticket Rate Reduced.—The Cleveland (Ohio) Railway on Dec. 15 began the sale of six tickets for 25 cents. The cash fare remains at 5 cents. The 1-cent charge for a transfer is retained. The company, which operates under the Tayler cost-of-service plan, formerly sold eleven tickets for 50 cents. A test of public sentiment indicated that citizens desired the lower rate rather than to have extra revenue diverted to other than necessary extensions. The company has been awarded an increase in the dividend rate to 7 per cent.

Transfers Abolished in San Antonio.—Transfers have been abolished on the lines of the San Antonio (Tex.) Public Service Company through an agreement with the city authorities. The company will give the new plan a sixty-day trial and, if it works successfully, will accept the elimination of transfers in place of a fare increase. It recently obtained an injunction from Judge Duval West in the Federal District Court restraining the city from interfering with the collection of fares in excess of 5 cents.

Six Cents in Spartanburg.—The South Carolina Light, Power & Railways Company, Spartanburg, S. C., has announced that it will raise the fares in that city from 5 cents to 6 cents. The increase will be made under the terms of an ordinance passed recently by the City Council authorizing the company to install a maximum fare of 7 cents. The people of Spartanburg at an election called by the City Council several months ago voted against authorizing the railway to increase its fare.

Eight-Cent Fare Too Low at Walla Walla. — The Walla Walla (Wash.) Railway has announced that as a result of the rapid increase in the use of automobiles by the residents of the city, the company can no longer operate with an 8-cent fare, and that unless some step is taken to grant relief, it will discontinue operation in January. The State Public Service Commission has recommended that the city lease the lines and continue their operation for the time being, or until such time as a plan is devised to put them on a self-sustaining basis.

Rhode Island Appeal Postponed.—The Supreme Court of Rhode Island has postponed to Jan. 16, 1920, the hearing of the appeal taken by nine Rhode Island cities and towns from the order of the State Public Utilities Commission granting the Rhode Island Company, Providence, permission to charge 6-cent fares. The court allowed the postponement to give counsel representing the municipalities and the company more time for the preparation of briefs. The company is now charging the 6-cent fare authorized by the commission.

More Transfers Abolished.—Federal Judge Mayer has granted the application of counsel for Job E. Hedges, receiver of the New York (N. Y.) Railways, for authority to cease exchanging transfers with the Fifty-ninth and Grand Street crosstown lines and the West Side Belt Line, operated by the Third Avenue Railway. The consent of the Public Service Commission for the First District will also be necessary in connection with the Fifty-ninth Street line because there the transfer system was the result of an agreement based upon a division of the fares received.

Would Abolish More Cleveland Stops.—Fielder Sanders, Street Railway Commissioner of Cleveland, Ohio, has under consideration a plan for eliminating a number of the present car stops on the lines of the Cleveland Railway. His plan by speeding up running schedules in outlying parts of the city, would, it is felt, serve as a partial solution of Cleveland's traffic problem. Commissioner Sanders, with the aid of officials of the company, is making a survey of the entire system and plans to present an exhaustive report on the subject to the new City Council, which takes office on Jan. 1.

Zone Fares on Long Island Interurban.—The Public Service Commission for the First District of New York on Dec. 11 authorized the Long Island Electric Railway, New York, N. Y., to establish a zone system under which the fare between Jamaica and Far Rockaway, on Long Island, will be raised from 10 cents to 15 cents, and between the New York city line and Belmont Park from 5 cents to 10 cents. In granting the increases the commission took the stand that the company's franchises contain no provision limiting the fare. The increased fare is estimated to yield approximately $45,000, or only about two-thirds of the amount needed, according to the commission's own figures, to cover operating expenses and taxes.

Revised Holyoke Fares Approved.—The Public Service Commission of Massachusetts has authorized the Holyoke Street Railway to put into effect the revised zoning system on its Holyoke local lines under which the fare in each zone will be placed at 6 cents and free transfers will be abolished. Under the zone system as approved by the commission last December, the company's system was divided into eleven zones, the central zone embracing the central part of the city and certain populous centers, such as Fairview and Willimansett. The fare in this zone was placed at 7 cents, with free transfers, and in the outlying zones at 5 cents. The system at Holyoke consists of more than 70 miles of track, operating about 180 passenger cars.

May Raise Cincinnati Fare.—The Cincinnati (Ohio) Traction Company has notified W. C. Culkins, city street railway director, of its intention to increase its fare 5 cents on Jan. 1, 1920. The present fare is 7 cents. Whether the increase will become effective depends upon Cincinnati bankers with whom the company is negotiating for a loan of $6,277,000. If the loan is secured the increase will not be made, but if negotiations fail an increase is inevitable and further increases are probable. According to the franchise when the company's books show a deficit for two months an increase in the fare is permitted. Official announcement of this increase must be made on the fifteenth day of the month preceeding that on which the increase will go into effect.

Personal Mention

Expert Traction Adviser

John Bauer Appointed to This Position on Transit Matters by New York's Corporation Counsel

John Bauer, who has been Chief of the Division of Accounts of the Public Service Commission of New York, First District, since July 1, 1917, has been appointed expert adviser on transit matters in the office of the Corporation Counsel of New York City. It is understood that his work in this capacity will deal largely with the financial and accounting questions relating to any transit litigation and proposed settlements of the electric railway situation which may arise.

JOHN BAUER

Mr. Bauer's experience with the Public Service Commission, where he had charge of the accounting and financial investigations in connection with rate cases, issues of stocks and bonds, rapid transit contracts and miscellaneous problems, will prove useful in this connection.

Mr. Bauer received his technical training in economics and finance at Yale University. In 1908 he went to Cornell University, where he served as instructor and then as assistant professor in economics, lecturing on general economics, corporation finance and accounting. In 1914, to get practical contact with public utility regulation, he obtained a leave of absence from Cornell University and temporarily joined the Public Service Commission, First District, in New York City. Here he worked particularly on the revision of the uniform system of accounts, and in addition did a variety of analytical work in connection with rate cases, capitalization cases, rapid transit contracts, etc.

In 1916 he resigned both from Cornell University and the Public Service Commission, to take charge at Princeton University of the newly created department of accounting, corporation finance and public utilities. Later he returned to the Public Service Commission in the capacity already mentioned.

Mr. Bauer has written articles on valuation, fair returns, and commission control of public service corporations for the ELECTRIC RAILWAY JOURNAL and other technical periodicals.

L. O. Gordon has resigned as general manager of the Jackson Light & Traction Company, Jackson, Miss.

W. T. Waters, publicity agent of the Georgia Railway & Power Company, Atlanta, Ga., has resigned to enter the automobile sales business in Atlanta.

Albert Clabaugh has been appointed manager of the Jackson Light & Traction Company, Jackson, Miss. Mr. Clabaugh succeeds L. O. Gordon, resigned.

N. H. Holifield, for several years superintendent of the Laurel Light & Railway Company, Laurel, Miss., has resigned. Mr. Holifield will engage in farming at Jennings, La.

James H. Wilkerson, a member of the Public Utilities Commission of Illinois, has been named by Governor Lowden to be chairman of the commission. Mr. Wilkerson succeeds Thomas E. Dempcy, resigned.

W. C. Dunbar, comptroller of the Philadelphia (Pa.) Rapid Transit Company, has been elected vice president of the company in charge of accounting and finance. The office of comptroller has been discontinued.

Thomas E. Dempcy, chairman of the Public Utilities Commission of Illinois, has resigned. Mr. Dempcy has been ill from pneumonia for some time and has taken no active part in the work of the commission for several weeks.

Carl B. Johnson was recently appointed superintendent of transportation of the Monongahela Valley Traction Company, Fairmont, W. Va., to succeed O. L. Flowers, now superintendent of the freight department.

Lee T. Shannon, formerly superintendent of transportation of the Altoona Logan Valley Electric Railway, Altoona, Pa., has been appointed general manager and elected a director of the Johnstown (Pa.) Traction Company.

W. C. Cook, assistant superintendent of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., recently met with an accident while engaged in service for his company which has necessitated the amputation of one of his legs.

G. A. Richardson, who has been transportation manager of the Philadelphia (Pa.) Rapid Transit Company since last April, has been elected vice-president of the company in charge of operations, the office of transportation manager having been abolished. Mr. Richardson will enter upon his new duties on Jan 1. The office of vice-president in charge of operations is a newly created one, and will represent a considerable extension of Mr. Richardson's duties. Before becoming connected with the Philadelphia Rapid Transit Company, he was general superintendent of the Puget Sound Traction, Light & Power Company, Seattle, Wash. A biography and a portrait of Mr. Richardson were published in the ELECTRIC RAILWAY JOURNAL for April 12, 1919, page 762.

Obituary

Herbert L. Breneman, a director of the Cincinnati (Ohio) Street Railway, died at his home in Cincinnati on Sept. 21. Mr. Breneman was a retired capitalist. He had taken a prominent part in the business development of Cincinnati.

Julius C. Dew, for many years roadmaster of the East St. Louis & Suburban Railway, East St. Louis, Ill., died on Nov. 15 at the age of fifty-nine years. Mr. Dew had been ill for several weeks.

H. L. Gantt, consulting engineer and author on engineering topics, has died. Mr. Gantt was perhaps best known through his writings on industrial management, a field in which he had specialized since 1884. He was also the inventor of the continuous piler, used in textile factories.

Philip L. Saltonstall, officer and director of many electric railway and electric light companies, died at his home in Boston on Nov. 15. Mr. Saltonstall was born in Newton, Mass., May 4, 1867, was educated at St. Mark's School and Harvard University and soon after graduation from the latter institution became associated with the Thomson-Houston Electric Company, Lynn, Mass. He subsequently became active in the direction of electric railway and light companies, serving as a director of the Bay State Street Railway; president and a director of the Hartford & Springfield Street Railway; treasurer and a director of the Manchester Traction, Light & Power Company, and a trustee and a member of the executive committee of the Massachusetts Electric Companies. Mr. Saltonstall was one of the financiers who a number of years ago bought a group of electric railways and formed the Bay State Street Railway, now operated as the Eastern Massachusetts Street Railway. He took a keen interest in electric railway problems and was especially active in promoting civic welfare and community affairs.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Electrical Sheet Mills Booked to June, 1920

Demand Is Heavy—March, 1919, Prices Prevail—Many Manufacturers Will Be Short of Stocks

Producers of electrical sheets are sold well through the second quarter of 1920. With one exception the old price of last March prevails, and the amount of this one advance is $6 per ton. During the summer and early fall producers were booking for the end of 1919 and first quarter of 1920, at the price which should then prevail. At that time the steel strike was in the spring with an unknown result. Now it is generally felt that it will not be necessary to exact a premium on sheets because of a higher wage scale, and the former price is in general prevailing as late as first half of 1920 delivery.

The demand for electrical sheets is very heavy, and it is evident that electrical manufacturers throughout the country have full order books. Demands have been received for considerably more than available productive capacity, and consequently some electrical machinery manufacturers are going to go short on sheets. Some prominent producers of electrical apparatus are known to be in the market for additional electrical sheets. There is no reason to believe that these companies did not order sufficient material but rather that allotments to them were not sufficient to cover their excess needs along with the excess needs of virtually all manufacturers using electrical sheets. Sheet production has been higher than normal capacity in certain mills recently, and it is expected that in 1920 more capacity will be added.

This short market is going to work a hardship on many manufacturers who failed to take advantage of open books to order according to requirements for the first half of the new year. It is expected that some old customers are going to suffer in this connection as well as new customers. As present unfilled steel orders are greater than at any time this year, the prospect is not too bright for anything but overcapacity orders for 1920.

Electrical Manufacturers' Club Annual Meeting

One of the most successful meetings in the history of the Electrical Manufacturers' Club was held at Hot Springs, Va., on Nov. 19 to 22. Addresses were made at the meetings by W. G. Merritt and Dr. B. C. Tremaine. Le Roy Clark, president of the Safety Insulated Wire & Cable Company, New York, was elected president for the ensuing year. The other officers elected were: Vice-president, Edward B. Hatch, Johns Pratt Company, Hartford, Conn.; secretary, F. L. Bishop, Hartford Faience Company, Hartford, Conn.; treasurer, Sears B. Condit, Condit Electrical Manufacturing Company, Boston; Commissionary, F. W. Sanford, General Electric Company, Harrison, N. J.

Reciprocating Track Grinders Advance

Further Increases Looked For—Limited Number of Machines Ready for December Delivery

Reciprocating track grinders are being built in large quantities for stock in order to make prompt deliveries during the first quarter, according to recent reports. A great many inquiries are being received and it is the belief of manufacturers that the amount of business which was booked during the next three months will show a 50 per cent increase over the fall months.

Prices have advanced from 10 to 20 per cent, but these have been expected for some time past. A further advance may be necessary later, depending upon additional wage increases and prices of forgings and castings.

Production has been and still is very slow at present. Difficulty in getting parts, castings, fittings and other numerous parts has been responsible for the slowing up of shop schedules and that, of course, has resulted in decrease of production.

Present stocks are exhausted, but a number of machines are almost finished and will be ready for late December delivery. From that time on, no trouble will be experienced from a lack of available machines.

Sales show healthy increases over the dull summer months. Buying is on a regular basis and approximately 50 per cent more machines are being contracted for now than during the summer season.

Railway companies are making reasonably prompt payments on what they do purchase although the amount contracted for does not compare favorably with that of previous years.

Conditions do not appear to be improving greatly, although it is believed that as soon as the benefit from the use of safety cars begins to be effective the revenue thus released by reduced operating expenses and by fare increases will put the railways in a better buying condition.

Coal Restrictions Removed Effective Dec. 16

Gradual Resumption of Service by Railways Which Were Compelled to Cut Schedules

Removal of coal restrictions were announced Dec. 16 by the central coal distributing committee. Former schedules for railroads and railways are rapidly being resumed and it is believed that within a few days full operation will be effected on all electric railway properties that were forced to reduce service.

In order to fill industrial demands, restrictions formerly in effect, which reduced the use of coal in the manufacture of coke by 25 per cent, also have been removed and the volume of coke production will soon be restored to normal.

Steam railroads in the Middle West and especially at Chicago are clearing their tracks of non-essential freight in order that the movement of coal may be facilitated. A general freight embargo may be brought about until all of the available coal stocks have been moved.

Production during the first week in December, taken from the latest Geological Survey figures available, was 43.5 per cent of normal and was thus lower than at any time since the first two weeks of the strike. Compared with the fourth week of the strike, when the wage negotiations were broken off, the tonnage per working day fell off 8 per cent. The total output for the week was 5,259,000 net tons while the average during the four weeks ended Oct. 25, which may be regarded as normal, was 12,089,000 tons.

Glass Expected to Increase 15 to 25 Per Cent

Factories Close for Season with Many Unfilled Orders—Bookings Refused Pending New Price Scale

Advice from the Pittsburgh district is to the effect that higher price schedules will be announced shortly and that until further notice, no new bookings for plate or window glass will be made. Big interests have not withdrawn entirely from the market, but as production is sold for three months, it is considered poor policy to quote on future business in the face of the coal shortage and the uncertainty of labor conditions.

Glass factories are closing for the last half of the 1919 season with a production record for the year of less than

70 per cent of normal. With many orders for the present season only partially filled, and production stopped until February, when the 1920 season begins, it appears that the demand for 1920 will be the greatest in the history of the window glass business.

Stocks of the popular sizes are clear out of the market. Furthermore, what little is held by either jobbers or manufacturers is very poor in assortment and far below normal in quantity. Ruling prices have advanced 15 to 25 per cent on practically all grades, excepting window glass, on which an advance is expected to be announced at any time.

Window glass heavier than double strength is completely out of the market except for a very small amount held by jobbers. The disappearance of this grade is due to the pronounced shortage in plate glass and the substitution of window glass for the plate.

Rolling Stock

Michigan Railway, Jackson, Mich., is rebuilding a number of cars for safety car operation.

Chicago (Ill.) Surface Lines has been notified by the Public Utility Commission that it must purchase 200 additional cars.

Boston (Mass.) Elevated Railway placed an order with the Russell Car & Snow Plow Company for two snow sweepers.

Worcester (Mass.) Consolidated Street Railway has placed an order with the Osgood-Bradley Car Company for ten safety cars.

Androscoggin & Kennebec Railway, Bath, Me., has placed an order for twelve safety cars with the Wason Manufacturing Company.

Long Island Railroad, New York, N. Y., is in the market for fifty motor cars, thirty trailers and twenty steam coaches similar to those now in operation.

Birmingham Railway, Light & Power Company, Birmingham, Ala., expects delivery soon on the first of the twenty-five safety cars recently ordered from the Cincinnati Car Company.

Brooklyn (N. Y.) Rapid Transit Company, through its receiver L. M. Garrison, has applied to the Federal Court for permission to issue receivers' certificates for the purchase of thirty-seven new cars for the Nassau Electric Railroad and four cars for the Brooklyn, Queens County & Suburban Railroad.

Hershey Cuban Railway, Havana, Cuba, has recently placed an order for ten closed motor passenger cars, three combination passenger and baggage cars, two combination baggage and mail cars and one freight car. The passenger cars are to be of the semi-steel interurban type and will be 47 ft. overall. The contract was awarded to the J. G. Brill Company, Philadelphia, Pennsylvania.

Franchises

Huntington (N. Y.) Railroad. — A franchise has been granted by the town of Babylon to Joseph G. Robin, representing New York interests, to operate a trolley line in the town of Babylon over the Huntington-Amityville route of the defunct Huntington Railroad.

Track and Roadway

British Columbia Electric Railway, Vancouver, B. C.—Decision has recently been made by the British Columbia Electric Railway to build about a mile of new track beyond the Shaughnessy Heights tract to connect the car lines on King Edward and Wilson Avenues. The Wilson Avenue line was never finished or put in operation so the new work will mean entirely new overhead construction for about 1⅜ miles and the addition of that much track to the mileage under operation. This extension of service carries out an agreement of several years' standing between the company and the Canadian Pacific Railway. The latter owns the land being opened up by the new line and has postponed its development until the present time. This will be the first new track this electric railway has opened for operation since 1913.

Power Houses, Shops and Buildings

Miami (Fla.) Traction Company.—A power house and some rolling stock belonging to the Miami Traction Company was destroyed by fire on Oct. 30 last.

Louisville & Interurban Railroad, Louisville, Ky.—The power house of the Louisville & Interurban Railroad at Lyndon, Ky., 9 miles from Louisville, was destroyed by fire on Nov. 11. The plant was valued at $75,000.

Toronto - Pickering Hydro - Radial Railway, Toronto, Ont.—The Ontario Hydro-Electric Power Commission has prepared plans for the Toronto terminal of the proposed Toronto-Pickering Radial Railway. The cost of executing the plans is estimated at $4,328,665.

Rolling Stock

Eclipse Valve Grinder Company, Kansas City, Mo., is now quartered in the Terminal Railway Building.

United Electric Construction Company, Inc., Cleveland, Ohio, contracting electrical engineers, has opened an office at 558-559 Hippodrome Annex.

George F. Simons, who recently was district manager for the Detroit and Cleveland offices of the Edison Storage Battery, has resigned to enter the industrial truck field.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., announces the appointment of Frank O'Ryan as district manager of its Denver office.

R. D. Nuttall Company, Pittsburgh, Pa., announces that R. R. Gartside has been appointed manager of the railway and mining sales division of the company.

Owensboro Ditcher & Grader Company, New York, N. Y., announces that its New York office has moved from Room 222 to 832 Singer Building, at 145 Broadway.

Richardson-Phenix Company, Milwaukee, Wis., lubrication engineer, has reopened its Philadelphia offices in the Bailey Building under the management of George F. Fenno.

Poole Engineering & Machine Company, Baltimore, Md., on Oct. 1 opened a branch office in Boston in the Old South Building, in charge of Robert W. Catlin, assistant manager.

R-P-R Company, Chicago, Ill., sales engineer, handling power-plant equipment, has been organized with Barrett Rogers as manager. The headquarters of this company are at 364 Monadnock Building.

Fairbanks, Morse & Company, Chicago, Ill., will start the erection in Beloit, Ill., next year of a large foundry, to be 900 ft. x 500 ft., containing 495,000 sq.ft. of floor space. It will have a capacity of 350 to 400 tons of gray iron per day and will employ 3000 men.

Bound Brook Oil-less Bearing Company, Bound Brook, N. J., has completed an addition 100 ft. x 180 ft., a new two-story office building 100 ft. x 40 ft. and a new power plant. The new buildings adjoin the foundry, thus giving closer co-operation between all departments.

H. C. Hancock, who has represented the Trumbull Electric Manufacturing Company at its Chicago branch for several years in the Middle West States, has severed his connection to become industrial engineer with the Great Lakes Electric Company of Detroit.

Inquiry No. 31,380.—An Austrian railway company desires to purchase monthly about 30 tons of copper needed in locomotive productions, especially such copper as is used in making bars, plates, and tubes. Offers should be accompanied with an analysis of the copper.

United Import Company, West Toronto, Ontario, Can., has moved to new premises at 69 Adelaide Street, East Toronto. The company represents the Pittsburgh Electric Specialties Company, Pittsburgh, Pa., and the Weiss Biheller, Ltd., London, England. James Fleck is manager.

Burke Electric Company, Erie, Pa., announces that it has purchased the good will and all records, patterns and drawings, special tools and equipment of the C. & C. Electric & Manufacturing Company and is prepared to fill orders for spare parts, duplicate machines, welding and other supplies.

Franklin W. Gilman, production engineer with the Sanford-Riley Stoker Company, Worcester, Mass., and of the Murphy Iron Works of Detroit, Mich., sailed recently for Japan where he will remain for about a year in connection with the installation and operation of stokers manufactured by the two companies.

Domestic Engineering Company, Dayton, Ohio, has been acquired by the General Motors Corporation, according to an announcement recently made by W. C. Durant. The Delco company will be merged with the General Motors Corporation and hereafter operated as a branch under the present management.

Dickey Steel Company, Inc., New York, N. Y., announces its appointment as Eastern sales and export representative of the Hammond Steel Company, Inc., Syracuse, N. Y., manufacturers of high-speed, alloy and straight-carbon tool steels, and a complete line of alloy steels in bars, weldless rings, die blocks and special shapes.

Chester A. Gauss, until recently advertising manager of the Crocker-Wheeler Company, Ampere, N. J., has resigned his position with the company to become a partner in the newly formed firm of Robertson, Gauss & Company, engineering sales and advertising counselors, with temporary offices at 59-61 Pearl Street, New York.

George C. Wing, Cleveland, Ohio, writes that patent No. 965,972 issued to him and Frederick W. Hempey, in his opinion, covers the use in a street car of seats between transverse hand rests, the seats being arranged so that they will fold up and thus give greater standing room in the car. An Italian car of this type was described in No. 20 issue of this paper, page 909.

Roller-Smith Company, New York, N. Y., announces that its California representative, the Electric Material Company, 589 Howard Street, San Francisco, which handles Roller-Smith measuring instruments, watt-hour meters and circuit breakers in California, Nevada and parts of Oregon and Idaho, has opened a Los Angeles office in the Title Insurance Building under the management of E. H. Bell.

Black & Decker Manufacturing Company announces the removal of its general offices from 105 South Calvert Street, Baltimore, Md., to Towson Heights, Baltimore, where a new building, 100 ft. x 200 ft. is being added to the plant. Additional machine-tool equipment will be installed in the new extension which increases the company's floor space 20,000 sq.ft.

M. H. Dinshaw & Company, Bombay, India, large importers of all kinds of machinery including motors, dynamos, and miscellaneous equipment, advise that they will be pleased to receive catalogs, price lists with discount sheets and any other information in regard to these lines. Dinshaw & Company stand ready to represent any reliable manufacturer and can furnish satisfactory references in America.

Imports into Australia.—A proclamation has been issued prohibiting the importation without a license into Australia of steel car wheels and axles for electric railways and electric railway material such as rails, fish plates, bolts, tie plates, switches, crossings, intersections, etc. It is stated that this procedure will greatly interfere with British exports and will militate against the development of Imperial trade and business.

Van Dorn & Dutton, Cleveland, Ohio, announce that E. W. Sinran, who has been general manager for several years, was elected president of the company at a meeting of the board of directors held recently. Mr. Sinran is president of the American Gear Manufacturers' Association. Franklin Schneider was elected vice president. He is also president of the Van Dorn Electric Tool Company. Mr. Sinran is treasurer of the latter company.

Kelvin Engineering Company, Inc., New York, N. Y., has organized a new department to do general engineering and contracting work in this country and in Latin America. This department will be in charge of Carlos Lobo, formerly borough engineer, Department of Water Supply, Gas & Electricity, Brooklyn, N. Y. The company is now prepared to execute contracts for furnishing and erecting electrical and industrial machinery and equipment.

Zobell Electric Motor Corporation, Garwood, N. J., which was incorporated last April and capitalized at $250,000, will manufacture both alternating-current and direct-current motors having somewhat similar characteristics and established sizes ranging from 1 hp. to 7½ hp. The present equipment is designed for an output of from 200 to 300 motors per month. Fred G. Bell is president, A. T. Zoebisch treasurer and F. E. Bucker secretary and superintendent of the plant.

Mechanical Appliance Company, Milwaukee, Wis., maker of Watson electric motors, with factory and main offices at Milwaukee, has recently opened new offices in Buffalo and St. Louis. W. C. Winterroth, formerly connected with the Chicago office, will be at 318 Prudential Building, Buffalo, as district sales manager for western New York. The St. Louis office will be in charge of L. F. Mahler, who has been recently appointed district sales agent for St. Louis and adjacent territory. His office is at 1039 Syndicate Trust Building.

B. F. Goodrich Company, Akron, Ohio, announce the appointment of Major C. G. Carothers, who recently returned from France after two years' service in the U. S. Army, as Chicago railroad representative of the company with headquarters in Akron, Ohio. After serving a machinist's apprenticeship in the Big Four shops at Mattoon, Ill., Major Carothers attended Purdue University and was graduated as a railway mechanical engineer in 1912. For several years he was mechanical engineer for a railroad equipment manufacturer and in 1914 became senior mechanical engineer with the Interstate Commerce Commission, Valuation Department, Southern District, with headquarters at Chattanooga, Tenn. He became a captain of engineers in July, 1917, and arrived in France early in January, 1918. He was made master mechanic and later became superintendent of motor power of the 13th Grand Division, Transportation Corps, with headquarters at Is-sur-Tille, France.

New Advertising Literature

Hubbard & Company, Pittsburgh, Pa.: Folder in the new Pierce presteel pin.

Harvey, Hubbell, Inc., Bridgeport, Conn.: Mailing folder showing various types of lamp guards.

Penn Electrical & Manufacturing Company, Irwin, Pa.; Bulletin P-20 on panel boards and cabinets.

U. S. Electrical Manufacturing Company, Los Angeles, Cal.: Bulletin No. 105 on its electric motors.

Goulds Manufacturing Company, Seneca Falls, N. Y.: Bulletin No. 122 on centrifugal pump sales service data.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Bulletin 1532 on Diesel type oil engines.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis.: Folder on its new swivel attachment plug.

L. J. Wing Manufacturing Company, 352 West Thirteenth Street, New York, N. Y.: Bulletin No. 58 on "Scruplex" electric ventilating fans and exhausters.

Westinghouse, Church, Kerr & Company, New York, N. Y.: A folder showing some of the shops the company has built.

Betson Plastic Fire Brick Company, Rome, N. Y.: A folder on one-piece permanent baffles for water tube boilers.

High Speed Hammer Company, Rochester, N. Y.: A folder on high speed, ball bearing, motor-driven, bench drill presses.

Block & Decker, Baltimore, Md.: Catalog on electric air compressors, portable electric drills and electric valve grinders.

Gurney Ball Bearing Company, Jamestown, N. Y.: Engineering bulletin giving uses of ball bearing in machine design.

Shaw Insulator Company, Newark, N. J.: Bulletin A-16 covering its moulded insulation and lightning protective equipment.

Bacharach Industrial Instrument Company, Pittsburgh, Pa.: Leaflet on Pitot tubes and orifices for measuring the flow of gases in connection with flow meters.

Ohio Brass Company, Mansfield, Ohio: Illustrated catalog on Imperial incandescent headlights for electric traction and mining service, numbered 205 and dated Nov. 1, 1919.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 54 New York, Saturday, December 27, 1919 *Number 22*

The next issue of this paper will be the annual statistical number. The most striking facts that the tables will show are that of the cars ordered in the United States by city surface lines nearly 75 per cent were of the one-man safety type, and that of the motor passenger cars ordered by these lines the percentage was even higher. The statistical issue will contain a suggestive symposium on the electric railway situation from a number of points of view.

Notice About Binding

THIS issue of the ELECTRIC RAILWAY JOURNAL completes Vol. 54. There have been twenty-three issues which should be included in the bound volume, namely, the twenty-two issues which carry the regular serial numbers and the report issue of the Daily, published on Oct. 11 with the report of the Atlantic City convention. The publishers recommend that this report issue, whose pages are numbered from 1 to 130, should be bound at the end of the volume as a supplement.

The editors believe that the index to Vol. 54 which accompanies this number will prove especially useful because more than the usual care has been given to its compilation. The system of key words adopted some years ago to standardize the terms used in the index has been continued and somewhat elaborated. A description of the plan followed will be found on page II of the index. A large number of subscribers to this paper bind their issues at the end of each half-year, and it is a plan which could well be followed by all.

A Decade of Mid-Year Meetings of the Association

THE Cleveland meeting of the American Electric Railway Association, to be held on Jan. 8, will be the tenth in the series inaugurated in 1910 under the presidency of James F. Shaw. The first five of these were held in New York but beginning in 1915 a different city has been chosen each year, namely, Washington in 1915, Chicago in 1916 and Boston in 1917. They were begun because a definite need was felt by the railway executives for an opportunity to talk over pressing problems of the business away from the bustle of the annual convention and the distraction of every-day work. The conference plan sprang immediately into favor, and in due course the conference was made an official meeting of the association with full legislative powers.

At first the winter meeting was rather incidental to a group of committee meetings which were called at the same time. As the committees were naturally made up of leaders of thought and practice in the several departments of the industry a representative attendance at the conference of all branches of the business was assured. Gradually, however, the practice of holding these various committee meetings at the time of the mid-year meeting fell into disuse, the principal reason being the general feeling that the work of the affiliated associations and of the committees should be started earlier in the association year. The present plan by which this work is begun soon after the October convention is desirable in many ways. Nevertheless, the earlier plan has many advantages and we suggest the matter again be considered before the 1921 meeting to determine whether possibly the circumstances have changed sufficiently to warrant a return to the older order.

The Mid-Year Meeting Programs Epitomize the Industry's Thought

AS the mid-year meetings enter their second decade, one's thought naturally turns back to review the 1910 to 1919 meetings in perspective as they changed in character from conference to full-fledged meetings. All have related directly to the financial side of the industry, and it is instructive to recall that even at the first (1910) meeting, emphasis was laid on the declining attractiveness of the electric railway as an investment and on the necessity for higher fares. This led naturally to studies of the proper rate of return (1911) and to proper bases for rates of fare (1912-13). By 1913 the drive of cities for lower fares had largely subsided, but the upward tendency of operating expenses was even then so marked as to cause great apprehension, and this was seven years ago. The principles of commission regulation logically came in for attention in 1914, and the 1915 meeting was appropriately held at the nation's capital. The great war had then begun, and it was not difficult to foresee that very close relations between the federal authorities and all industrial and transportation enterprises were inevitable, especially if we should enter the war. The 1915 meeting was addressed by President Wilson, who declared in memorable words that if the companies treated their employees and the public fairly and if their methods were above reproach, they could "pile up profits as high as the Rockies, and nobody will be jealous of it." The following two meetings (Chicago and Boston) immediately preceded our entry into the European conflict, and were given over to valuation, rate of return, regulation, employees' welfare and, last but not least, the adaption of merchandising principles to the selling of transportation. No winter meeting was held in 1918, but last March many of our representative men got together to confer as to the fundamentals of economical operation which had to be applied immediately in view of the crisis forced upon them directly by the war and indirectly by several factors which would have acted adversely even without the war. These have continued to act during 1919.

The experience of the past ten years has shown mid-year meetings to be decidedly worth while, and we expect definite progress from that at Cleveland.

Massachusetts Anti-Strike Bill Was in the Right Direction

SPEAKING of the coal strike in 1902, Theodore Roosevelt said: "No man and no group of men may so exercise their rights as to deprive the nation of the things which are necessary and vital to the common life." This sound principle was again emphasized recently in several statements issued by President Wilson to the striking bituminous miners whose obstinate tactics threatened for a time to bring serious disaster upon the nation, as they had already resulted in real discomfort for millions of citizens.

There can be no gainsaying the statement that a strike which ties up the transportation of a great community is a strike invested with a public interest, and as such it should merit the condemnation of right-thinking persons everywhere. For this reason an unusual interest attaches to the draft of an act recently recommended to the Massachusetts Legislature by the Street Railway Commission, the purpose of the proposed legislation being "to secure continuity of service on street railways under public control." In brief, this bill was an anti-strike measure. It was printed in full in the JOURNAL of Nov. 8, page 873, and while it subsequently failed of passage the issue involved deserves serious consideration.

People no longer question the right of men to combine and strike for a lawful purpose, but when in doing so the strikers trespass upon other rights which are no less sacred, a sharp line must be drawn between the liberty of the individual and the interests of the greater public. This is peculiarly true in the case of a strike on a railway system. Here is involved the distinction between the carrying on of public utilities and of a private enterprise.

Presumably, a person enters the service of a public utility voluntarily. He may quit that employment without hindrance when he chooses to do so. But when the public service is interfered with "by concerted action, combination or agreement" of employees, as the proposed Massachusetts act contemplated, a greater issue is at stake. As the United States Supreme Court pointed out in passing upon the validity of the Adamson law, the right of an employee to leave the employment if he desires and by concert of action to agree with others to leave, is "necessarily subject to limitation when employment is accepted in a business charged with a public interest." Also, in the well-known Debs case, the Supreme Court sustained the action of the lower tribunal which took steps to prevent the wrongdoing of one resulting in injury to the general welfare.

Agitators and supporters of the radical labor point of view often are heard to say that proposals to prevent strikes have a tendency to create "involuntary servitude." As a matter of fact, the law which was recommended in Massachusetts would not restrain a man from refusing to work, but it would prevent his stopping an important public service by a combination with others.

Thinking people of all civilized nations have had occasion in the past year to give more than the usual amount of serious consideration to the labor situation. Apostles of discontent have sown the seeds of dissension everywhere, and there seems to be an almost universal demand for the highest possible pay for the least possible amount of work. It would seem that the average workman no longer takes pride in work for itself and that he places his pay above all other considerations. While this situation in itself is fraught with peril, the disturbances are still more threatening when they tend to paralyze whole communities in their commercial and social activities through strikes on street railway systems or in any business affecting the greater part of the public. We believe from recent public utterances of candidates for political office and other reasons that sentiment is tending toward passage of anti-strike legislation as regards the kind of properties mentioned, and we look upon it as a tendency in the right direction.

Some More Bus Calculations

IN OUR issue of Nov. 1, we had occasion to analyze some recent bus-promotion literature under the title of "Bus Facts Versus Bus Fancies." This time we are not concerned with the J. Rufus Wallingford promises of the private promoter, but with the optimism of the municipal officer who confuses utility to the public with profit to its civic purse. As an instance, we have in mind the estimate of bus costs presented to the Board of Estimate and Apportionment, New York, on Nov. 21, by Grover A. Whalen, Commissioner of Plant and Structure. Mr. Whalen is the official who is in charge of the extemporized bus services that are now in vogue on nearly a dozen lines, either to replace abandoned car lines or to give a more convenient service than is possible with the disrupted routes of some of the railway companies. Realizing that the present scheme of haphazard operation with individually-owned buses cannot be continued with safety to the public, let alone fairness to the railways, Mr. Whalen has presented an estimate for a municipal bus system.

In figuring that of 100 buses, not more than ninety-two would be constantly available, Mr. Whalen is within bounds; nor is his estimate of $5,500 for a twenty-six or twenty-seven-seat bus unreasonable. It is also noteworthy that he has allowed 30 per cent for depreciation, although a careful bus operator might get up to five years effective life. On the other hand, his estimate of $10,000 each for "spare parts" and "garage equipment" totals only 3.6 per cent of the $550,000 required for new buses in comparison with an allowance of 10 per cent by actual operators of bus systems. A responsible bus company, just like a street railway, must also be prepared to operate in snowstorms and on icy pavement. Hence snow scrapers and sand spreaders are a necessity unless the buses are going to stay in the garage until the street railways and the street cleaning department clear the streets for them. Mr. Whalen's estimate makes no allowance for such equipment; nor can we find any reference to the service vehicles which would be needed for pulling in broken-down buses, carrying repair parts between the garages, handling cash, etc. Unless the "garage" item of $25,000 covers all storage and upkeep structures the omission of "land and buildings" indicates that a kindly city will place facilities of that nature at the disposal of the bus department! This is a typical instance of how real costs can be covered up in an undertaking where one department can sponge on another.

In the still more important matter of operating costs, we are informed that the total daily charge per bus will be $17.40, which compares with an actual derived average cost of $20 a day for smaller buses in the same service. As a matter of fact, the cost of operating buses of less than the capacity proposed has run as high as 35 cents per bus-mile. To secure more than seven 5-cent passengers per mile average with a twenty-seven-passenger bus in order to break even means that the bus services will have to stick to the short-haul, dense-traffic sections. In other words, neither the city of New York nor any other operator of buses can make money at a 5-cent fare unless said operator deliberately robs the electric railway of its only profitable traffic. If, on the contrary, the bus services are for localities where the street railway is no longer available, or accessible, they will undoubtedly be a public benefit but a financial loss generally. Our objection is simply that our public officials deceive both themselves and their citizens when they fail to point out that they are embarking on a general philanthropic enterprise, whereas some give the impression that there's a lot of money in it. The bus is bound to have an ever-wider field as highways continue to improve and electric railway burdens continue to increase, but let it be understood that wherever there is any worth-while density of traffic an organized, responsible, 365-days-a-year bus service costs more and not less than the modernized electric railway.

True Economy Must Operate from the Bottom Upward

SEVERAL pages in this issue are devoted to a symposium on operating economy which formed an important part of the program of the Grand Rapids meeting of the Central Electric Railway Association. It is worthy of careful study because it gets right down to the ground in this matter. There is apt to be a great deal of talk about economy without much real saving being accomplished unless the co-operation of the ultimate spenders of a company's money is enlisted. On the other hand, without a comprehensive view of the matter undue attention to detail may result in a policy of "saving at the spigot and wasting at the bunghole." The Grand Rapids symposium ought to be helpful in guiding the thought of the readers between these two extremes.

The program committee for the C. E. R. A. meeting asked F. R. Phillips to outline the field of possible electric railway savings preparatory to having the details of the many-sided problem presented by representatives of the several component departments. The theory of this is ideal, it is the basis of conferences of competent advisers which in these days are held before any important matters are decided. And it worked out very well in this case. To be sure all departments do not agree in details. For example, the operating man wants more car speed to cut down labor and other costs chargeable to him, while the claim agent fears that too much speed may cut into the allowance for accident claims. Obviously a compromise must be effected here. The master mechanic says that the painstaking work of the shop men can be "knocked into a cocked hat" by a few minutes of reckless operation. Obviously the far-reaching effects of carelessness need to be preached to the car crews if the mechanical department is to be placated. But why multiply illustrations? These indicate the principle which we have in mind, a principle which is being applied increasingly well. We hope that maintenance costs will be sensibly decreased as a result of the discussion at Grand Rapids. Also, the poly-sided symposium plan of program so profitably used there might well be used at other meetings and on other electric railway topics.

Municipal Roads Are Not Independent of Economic Laws

DELEGATES to the conference of the Public Ownership League of America, held recently in Chicago, appeared to be a well-satisfied aggregation as they adjourned after adopting resolutions in support of the principles to which they are all committed. They had heard their leaders tell of the growth of sentiment in favor of public ownership, and they seemed happy in the thought that the dawn of a new era was at hand.

Two papers were read at that conference in which statements were made which tended to show that even municipal ownership cannot accomplish the impossible —that is, pay all the costs of street railway service out of a 5-cent fare. One of these was made by the city engineer of San Francisco who had much to do with the construction of the municipal line, and the other by the chief executive of the Seattle property. Of these two roads, the former is one of the oldest, and the latter is the largest of our municipal railway undertakings.

Mr. O'Shaughnessy of San Francisco explained that it had been the custom to set aside 18 per cent of the gross receipts to cover depreciation and damages. He admitted that in order to meet the July expenses it was necessary to borrow money from this fund, and he did not know whether this practice would be continued. He also conceded that "it is much more desirable that the returns to the corporation or to the municipality be sufficiently high to insure first-class service rather than to retain a low fare and allow the service to deteriorate."

Mr. Murphine of Seattle declared that no amount had been set aside for depreciation of the municipal railway—that the authorities believed rather in spending this fund than in allowing it to accumulate. He did not think it a proper railway expense under city ownership and management to care for and maintain that portion of the street covered by tracks, and this is not being done in San Francisco. This official also admitted that municipal ownership alone would not make a nickel fare go as far as formerly, saying that it would have to be accompanied by relief from franchise obligations and by economies in operation. "Relief from all franchise obligations is imperative," said he, "and under public ownership and management there can be no just reason why any portion of the nickel fare should be taken to pay other than legitimate railway expenses."

A Massachusetts advocate of public ownership recently said: "Even if public ownership be adopted we shall have to utilize the service of human beings." He might just as truly have said that under public ownership a nickel fare would not be found any more elastic nor would it have lower expenses to meet either for labor or materials.

These M. O. "fans" are inclined to be very frank among themselves. They admit that they cannot work miracles. But they do boast that they can furnish local transportation for a 5-cent fare *"if"*—Ah, there's the answer!—if they are relieved of non-transportation charges such as paving, taxes, etc.—burdens which they have been refusing for years to lift from the shoulders of those who have been striving to make a success of the 5-cent fare under private operation.

As a recent Massachusetts report stated: "Public ownership will not change these facts. All these amounts must be met either by the car rider or by the taxpayer, whatever be the system of ownership or management adopted. Facts exist even when concealed by the magic mist of public ownership."

Preparing the Public for the Zone Plan

The Inauguration of the New Method of Charging for Transportation on the Connecticut Company's Lines Was Preceded by a Long Program of Publicity

SUPPLEMENTING the general article on the inauguration of the zone plan in Connecticut, printed in the Nov. 8 issue of this paper, the officials of the Connecticut Company have furnished more detail regarding the methods used in preparing the public and the employees for the new system. According to these men the chief fact by virtue of which the zone system was established on the company's 700 miles of track without the slightest disturbance from the public or material interruption of service was the existence of close co-operation between the company and its employees, and between the employees and the public. The zone system is declared by all of the officers of the company to be "an unqualified success." It was inaugurated on Nov. 2. Eight days later the company issued a statement to the press that the system was a success and that, while it was too early to make financial comparisons, the situation was very satisfactory.

COMPANY AGREEABLY SURPRISED AS TO REVENUES

Since that announcement was made there has been a steady improvement, both as to the smoothness of the system's operation and in the company's financial condition. Although the company expected a temporary decrease in revenue when the new system, with its radical changes in the customs of passengers and crews, was established, there was only a single day that showed a decrease in revenue as compared to the corresponding day in the preceding year, that day being the one which had to be compared to "armistice day" of 1918, when railways throughout the country did holiday business.

The co-operation which made possible the successful establishment of the new system was not brought about in a day. It was the result of a very carefully planned educational campaign, designed first of all to inform the company's 4500 employees regarding the condition of the company, and, secondly, to bring the public to realize that the continuance of electric railway service in Connecticut—and anywhere else, for that matter—depended entirely on the willingness of the people to pay a fare that would enable the company to meet its obligations and obtain a return on its investment, so that it might provide the improved service made necessary by the growth and development of the communities. This educational campaign was a success.

The decision to try the zone system had been under consideration for many months before it was put into effect, for the company concluded not to make the change until the most favorable time came. Meantime the campaign to educate the employees and the public as to the necessity of obtaining increased revenue was carried on.

SERVICES OF A NEWSPAPER MAN WERE SECURED

About a year ago President L. S. Storrs decided that the time had come when the company should employ an expert in publicity. Although it is one of the largest electric railway properties in the United States, the Connecticut Company had never attempted any definite program of education. Mr. Storrs obtained the services of a man who had spent his life in the editorial end of the newspaper business, and who had, in some degree, been a student of street railway problems. The company gave him the title of "Executive Assistant," and told him that it was largely up to him to work up a program and carry it through, subject of course to the approval of the president.

The first work attempted was the education of the company's employees. As a beginning, a short bulletin, printed on the president's letterhead, was mailed to the home address of every employee to emphasize how important it was that the company should win the good-will of the public. It declared that the officers and the employees formed "one big family" which must work together, and called on every officer and employee to give the company's problems his very best thought. It invited suggestions from the men and included a sheet bearing the letterhead of the company and the following paragraph:

"I believe the service of The Connecticut Company on the ——— Division would be improved if attention were given the following matters:"

An envelope addressed to the president was inclosed with this letter so that employees might have every facility for sending in their comments. This letter resulted in several hundred constructive suggestions being received by the company, many of which were valuable.

STATE COMMISSION INQUIRY "AIRED" THE COMPANY'S NEEDS

About the time this circular was sent out an inquiry into the condition of the electric railways of the State was begun by a special commission appointed by the Governor and the General Assembly. The hearings before this commission resulted in much publicity about the condition of the company, which, because of increased expenses, had been unable to pay its State taxes or to meet various other obligations. These hearings focussed public attention on the railways and as it had been known that The Connecticut Company, which then had a 6-cent fare, was considering a higher fare, there was considerable guessing in the newspapers as to what the company would do.

Then came the report of the special commission to the General Assembly, and hearings before committees of the assembly to which the bills reported by the commission were referred. Everybody agreed by this time that the electric railways of Connecticut needed help, but the legislators and other representatives of the cities and towns who appeared before the legislative committees were unwilling that their particular communities should be deprived of any of the financial assistance the railways were required by law to give them. The limits to which the Legislature was willing to go were the passage of a bill requiring bonds for jitneys and the instruction of the Public Utilities Commission of the State to investigate the electric railways and report to the next General Assembly.

The denial by the assembly of the relief from paving and bridge obligations, and other assistance sought by electric railways, served to emphasize their condition, and the guessing of the newspapers as to what The Connecticut Company would do went on. There were guesses that the fare would go to 7 cents, that it might be 8 cents, that it might be 5 cents, and that it might be a zone system. None of the guesses was ever specifically denied. The company said in every instance that when it was ready to announce what it would do a full statement would be made to the public.

In the meantime the company had sent bulletins to the employees on the amount of money that had to be spent through accident claims, and a graphically compiled bulletin showed the manner in which the 6-cent fare was spent as compared with the distribution of the 5-cent fare in 1916. This bulletin showed the employees that practically one-half of every fare taken in was paid to them in wages, and it called attention to the increased expenditures for power and equipment, and the diminution of the return on investment to an almost negligible percentage.

While the company was carrying on its own campaign of education the Committee of One Hundred was presenting the case of the electric railways before the Federal Electric Railways Commission in Washington. The Connecticut Company sent out 1500 copies of the daily reports prepared by the Committee of One Hundred to a list of city and town authorities and influential business men throughout Connecticut. It sent out 2500 copies of a booklet containing excerpts from testimony published by the committee. It saw that the newspapers in its territory obtained the testimony which was of particular local interest.

Every member of The Connecticut Company section of the American Electric Railway Association was supplied with a leather loose-leaf book in which could be placed printed leaflets containing information about the industry and about the company in particular.

About the end of last summer the public was prepared for any announcement the company might make. The public and the men knew that the company had to do something to increase its revenue.

GETTING READY FOR THE ZONE SYSTEM

In the meantime the officers and managers were working in close harmony on the details of the zone system. It was looked at from every angle. If anyone thought that a certain feature which "looked good" to somebody else was really not desirable, he presented his objections, and if he proved his case his advice was taken. Before any announcement of the zone system was made, every officer, manager, superintendent and foreman was told about it, among those to get advance information being the joint conference board of the employees' organization.

On Oct. 6 the company issued a brief statement that it had decided to put the zone system into effect. This statement gave only scanty details, but said that ten days notice would be given before the system became operative.

This announcement created great interest, yet there was no opposition to the zone system on the part of the press with the exception of certain newspapers that had been constitutionally opposed to anything the electric railways might seek, and whose opposition had been expected. Certain chambers of commerce and similar organizations did become very much interested, however, and arranged for conferences with President Storrs, who very frankly stated the position of the company, and in all cases convinced his hearers of the fairness of the zone system and the justice of the company's case. The newspapers were supplied with abstracts of the statements made by Mr. Storrs so that there might be the fullest publicity as to the reasons for the adoption of the zone system by the company.

On Oct. 20 the company announced that the system would be effective on Nov. 2. From the day of the announcement until the new system was inaugurated Mr. Storrs was at the service of the public. Any organization that invited him to discuss the situation found its invitation promptly accepted. At the meetings those present were invited to ask questions which were gladly answered. In the meantime meetings of the company's employees were being held at which the details of the system were repeatedly given. Every man showed the keenest interest in the new system.

THE NEWSPAPER ADVERTISING CAMPAIGN

On Oct. 27 an intensive advertising campaign was started. Advertising space was bought in practically every newspaper in all the cities and towns served by the company. Advertisements were run every day giving the details of the system. Passengers were informed that beginning Nov. 2 they should enter cars at the front door, get a zone check from the motorman, take seats as near the rear as possible, have change ready for their fares, pay their fares before the car stopped at their destination and step to the platform ready to alight when the rear door was opened. This information was repeatedly given, and information regarding the new transfers was carefully disseminated. In large cities full-page advertisements containing the zone boundaries were printed on the two days preceding Nov. 2. On Nov. 2 and 3 a large advertisement was run declaring that "The Zone System Is the Public's Suggestion as the Best Means to Increase Trolley Revenue," in which it was stated that the zone system was the only fair and logical means of charging for street railway rides, that there were certain alternatives from which the public could choose if the zone system should fail, that while the company knew that there would be delays in service the first few days of the new system these delays would be much less serious than passengers might imagine and that very quickly conditions would become normal again.

In connection with the newspaper advertising the company sent out posters printed in six languages for distribution in factories on its lines, where thousands of men unable to speak or read English are employed. The foreign language press was extensively used also.

Placards informing the public of the new fare, asking its co-operation in maintaining schedules were liberally used. Three days before the system went into effect a personal letter was mailed to every employee describing the details of the system and calling on the men for their co-operation. This circular among other statements contained the following:

"The success of the new system depends in large measure on the co-operation of our employees. We believe that you will heartily work with us to make it a success."

It asked the employees to be helpful to passengers, to take a personal interest in the successful operation of the system and to bear in mind that the company could not continue to pay good wages or even to run the cars unless it could obtain sufficient income to pay its bills.

ADVERTISING SMOOTHED THE WAY FOR THE LAUNCHING

The results of all this preliminary educational work were apparent on the first day the zone system was applied. Passengers seemed to know that it was to their advantage to go immediately to the rear of the car so that they need not have far to walk when their destination was reached. Most of them had correct change for their fares, although there were some whose humor it was to present bills. But the public had been so thoroughly drilled regarding the necessity of having exact fare ready that those who sought to delay service heard caustic comment from other passengers. The public itself co-operated with the crews on the cars. The crews showed a most wonderful co-operative spirit toward the public and the company. Even during the first two days there was no serious delay on any line, although in some of the cities served by the company the streets are narrow, automobile and jitney traffic is very heavy, and traffic conditions are unfavorable.

It was to be expected that there would be protests against the zone system, and some have come from communities where commutation rates formerly had been effective, but where, under the zone system, they are abolished. Hearings on the system are now being held by the Public Utilities Commission of the State of Connecticut, but the fact is that the zone system was successfully established on the lines of The Connecticut Company under conditions which would have been considered by many as exceedingly unfavorable. The following editorial from the issue of the New Haven *Register* of Nov. 11 gives a very plain statement of what happened in Connecticut:

> The trolley company quite rightly takes cognizance of the important part which the public has played in making the zone system so quickly successful. Two weeks ago there was talk of the difficulty and confusion it would cause, there were predictions of calamity, there were almost promises of attempts to defeat its purpose. But with the system in operation, those prophets of disaster found that they spoke only for themselves, that the New Haven public were determined to give the system a fair trial, regardless of their opinion as to its justice or injustice.
>
> As a result today the zone system is adopted as a custom, the public forebearance during the trying first days, its helpfulness in assisting the employees of the company meet a difficult situation, and perhaps most of all the unexpected condemnation of all those who sought to interfere with the movement of the traffic by argument or ridicule of the system, have brought the condition related in the company's report. When the new system was first discussed, the objectors were certain that the public would never accept it and would do all they could to hinder its operation. But those objectors saw only their own viewpoint, they forgot the majority of intelligent, fair-minded people who believed in giving the company a chance. It is to this majority that the credit for the quick adoption of the system is due— and none realizes this more than the trolley company.

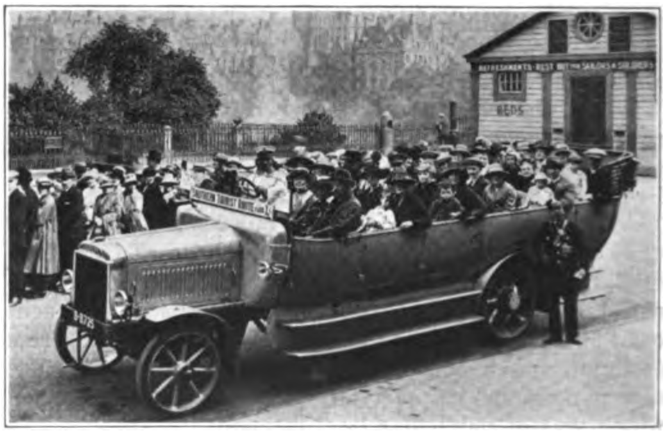
Comment similar to this was printed in practically every city and town served by the company.

The publicity policy which The Connecticut Company has set for itself may be summed up as follows: (1) Win the co-operation of the employees. (2) Answer every question. (3) Side-step nothing. (4) Be absolutely frank. (5) Use advertising space liberally and sensibly for the information of the public.

The company feels that it does not need a "press agent" and for that reason it avoids the use of the word "publicity" so far as possible. Its information department aims never to put out an item that does not have strict news value, and that could not be printed by any conscientious editor strictly on its news merits. It believes it has convinced every open-minded newspaper man in the State of its honesty of purpose, its desire to serve and the need of public co-operation.

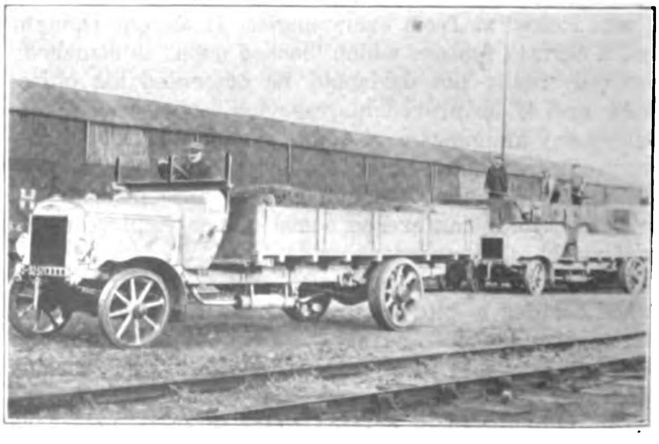
Edinburgh Tramways Demonstrate Resourcefulness

WHEN the railway strike in Great Britain suddenly cut off the usual supply of coal to the Edinburgh (Scotland) Corporation Tramways, it was necessary to have prompt action in order to keep the Tramways Department's four power stations supplied with coal. It so happened that the department had inaugurated, during the summer of 1918, a service of tourists' pleasure cars, which starting from Princess Street, the hub of Edinburgh's universe, took tours through the most notable streets of the city not served by the tramway lines. When the coal crisis occurred, the pleasure cars were withdrawn from their usual service and converted into coal lorries, which supplied the power plants direct from the local colliery railway sidings.



TOURISTS' CAR OPERATED BY EDINBURGH CORPORATION TRAMWAYS DURING SUMMER OF 1918

The accompanying pictures show the appearance of the cars before and after the transformation.



CONVERTED PLEASURE CAR DRAWING COAL DURING RAILWAY ST

An Outsider's Observations on the Connecticut Zone System

Street Railway Engineer of New Jersey Board of Public Utility Commissioners Studies Operation of New Plan and Makes Favorable Report

AT THE REQUEST of the Board of Utility Commissioners of the State of New Jersey, H. C. Eddy, street railway engineer, recently spent several days on the property of The Connecticut Company for the purpose of observing the operation of the zone system of fares which was inaugurated on Nov. 2, 1919. This system was described in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 8, 1919, page 852. In his report, besides describing the Connecticut plan in some detail, Mr. Eddy made a number of comments based on his observations, the substance of which is given in the following paragraphs.

Referring to the general effect of the zoning scheme, he said that the results produced were to confine the average ride to two zones and to include practically the entire built-up section of each city or community within at least the first two zones from the traffic center. Other apparently desirable resulting conditions were the inclusion of the principal business sections of the cities and towns within two zones and the riding of many of the factory workers within the same distance.

OPERATING DETAILS WHICH PROVED SUCCESSFUL

Certain details in the method of operation, according to Mr. Eddy, which tend to make the system successful are as follows: (1) Conductors pass through the cars when an opportunity affords and make change for passengers. (2) Inspectors board heavily loaded cars and make change for passengers. (3) Motormen do not have zone indicators to operate. (4) Zone indicators for conductors are so simply designed that they can be turned quickly with one hand. (5) The conductors stand inside the car off the platform, thus leaving the entire platform free for passengers who have paid their fares. (6) Neutral zone areas, extending two or three blocks from heavy loading zone points, have been established, thus relieving excessive loading or unloading at such points, and also otherwise accommodating the public. (7) Metal tokens are used for 6-cent fares. (8) Time is saved and greater insurance of collection of all fares is provided by the requirement that the passengers deposit fares in the boxes, fare boxes being exclusively used. (9) The system was liberally advertised, with suggestions as to how its operation could be facilitated, by means of posters in cars and otherwise. (10) Cars were redesigned by removal of bulkhead doors or bulkheads completely, thus facilitating the movement of passengers. (11) Both parts of double doors are used for entrance and exit quite generally. (12) Pay-as-you-enter cars are operated to and from certain industries employing large numbers of persons. The general characteristics of the property and the location of many of the industries tend to make this method simple and the result is the practical elimination of disorder and confusion.

The effect of the introduction of the zone system on transportation conditions in connection with a number of large industrial establishments was particularly studied by Mr. Eddy, and he found that the new system appears not to have been a disturbing element in handling this class of traffic. He attributed this to the following reasons: (1) The system is so designed that practically all factory workers are compelled to pay but one rate of fare, that is, 6 cents. They know this and usually have the fare ready. (2) Service to factories is supplied by two or more lines in many cases. (3) Where heavy loads are carried to factories, pay-as-you-enter cars are operated and most successfully. (4) The trolley traffic to the factories is not generally very heavy, much of the traffic being carried by jitneys. Many factory employees live within walking distance of their places of employment. (5) Many of the large factories have several entrances and exits for employees. This eliminates the necessity of unloading cars at one point and greatly relieves car congestion and delays. The majority of the larger industrial establishments throughout the State are made up of a number of comparatively small concerns which are more or less scattered. This condition materially helps the traffic situation.

Mr. Eddy found that the public in general is at least not antagonistic to the new system and in a large measure is favorable to it, with the possible exception of the residents of Bridgeport. The employees of the company generally favor the plan, although those employed in the Bridgeport division appeared generally to dislike it. The newspapers as a rule were favorable to the system, as indicated by editorials and news items, as well as through personal interviews by the board's inspector. Again, Bridgeport appears to have been an exception to this rule.

In general, Mr. Eddy considered the zone system as operated by The Connecticut Company to be a decided present and prospective success. While he found certain defects in the system these were incidental and can, and undoubtedly will, be rectified. He summarized the reasons for the evident success of the system as follows:

1. The confidence of the public, employees and press, in general, has been obtained.

2. The company has spared neither pains nor expense in educating its employees and the public in regard to the system and its operation. The methods used indicate great foresight and intelligence in regard to the matter of obtaining the public favor and meeting its requirements and in the obtaining of employees.

3. The system of zoning and rates of fare are especially well adapted to the characteristics of the property, particularly the traffic conditions.

4. There is in general an absence of great congestion of traffic.

5. The co-operation of many factory managers was secured, these agreeing to pay their employees with the trolley company's metal tokens, an amount equal to the difference between the old fares and the new fares under the zone system. This plan was to be in effect for six months.

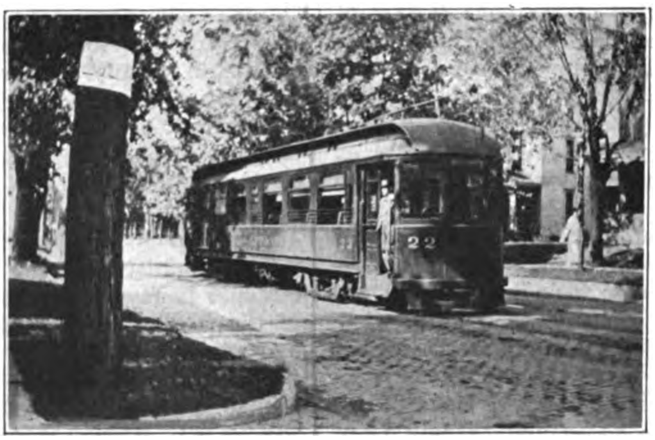
In conclusion, Mr. Eddy notes that the long-distance rider is the greatest sufferer under the zone system on The Connecticut Company's property, but the company reports that while there has been some complaint in regard to this and some traffic has been lost, this is not considered a serious matter and it is expected that much of the lost traffic which has gone largely to the steam roads will ultimately return. Riders of this character are few as compared with the total number of riders on the system.

The report abstracted above was signed by John P. Petty, deputy chief inspector, Bureau of Utilities, as well as by Mr. Eddy, who made the inspection.

History Hath Its Lessons

Inside Story of the Promotion, Operation and Dismantling of One of Those Railways Built On Faith, Not Judgment

By CHARLES J. FINGER
Receiver and General Manager, Columbus, Magnetic Springs & Northern Railway



CAR WORTH MORE FOR MOVIE SMASH THAN ON THE LINE

ON A COPY of the official interurban map issued by the Central Electric Traffic Association that hangs on my office wall, there are marked in green the railway lines, both steam and electric, that have been, are being or shortly will be dismantled. In the states of Ohio and Indiana alone there are eighteen thus marked. In one way or another I have been able to gain an insight into the affairs of six of them. With three of them I was closely associated when the time came to wind up their affairs. One of them I watched from time of construction until the last rail was loaded on the car in the process of dismantling after a career of thirteen years. Tracing the history of that particular road and comparing it with the history of some of the others that have disappeared from the map, I find conditions in it common to many roads that to-day are on the verge of bankruptcy. A condensed history of the first line that was dismantled in Ohio, and which shall be known as the Brown line, follows:

The Brown line was built in 1903, and was dismantled in 1916. It was 24 miles long, but in the course of its brief life became the parent line in a little system that aggregated 100 miles. This system comprised three lines, two electric and one steam.

The Brown line was standard gage and connected with the N. & W. to the north and the Ohio River to the south. Midway it joined the E. J. & B. at a county seat. The original intention of the builders was to inaugurate a traffic in coal from the Pittsburgh district via the Ohio River to points in Ohio. The road passed through a county seat, with a population of 3000 and touched a town of 3500 at the river end, and one of 2000 at its junction with the N. & W. There were five other small settlements along its line. Counting the surrounding territory, the little road would perhaps serve 12,000 people. It touched the following industries: a large boat yard, three sawmills, a canning factory, a tobacco warehouse, a brick plant, three coal yards and some fertilizer warehouses.

E. Lytle, a banker of Cinatolis, who had personal interests in the neighborhod of the Brown line, was the original promoter. He induced a brother, G. Lytle, a banker in a Western state, to interest a Mr. Joyce, president of a bank with a national reputation. Being assured that the investment would take care of 6 per cent, Mr. Joyce promised his financial support.

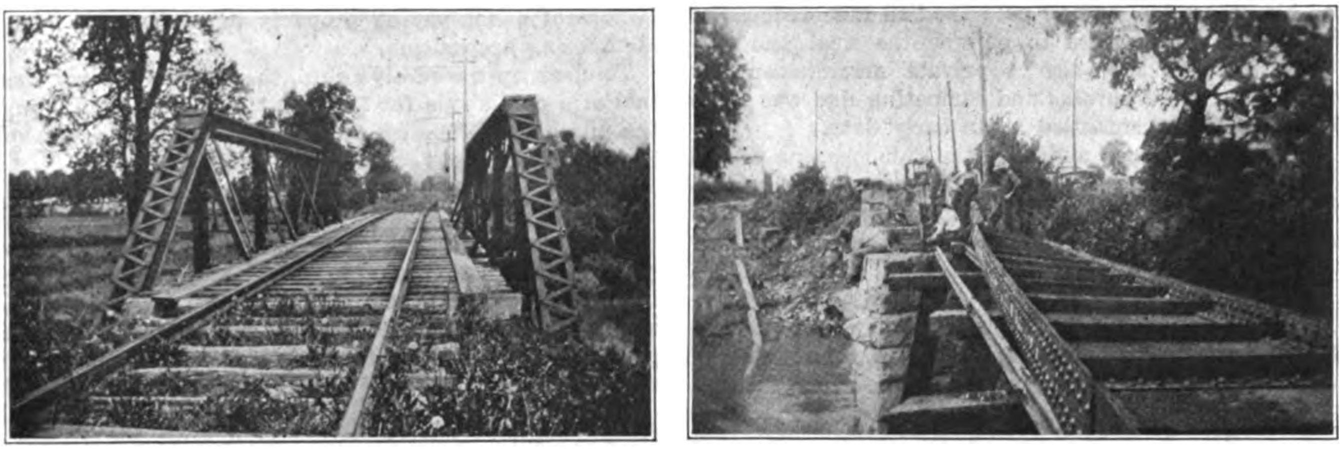
The company organized with a local directorate, was capitalized at $500,000, with a bond issue of an equal amount, and a construction company was formed. No expert opinion was taken as to the practicability of the scheme, nor did any of the three original promoters make any thorough investigation or prepare any statistical statement as to probable earnings and expenses. It seemed to be taken for granted that the mere fact of building the railroad would without other influence create traffic.

This error was also the fundamental error in the case of five other short lines in Ohio that have been dismantled with the past two years. It should be borne in mind that, despite all local opinion to the contrary, there was no idea whatsoever on the part of any of the promoters to enter into any speculative proposition or to make money by the sale of stock. In fact, in the case of five of the Ohio roads that have gone under, no stock was ever sold. The money was advanced by entirely disinterested parties.

In the case of the Brown line, the money for the construction of the road was furnished by the bank president, Mr. Joyce. Unfortunately, neither he nor his associates audited the construction company's bills. Week by week during construction, drafts were made upon Mr. Joyce for the cost of material and labor. These amounted in the aggregate to $480,000. When an audit was finally made, which was not until the road had operated for two years, a strange state of affairs was revealed. In some cases whole payrolls had been drawn for twice. In one case a draft was made for a carload of rails that was neither ordered nor shipped. An ordinary letter written by a supply house stating what the cost of a shipment of material would be, went through the local bank and was accepted as a draft. When construction was reported finished, one half of the length of the road was entirely without ballast, and the other half was ballasted in patches. Faulty construction of course resulted in unduly heavy maintenance cost. For two years, however, after construction ceased, operating officials charged a generous amount each month to capital accounts.

STATISTICS AS TO FINANCING

It has been said that the bonded indebtedness was $500,000. The original promoters hoped that the entire amount would be subscribed by the people along the line of the road. Instead of this no more than a face value of $85,000 worth of bonds were so disposed of



THESE RAILS COST ORIGINALLY $28 A TON, BUT AFTER BEING TAKEN UP SOLD FOR AS HIGH AS $70 A TON

and the net amount of real money gained locally was not more than $67,000. The $415,000 worth of bonds were then turned over to Mr. Joyce as collateral for notes which were made to cover money expended during construction. By subsequent arrangement, each of the Lytle brothers was to take care of one-third of the indebtedness thus incurred. As may be inferred by so unpromising a start, the road at a very early date showed its inability to pay ordinary operating expenses. In fact, from first to last there was an annual loss ranging between $8,000 and $10,000. This loss Mr. Joyce continued to pay from his private and personal funds. He also paid for many years the bond interest on the $85,000 of bonds, as it fell due, in addition to the taxes on the property.

At first blush this may seem somewhat of a unique proceeding, but I know of two other lines in Ohio for which men living in other states have acted in like manner. The psychological process is something like this. At first there is a hope that things may change. It is like a gambler playing his stake. He risks his all, and then he borrows. That is just what the men backing some of these roads do. Finally, for a time, they keep on because there seems no way out.

STATEMENT OF EARNINGS AND OPERATING EXPENSES

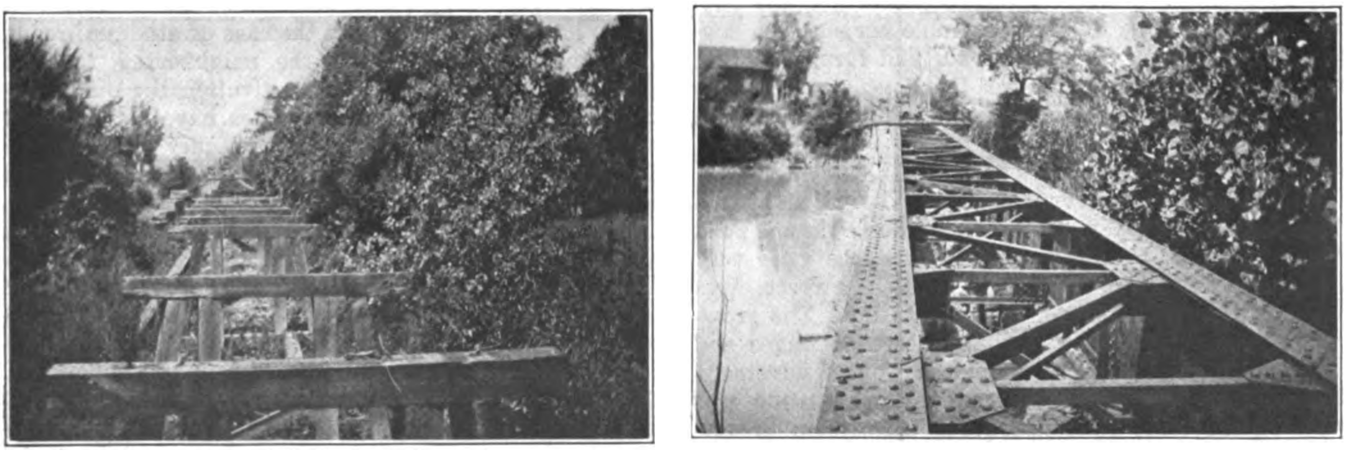
Years	Earnings	Expenses	Loss	Profit
1906	$16,538	$28,451	$11,913	......
1907	18,287	29,418	11,131	......
1908	16,232	35,818	19,586	......
1909	16,889	27,587	11,698	......
1910	18,692	26,659	7,867	......
1911	18,240	33,547	15,307	......
1912	23,791	24,516	725	......
1913	26,856	21,159	......	$5,697
1914	25,967	23,249	......	2,718
1915	23,743	22,453	......	1,290
1916	26,931	25,562	......	1,369

To give an idea of the earnings and expenses on the Brown line from the time the "construction account" was closed, up to the time that the road was sold to be dismantled, a condensed summary is given. It should be borne in mind that the expense column does not include depreciation, taxes nor bond interest.

In 1912 and 1913, an amalgamation between two neighboring lines was effected. Both these lines were on the verge of bankruptcy. Burdened by interest charges, hampered by poor construction and handicapped by inefficient, cheap management, the annual showing had become so bad that the owners were discouraged.

MAKING A BAD MESS WORSE

Clutching at a straw, Mr. Lytle, burdened with his share of responsibility engendered by his Brown line, dreamed of a way out by amalgamating his line with these two bankrupt lines. That three ciphers added together could never make an integer, he failed to see. He persuaded Mr. Joyce, then a very sick man, to his way of thinking and a contract was drawn up between Mr. Lytle and the owners of the electric lines. A more insane agreement was never made. By its terms $20,000 was to be immediately expended upon the roadbed of the electric lines. Two cars were also to be bought. Expensive work was to be done on a big bridge. A steadily increasing rental was to be paid, the amount of which was to be deducted from the purchase price at the end of a few years when Lytle



BRIDGES WERE CUT INTO SCRAP AND TRESTLES WERE SOLD AS THEY STOOD—ALL AT A PROFIT and his associates, having paid the full indebtedness of the electric lines, were to become the final and sole owners. There was also a private arrangement by means of which a parallel and competing line was to be abandoned and dismantled at an early date.

When, with proper auditing, the full meaning of the contract was understood by Mr. Joyce, he was thunderstruck. He placed the management of his affairs in the hands of a trusted friend, a man of integrity and initiative. For the first time he learned that the Lytle brothers were heavily involved. One of them fled the country. Mr. Joyce with a rare nobility, surrendered of his own accord his entire fortune to reimburse the bank of which he was president for the money loaned the Brown line—a railroad, by the way, which he had never even seen. The mental worry and shock killed him. Mr. Lytle, the original promoter, whose speculations had widened as the circles from a stone cast in a pond, was arrested. He is now serving a term in the penitentiary.

CLIMAX FINALLY CAME

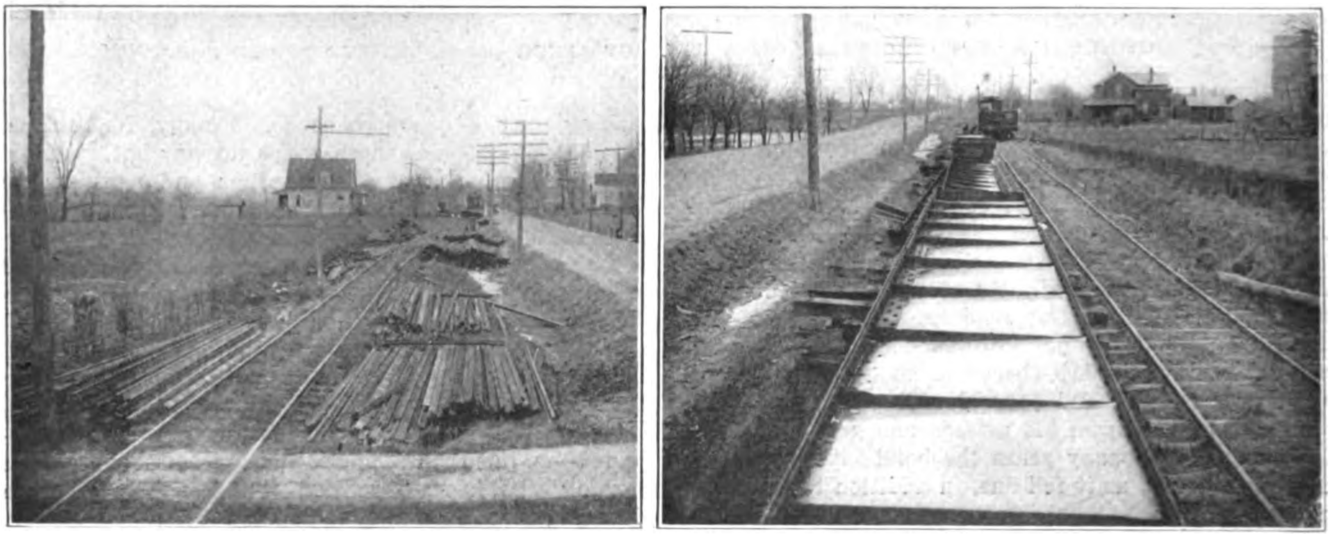
At the instance of the Joyce estate, the Brown line was thrown into the hands of a receiver. The contract of amalgamation with the electric roads was broken, but not before it cost the Joyce estate some $60,000. Meantime, the holders of the $85,000 of bonds, led by certain lawyers who had obtained bonds "for services," instituted a case in court asking that the bonds held by them be preferred, the road sold and the proceeds divided. One of the most able corporation lawyers in the country, an ex-governor and former cabinet member, watched the case for the Joyce estate. The case was taken through the Common Pleas Court, to the Court of Appeals, and on to the Supreme Court, but the plaintiffs' case was lost.

Meantime the receiver had financed and started a stone quarry, by means of which earnings on the road during the last three years of its existence were very materially increased. The net result, however, was not sufficient to justify continued operation. The growing popularity of the automobile, increased wages and taxes and higher cost of material all worked adversely, and upon the advice of the receiver, application was made to the state commission for permission to suspend operation. It was the first case of its kind, and apparently no law was in effect that could compel owners of a non-paying property to continue to operate a losing proposition.

To clear up the receivership, therefore, the road was sold at a public sale for $30,000, the Joyce estate being the purchaser. The estate in turn sold it to a firm of iron and steel men for $84,000.

EVERY CLOUD HAS A SILVER LINING

Then came a strange change. Owing to the war requirements, prices began to soar. Rail that had originally cost $28 per ton at the time of construction, were sold after thirteen years of service for $35. The price continued steadily to climb. Within a week or two relayers with angles were selling at $45. They climbed to $50, to $60 and to $70 at last. A locomotive that had been bought second hand for $2,200, used for three years and then condemned, was sold for $5,000. An offer was received from a moving picture concern by which it was to have the right to run an old locomotive over a bridge and into a ditch, for which it was to pay $9,000, leaving the scrap to the owners. Another moving picture concern suggested the setting on fire of a wooden trestle and the running of a car into the flames. Price $5,000. The right-of-way was sold to a land speculator. The wooden trestles were sold as they stood at $30 per thousand. Ties went to coal mines. Steel bridges were cut into scrap.


SOME OF THE GATHERED INGREDIENTS OF THE BROWN LINE, AFTER IT WAS UNSCRAMBLED

To-day the community in which the railroad served, is apparently not any worse financially than when the railroad operated. Auto buses link the towns, and trucks haul merchandise. In the case of other railroads that have been dismantled the neighboring farmers have purchased and put into cultivation the old right-of-way. In some cases the counties have bought steel bridges, and, leaving them where they stood, have changed highways and pikes so as to utilize the old railroad structure.

Doubtless within the next few years several roads will suspend operation. The fact that they will do so is no more to be deplored than is the cutting out of the undergrowth in a forest. That the country will never again see such an era of wild investment in railroads as occurred two decades ago is to be doubted. The present general cleaning up of non-paying properties is in effect nothing more than the logical outcome of unwise investment. The roads that survive will be the stronger for the disappearance of the weaker ones.

Operating Economy Viewed from Several Angles

At C. E. R. A. Cleveland Meeting F. R. Phillips' Paper and the Accompanying Discussion Showed that All Departments Must Contribute to Cutting Down Costs

AT THE fall meeting of the Central Electric Railway Association, held in Cleveland, Ohio, on Dec. 4 and 5, one session was devoted to the reading and discussion of a paper by F. R. Phillips on "Economies in Car Operation." This was discussed from the standpoints of the conductor, the motorman, the dispatcher, the master mechanic, the claim adjuster and the superintendent. Abstracts of the paper and the formal contributions to the discussion follow:

Economies in Car Operation

The Giving of Good Service at Reasonable Cost Depends Upon the Closest Attention to Operating Detail

By F. R. Phillips
Superintendent of Equipment Pittsburgh (Pa.) Railways

A COMPREHENSIVE plan designed to produce maximum economy in car operation falls short of its purpose if the result of its application fails to produce a net over-all saving. The operating costs of one department should not be reduced at the expense of the whole. On the contrary, it might so come about that the costs in one department are actually increased to accomplish an over-all saving.

The history of the industry shows no radical or revolutionary developments in the means for producing transportation since the adoption of the electric motor. Moreover, in my opinion, the near future holds forth no likelihood of radical changes, current rumors of startling developments, soon to be disclosed, involving the use of an internal combustion motor to the contrary notwithstanding.

The sensibility of the riding public with respect to changes in operating methods, or even maintenance or construction work, is remarkable.

We should, therefore, be exceedingly circumspect before instituting radical changes in operating methods, whatever may be the goal, if we would not disturb the very delicately balanced differential between financial salvation and oblivion.

There will, however, be found a wide field in which to search for economies without treading upon dangerous ground. Some of these will tend toward a more favorable impression upon the public.

Merely, as a guide, I have prepared a simple table of percentages showing the relationship that the expense of each of the several branches of the operating department bears to the total. The figures are based on averages taken from the operating expense sheets of a large number of representative companies.

TABLE I—SUBDIVISION OF COST OF ELECTRIC RAILWAY OPERATION

Item of Cost	Percentage of Total
Conducting transportation	45.0
Cost of power	14.7
Maintenance of way	14.1
Maintenance of equipment	11.9
Traffic	0.5
General and miscellaneous	13.8
Total	100

It is at once apparent that the most promising results in our search for economy will come through an investigation into the possibilities afforded in (a) conducting transportation, (b) reduction in energy consumption, and (c) improved methods in maintenance of roadway and equipment.

Transportation Department Saving Possibilities

The wages paid motormen and conductors constitute practically 80 per cent of the expense chargeable to the transportation account, or more than one-third of the total cost of maintenance and operation. Obviously, a reduction in the number of car-hours without reduction in car-mileage, or an increase in number of car-miles with the same car-hours, is the goal we seek.

Increased speed, within reasonable limits, meets with the approval of the patrons and at the same time, without additional burden or responsibility on the part of trainmen, secures to the company greater economy. The controlling factors in schedule speed are: (1) Rate of acceleration and braking. (2) Number of stops and slow downs. (3) Density and regulation of traffic. (4) Speed with which passengers board and alight. (5) Physical condition of roadway and equipment. (6) Time-saving facilities. (7) Efficiency of car crews. These will be taken up in order.

Rate of Acceleration and Braking. Electric railway literature is filled with elaborate speed-time curves, showing in all imaginable ways the values of the various rates of acceleration of coasting and braking. These are strictly applicable only in special cases. Moreover, the application of theoretical speed-time curves is predicated upon a degree of intelligence on the part of operators that rarely exist.

Adherence to a predetermined economical rate of acceleration under such circumstances is only possible with the aid of devices which will provide automatic acceleration.

Imagine the appearance of a speed-time curve produced by the operation of a car through congested warehouse districts, where it frequently happens that a car must follow slow-moving vehicles for several thousand feet. The situation is becoming more difficult with the advent of rapidly-moving vehicles. An actual curve representing operation of this character would hold little resemblance to the typical speed-time curve. However, all are agreed that the most rapid rate of acceleration and braking within the limits of the comfort and safety of the passengers, of the capacity of the motors and of the spinning and skidding point of the wheels is the most economical one.

Number of Stops and Slow-Downs. The agitation by the Fuel Administration during the war with respect to the efficiency of the skip stop and the excellence of the results following the almost universal adoption of the system throughout the country make elaboration superfluous. A schedule cannot be made economically effective without a thorough analysis of the number and character of slow downs or stops in a given run and the time consumed thereby. As approximately 35 per cent of the total elapsed time of the average city schedule is consumed in slow downs and stops, and fully as much more is lost incidentally, this feature assumes a degree of considerable importance and offers a large opportunity for a saving of time and fuel.

Density and Regulation of Traffic. Recent observation shows that there are from six to ten times as many vehicles as street cars on the street in the congested areas of some of our large cities during certain periods of the day, and the recklessness and complete abandon with which many of the vehicles are operated intensifies the seriousness of the problem of operating the cars. We are rapidly approaching a condition which may require heroic treatment.

Street railway operators, because of their peculiar training and experience in traffic matters, are eminently fitted to cope with the condition if clothed with suitable authority. The public could do worse than secure the advice and opinion of the local railway operators in the promulgation of plans for relief. Much can be accomplished by co-operation with the traffic police, the establishment and enforcement of auto parking limits and safety zones, the institution of one-way traffic streets, the installation of turnouts and crossovers to make possible the breaking up of a blockade by turning short, looping just within the congested areas to effect a thinning out of the congestion, and many other devices of a similar character.

A notable example of time saving in the operation of surface cars through congested districts is the looping system in the city of Cleveland. There all cars approaching the Public Square district via the same avenue in no way intermingle with cars of any other route using another avenue of approach. Common loading points for adjacent districts are provided and a maximum of non-interference results, the only exception to the rule being the operation of depot cars.

The character of a turn at a street intersection has also a large influence upon the time required to "negotiate" the turn. The inside turn requires 4 per cent and the outside turn 39 per cent more time for a single car to clear to permit taking advantage of the intersection than would be required on a straight crossing. Obviously, the time consumed in congested districts has a very large influence upon economy. No schedule can be maintained with any degree of accuracy or satisfaction in the absence of some measure of regularity and uniformity with which the cars negotiate congested districts.

The Speed of Boarding and Alighting from Cars. The most rapid loading ever observed by the writer was at the rate of 0.3 second per passenger, or sixty-four passengers in 19.2 seconds. Yet this same car on the same trip with a reasonable amount of promptness on the passengers' part consumed four seconds in discharging one passenger. With the modern low-step, easy-access, stepless or low-floor car, the time per passenger varies from approximately four seconds for one passenger to the previous figure for a large number of passengers. The effect of car design upon the time consumed in stops is most marked. A recent check showed that in comparison with the high-floor, end-entrance car, with large wheels, the modern, center-entrance low-floor car consumes 30 per cent less time per passenger. The saving in time is entirely attributable to the design of car. Of course, we could not consistently recommend the abandonment of present equipment to permit taking advantage of the loading feature of more recent designs, since time saved in boarding and alighting is not sufficient of itself to warrant such procedure. However, a study of step heights and entrance ways on present equipment may be productive of surprising results.

Physical Condition of Roadway and Equipment. In the production of good service, the function of the roadway and equipment departments is secondary to the transportation and traffic divisions. The latter are upon the firing line and are helpless without the whole-hearted support of the forces whose duty it is to provide the physical means for high-grade economical service. No campaign for economy through the maintenance of high schedule speeds can be successful unless accompanied by a high standard of maintenance of roadway and equipment.

Moreover, since the speed of motors is in direct proportion to the voltage impressed at the brush-holders, overloaded trolley and feeder lines and inadequacy of negative return due to bad rail joints, not only affect schedule speed, but overload the car equipment.

CARS MUST SOMEHOW BE KEPT ON SCHEDULE

Time-Saving Facilities. The maintenance of schedules, especially in the rush-hour period, has been greatly facilitated by the more even spacing of cars and rapid clearing up of incipient as well as serious blockades or other interruptions to traffic. An important thing in this connection is the institution of emergency service. Speedy auto trucks, equipped with apparatus for quick handling of break-downs, in charge of men picked because of their particular fitness for such work, are located at strategic points and dispatched like fire apparatus. They respond to fire alarms in their district and promptly clear the way for traffic. The service is augmented by the installation of street phones to which all employees have access. In addition, the telephones permit the superintendents to keep in close touch with conditions at all parts of the system.

A traffic dispatching system would be helpful in producing even spacing and loading of cars as well as clearing up blockades. The plan involves the installation of telephones at important junctions or close to the usual location of traffic inspectors whereby important information and instructions can be issued by the dispatcher, the instructions being based on the information furnished by inspectors through telephonic reports.

The use of headway recorders with a reasonable amount of accuracy to indicate the spacing of cars has been found of much value. Most large companies handle their power problems through a centralized load-dispatching system, thereby minimizing "outages" as well as equalizing the load on stations, frequently producing economy through their ability to drop off promptly unnecessary apparatus and less economical stations. Another fairly effective method of securing proper spacing and adherence to schedule requirements is the locating of centrally controlled, accurate time clocks at the principal junctions and time points. They prove quite helpful in controlling the practice of some car crews who time their watches by location rather than watch their location by time.

Again, power-operated switches in tracks under frequent headway will be usually found well worth the investment. The employment of special inspectors at the principal loading stations and intersections will also be found helpful in expediting traffic, as will also the institution of loading areas indicated by signs wherein two or more cars stop within the area at once at an intersection. Under certain circumstances, it has been found advantageous through an arrangement with the traffic police at intersections where diverging lines meet, to stop only at the far side of the corner in order to clear the way for cars behind which take another direction.

Experience in certain large cities with the pay-as-you-leave system of fare collection has shown marked improvement in the time required to "negotiate" the congested districts. Further, the use of fare boxes, aside from their money-getting propinquities, reduces loading time.

SCIENTIFIC METHODS MUST BE USED IN CAR OPERATION

Efficiency of Car Crews. No plan of economical operation is effective unless it is properly applied and efficiently executed. After car crews have had thorough preliminary training they should follow a well-defined program of education. Most men have a sincere desire to learn and if properly encouraged will apply their knowledge in ways that are helpful, and will appreciate the elemental principles of safety and economy as applied to electric railway work.

A well-balanced, economical car-operating program must be founded upon a thorough knowledge of the value of its controlling factors. Too many assumptions may prove fatal to its successful application. Until a few years ago the traffic engineer was an unknown quantity, today he is coming into his own. Then, traffic data upon which schedules were based were the accumulation of more or less intelligent guesses, now they are scientifically prepared with precision and mathematical exactness. In large congested centers, schedule making is becoming more and more complex.

One-Man Cars. In this day no discussion of street railway problems would be quite complete without some word concerning this very popular subject. It is indisputable that under certain conditions of traffic the one-man car will prove valuable to the community as well as to the operating company. Especially is this true in communities where congestion has not reached the acute condition found in large cities, although to some extent in a number of large cities there will be found a suitable field for their use. Where headways are great their use is distinctly advantageous as compared with the two-man car.

However, we are still to be convinced that the operation of the one-man car will compare favorably with the operation of two-car units with large seating capacity, either from a standpoint of economy or convenience to the public when operated through densely congested districts where large numbers of passengers must be cared for in a minimum possible time. Furthermore, in all fairness, it should be stated that the advantages of safety, light weight, low steps, small wheels, baby motors or shiny varnish are not coincident with the introduction of the one-man car.

Energy Consumption. Our story would be incomplete without reference to power generation. Greater economies here have become absolutely indispensable. Important developments have been made in the instantaneous checking of flue gases; in the use of higher steam pressures, and in the consolidation of community generating stations. Probably one of the most important links in the chain of efficiency in power distribution is the negative return circuit. A careful survey will usually prove that the cost of maintaining good rail circuits is insignificant compared to the resulting saving in energy.

But it is in the consumption of power that the greatest opportunities for economy are to be found, not only on the cars but in street lighting, in the carhouses and shops.

On the cars there is much power loss possible in air-compressor circuits and in the heaters. Good maintenance will reduce the former and careful heat regulation the latter. There are several systems of manual regulation which are efficient, but only when supervisors and car crews are responsive. Automatic regulation is constantly attentive and does not forget.

Light-Weight Cars. In the matter of reduction in weight it is the writer's belief that we have not yet gone far enough. With the use of alloy steel and aluminum, and less elaborate facilities for lighting, heating and ventilation, an electric car can be built to weigh less than 300 lb. per seated passenger.

Power-Consumption Checking Devices. There are three types of devices for checking operation of cars, one measuring directly the energy input, one the coasting time, and the other the number of brake applications and the total braking received. Each has distinctive advantages; certainly none of them are effective without the co-operation and understanding of the car crews. The advantages of increased coasting under suitable circumstances is not to be gainsaid, but the economical car schedule is not predicated upon the degree of coasting. Most high-speed schedules for city surface cars with six or more stops per mile leave little opportunity for coasting.

Maintenance of Roadway and Equipment. It is almost axiomatic that the most economical maintenance of roadway and equipment is that which involves the highest standard obtainable. The most effective single instrument of economy is a complete system of inspection, including overhauling, and a well-defined program of reconstruction. The costs of labor and material used in maintenance have advanced in such an amazing degree that the value of frequent adjustments and thorough inspection, in order to procure from the materials used the last "ounce of usefulness," is more necessary than ever before. Next in importance is the application of the principles of production efficiency, through the use of time-saving tools and machinery, the planning and routing of materials to accomplish a minimum amount of handling, reclamation of heretofore salvaged material through the medium of welding devices, the proper selection and checking of the quality of materials, etc.

A great contributor to reduction in expense may be found in standardization of parts, by the plan promulgated by the American Electric Railway Engineering Association. This effort should receive the support of all manufacturers of materials and supplies, as well as railway men. Adherence to a standardization program will entail some sacrifice on the part of all; individual opinion on the part of railway men and an over-emphasized commercial spirit on the part of the manufacturer. We all know that standardization carried to the extreme will stultify progress. On the other hand, a lack of standardization will affect ultimate economy adversely.

No comprehensive campaign for economy can well be undertaken without thorough consideration of all the phases entering into its consummation. Hence as specific treatment in detail of any one of the many aspects of the problem has not been possible in the limited time available for the presentation of this paper it has been necessary to deal in generalities. To sum up the whole matter, efficiency and economy are obtainable only through constant application and attention to the minutest detail, coupled with the highest degree of helpfulness, co-operation and intelligent co-ordination on the part of all concerned.

A Conductor's Point-of-View

By CHARLES CONNELY
Conductor Grand Rapids, Grand Haven & Muskagon Railway, Grand Rapids, Mich.

MR. PHILLIPS' paper is rather over the head of the average conductor, so that many of the points which he makes will not be discussed here. Theoretically, the low-floor, low-step car would materially aid in the speed of loading cars, but these cars would not be suitable for interurban lines, especially those operated from third-rail, and those liable to be troubled with heavy snow drifts. There are also strong arguments in favor of standard height for interurban cars, the height conforming preferably to steam road practice. We will agree that the better the condition in which the equipment and roadway are maintained, the fewer the pull-ins, and this would seem to be economical. The standard would of necessity vary on different properties. but from a conductor's standpoint this standard could not be too high.

Referring to the education of the train crews, and especially of the conductors, the following points bear on that question: The greatest opportunity for the conductor is to see that no fares are lost to the company by failure in collection. Many fares may be lost because patrons refrain from riding except when absolutely necessary. To overcome this tendency it is necessary that a conductor be courteous and attentive to his passengers and also to the public generally, as each person with whom he comes in contact is a potential passenger.

THE CONDUCTOR IS A SAFETY AGENT

In assisting in the prevention of accidents the conductor has another opportunity for increasing the economy of operation. He should be always vigilant for the safety of his passengers. He should see that passengers have safely boarded or alighted from a car before he gives the signal to start, that objects over which passengers might stumble are kept out of the aisles and that infirm persons not yet seated are not thrown down by the starting of the car. He should be vigilant concerning train orders and time-tables, and not depend on the motorman to keep his train clear of other trains. When an accident occurs he should secure the names of all witnesses possible, make a full and intelligent report concerning the accident, and forward it to his superior officer at the earliest possible moment. In fact, he should make intelligent reports concerning anything coming under his observation that might lead to possible injuries or damages.

Again, he should make himself thoroughly familiar with the operating rules and be ready instantly to follow instructions. If a conductor is thoroughly familiar with the rules he knows at once what to do when the emergency arises.

He should also be careful when throwing switches to see that the points are properly set before signaling the motorman to proceed, and he should co-operate with the motorman at loose-tongue city switches to assist in preventing troubles at such points. Furthermore, he should be watchful at switches, curves and other points where the trolley wheel is likely to leave the wire, to prevent damage to the overhead.

The conductor should co-operate with the motorman in the economical use of current by giving notice of a stop in ample time, and in giving the starting signal promptly. He should also watch the heating and lighting of his car so that unnecessary fuel or current is not consumed.

In the handling of freight and express, proper care and attention on the part of the conductor will result in minimizing damage claims and a consequent saving to his employer. It is only with the hearty co-operation of employee and employer that a maximum of efficiency in this work is secured. Take the baggage end of the service, for example. This with few exceptions is given in connection with the passenger service and very little direct revenue results therefrom. However, if an occasional piece is improperly checked and perhaps lost or delayed beyond a reasonable time, considerable expense in the adjustment is involved and indirect injury to other branches of the service is caused. Patrons, becoming dissatisfied with such experiences, are inclined to extend their "grudge" to the entire system and transfer their patronage to competing lines.

AFTER ALL, COMMON SENSE IS THE PRIME REQUISITE

To sum up the ways in which a conductor can assist in the economical operation of his car or train, and through this the entire system, it need only be said that what is required is the right use of ordinary common sense. The trouble is that some people, in fact most of us, do not do our best; but if a conductor will remember that courtesy will make friends for himself and his employer; if he will use the company's property as he would his own; if he will do all possible to avoid accident, and make quick, full reports when they do occur; if he will not be afraid of doing a little more than his share, then he will find that when, to secure greater economy in car operation it is necessary to reduce the number of men, his name will still be upon the payroll.

How a Motorman Can Help

By JOHN A. SUNDERLAND
Motorman Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.

THE economical operation of a car by the motorman is a study in itself. The laws governing such operation cannot be set out explicitly in a rule book, nor can proficiency therein be attested by a diploma issued by any school except the great school of experience. The motorman must be an apt and intelligent pupil, endowed with rare good judgment, enthusiastic in his work and with an honest ambition to excell. He must be patient, slow to anger and considerate of the rights of others. The management, on the other hand, must make the motorman feel that his work is appreciated, and furnish him a comfortable, safe place in which to work. To the uninitiated the work of a motorman seems more or less mechanical, requiring but little skill and less thought. But we know that such is far from true. We appreciate the vast amount of skill and thoughtfulness that is incorporated in the work of a good motorman. This is especially true in the great field of practical economy.

There are many ways by which a motorman can lower the cost of operation. For example, he can reduce the number of accidents to live stock, by familiarizing himself with all the permanent objects found on the right-of-way. Thus, he can, while yet a long way off, distinguish between a stump and a hog, between a tie pile and a cow; and any unusual object will at once attract his attention, thus frequently enabling him to avert an accident. The same end may be attained if he will watch the fences inclosing the right-of-way, reporting to the proper officials any defects that he notices.

Again, the use of a file at the right time, the application of a screwdriver, or the pouring of a few drops of oil just where and when it is needed will often prevent a serious and costly accident or injury to equipment. As long as cars are run, there will be costly accidents, both to stock and to equipment, with all the care that the motorman may exercise. In this paper attention will be directed to a means of economy which lies entirely within the control of the motorman, the economical use of power.

MOTORMAN HAS A PROFESSION, SAYS MR. SUNDERLAND

Any motorman can, by exercise of sound judgment and good common sense, by interest in his work as well as in his pay, coupled with an insatiable desire to lead in his profession (and it is a profession) save money for his company on every trip, by cutting down to the irreducible minimum the current necessary to maintain the schedule under the rules. The irreducible minimum is an elusive goal; its pursuit is one of the things that takes the monotony out of motormanship, adds zest to the present run and lends enticement to the future run.

There are two electric circuits on each car, the operating and the light circuits. It is the operating circuit that affords the greatest possibilities of saving.

There are at least two positions marked on each controller, "off" and "on." We can save power in both positions. At the carhouse the controller is in "off" position and that is the logical place in which to commence to save. We shall, however, begin with the "on" position. At most carhouses there are peculiar physical characteristics of track or overhead that necessitate limited speed. Shall we open up the controller and go out of the carhouse with a rush, making the car jump at each point until we reach the bad place in track or wire and then throw off and use the emergency brake to slow us down? Hardly; if it is necessary to beat another motorman to the straight-away, the better plan would be to get up a little earlier than he does, and take our own time in getting out. Instead, we shall open the controller one point, then when the car has attained the limit of speed on that point, give it another and another, until we have momentum enough to carry us over the bad place. Then we shall throw off and drift at the required speed. This, of course, applies not only at the carhouse but at many places on the road. At one point on our line we have a sharp grade to climb, then a short stretch of straight track, then a sharp curve. I have found that by throwing off about 50 ft. before reaching the crest of the hill I can drift around the curve without the use of air—that is, I let the hill do a little of the braking for me.

The rules governing the start from the carhouse, govern every start on the road. Feeding should be done gradually, not too rapidly nor yet too slowly. Whenever we feel the car jumping ahead, we are feeding too fast; that is, if the car is in good working order. Feeding too slowly is a waste of current and accomplishes nothing.

We often have to slow down for a bad stretch of track, a curve, bad wire, crossing another track or "negotiating" a spring switch. In feeding up after such a slow down the controller should be opened up promptly to the point corresponding to the speed of the car—we can tell when the motors begin to work—and from there on the feeding should proceed as from a stop.

If, while the car is standing, a wagon stops on the track 20 ft. ahead of us we must get it off the track before starting. We cannot get by it until it gets out of the way and that 20 ft. of track is expensive to the company if we "inch" over it. Again, starting on a slippery rail is an art. We should feed up very cautiously and slowly, and if spinning takes place we must immediately throw off and feed up again after the wheels stop spinning.

Attempting to start before the brakes are entirely off is expensive, as a rule, but when starting on an up-grade we should feed up just about the time the air is released enough to let the car start forward. We must never let the car start backwards down such a grade. When it is necessary to start after meeting another car it is good practice to feed even more slowly than our own car requires. We must consider the fact that the other motorman is feeding too, with a great pull on the substations. He can only have his share of the current, and there is no necessity for us to try and get the first "bite." Again, the farther the cars are kept apart, the more feed taps there will be between the cars and the less resulting strain there will be on the substations. I understand that substations are an expense in themselves.

In striving to economize with the controller in the "on" position, sparing use should be made of the series running position, which I deem the most expensive point on the controller. It is necessary to use it on long grades, or perhaps to insure a steady running at low speed for a short distance when any other manner of operating the controller would result in a jerky movement of the car, with its resulting discomfort to the passengers. But when we have time to "kill," we should build up to full speed and run, say, a third of the distance, then throw off entirely and finish the remaining two thirds with the controller off.

THIS MAN HAD THE RIGHT IDEA

Years ago I ran with a man who was conductor in the morning. After dinner he was the section boss, fence-gang superintendent, general manager, director and auditor. Of a morning when he had collected the two or three fares, he would come up to me and say "let her float, boy, let her float." And "float" she did. It was up to him to economize and he know how fast his wattmeter was turning when we were "floating." So we floated and saved. The heavier the car is, the more slowly it will start, and the farther it will drift. A car will not stop immediately the current is cut off (sometimes we have wished it would). I do not know of a run in which no place can be found to drift, and that without detriment, of course, to the schedule.

Finally, every effort brings its own fitting reward. There is a deal of honest pleasure in climbing down out of the front and walking around the car at the end of a splendid run, and finding "her" cool and in good order. It is then that we realize that no mechanical means can ever take the place of a motorman.

A Dispatcher's View of Car Operation Economics

By R. E. Harris
Trainmaster Michigan Railway, Jackson, Mich.

UPON the train dispatchers, with the assistance of operators, conductors and motormen, depends the prompt movement of railway traffic. The getting of trains over the road with the greatest dispatch consistent with safety is increasingly recognized to be of the greatest importance. Shortage of power, constant demand for cars, congestion in terminals, clamor of shippers and passengers for better service, and keen competition among railroads, electric lines, auto trucks and jitneys, press the dispatching question upon the traffic and transportation departments.

My observation of train dispatching has been through years of experience as conductor, motorman, dispatcher and trainmaster. To my mind, to make a good dispatcher a man should have keen observation, good judgment, steady nerves and the best of memory. He should be slow to anger, but have determination; a man who can think for himself and for others, and above all who is loyal to his company.

Dispatchers should be given more consideration by the managements of electric railroads, because they are a part of the official family and should be given their place as such. To be a good dispatcher a man should be fully informed as to the characteristics of the employees of the road and of the equipment, and he should understand the power conditions. He should obey instructions to the letter and should see that all instructions are obeyed by those under his direction. He should be fully acquainted with the book of rules, tariffs and everything pertaining to the operation of trains. A dispatcher on our electric lines is a sort of a bureau of information.

The Dispatcher Has First-Hand Information

Most dispatchers' offices have charge of keeping the time of the trainmen. This time-keeping should be given very close consideration. A dispatcher should check the time sheets against the train sheets and be absolutely sure that they are correct before they are sent to the timekeeper's office. When the transportation department plans to make a new schedule the dispatcher's views should be considered because of his knowledge of traffic conditions.

What I have to say should not be considered as a criticism of the work of others, but only as a series of suggestions which have come to me from time to time. In the first place, I note a great waste of energy in power distribution. When we have 600 volts at substations and power houses and down the line a short distance there are but 200 volts, something is wrong with with distribution. When we allow rotaries to run idle for hours we are wasting energy.

Men build power houses, railroads and interurban equipment which are fine from an artistic as well as a mechanical standpoint; but they sometimes overlook the possibilities and probabilities of breakdowns. Thus the transportation department is unable to maintain its schedules. Show me the company that does not properly maintain its track and tolerates poor distribution of power and I will show you the company that has poor equipment, poor power, discouraged trainmen, unreliable schedules and bad business generally.

Finally, my greatest wonder is why the electric traction companies try to maintain all the conceivable varieties of equipment that they do. Why not cut down the enormous cost of upkeep on the "fifty-seven varieties" of equipment and standardize all of our cars and interurban lines, and run through service from one large city to another?

How the Master Mechanic Looks At It

By Terance Scullin
Master Mechanic Cleveland (Ohio) Railway

SCHEDULE, speed, proper equipment for local conditions, proper maintenance of roadbeds, distribution of power, training of trainmen and a co-operative spirit among employees, all play their part in operating economy. From the mechanical standpoint, the handling of the equipment in service is the most important, and overshadows all others. The best efforts of the mechanical department can be "knocked into a cocked hat" in five minutes by carelessness or recklessness.

Transportation and Mechanical Departments Must Co-operate

There are, to my mind, no departments where co-operation is so vital to the general welfare of the company and to good service to the public as between the men who operate the equipment and those who maintain it. Careful operation results in fewer repairs, and careful repairing makes operation pleasant for public and management. The public mind would not be agitated by interruptions in service, and the feeling between public and company would improve under the conditions that should prevail if co-operation could be maintained in practice.

Car operation at excessive speed over track special-work is very irritating to the mechanical department, which realizes the damage that results from the hammer blows that the equipment receives under such conditions. The handling and application of the air-brake equipment should not be overlooked, also, when economies in operation are desired. In general practice on city service, more air is wasted in making one stop than would be required for two if the brakes were applied properly. The application of brakes with power on causes necessarily a waste of power and excessive wear on brakeshoes and wheels.

The proper handling of the controller is another very important factor in economical operation. The notches or operating points were put on these controllers for a purpose. If they are to be ignored the controllers could be constructed much more cheaply than at present. Engineers have prepared tables showing the power saved by the careful handling of the car compared with reckless handling over a given distance, all conditions being equal. This is worked out to show that with the proper application of the power 250 ft. more could be covered with the same amount of energy per stop.

Finally, I wish to emphasize the point that in securing economical results, the proper training of employees is the most important factor.

A Claim Adjuster's Views on the Subject

By T. W. Giltner
Assistant Claim Adjuster
Northern Ohio Traction & Light Company, Akron, Ohio

A CLAIM adjuster has neither cost curves, speed schedules, ampere-hour meters nor saturation point of the motor field to guide him in his work. He must depend upon the uncertainties of the unknown quantity and quality of a jury selected from all classes as his reliable barometer. This is influenced more or less by the cunning of ambulance-chasing attorneys and their cohorts, and of unscrupulous physicians who use the not unwilling claimant as a vehicle by means of which to transfer money from the fare boxes to their own pockets.

Too often the item of claims is classed with general and miscellaneous expense, not of sufficient importance to receive special attention; yet no doubt every one can recall a serious collision or derailment involving great loss of life and serious injury to scores of passengers which resulted in a receivership for the unfortunate company. It is doubtful if either the cost of power, the maintenance of way, the maintenance of equipment or traffic has been the direct cause of such misfortune. In the scope of the claims department, as well as in that of each other branch of electric railway work, may lie that delicaately balanced differential which means financial salvation or oblivion. Any plan designed to produce maximum economy in car operation will fall short of its purpose unless accident prevention is continually kept in mind. The cost of a single accident occasioned by an effort to save the interest on the cost of new and needed equipment or by excessive increase in schedule speed may wipe out a year's prospective profit.

Quick Starting Can Be Overdone

Mr. Phillips suggested that the most rapid rate of acceleration and braking within the limits of comfort and safety to passengers, and of capacity of the motors, is most economical. Unless the construction of cars leaves a minimum open floor space, and provides for ample supports and opportunities for maintaining the equilibrium of standing passengers in these sudden starts and stops, a heavy loss in the payment of claims is sure to result. It will also prove economical to limit the motor capacity of cars operating in closely built-up districts so as to produce a speed not far in excess of the limit fixed by statute, for every attorney alleges in his petition "a high, excessive and dangerous rate of speed," an allegation most difficult to combat. It is an accepted fact that the number of accidents will increase or decrease in direct ratio to the increase or decrease of the speed schedule, provided no greater skill in operation accompanies the increase. The cost of accidents will likewise rise and fall with the changing condition of the rolling-stock, roadway, overhead construction, etc. Maximum economy in the claims department will be secured by spending large sums for good cars, for good roadbed, for good overhead construction and for efficient supervision of all.

The number of alighting and boarding accidents will vary in proportion to the number of stops and the skip-stop plan should, therefore, be carefully considered. To eliminate a stop removes one potential danger. Opportunity for time saving at loading points should be provided by the use of wide doors entered by means of a low step. Approximately 75 per cent of the total number of accidents occurring on electric lines traversing thickly populated districts are collisions with vehicles. A plan for economy in car operation should involve a survey of the entire system to determine where the greatest number of accidents are concerned. This should be followed up with remedial measures, which may include slow orders, safety stops and instructions to platform men, together with co-operation of those who regulate the vehicle traffic. A large map of the system on soft wood, with pins having differently colored heads to represent the different types of accidents will prove useful. When a number of pins appear at the same point, showing derailments for instance, this information can be given to the maintenance-of-way department, which would naturally take the necessary remedial measures.

There is no other factor as important in the prevention of accidents as the efficiency of car crews. The most economical route is through training schools conducted by a claims-department man who knows his work, in which talks are given to the platform men at meetings arranged for their convenience and attended by the heads of departments, superintendents, dispatchers and officials who take this opportunity to get closer to their men. These talks on accidents should occur not less frequently than once every six months.

To most of the men an accident is a closed incident when they have signed their accident reports; but it is their nature to want to learn, and if the opportunity is given they will learn and this will show in reduction of accidents.

The old story of locking the stable door after the horse is stolen is covered with moss, it is true, but it is a good introduction to the last point to be considered, namely, frequent and thorough inspection of all equipment and construction. Any plan designed to produce maximum economy in car operation in which a place is not given to careful inspection of roadway, power plants, underground and overhead construction, equipment and traffic conditions; and which does not provide for the selection of platform men with great care and for their careful training, will find that out through the claims department has gone the revenue which should have swung that delicately balanced differential toward financial salvation.

The Superintendent's Viewpoint

By O. G. Snell
Superintendent Union Traction Company of Indiana, Anderson, Ind.

IF THE interurban transportation industry is to be established on a business basis, systematic and efficient operation in every detail is absolutely necessary. It is impossible in this day of rapid industrial growth to handle enormous increases in business with old equipment and ancient methods. It is doubtful whether the close of the war is going to restore normal conditions in transportation, and even if approximately the old conditions should be brought back it will not be easy for us to recover from the severe financial distress of the present time.

The railway business is not what it used to be. Since the advent of myriads of automobiles, a city or community can get along for a few days in a lame sort of way without railway service. Increases in unit fares and freight rates, and shortened fare zones, have a tendency to stimulate competition to make further inroads upon our traffic. This forecasts a radical change in the nature of the city or interurban railway as a public utility and in the character of service it may render. Drastic remedies, such as the operation of one-man cars with the track layouts required on a more frequent headway on city lines, must be applied; these cars to be equipped with registering fare boxes and modern motor equipment. I refer particularly to service in cities of less than 50,000 population. In the larger cities some districts or lines will not permit of such service, and cars of the pay-as-you-enter or pay-as-you-leave type, with ample vestibule room, will be needed to maintain a frequent and fast service through densely populated sections. Traffic surveys at frequent intervals on interurban lines to determine peak-hour loads, canvasses if necessary to secure public opinion as to what service will accommodate the majority, and other means for improving service must be employed. As conducting transportation involves about 50 per cent of the operating expense of an electric railway this department is important from the standpoint of economy.

The experienced platform man who has made a careful study of his duties can be an important factor in economy of operation, since his experience may at some critical moment cause service to be maintained under conditions that would cause a new man to fail completely. Most men are willing to be taught, and here lies a wide field for economic and efficient teaching of the many phases of the economics of car operation.

METERS KEEP SHOP MEN "ON THEIR TOES"

On the subject of power for operating cars, the writer has had some experience with ampere-hour meters installed on cars to promote energy saving. He found that the men appreciated that careful attention to power saving goes hand-in-hand with greater safety to themselves and their patrons. For example, if a car showed signs that the brakes were too tight or the car dragged for any other reason, the men asked to have the trouble corrected in order to keep the average power saving record high. Such an attitude on the part of paltform men tends to keep the shop men on the alert to see that no car goes into service unless in good operating condition.

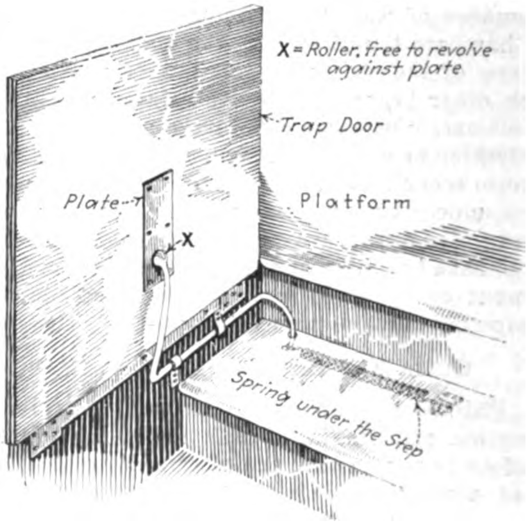
Besides improving the energy-saving record, the meters had a further value in showing that the motormen who made the best energy records were as a rule the ones who were previously considered the best. In other words, the man who was alert and keen in his efforts to save power was found to be always on the lookout to avoid accidents. In promoting better driving of the car, the meters helped in saving the equipment and effected a reduction in accidents.

Another factor in economy is good maintenance, and the operating department has a real task to perform if a dependable service is to be maintained. The system of inspection on many city and interurban railways has not yet reached the steam-road standard of efficiency. On the steam roads, at all terminals and certain stations where trains stop even for a few minutes, one finds the car inspector, with hammer and can of oil, making a close inspection of the condition of journals and trucks. He is in many cases able at once to remedy a condition that would otherwise have caused a bad tie-up of the train.

An effective system of shop inspection, whereby cars are placed in service only after they have been thoroughly inspected for mechanical or electrical defects or repairs and for cleanliness of interior as well as the exterior, will go a long way to satisfy the patrons of the road. In these days of strenuous competition and keyed-up efforts to maintain a dependable service, any failure of equipment to perform the duties intended will cause criticism of the personnel or policy of the company. No passenger will be satisfied with the service if the car has a dusty and unclean interior, the windows a coating of dust or a toilet in condition that could have been eliminated by a system of inspection at the shops.

Spring-Operated Trapdoor Lift

THE accompanying illustration shows a spring-operated trap door lift which has been in satisfactory service on the cars of the Philadelphia & Western Railway for the past few years. It was designed by Rowland Hubbard, master mechanic of that road. The trapdoor, hinged in the usual manner, is operated by means of a bell-crank lever offset to provide for bearings. This lever is made of ⅞-in. mild steel and the portion which passes through the car step is 5 in. long, the bearing portion 12 in. long and the long outside portion 18 in. long. This longer end has a larger piece of iron forged on, which is upset and slotted to provide for a roller ¾ in. long by 1 in. in diameter. The roller is of mild steel, case-hardened, and it operates on a wearing plate fastened to the under side of the trapdoor. The wearing plate is made of iron ⅛ in. x 2 in. x 12 in. A long tension spring made from an old brake-release spring is attached to the short end of the bell-crank lever and provides the necessary tension for raising the door when it is released. This short end of the bell-crank lever passes through the upper car step and the spring is hooked over the end of this. The other end of the spring is hooked to a right-angle bracket fastened to the under side of this step. Two flat-iron straps, ½ in. x 1 in., form the bearings for the bell-crank lever. These are bent around a piece of ¾-in. stock, drilled to ⅞ in. and then split in two parts to provide for covenient attachment. In ordinary operation the trapdoor is latched down. Unlatching is all that is necessary in raising it, as the spring action through the bell-crank lever raises the door to its proper position. This type of lift can be made up at very small expense and will operate both steel and wooden trapdoors.



APPLICATION OF TRAPDOOR LIFT TO CAR PLATFORM

Economies in Steam Generating Stations[*]

The Author Shows Particularly How Labor Saving Can Be Accomplished Between the Coal Car and the Ash Dump — He Does Not Favor the Bonus System

By S. M. FINN
American Engineering Company, Boston, Mass.

AT NO TIME and in no other industry has there been such an awakened interest in the subject of economic operation as there is at present among power-plant engineers. This is a natural aftermath of the war. It is made necessary among other things by the scarcity, high price and general inefficiency of labor.

Economies in the power-plant field fall into three well-defined classes, namely, (1) labor, (2) maintenance of equipment and (3) conservation of natural and generated energy and lubricants. Labor saving is effected by the geographical location of the plant, the design of the plant and the selection of equipment made with a view to eliminating labor and extensive repairs. Saving in maintenance depends on proper selection of equipment from the standpoint of maintenance and proper selection of operators. Saving in the third class mentioned depends, first, on the proper selection of equipment, second, on the selection of the operators and, third, on the checking up of performance.

From the above it is evident that proper selection of equipment occurs in all three classes of savings to be effected, and this in general is the most important source of economy available. This paper is devoted mostly to the equipment end of the subject. Before taking up this topic, however, a few words on the others will be in order.

In these abnormal financial times, common labor is being paid out of all proportion to ability as compared with operating engineers and experienced technicians. In such an emergency as that through which this country is passing, muscle predominates for the time being at the expense of brains, but in the past in every case muscle has gone back somewhere near its previous level, while brains have permanently remained uppermost. The great body of workers who constitute the middle class between labor and capital should, therefore, remain the conservative, constant class, counteracting any radical tendency on the part of either labor or capital.

As to the human element in labor, results along this line can only be secured through the personality of the foreman, through his willingness to put aside his personal ideas in order to adopt an attitude which his analysis of the situation says is correct. Bonus systems have been worked out in some plants for increasing efficiency of firemen. In most of these it is possible to manipulate the results, breeding dishonesty in those who are clever enough to do so and dissatisfaction among the others. The only fair bonus system is one based on punctuality and attendance, but even this has the effect of under-rating the common rules of success in the minds of the men.

As to the effect of geographical location as a source of economy, the plant of the Northern Ohio Traction & Light Company at Cuyahoga Falls may be cited as an example. This is built on an alluvial deposit between the base of a high cliff and a small river. The face of the cliff forms the back of the power plant, the waters of the creek washing the foundation in the front. Elements of economy here are found in the short distance through which it is necessary to handle the condensing and circulating water; in building construction due to the use of the cliff for one wall, but most of all in the use made of the location in connection with coal handling. A railroad track runs parallel to the creek, and it is possible for coal cars to be run off from the cliff on a level grade on top of the power plant. The coal is dumped into track hoppers, from which it passes down to the coal bunkers, then through the stokers, which have continuous rotary dumps, and into the ash hopper. Coal is not handled by man or machinery until it has been reduced to ashes. There are few such ideal locations to be had in this country, but on the other hand the advantage of locating the power plant at tidewater is utilized in many plants, such as, for example, the "Waterside Station" of the New York Edison Company. The real benefit derived from waterfront power station location must, however, be credited to the ingenuity of the conveyor engineer rather than to the location of the plant.

SOME PRINCIPLES OF ECONOMICAL COAL HANDLING

Coming now to the subject of equipment, it seems best to consider this with all three possible sources of economy simultaneously in mind.

Power generation starts at the unloading of the fuel container, whether it be a coal car or a tank for fuel oil, and at this point economy must start. Unloading of cars by hand requires much labor, and involves appreciable loss of fuel. There is probably not a plant in the country which could not build an elevated siding up which the cars could be run and dumped into a track hopper. If coal is stored on a plot of ground, there is the problem of getting the coal into the boiler room. Although still used, the wheelbarrow is an antiquated device for moving this, although there are old plants in which it would not be practicable to install overhead conveying systems. For these the electric tractor offers an ideal solution. In some plants very elaborate coal-handling equipment is feasible. Locomotive cranes are frequently used for unloading and piling coal in storage cars and are very economical for this purpose.

In the boiler room there are excellent opportunities for coal-handling equipment. One method which is particularly useful, when stokers with hoppers of ample size are installed, is the use of a traveling lorry, either on telfer rail or on a double track. The great advantage of the monorail or telfer system is the ease with which a track can be run out into the storage yards, as there is but one rail or track. This can twist and turn around on existing building structure, and the monorail lends itself particularly well to plants which are being rehabilitated. The use of the double-track traveling lorry is restricted to straight-line operation or to curve of long radius. It usually has the advantage of including a weighing scale and can be installed and built much lighter than the monorail crane, particularly when the operator walks on the ground. It is always necessary to have coal overhead in using this type of lorry, whereas the monorail system can be equipped with a grab bucket, either of the clamshell or orange-peel type, and can have the operator in the cage. The latter plan, therefore, is efficient for handling coal from the yard directly to the boilers.

---

[*] Abstract of paper read before the New England Street Railway Club, Boston, Dec. 4, 1919.

COST OF MAINTENANCE NOT A FACTOR

The installation of an efficient coal-handling system is surely one of labor saving; and as far as maintenance is concerned, there is very little choice among the several systems outlined. I make this statement because in the case of the bucket conveyor, where the maintenance would naturally be higher than that of an electric tractor, the size of the plant which would warrant the installation of a bucket conveyor would not warrant the installation of a tractor. Therefore, the upkeep per ton of coal handled would be about the same in both cases, provided of course that the best design and construction of mechanism in each case were selected.

In connection with the coal-handling equipment a very important auxiliary is a coal-measuring device. An automatic recording coal scale has a psychological effect upon the average fireman. The non-automatic recording coal scale has the effect of making the fireman dishonest in his endeavor to show low fuel consumption. The scales are usually located at the top of the down-comers to the boilers.

A large item of conservation of coal is in the selection of stoker and boiler. Although for short periods, under special conditions, results equal to those possible with mechanical stokers can be secured by hand firing; this method does not belong to the modern power plant. A consideration of the construction of a modern underfeed stoker will show why this is so. For example, in the later type of Taylor stoker the power dump feature has been incorporated, and the cleaning of the bridge wall is accomplished by mechanical means. This is done, the plates are dumped and the plates are returned to their normal condition in about twenty seconds. This feature eliminates smoke due to cold air coming up through the side door while the clinker is being broken from the bridge wall; it eliminates the necessity for an air-tight ash pit and also saves labor. An even later improvement is the rotary ash-discharge type of stoker, in which the crusher rolls revolve continuously with a speed proportionate to the speed of the coal feed.

Modern devices of this sort not only produce labor saving, but increase efficiency. For example, in one plant which has a varying load factor of from 15 to 85 per cent an average monthly over-all efficiency of boiler and stoker of from 72½ to 74 per cent is maintained. This includes all standby losses, and at times these efficiencies have been obtained with coal running as high as 20 per cent in ash. The plant uses Taylor power dumps and Edge Moor watertube boilers.

The boiler question is largely a matter of personal opinion of the engineers. The writer has found very little difference in efficiency as obtained with the various types of boiler. The design of the setting is very important, however, and a large combustion space with the stoker set flush with the front of the boiler is important. Vertical and inclined baffles are considered superior to horizontal baffles hanging from or laid on the tubes. The building of superheaters in the gas passes of the boiler setting proper is preferred by engineers to location in a separate compartment. Soot cleaners are necessary, and one permanently built in place is preferable to the old steam lance.

Ash disposal, and with this may be included soot disposal, is a very important item in the power plant, but until recently it has not had proper consideration. The bucket conveyor should not be used in handling ashes, not because it is not a good conveyor but because rolling contacts wear excessively in the presence of abrasive material. One of the best methods of handling ashes is the old-fashioned wheelbarrow method, condemned for every other modern use. Of course, in this the actual wheelbarrows are not used, but the same principle is applied, namely, the ashes are dumped or raked into cars. As an example of good ash-handling practice, that used in the Long Island City power plant of the Pennsylvania Railroad may be mentioned. Here the ashes from thirty-two 600-hp. boilers are handled by dumping into iron tanks which are carried on flat trucks pushed by hand to a hoist. This lifts the tanks without the truck up to a runway, where they are carried on other cars out to the ash tower. The use of electric tractors or endless cable has also been adopted successfully for handling ash cars. The storage battery drive should, of course, not be put directly on the ash car. Bell conveyors are not successful in handling ashes.

A modern type of conveyor that lends itself particularly well to the handling of ashes is the so-called vacuum conveyor. The system that sucks the ashes is preferable to the one that drives them, because suction tends to draw the particles of ash to the center of the pipe, producing the minimum wear on the pipe itself. A combination of the two methods is probably the best, namely, suction on the horizontal line and forcing on the vertical line. Much ingenuity has been exercised in designing the elbows of these conveyor pipes, so that the pipes that are subject to excessive wear are easily replaced.

The low cost of operating one of these conveyors is surprising. By actual test made by a company not selling ash conveyors, it was found that the steam consumption was but a very small fraction of 1 per cent of the steam generated.

ANOTHER BROAD FIELD FOR SAVING IS SUGGESTED

The proper selection of auxiliary equipment, both for the generators and for the boiler of the power plant is very important. The rotary circulating pump driven by an electric motor is far more economical than a reciprocating pump. The modern high-speed fan driven through reducing gears by a high-speed turbine gives forced or induced draft at a much lower cost both for operation and maintenance than the old paddle-wheel fan. The steam consumption for stoker auxiliaries should never exceed 2½ per cent of the steam generated when exahusted into the atmosphere, and actual tests show the figure to be as low as three-fourths of 1 per cent, when the steam is returned to a heater. Modern bucket conveyors are operated by motors ranging from 5 to 20 hp.

Experiences with Thermit Insert Welding at Southampton

By W. Tuke Robson
General Manager and Engineer, Southampton Corporation Tramways, 1915-1919

SOUTHAMPTON was one of the first English towns to adopt Thermit welding, and as long ago as 1906 this process was used in relaying the track on the fine thoroughfare known as Southampton Avenue, one of the finest roadways in any British town and of which the inhabitants are justly proud. The present process followed in America of insert or wedge welding was then quite unknown, and the joints were welded in the usual British way by drawing the ends of the rails together by means of a large clamp, this clamp not being released until the weld had cooled off.

SOUTHAMPTON AVENUE WHERE THE JOINTS WERE INSTALLED

Owing, however, to the existence of fishplate holes, fractures afterward occurred, and the writer upon taking up his duties was met by the serious position of finding the main thoroughfare of the town spoiled by a series of badly knocking joints. The Thermit Company at that time was experimenting with the pressure weld now so universally known in America, and after much consideration, it was decided to make a clean sweep of the trouble, and the defective joints were cut out, an insert piece 18-in. long of equally worn rail being substituted.

The double joints thus made were then forced apart by wedges, and the outer rails held by a specially designed clamp, which in addition to maintaining the expansion was also provided with a heavy square threaded thrust screw.

The wedges were then replaced by copper-covered inserts, known as "shims," $\frac{3}{16}$ in. thick, which were thrust into position by this screw. The clamp was then removed and two Thermit welds were made in the usual manner.

This departure from existing standard practice was fully justified by the results, as not one of the joints welded in this way in 1915 has since failed and Southampton's fine avenue now enjoys a quiet, perfectly-welded track.

This success naturally led to further experiments, and other portions of the system were dealt with. It was soon found that ordinary fishplate joints could be successfully treated by pressure welding, as the presence of fishplate holes in rail ends did not lead to fracture when the rails were forced apart, although fatal when the opposite practice of drawing together was used, and a considerable length of track marked down for renewal just before the war was saved for a further indefinite period by similar treatment.

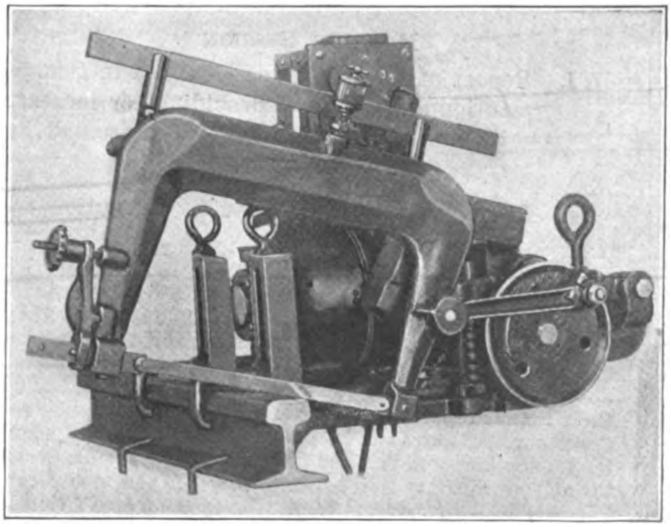
The impossibility of obtaining either new rails or labor during the period of the war actually made such a process very welcome, and although the adoption of electric welding of dished or cupped joints proved to be much cheaper than the Thermit process for minor repairs, the latter has its own particular uses, especially in cases of fracture of the rail itself, when the insertion of a short length of rail provides the only satisfactory solution.

Cutting Rails with a Power Sawing Machine

A NEW TYPE of portable rail sawing machines has recently been placed on the market by the Racine Tool & Machine Company, Racine, Wis. The machine is furnished complete with motor and starting box, and the frame and body are of steel castings to insure against breaking.

An interpole, ball-bearing, fully-inclosed type of motor is supplied for driving the machine, which will operate on direct current of from 260 to 600 volts. When used by electric railways, current may be taken directly from the trolley wire or the third-rail. The motor is mounted on the frame of the machine and the drive is through worm gearing. The weight of the machine complete with motor and starting box is 225 lb.

Quick-acting clamping devices allow the machine to be easily placed at work, and the clamps may be readily adjusted to fit any size of rail within range of the machine. The length of stroke is 6 in., and the number of strokes per minute is sixty. It is claimed that this machine will cut a 9-in. girder rail in from fifteen to eighteen minutes, and that one blade will cut from eight to ten rails. The saw clears the work automatically on the return stroke.


POWER SAWING MACHINE FOR CUTTING RAILS

Association News

Special Car New York to Cleveland

FOR the benefit of New York members who are going to the mid-year meeting to be held in Cleveland on Jan. 8, there will be a special car attached to the 6.45 p. m. train leaving Grand Central Terminal on Jan. 7. The railroad fare is $20.16, lower berths are $3.24 each, uppers are $2.59, and the one drawing room holding two or three is $10.80. Applications should be made to association headquarters at once.

Activities of Information Bureau

THE information bureau, through Special Engineer J. W. Welsh, announces the completion of ten bulletins on timely subjects.

Two bulletins relate to trainmen. No. 122 contains information from 288 companies covering rates of wages paid for each year of employment, together with the dates on which the present scale became effective. No. 123 covers working conditions of trainmen employed by 237 companies, and gives the information regarding the number of hours constituting a day's work, the limitations as to the spread of runs, the proportion of straight and swing runs, the rates paid for overtime and the basis on which overtime is calculated, together with any guarantees covering minimum wages for men employed. As this is a confidential compilation, the companies are referred to only by key numbers.

An up-to-date tabulation has also been prepared covering cities that have increased the rates of fare. This gives both the new and former fares, cash and reduced-rate tickets and the effective dates. A comparison of valuation and capitalization of twenty-three typical electric railways shows an excess of capitalization or valuation for the group of approximately 11 per cent. This bulletin contains a brief summary of the valuations, the authorities making the studies and the sources of information.

A study has also been made of the cost of money for public utilities in a compilation of securities issued since Jan. 1, 1919. This shows the kinds of securities, the actual yields to the investors and the nature of collateral back of the securities. A study has also been made of the rate of return allowed in numerous decisions of public utility commissions, as well as by other public authorities. It deals solely with electric railway properties, and includes a summary of the rates of return fixed in service-at-cost franchises.

Another bulletin covers the cost of motor-bus operation. This includes summaries of financial statements of a number of prominent motor-bus companies, together with descriptions of the operating equipment, and a general statement of the operating conditions in the territory served by the buses. The tabulation also includes a summary showing the cost of operation of the Post-Office Department's motor-wagon service, as well as information covering the cost of operating a number of different types and sizes of motor buses.

The remaining bulletins relate to jitney regulations, metal tickets and fares. The first is a summary of public service commission decisions in several states and a compilation of statements in the technical press from

Program for the Mid-Year Meeting

CLEVELAND, OHIO, JAN. 8, 1920

MORNING SESSION

I. Report of Committee on Changes in Constitution and By-Laws providing for increase in dues of members, to be presented by L. S. Storrs, chairman.

II. Presentation of the following resolution regarding depreciation:

Resolved, that the American Electric Railway Association recommend to its member companies that they provide in their accounting practice for the creation of adequate reserves to insure the replacement or abandonment of major items of property in advance of their actual replacement or abandonment; that such reserve shall, if possible, be provided for in cost of service franchises; and further that this subject be referred to an appropriate joint committee of the American Electric Railway Accountants' Association and American Electric Railway Engineering Association, to formulate report on the preferable means of creating such replacement reserve and the variations in the amount thereof that will occur in railway properties of different characteristics; and further

Resolved, that a summary of such report be presented to the American Electric Railway Association at its annual convention in 1920.

The foregoing resolution will be discussed by Williston Fish, vice-president West Penn Railways, Pittsburgh, Pa., who will present a paper supporting it, after which there will be general discussion of the resolution.

AFTERNOON SESSION

III. Paper: What a Labor Contract Should Contain
EDWIN GRUHL—Assistant to President, North American Company, New York.

General Discussion.

IV. Discussion of the Desirability of the Association Holding More Frequent Conferences.

THE BANQUET

Richard McCulloch, first vice-president of the association, will preside at the banquet to be held in the Hollenden ballroom at 7 p.m.

The speakers will be:

Hon. Warren H. Harding, United States Senator from Ohio;

E. A. Guest, of the Detroit (Mich.) *Free Press*, and Andrew Squire, General Counsel Cleveland Railway.

April, 1918, to Dec. 3, 1919. The second is a partial list of companies using metal tickets, together with references from the ELECTRIC RAILWAY JOURNAL and *Aera*, to Dec. 9, 1919. The fare bulletin relates to rates in Canadian cities, showing authority granting rate, name of company operating, former rate of fare, date on which increase became effective, and population served.

Electric railway companies which are members of the association, can obtain copies of these bulletins by application to the information bureau.

Manila Section Temporarily Suspends

OWING to labor conditions on the property of the Manila Electric Railroad & Light Company, it has been found expedient not to hold meetings of the company section for the present. The men who have been active in conducting the work of this highly successful section hope that it may be possible to resume the work at an early date.

Toledo Section Still On the Map

OWING to the recent disturbances in the electric railway situation in Toledo, Ohio, the local company section was quiet for a time, but activities have been resumed. Its Christmas party was held on Dec. 23, with music by the section orchestra and the section glee club, as well as a motion picture entertainment. An old-fashioned Christmas tree with distribution of presents for the children rounded out the program. The last section dance was held on Nov. 5, just before the cars of the Toledo Railways & Light Company went "on vacation," but the dances will be resumed on Jan. 7. There will also be a "stag party" and smoker on Jan. 30.

Fare Boxes Settle the Arguments

THE Galveston (Tex.) Electric Company recently installed Johnson fare boxes on the local street cars, and at the time of this writing had had two weeks experience with them. The result is that the public, company and employees seem to be well satisfied. The company is pleased not only because of the usual results from fare box installations, but because the new practice of pay-as-you-enter collection has eliminated one source of many arguments between the conductors and strangers in the city. The pay-enter system is so generally prevalent that most strangers boarding the cars tender the conductor their nickel as they enter. The conductors have had a habit of refusing to take the coin at that time, apparently because of some mental process of keeping track of who has and who has not paid by his position in the car, or for some reason. Arguments have followed. But the fare box solves this situation and the people like the freedom from the frequent trips of the conductor through the car.

All of the closed cars operated by the company are single truck with small vestibules. The fare boxes were mounted on the far door post of the bulkhead without any change in the vestibule. The adoption of fare boxes was somewhat complicated by the use in summer of a large number of cross-seat open cars on which the boxes of course cannot be used. These cars are very popular with the riders, so that it is desirable to continue their use. So the practice in summer will be mixed, pay-enter on the closed type cars and pay-within on the summer cars.

Letters to the Editors

Zone Fares for Small Cities

BROOKLYN, N. Y., Dec. 21, 1919.

To the Editors:

In these parlous days when American experiments with the zone fare are in their early stages, and therefore with few friends and far between, it is good to have so enthusiastic an article as that which J. A. Emery contributed to your issue of Oct. 4 on "The Future Fare System for Small Cities." While others question the value of the zone-fare principle for urban communities of any size, Mr. Emery goes as far as is at all practicable by suggesting a zone fare for cities of less than 100,000 population.

In general, I am fully in accord with him that where the differential fare is introduced in such cities in combination with the modern one-man car—and the latter can be made more important than the fare system—there should be no practical difficulty in the collection of fares "by the use of colored tickets with prepayment inbound, and postpayment outbound."

For all that, I believe it would be unwise to make any sweeping generalizations on this question of zone fares for cities under 100,000. In the examination of particular communities, we are likely to find that some other scheme is demanded by the necessities of the case. For example: There is a city of 50,000 with the business and shopping district located along a body of water with the car routes extending south, north and west from this area for distances of 2 to 2¼ miles. Owing to the present long intervals between cars, at least half the population are not prospective customers for the street railway except in bad weather, and a large portion of the other half could easily walk pretty deeply into the inner or first zone before a car comes along, assuming that the prospective passenger had just missed the preceding car.

Under circumstances like these people in the inner zone will not be tempted by a short-ride fare, for the obvious reason that the cars do not come along often enough to save their time. Very close headways are required to build up riding in such areas. In practice, we generally find that two or more lines converge in the downtown section so that it is possible to offer a car in this section every two or three minutes if the converging lines themselves have something better than fifteen and twenty-minute intervals. Granted this condition, we may be assured that we have the first requisite for maximum riding, namely, frequent service.

It must also be clear that so long as people in the outer zone depend upon long-interval cars they will almost always walk to and from the boundary of the first zone. Give them a five-minute service, and such practice would be reduced to negligible proportions.

From the studies in small cities that I have been privileged to make here recently, it seems to me that the first essential for reducing expense and gaining more revenue is to operate more economical cars and a greater number of them. This means the automatic or safety car. After the resources of such frequent-service cars have been exhausted, it is in order to see what can be done with differential fares, particularly in building pick-up traffic.

In passing, I would also like to point out that we cannot form wholly satisfactory deductions as to what a zone fare would do for large cities if we base those deductions on the traffic characteristics developed under a flat-fare system. The tendency of a zone fare in combination with frequent service is to develop off-peak, short-haul riding, which in turn leads to the growth of more neighborhood centers. For the public welfare this consequence is desirable, because it is largely through neighborhood centers that we can foster that civic pride so lacking in big American cities to-day.

WALTER JACKSON.

Police Power Reserved to Cities

Supreme Court Will Interfere Only Where Power Is Exercised in a Clearly Arbitrary and Oppressive Manner

THE United States Supreme Court handed down on Dec. 15 a decision in the Shreveport (La.) "one-man car" case, upholding the right of the city, under its police power, to insist on the use of two men. While the court did not deny its right, under certain circumstances, to interfere with the "exercise of the power reposed by law in municipal corporations for the protection of local rights and the health and welfare of the people in the community," such interference, it declares, should take place only "in cases in which the power has been exercised in a manner clearly arbitrary and oppressive." The decision, delivered by Justice Clark, follows:

THE DECISION IN FULL

In 1907 the City of Shreveport, La., passed an ordinance requiring that each street car used in its streets should be operated during designated hours by two persons, a conductor and a motorman, and providing penalties for its violation. The company with street railway lines in the city complied with the requirements until in June, 1917, when it procured some cars equipped for operation by one man, and attempted to use them on its "Allendale Line," with only a motorman in charge. Thereupon the plaintiff in error, hereinafter designated the defendant, who was superintendent of the railway company, was arrested for violation of the ordinance.

He defended by filing a motion to quash the affidavit for arrest, on the ground that the ordinance was unreasonable and arbitrary and that the enforcement of it would deprive the company of its property without due process of law and without compensation, in violation of the Fourteenth Amendment to the Constitution of the United States. The motion to quash was "referred to the merits," a full trial was had, the motion was overruled and the defendant, found guilty, was sentenced to pay a fine. The judgment of the Supreme Court of Louisiana affirming this judgment is before us for review on writ of error.

The defense introduced evidence tending to show that the new type of car used was so equipped that it could be operated by one motorman with safety to the public as great as was secured by cars theretofore used when operated by two men. The car, designated in the record as "a one-man car," is described as so arranged that passengers enter and leave it only at the front end, where the motorman is placed. It is so equipped electrically that the motorman must remain in an assigned position necessary for the discharge of his duties and must perform "some conscious act" at all times when the car is in motion. If he fails in this "conscious act" the current is automatically cut off, the brakes are applied in emergency, the rail is sanded and the door of the car is unlocked and is so adjusted that opening it lowers the step for use. There is testimony tending to show economy in the use of such cars, not only in the saving of the wages of one man but also in immunity from accident.

It is apparent from this description derived from the record that it presents for decision the question: Whether the ordinance of 1907, confessedly a valid exercise of the police power when it was passed, was rendered arbitrary and invalid by the development of a car which it is claimed can be operated by one man with as much safety to the traveling public as, and with less cost than, was secured by the two-man car, in use at the time the ordinance was passed and which was contemplated by it.

It is not necessary to decide in this case whether a valid regulating ordinance can be rendered invalid by a change of conditions which render it arbitrary and confiscatory (Lincoln Gas & Electric Light Co. v. Lincoln, 250 U. S. 256, 269; Minnesota Rate Cases, 230 U. S. 352, 473; Johnson v. Gearlds, 234 U. S. 422, 426; Perrin v. United States, 232 U. S. 478, 481; Municipal Gas Co. v. Public Service Commission, 225 N. Y. 89, 95, 97, and Castle v. Mason, 91 Ohio St. 296, 303), for the claim that such a change of condition had arisen in the case is stoutly disputed by the city authorities.

While on the record before us it might be plausibly contended that when all the appliances on the "one-man car" work as it was intended they should, it could be operated with a high degree of safety in streets where the traffic is not heavy, yet there is evidence that in the short period of the operation of such cars in Shreveport, the brakes on one of them failed to operate on a descending grade, resulting in the car getting out of control under conditions, which, except for good fortune, might have resulted in serious accident. A passenger testified to receiving slight injuries when entering a car due to the premature closing of the door, and he attributed the accident to the presence of other persons between him and the motorman whose duty it was to close the door. It was in evidence that the line on which these cars were placed, while in general one of light travel, extended into the principal business section of a city of 40,000 inhabitants; that it had at least one steep grade in it, and that at times the travel was heavy and the cars crowded.

It is obvious, and not disputed, that such cars are better adapted to light than to heavy travel, for all passengers must enter and leave at one door, and one man must take fares, make change, issue transfers, answer questions and also remain in position to start the car promptly. So occupied and placed, plainly this one man could not render such assistance as is often necessary to infirm or crippled, or very young passengers, or to those encumbered with baggage or bundles, and it would not be difficult to suggest emergencies of storm or accident in which a second man might be of first importance to the safety and comfort of passengers.

These "one-man cars" at the time of trial were, as yet, experimental, and enough has been said to show that in each community the operation of street cars presents such special problems—due to the extent and character of the travel, to grades and other conditions—that with peculiar appropriateness they have been committed by the law primarily to the disposition of the local authorities, whose determination will not be disturbed by the courts, except in cases in which the power has been exercised in a manner clearly arbitrary and oppressive. The rule is, "that every intendment is to be made in favor of the lawfulness of the exercise of municipal power, making regulations to promote the public health and safety, and that it is not the province of the courts, except in clear cases, to interfere with the exercise of the power reposed by law in municipal corporations for the protection of local rights and the health and welfare of the people in the community." Dobbins v. Los Angeles, 195 U. S. 223, 235. Since the record, as we have thus discussed it, fails to show a clear case of arbitrary conduct on the part of the local authorities, the judgment of the Supreme Court of Louisiana is affirmed.

Safety Code Conference in Washington

A CONFERENCE of representatives of interested organizations was held in Washington recently with a view to formulating uniform safety standards. The conference voted unanimously to approve the plan formulating such standards under the general auspices of the American Engineering Standards Committee. To expedite early action a general advisory committee will be formed to survey the whole field of safety standards and recommend what standards should be undertaken first and what organization should sponsor them. A meeting of the committee will probably be held during January, 1920.

Bulletin News Page

Summary of the Principal Happenings of the Industry of Current Interest Since the Last Issue of This Paper Was Published

PRINTED DECEMBER 26, 1919

The City & Suburban Railroad, Brunswick, Ga., has gone into the hands of a receiver.

The committee representing the holders of the collateral trust gold 4 per cent bonds of the International Traction Company, interest on which was in default, has purchased at foreclosure sale collateral which had been deposited with the Guaranty Trust Company as trustee.

For the year ended June 30, 1919, the Interborough Rapid Transit Company, New York, N. Y., went behind $8,473,098. Officers of the company see no hope of escape from receivership unless an increase in fare is permitted.

Twenty-six million forty-six thousand seven hundred and sixty-four dollars is the reproduction cost new as of Dec. 31, 1919, found by the Railroad Commission of California for the Los Angeles Railway Corporation. The commission has suggested $720,000 a year as a depreciation allowance.

President Kealy of the Kansas City (Mo.) Railways believes the company has passed over most of the roughest spots. A letter from him to the holders of the company's funded obligations reviews the recent operations of the company.

Arthur Gaboury has been elected president of the Canadian Electric Railway Association.

The Kansas City (Mo.) Railways is now charging 8-cent cash fares.

The City Council of Salem, Mass., has voted to revoke permits for the operation of jitneys within the city limits.

The Nashville Railway & Light Company, Nashville, Tenn., has applied to the State Public Utilities Commission for an increase in fare to 7 cents.

The United Railways & Electric Company, Baltimore, Md., will reroute its lines with a view to the ultimate establishment of a rapid-transit system.

Judge George W. Kelly of the District Court has dismissed the case of the town of Whitman (Mass.) against four jitney operators.

A zone system with a 5-cent fare in each zone has gone into effect on the lines of the Worcester (Mass.) Consolidated Street Railway.

The Supreme Court of Illinois has handed down a decision sustaining the action of the State Public Utilities Commission in raising fares of the Quincy Railway to 7 cents.

John A. Beeler, traffic engineer, has made the first of his recommendations with regard to traffic conditions in Kansas City, Mo. Mr. Beeler's suggestions will be tried out on Twelfth Street, Kansas City.

The Birmingham Railway, Light & Power Company, Birmingham, Ala., has purchased twenty-five one-man cars with which it will experiment with a view to working out the best plan for the segregation of the races.

Claims so far presented growing out of the wreck on the Brooklyn Rapid Transit System about a year ago aggregate $1,200,000.

A system of buses is proposed for Philadelphia.

Mayor Thompson of Chicago has named the board to prepare a transportation plan for Chicago.

The City of Seattle, Wash., proposes to take over more electric lines which are now being operated privately.

Trainmen in the employ of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., have received an increase in pay averaging about 20 per cent.

Employees of the United Railways, St. Louis, Mo., have requested a reopening of the wage agreement.

Further changes in New York's Public Service Commissions are recommended in the report of the reconstruction commission in that State. It is expected that the matter of increased fares will again come before the Legislature.

Employees of the Interborough Rapid Transit Company, New York, N. Y., have asked for an increase in pay of 25 per cent. Further conferences will be held. Last July wages were increased 25 per cent.

A bill has been introduced in the Legislature of Ohio providing for municipal ownership of railways in cities. The measure is in the interest of the settlement of the controversy at Toledo.

The superintendent of Seattle's municipal railway has recommended an issue of bonds to provide funds for the extension and betterment of the property.

Council of Detroit, Mich., has before it for action the proposal of Mayor Couzens to authorize an issue of bonds to the amount of $15,000,000 for railway construction by the city.

S. M. Gallaher, manager of railways of the Monongahela Valley Traction Company, Fairmont, W. Va., has resigned to become head of the engineering and construction departments of the Cleveland (Ohio) Electric Illuminating Company.

Harry Clark, treasurer and assistant general manager of the Empire State Railroad, Syracuse, N. Y., has resigned.

The Public Service Commission of Missouri has authorized the city Light & Traction Company, Sedalia, to charge 6-cent fares on its lines.

The cars of the local and interurban lines of the Detroit (Mich.) United Railway were involved in more than 10,000 collisions with motor vehicles during the first ten months of 1919.

The Richland Public Service Company, Mansfield, Ohio, plans to charge 8-cent fares beginning Jan. 1, 1920.

The Eastern Massachusetts Street Railway plans to establish a freight system throughout its system in Essex County, Mass.

The Illinois Public Utilities Commission on Dec. 23 issued an order reducing the fares on the Chicago Surface Lines to a straight 6-cent basis. The order became effective at midnight on Dec. 26.

Rolla Wells, receiver for the United Railways, St. Louis, Mo., has announced that he will shortly apply to the State Public Service Commission for authority to make a charge for transfers on the company's lines.

The statement is printed in full this week which was issued by the Public Service Corporation of New Jersey indicating that the experiments of the Public Service Railway with the zone fare cost that company $1,500,000.

Both sections of the commission appointed to deal with the railway situation at Toledo, Ohio, are conducting hearings. Material progress is reported, with the prospect that the respective reports will be ready well within the time allowed to put the matter before the voters for decisive action.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Urges Bond Issue

Detroit Council Soon to Take Up Measure Appropriating $15,000,000 for Railway Construction

The ordinance and resolution introduced in the City Council of Detroit, Mich., for Mayor Couzens more than a month ago, proposing that a bond issue of $15,000,000 for the construction of needed extensions, be submitted to the voters, but making no provision for operation of the lines, will be taken up by the Council committee of the whole for action in the near future.

Mayor Opposed to Tayler Plan

Among other objections voiced by Mayor Couzens in opposition to the Tayler service-at-cost plan as submitted by the Detroit Street Railway Commission before its members resigned as a body, was the claim that the present city charter gave city officials no power to enter into an agreement with private parties for the operation of railway lines. It is believed that an amendment to the city charter, to permit the city to enter into an agreement with the Detroit United Railway, providing for joint use of the existing lines and proposed municipally constructed extensions, may be one of the points of the railway ordinance as submitted to the Council for final action.

Three methods for working out an operating policy have been suggested. One provides for favorable action by the Legislature of Michigan authorizing the city of Detroit to operate cars over the Detroit United Railway's lines on which franchises have expired and on such non-franchised lines as are now being operated by the Detroit United Railway under the so-called day-to-day agreement.

The plan which the Mayor is believed to be seriously considering is that of forming a complete independent system by linking up the new extensions, the new system to be operated in competition with the Detroit United Railway.

Employees Favor Tayler Plan

The third plan is to submit a charter amendment revising the section of the city charter relating to electric railways, empowering the city to negotiate an agreement providing for the interchange of traffic between the Detroit United Railway and the city-owned lines.

Representatives of the railway union who were influential in the settlement of the recent strike in Detroit and at one time advocates of municipal ownership, favor the adoption of the proposed Tayler plan. It is claimed that the railway employees have achieved better working conditions and more satisfactory relations when dealing with practical traction executives than with officials appointed by the municipalities.

Seattle Planning Improvements

The utilities committee of the city of Seattle, Wash., has asked Thomas F. Murphine, superintendent of the city's municipal railway system, to submit a statement covering proposed extensions, terminal facilities, construction work and other betterments and improvements planned by the railway department in 1920. The statement will pave the way for consideration by the City Council at an early date of the proposal to construct a terminal station in connection with the city's transportation system.

The bond issue of $790,000 for needed extensions authorized by the city shortly after the electric railways were taken over has been exhausted by the department in construction of important extensions. Additional construction work will probably be necessary in 1920. In order that all the projects contemplated may be grouped together and financed as the construction program of the department for the entire year with an issue of utility bonds, Councilman Drake, chairman of the finance committee, is desirous of obtaining a complete statement.

The question of a terminal station is under consideration by city officials, Mr. Murphine having submitted tentative plans for a subway, elevated and terminal system. Chairman Drake has expressed the opinion that a common terminal station is absolutely necessary. He believes that it would be wise to start action toward securing a site and undertaking construction.

Mr. Murphine states that the railway system is losing $1,000 a day by duplication of service on the downtown streets that could be eliminated with a terminal station.

Municipal Ownership Bill Introduced

The right of municipalities to issue bonds for the purchase, construction and operation of city railway systems is provided in the bill introduced in the House at Columbus, Ohio, by Representative Brach of Lucas County. The bill is in the cities committee.

The bill permits a municipal corporation to bond itself to a total indebtedness of not to exceed 2 per cent of the total valuation of all property in the municipal corporation. The revenue from the lines is to be used to retire the bonds and pay the interest.

Toledo Commission Busy

Both Branches of Body Charged With Drawing Settlement Plans Rushing Work

The commission is at work that was appointed to consider the settlement of the electric railway controversy in Toledo. Two proposals will be submitted, one by part of the commission on the question of municipal ownership and the other by members of the commission on a service-at-cost arrangement.

It will be recalled that the resumption of service by the Toledo Railways & Light Company, after a suspension of almost a month, followed the amendment of the ouster ordinance of the City Council upon the appeal of the Mayor, who originated the ouster measure, and the issuance of a mandatory order by Judge Killits in the federal court.

The settlement commission is working in accordance with the orders of the court. Both sections of the commission are perfecting their plans. Already the municipal ownership section has initiated a bill which would give the city the right to issue general-credit bonds to acquire the transportation system. The municipal ownership section further has appealed to the citizens who are in favor of taking over the lines to support the bill by urging their representatives in the Legislature to enact the measure.

Under the service-at-cost plan as proposed the city and not the company will own the railway at the expiration of the franchise period. This amortization feature is considered advantageous alike to the company and the city.

H. L. Doherty, as operating head of the company, has been asked for terms under which he would sell so that the municipal ownership section may proceed more intelligently. It was said unofficially that Mr. Doherty would be willing to accept 20 per cent of the purchase price in cash and the remainder in 7 per cent debenture bonds.

Interest in the work of the commission outside of Toledo is not so much in the matter of how the two sections carry on their work and the details of their deliberations as it is in result of the deliberations. The final reports of the commission are therefore awaited expectantly, for on them will be based the ordinances to go before the voters, who it is hoped will then decide beyond a question of a doubt whether Toledo shall take over the lines or whether the present company will be permitted to continue operation under terms affording proper service to the public and sufficiently broad adequately to protect the company.

Transit Legislation Likely in New York

Fare and Commission Regulation Measures to Be Presented at Coming Legislative Session

The Legislature of New York is not yet in session, but there is apparent an unwillingness to accept as final a recent statement by Senator Thompson that the Legislature is without power to permit an increase in electric railway fares. One of those who openly takes issue with Mr. Thompson is Godfrey Goldmark, former counsel of the Public Service Commission for the First District of New York.

A LAWYER SEES IT DIFFERENTLY

Mr. Goldmark said that he had no special interest in the controversy, except as a citizen and as a lawyer, and while he thought the courts would support his contention, so far as it related to fares on the rapid transit lines, his opinion was based on other authorities than the one quoted by Mr. Thompson, who cited a recent decision by the United States Supreme Court in litigation at Columbus, Ohio. Mr. Goldmark said that in the ordinary case where a city grants a franchise to an electric railway and fixes the rate of fare, the courts of other states have held that the rate may be increased by the Legislature over the city's objection, because the city, in fixing the rate, acted as an agent of the State, and, therefore, the State as the principal, might modify the contract.

So much for the legal side of the matter. As to the legislative side, an unnamed critic of Mr. Thompson points out that it is well to bear in mind that important legislation is seldom successfully introduced and passed in the newspapers and that the Legislature is itself the final judge of what it will do. It is reasonable to suppose, so this source of information says, that if the Legislature is satisfied some sort of relief is necessary for the protection of property interests, the Legislators will not allow one or two members to block it. Some drastic measure may be proposed designed to obstruct the present avenues through which relief may eventually be secured, but the likelihood is remote of such measure being passed.

RECONSTRUCTION COMMISSION REPORTS

As a matter of fact it is expected that the various measures to be proposed by the reconstruction commission will occupy the chief spot in the limelight. Even these measures will probably only advance far enough to make material for the coming political campaign. A loud noise is expected from the adherents of some of the more radical members, but with the presidential primaries in April and the necessity for an early adjournment it is doubtful if any legislation from this source will get very far.

As stated before, the various measures to be proposed by the reconstruction commission will be the absorbing topic. The complete report of that commission has just been published. So far as the electric railways are concerned the only part of the report of interest to them is that which contains the suggestions of the commission regarding the proposed reorganization of the Public Service Commissions.

The recommendations made therein are considerably at variance with the recommendations of the so-called Thompson committee, headed by Senator Thompson, that inquired into the work of the commissions. A particularly distasteful aspect of this report to some will be that it makes no particular provision for the political advancement of any particular person.

The reconstruction commission sees clearly that with two commissions such as there are in New York the benefit is lost of having a single authority deal with similar or identical problems such as street railway rates, but it still is of the opinion that for the present the two district commissions should be maintained. At present there are two Public Service Commissioners in New York City, both appointed by the Governor, one in charge of regulation and one in charge of transit construction. The reconstruction commission points out that the transit construction commissioner exercises in no sense a state function and that that office should be transferred to the city and the commissioner appointed by the Mayor.

TWO COMMISSIONS SUGGESTED

The reconstruction commission, therefore, has recommended that the powers and duties of regulation of public utilities be vested as at present in two public service commissions to be known as the first and the second district commissions each under a single commissioner appointed by the Governor with the approval of the Senate and serving at his pleasure. These commissioners will have two deputies each. This will involve a complete reorganization of the second district commission. The commissioners and their deputies will have power to act in a quasi-legislative or quasi-judicial capacity either singly or as a commission, but the commissioner is to be responsible for all decisions. The present First District Commission will be grouped under four bureaus. This will involve a logical consolidation of several existing bureaus. The legal work would be transferred to the office of the Attorney General. Only statutory changes will be necessary, in order to bring about these modifications.

Receiver Wants Buses Regulated

Declaring that jitney and motor bus competition is ruinous to the traction systems of the country, Zenas W. Bliss, a receiver of the Rhode Island Company and chairman of the Rhode Island Board of Tax Commissioners, said that such competition must be suppressed and the electric railways given a virtual monopoly if they are to exist, in an address before the eighth annual conference of the members of the New England Tax Officials Association during the week ended Dec. 13 at the State House in Boston, Mass.

Based upon his experiences as a receiver of the Rhode Island property, Mr. Bliss said that jitney competition means the destruction of vast legitimate values, the disruption of transportation, inconvenience and great unnecessary expense and financial loss.

Increased cost of operation, competition, public regulation, public opinion, taxation and inadequate gross revenue, are the principal difficulties, Receiver Bliss said, that are affecting the traction companies throughout the country. His subject was "Cost Problems of Traction Systems and Their Solution."

Mr. Bliss told the conference that he was decidedly in favor of regulation of traction properties by constituted authority with guarantees, as against public ownership. He laid stress upon the antagonistic attitude of the public toward the traction concerns and said that the people refuse to ride at the increased cost, although they pay more for everything else.

Receiver Bliss indicated a strong tendency to favor subsidizing the Rhode Island Company by the State without removing the real estate taxes against the utility, but eliminating all street paving and franchise obligations.

Interborough Men Want 25 Per Cent More

Fifty-four members of the general committee of the Brotherhood of Interborough Rapid Transit Employees called on Frank Hedley, president of the Interborough Rapid Transit Company, New York, N. Y., on Dec. 22 to discuss the making of a new wage agreement in place of the existing two-year agreement which expires on Dec. 31. They asked that the pay of the men be increased so that wages received would equal the amount the men would be receiving if their demands of last August for a 50 per cent increase had been granted.

Failure to yield instant compliance with the demands of the men last Summer for the 50 per cent advance in wages resulted in a complete tie-up of the lines from 4 o'clock on the morning of Aug. 17 until midnight on Aug. 18, when the men returned to work on a compromise arrangement of a 25 per cent increase and the understanding that the demand for enough more to make up the other 25 per cent might be renewed later on.

In discussing the matter Mr. Hedley said:

> Any changes to be made must be inserted in the new agreement. I am glad to say that the meeting has disclosed that there is the most cordial co-operation between the company and the men, a real spirit of co-operation. We have the requests of the men and they will receive consideration. There will be another meeting about the middle of January, when, I hope, a satisfactory agreement will be reached.

Lawrence Service Under Local Control

The jitneys in Lawrence, Mass., prevented by the city from operating after the Eastern Massachusetts Street Railway had withdrawn service as noted in the ELECTRIC RAILWAY JOURNAL for Nov. 15, page 948, did not give up the fight without a struggle. The jitney owners, numbering about 250, determined to take the issue to the public and though a fine of $10 was provided for the penalty for operation within the city limits, jitney service was continued for a time.

Restoration of electric railway service was accomplished through an agreement reached whereby the trustees of the Eastern Massachusetts Street Railway turned over control of the service to a committee of citizens of which James H. McBride is chairman and on which manufacturing interests, retail store owners, the Central Labor Union and newspapers are represented. Furthermore, the chief of police served notice that jitney operators within the city limits would be arrested on sight.

The sympathy and co-operation of the public, together with a genuine desire on the part of the railway officials to render satisfactory accommodation at the lowest possible rate give encouragement for the future of railway service.

The statement of the Eastern Massachusetts Street Railway says in part:

> The public trustees of the Eastern Massachusetts Street Railway are gratified that the people of Lawrence will enjoy the low fare which was impossible while the unfair jitney competition existed. The trustees have turned over complete control of service to the citizens' committee. A much more frequent schedule than has hitherto prevailed will become affective.
>
> With the continued co-operation of the City Council and the citizens' committee, the trustees are confident they will give Lawrence an electric railway service which will be generally satisfactory in point of service and fares.

It is proposed to institute strip tickets, giving sixteen fares for $1.

Aurora-Elgin Wages Increased

The wage increase awarded employees of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., by Judge Evans of the United States District Court will be accepted. The men are not satisfied with the offer, but say that they will work under the new scale until the expiration of their present contract next June.

All increases awarded by Judge Evans are retroactive to Aug. 21. The contract of May 31, 1918, provided for a wage scale of 46 cents an hour for city motormen and conductors. In the general increase of 20 per cent allowed by the court the trainmen will secure an advance of 9.2 cents, to 55.2 cents an hour. The city motormen and conductors will receive an increase of 7.3 cents to 43.8 cents an hour. The raise, exclusive of the service bonus, amounts to 2.3 to 4.2 cents an hour more than the men now receive, they having been granted an increase of 5 cents an hour on Aug. 21, with the understanding that they were to receive a further increase if an investigation of their demands by Judge Evans warranted it.

The increase in wages granted on the length of service schedule of 1 cent an hour for each five years will almost equal the general 20 per cent increase on an average for all employees. There are only thirteen motormen and twenty-three conductors who will not receive at least a 1-cent increase under the length of employment clause. They have entered the service of the company since 1914. Almost one-third of the employees have been with the company long enough to draw a 3-cent increase and fifty more are entitled to a 4-cent an hour increase. There are, several men who will receive the 5-cent increase for twenty-five years of employment.

St. Louis Labor Restive

Employees of the United Railways, St. Louis, Mo., who are members of labor unions have begun a new movement for a general increase in wages. The request of the unions is for a reopening of their wage contracts.

The unions are the electrical workers, the metal workers, and the blacksmiths. While a new wage schedule has not been prepared it is said the request will be for increases of varying amounts.

In addition to a higher wage movement by these four unions, which are outside of the union of trainmen, members of the latter organization who comprise the great bulk of the United Railway employees, also are said to have virtually agreed to ask for a reopening of their wage contract between now and April 1 next, and to ask for higher pay.

The United Railways has not yet completed the payment of back wages under the last wage award and some dissatisfaction has been shown by the men because of the delay.

When the last wage award was made to employees, officials of the United Railways told the State Public Service Commission the company could not pay the advance without getting higher fares. The company, according to its officials, is not benefiting to any great extent from the 8-cent cash fare. Cash fares are now only 4½ per cent of the total, thus indicating that any further wage increases would have to be met by increasing the fare to 8 cents whether paid in cash or by token.

New Texas Interurban Line Likely

The preliminaries to plans for financing a new electric railway from Dallas to Wichita Falls, Tex., have progressed sufficiently to warrant the statement that it is fairly probable that ground will be broken by spring. The distance between the two cities is 130 miles and there is at present no direct rail connection between them.

The great activities in the oil industry and the very high price of cotton together with the great increase in other agricultural pursuits in Texas, have created business conditions in the north of Texas so good that even present enormous construction costs may not defer work on the proposed line. If the line is built, it will be made a high grade property in every respect, and assuming a present-day average cost of $60,000 a mile for such a road, it will cost in the neighborhood of $8,000,000. It is expected that the near future will bring forth definite information in regard to this project.

Chicago Transportation Board Appointed

Four members of the board who will prepare a transportation plan for Chicago were appointed by Mayor Thompson recently. They are Samuel A. Ettelson, Corporation Counsel; Charles R. Francis, Commissioner of Public Works; John P. Garner, an Alderman; and P. H. Moynihan, ex-Alderman. These four are to agree upon an engineer as fifth member of the commission. They will have $250,000 to spend in the nine months before their report is due. Meanwhile weekly meetings will be held.

Mayor Thompson's plan has been referred to several times in these columns. It contemplates the taking over the existing surface lines for public operation by an elected board of trustees, and the assurance has been given that a 5-cent fare will be sufficient to meet all expenses.

Seattle Would Take Over More Lines

The Puget Sound Traction, Light & Power Company, Seattle, Wash., has renewed its offer to sell to the city of Seattle its North Ballard or Greenwood railway operated by the Western Washington Power Company. A previous offer from the traction company naming $81,000 as the purchase price was rejected by the City Council. The new tender provides that the property will be transferred to the city "for an amount to be decided upon as the result of an appraisal made by representatives of the city and the company, or by the City Council and representatives of the company." All the property of the company, south of Eighty-fifth Street, including approximately 4½ miles of track on Fifteenth Avenue, N.W., is embraced in the company's offer, with the exception of two safety cars now operated over the line.

The company agrees to accept in payment of the property transferred utility bonds of the same description as those issued by the city to negotiate the $15,000,000 purchase of its railway properties by the city last spring.

The city has started negotiations with the Seattle & Rainier Valley Railway for the purchase of its lines. It has asked the company to state in writing within sixty days its position in the matter, if a resolution passed by the utilities committee is adopted by the Council.

News Notes

National Safety News Letter.—The Weekly News Letter of the National Safety Council is now being published under the title "National Safety News." Louis Resnick is editor.

Morris County Employees Organize.—Ninety employees of the Morris County Traction Company, Morristown, N. J., are said to have formed a local branch of the Amalgamated Association on that property.

Objects to Withdrawal of Claims.—The Federation of Civic Bodies of the Northside, Pittsburgh, Pa., has filed with the City Council of Pittsburgh an objection to the request of the receivers of the Pittsburgh Railways that all municipal claims against the company be withdrawn. The civic bodies insisted that such a course would be "unbusiness-like."

Writes on Electric Railways.—The *Saturday Evening Post* for Nov. 15 contained an article by Edward Hungerford entitled "The Plight of the Tractions" in which the author discussed the electric railway situation in the country at large. The article reviewed the history of electric railway development in the United States and urged the general establishment of the zone-fare system.

Parallel Suits Will Be Pushed.—Mason B. Starring, president of the United Railways Investment Company, controlling the United Railroads, San Francisco, Cal., is quoted to the effect that suits against the city of San Francisco over the paralleling of the company's tracks on Market Street would be pushed, as the legal department of the company had advised him that the company had a good case.

Suggests Municipal Operation for Bridge Cars.—The Board of Estimate of New York has submitted to the committee on franchises a suggestion from Commissioner of Plant and Structures Grover A. Whalen to have the city operate the local railroad line now operated by the Bridge Operating Company over the Williamsburg Bridge. The permit issued to the company expires May 31, 1920. Mr. Whalen would have the city take over the lines as of that date.

Railway Robbed.—Six robbers, one of whom remained in an automobile outside, held up the office of the United Railways at 3820 Easton Avenue, St. Louis, on the night of Dec. 11 and stole $2,500 with which they escaped. The men drove up to the office entrance shortly before 10:30 p. m., after most of the conductors had made their returns for the day and while cashiers were counting the money in the office. After the robbery the men backed out of the office, after warning the employees not to follow them.

Gas Decision Attracts Attention.—The Appellate Division of the Supreme Court on Dec. 19, handed down a decision declaring the courts had the power to decide whether the statutory rate for gas was unconstitutional because it was confiscatory, and, having so decided, the rate to be charged could be fixed by the Public Service Commission. The decision was in the suit of the Bronx Gas & Electric Company, which applied to the courts to permit it to charge more than the statutory charge of $1 per 1000 cu.ft.

Buses for Philadelphia. — Russell Thayer, president of the Platinum Metal Company, has applied to the Pennsylvania Public Service Commission for a certificate of convenience to permit of the operation of 100 motor buses on Broad Street, Philadelphia. In lieu of taxes and franchise fees the city is to receive one-half of the profits for a period of twenty years, at the end of which the property is to revert to the city. The city is to have at least three representatives on the board of directors.

Wreck Jury Disagrees.—The jury failed to return a verdict on Dec. 18 in the trial of John J. Dempsey, former vice-president of the New York Consolidated Railroad (Brooklyn Transit System) charged with manslaughter as a result of the Malbone Street tunnel disaster of a year ago. More than ninety persons were killed and several hundred injured in the accident on the line, which the prosecution attempted to prove resulted from neglect on Mr. Dempsey's part in permitting an inexperienced motorman to handle the train.

The Chamber of Commerce, U. S. A.—In response to a resolution supported by a brief presented by Engineering Council, the Board of Directors of the Chamber of Commerce, U. S. A., has authorized the appointment of a special committee of the Chamber to investigate and report on our project for a department of public works. It is our hope that the logic and merit of the plan will so commend itself to the committee that the Chamber will be persuaded to present the matter for referendum to the member bodies throughout the United States.

Sarnia Talking Municipal Ownership.—As a result of a special meeting of the City Council of Sarnia, Ont., on Dec. 13 the Provincial Hydro officials will be requested to visit Sarnia and make a report on the present electric railway system. Sarnia is think of taking over the lines. J. J. Jeffrey of the Provincial Commission outlined the method of procedure adopted in the border cities for the acquisition of the Sandwich, Windsor & Amherstburg Railway, and suggested that the resolution inviting the hydro commission be adopted by the Council.

$1,200,000 B. R. T. Wreck Claims.—Federal Judge Mayer has approved the preliminary report of Philip J. McCook, special master, in deciding the last claims against the Brooklyn (N. Y.) Rapid Transit Company. The claims so far allowed for injuries and deaths resulting from the Malbone Street disaster, in which more than ninety persons were killed, amount to $300,000. It has been estimated that the total damages which the sufferers from the accident will collect, will approximate $1,200,000. The company has no funds available for the payment of the claims.

Will Arbitrate One-Man Car Wage.—Following a conference between the public trustees of the Eastern Massachusetts Street Railway, Boston, Mass., and the joint conference committee of the unions at which no satisfactory agreement could be reached for wages for men operating one-man cars, the two parties decided to submit the matter to arbitration. The company offered the joint conference an increase of 5 cents an hour to 56½ cents an hour, but the committee refused to accept it. The present wage is 51½ cents an hour for three-year men. The company is planning to put one-man cars in operation within a short time and began negotiations for satisfactory remuneration so a decision would be forthcoming when the new type of cars is started.

Wage Award Announced.—The report of the arbitrators who inquired into the matter of wages and terms of service for the trainmen of the Grand Rapids (Mich.) Railway had not been formally presented on Dec. 13, but on that date announcement was made as to their findings with respect to wages. The arbitration board consisted of three members. The neutral arbitrator and the representative of the company recommend that men in the service more than a year receive 51 cents an hour and those in the service more than three months and less than a year 48 cents and new men 45 cents. A. A. Ellis, representative of the employees' union, believes that the lowest possible figures should give one-year men 56 cents an hour, those having served three months and less than a year 51 cents, and beginners 45 cents.

Program of Meeting

A Public Works Convention in Washington

A call has been issued for a convention to be held in Washington on Jan. 13 and 14, for the purpose of broadening the scope of the campaign of the National Public Works Department Association for a National Department of Public Works and to discuss and adopt plans and policies for the subsequent legislative campaign, and finally to focus the situation by intensive work in Congress. The invitation includes: (a) the organizations that were represented at the Chicago Conference last April; (b) the State campaign committees from the entire country; (c) the technical organizations not represented; and (d) the industrial interests of the country.

Financial and Corporate

Prospects Greatly Improved

President P. J. Kealy of Kansas City Railways Believes Company Will Return to a Paying Basis

A protective committee has been formed in the interest of the security holders of the Kansas City (Mo.) Railways. The company is in default in the payment of interest on some of its obligations. The committee has asked a prompt deposit of the securities in question with one of the depositaries named for the purpose of mutual protection. Interest due on Nov. 15 on certain of the company's obligations remains unpaid, and further defaults are said to be impending.

MR. KEALY'S STATEMENT

The committee has addressed to the holders of all the company's funded obligations, both bonds and notes, a letter from Philip J. Kealy, president of the railway, dated Nov. 5. In his letter Mr. Kealy points out that the funded debt of the company aggregates $29,606,700. He says that the valuation of the property of the company as recognized by the Public Service Commissions of Missouri and Kansas is approximately $35,500,000. There is also about $1,000,000 additional value that probably would be allowed when presented. In addition to its funded debt, the company also owes about $2,500,000 on demand notes and accrued accounts and vouchers for labor, labor supplies, etc.

Mr. Kealy says that the equity is represented by nominal stock of $100,000 held by trustees against which are issued preferred and common participating certificates, the owners of which are for practical purposes stockholders. Until the extraordinary conditions which he describes at length began seriously to impair the earnings, the company made money. For the fiscal years ended June 30, 1915, 1916, and 1917, it made $301,000, $590,000 and $519,000, respectively, above fixed charges including taxes. For a number of years prior the company had earned on a comparable basis.

DETAILS OF INCREASED COSTS

While in June, 1918, the first increase of fare was obtained and a favorable forecast seemed justified, labor troubles, the influenza epidemic, and other unavoidable conditions prevented this being realized. In 1919 the company failed by $505,000 to make operating expenses without taking into consideration its fixed charges. As an instance of its burden, Mr. Kealy cites that in comparing 1919 with 1915, and using approximate figures, labor increased in cost 90 per cent, fuel 100 per cent, and supplies 100 per cent.

The deficit piled up by the company was made good out of equity and by some of the stockholders personally guaranteeing in part the loan. Mr. Kealy says that the July interest and the large number of deferred vouchers, the existence of which threatened receivership, were paid by the holder of a part of the equity personally guaranteeing the demand notes of the company for $1,000,000. The borrowing power upon the equity is exhausted.

After careful investigation there was no reason to believe that the company could from any source pay the interest due on Nov. 15 or Jan. 1 next, or the principal of or interest on $1,000,000 which fell due on Dec. 1.

In the year ended June 30, 1919, certain conditions existed which are not likely to recur. These materially impaired the company's earnings. Mr. Kealy feels that if the company is permitted to continue operation uninterrupted and unimpaired by receivership for a minimum of one and a maximum of two years, it can return to a paying basis. Among the factors that lead to this conclusion are the following:

(a) The Public Service Commission of Missouri holding it could increase the franchise fare with the Supreme Court affirming its action granted a 6-cent fare and later increased this to an 8-cent and 7-cent basis. Similar action resulted in a 6-cent fare in Kansas with good prospects of obtaining there the rate now in effect in Missouri.

(b) Public co-operation steadily improving. The Chamber of Commerce has recently appointed 100 business men to aid in bettering the situation.

(c) Effective business regulations have just been made and this, with natural causes, will greatly lessen if not remove such competition as has affected the company adversely in the past.

(d) The labor situation from being very bad has become very good.

(e) Negotiations pending with fair prospect of success for obtaining a release from present franchise burdens, having no relation to service.

(f) Increased revenue being realized, the gross being the largest in the history of the company.

(g) The public seemed to begin to realize that it could not let the operation of the property become seriously impaired without itself losing thereby.

"What It Is Costing to Operate Your Street Railway"

Under the caption quoted above the Kansas City (Mo.) Railways recently published in the Kansas City *Railwayan* a tabulated statement of the cost of operation for May "for the consideration of every street car patron." The figures show what the company actually spent in May, 1919, and the cost per passenger as compared with May, 1918. Comment on the cost of service is published in a column at the side of the tabulated statement. This comment is concluded with the statement that "the startling fact remains that exclusive of all interest, all debt, all fixed charges, the actual day to day wages and fuel, is 6.6 cents per fare passenger carried."

Valuation and Depreciation

Commission's Engineers State Valuation for Los Angeles and Make Recommendations on Depreciation

In the recent report of the engineering department of the California Railroad Commission in the fare case of the Los Angeles Railway Corporation, mentioned on page 959 of the issue of this paper for Nov. 15-Dec. 13, the reproduction cost new, as of Dec. 31, 1919, was found to be $26,046,764, and the reproduction cost less depreciation $22,900,000, making the condition of the property 89 per cent.

The valuation of the railway property was based on the appraisal of Dec. 31, 1913, the two valuation figures for the operative property found at that time being: (a) Reproduction cost, $22,322,430; (b) reproduction cost less depreciation, $19,217,269. These figures were brought to date by the addition of the company's new capital expenditures and betterments and deduction for retirements. In the estimate of reproduction cost new less depreciation, these additions (amounting to $3,724,677) have not been depreciated, because their average age was not more than two years.

PROPOSED FRANCHISE

The proposed new "indeterminate resettlement franchise," to quote from the opinion of the commission's engineers, should contain definite provisions concerning the following matters:

(a) The conditions under which the city can acquire the property should be definitely set forth and the methods of determining the value of the property should be specified.

(b) The disposition of all revenues should be dealt with in the franchise and recognition should be had of the essential necessity of making revenue available in the following order: 1, operating expenses; 2, depreciation; 3, taxes; 4, fair return.

(c) Burdens not necessary or essential to street railway service should not be placed on the patrons of the street railway and in this connection particular attention should be paid to the elimination of unnecessary and unjustifiable paving requirements.

(d) The franchise should recognize the absolute necessity of an adequate depreciation reserve and should safeguard this reserve in every possible way so that it can be used only for the purposes for which it is intended.

(e) The franchise should contain provision for the best possible service and for additional service as required.

(f) The conditions under which extensions should be built and the methods of financing such extensions should be dealt with in the franchise.

(g) The disposition of surplus earnings over and above the requirements as set forth under (b) should be dealt with in the franchise.

(h) Check and regulation of all expenditures, including contracts, by the city authorities, jointly with, or separately from, the functions of this commission, should be provided for in the franchise.

(i) Provision should be made for the revocation by the city of the franchise upon proper notice and upon obligation to purchase by the city.

ECONOMIES POSSIBLE

The franchise question, in the opinion of the commission, should be settled before any number of franchises expire and in order to put the company in a position where it can make proper provision and allowance for the financing of such reconstruction as will become necessary.

The details of a rerouting plan were worked out by the engineers of the commission, by which it was expected there would be a saving of $4,000,000 per annum, equal to 13 per cent of the company's entire car mileage, with a saving of 17½ per cent in car hours. There was a strong plea for the purchase of safety cars and for a reduction of paving charges, as mentioned in the article last week.

CARE OF DEPRECIATION

Commenting on the proposed clauses (b) and (d) in the proposed franchise, the report declares that payments to a depreciation reserve are a portion of operating expenses and should therefore come ahead of fixed charges. On this point the commission's chief engineer says, in part:

> Payments into a depreciation reserve are a portion of operating expenses, and the proper sums to be set aside should, therefore, come ahead of fixed charges and other requirements. This company is following the practice of varying its depreciation allowance according to gross earnings and available net earnings regardless of the actual requirements for a depreciation reserve. Since 1911, the depreciation accruals have varied from a minimum of 4 per cent to a maximum of 8.4 per cent of gross income. A policy is not a good one under which a reserve for depreciation is treated as a secondary and theoretical proposition only and under which the payments into the fund vary with the earnings. In addition, this company, in common with other utilities in this State, handles its depreciation reserve as a bookkeeping matter only. There is no actual and separate depreciation fund and there are no definite rules and regulations governing the use of such a fund. . . .
>
> The purpose of the reserve must be to make provision for the replacement of the depreciable property at the end of the reasonable expected life. It is not possible to estimate beforehand exactly what the annual allowance should be, but it is possible closely to approximate the actual requirements. The fund should be neither too large nor too small, and to accomplish this object it will be necessary from time to time to compare the actual depreciation of the property with the allowances and their accumulations and to either increase or decrease the periodical allowance as the actual conditions may demand.
>
> Under no circumstances should depreciation funds be used for purposes other than those for which they were set aside, and the accounting, investing and disbursing of the funds should be under the detailed and strict control of the commission. The fund should be invested with a view to safety only, and security of principal should never be sacrificed to earning power. The reserve should be held in the form of a sinking fund, analogous to a trust fund, and all earnings of the reserve should be added to the fund. It is not desirable, in my opinion, to demand a certain definite interest return from the depreciation reserve and I believe it is better merely to require that all earnings, whether large or small, and as they may fluctuate from year to year, should become part of the fund.

Later, the sum of $720,000 a year was suggested as a depreciation allowance.

Hopeful of Reorganization

Mason B. Starring, president of the United Railways Investment Company, controlling the United Railroads, San Francisco, Cal., has been in that city lately. The Chronicle quotes him as expressing the hope that the reorganization committee of the United Railroads will have completed its plans early in 1920, and that shortly thereafter the affairs of the company will be on a more satisfactory basis. The committee, he said, had been making good progress.

I. R. T. Goes $8,473,098 Behind 1918

With All Its Available Cash Surplus Used Up, Company Operating New York Rapid Transit Lines Faces Receivership

The résumé of the report of the Interborough Rapid Transit Company, New York, N. Y., for the year ended June 30, 1919, prepared by the company itself was made available to the press in two installments. The first installment of the statement dealt with developments during the twelve months of new lines and other additions and improvements to the service rendered to the public. The second installment dealt with the company's condition and its financial operations for the year. The second installment is undoubtedly of greater interest than the first to operating officials and others readers of the ELECTRIC RAILWAY JOURNAL so reference will be made to that first.

COMPARATIVE STATEMENT OF INCOME OF INTERBOROUGH RAPID TRANSIT COMPANY

Year ended June 30	1919	1918
Gross operating revenue	$43,207,209	$40,497,728
Operating expenses......	26,233,326	19,113,336
Net operating revenue	$16,973,883	$21,384,391
Taxes.................	3,134,156	3,758,583
Income from operation	$13,839,726	$17,625,808
Non-operating income....	607,302	593,599
Gross income..........	$14,447,028	$18,219,408
Income deductions.......	18,257,368	13,556,649
Net corporate income for the year...........	*$3,810,339	$ 4,662,758
Add:		
†Surplus, June 30, 1918 and June 30, 1917......	$15,705,569	$17,199,878
Other credits............	25,110	137,296
Totals................	$11,920,339	$21,999,933
Appropriated for:		
Amortization, capital retirements and other charges..............	$ 18,247	$ 169,364
Dividends..............	1,750,000	6,125,000
Total appropriations...	$ 1,768,247	$ 6,294,364
†Profit and loss—Surplus.	$10,152,092	$15,705,569

†Stated exclusive accruals under Contract 3 and Related Certificates payable from future earnings and aggregating as of June 30, 1918, $2,957,407 and as of June 30, 1919, $10.457,478. *Deficit.

It is pointed out that owing to increased costs of materials and supplies, increased wages and other expenses of operation the company has now used up all its available cash surplus, and unless the rate of fare is permitted to be increased, the company cannot much longer avoid a receivership.

The net corporate income for the year shows a deficit of $3,810,339. As the same item for last year was a favorable balance of $4,662,758, the decrease in net corporate income for the year is $8,473,098. The net operating revenue of $16,973,883 is a decrease from last year of $4,410,508; for while the gross operating revenue ($43,207,209) increased $2,709,481, the operating expenses ($26,233,326) increased $7,119,990.

The subway division showed an increase in operating revenue of 12.78 per cent and the elevated division a decrease of 0.44 per cent. The operating expenses increased 37.25 per cent.

The profit and loss surplus (stated exclusive of accruals due the company under Contract 3 and Related Certificates, payable from future earnings, and aggregating as of June 30, 1919, $10,457,478) stands at $10,152,092, a decrease of $5,553,476. This, however, the report points out, represents no cash or other quick assets available for current use, the quick assets being more than offset by amounts due for supplies, taxes, etc.

During the year the company's available quick assets have been exhausted in meeting the increased costs of operation and maintenance. These costs will be still further increased in the current fiscal year by the recent 25 per cent increase in wages amounting to approximately $5,000,000 a year.

During the year Stone & Webster, engineers, made an exhaustive investigation and analysis of the Interborough properties for bondholders' protective committees. The preliminary report, just issued, sets out the following table of their estimates of probable deficits for the fiscal years 1920 to 1924 inclusive as a result of continued operation on a 5-cent fare and the present prices of materials and supplies together with the present wage scale which was recently increased 25 per cent in rates.

The Stone & Webster report adds:

> We estimate, therefore, that the company will require before July 1, 1924, under the new wage scale now in force, in addition to about $7,400,000 needed to cover additional expenditures for capital purposes, $35,390,000 for deficits, making a total cash requirement for that period, in addition to earnings, of $42,790,000. This amount may be reduced, possibly to the extent of $3,000,000 by savings from the construction fund.
>
> It is clear that if the present fares, wages, cost of materials and supplies and other operating expenditures continue in force the company will not be able to earn its fixed charges for many years after 1924.

Item	1920	1921	1922	1923	1924
Estimated deficit on prior wage scale as shown by Stone & Webster report of Aug. 11.....	$2,978,000	$3,628,000	$1,905,000	$543,000	$864,000 (Surplus)
Estimated additional expenses resulting from 25 per cent increase in wages..............	4,800,000	5,050,000	5,250,000	5,450,000	5,650,000
Total estimated deficit by years on new wage scale........................	8,778,000	8,678,000	7;155,000	5,993,000	4,785,000

The Stone & Webster report also says:

> We find the management of the Interborough Rapid Transit company is capable and efficient.
>
> The condition of the properties is excellent. We shall point out, however, that while expenditures for current maintenance seems to be adequate the reserves for depreciation and obsolescence, heretofore accumulated, have been exhausted and no

> new reserves for that account are being made.
>
> In order to enable it adequately to serve its territory and attain the estimated earnings, we believe it will be necessary for the company to make additional expenditures for capital purposes, chiefly equipment, amounting to approximately $7,400,000 during the next five years, the carrying charges on which are included in our estimates. This amount may be reduced, possibly to the extent of about $3,000,000 by savings from the construction fund.
>
> It is manifest that a 5-cent fare falls far short of providing the cost of furnishing a ride.

The report closes by calling attention to the fact that without an increased fare the city's investment in subways cannot be self-sustaining and must be met by increased taxation, and adds:

> The cost of service during the past year, including interest and sinking fund on the money invested in the property actually under operation, exceeded the net revenue by more than $7,000,000, the loss being about equally divided between your company and the city.

With respect to the development of new lines and other additions and improvements to the service rendered to the public the year just passed was the most important in the company's history. The passenger carrying record of the system (subway and elevated) is approaching the mark of 1,000,000,000 a year, the total for the twelve months just passed being 809,335,658. The growth is shown in the accompanying table.

INCREASE IN PASSENGERS CARRIED BY INTERBOROUGH RAPID TRANSIT COMPANY

Year	Elevated (In round millions)	Subway (In round millions)	Total (Exact figures)
1905	266	72	339,104,820
1906	257	137	395,716,386
1907	282	166	449,287,884
1908	282	200	483,285,640
1909	276	238	514,680,342
1910	293	268	562,788,395
1911	301	276	578,154,088
1912	304	302	607,244,697
1913	306	327	634,316,516
1914	311	340	651,886,671
1915	301	345	647,378,266
1916	312	371	683,752,114
1917	349	414	763,574,085
1918	352	418	770,998,335

For the year just ended the subway carried 42,809,392 passengers more than last year, an increase of 10.23 per cent.

The elevated carried 4,472,069 fewer passengers or 1.27 per cent less than last year. This shift in traffic was due in part to the opening of the new East and West Side subway lines. The new subway lines also took traffic from the old subway, the opening of the "H" System resulting in a decrease of 68,127,085 in ticket sales in the old subway stations.

More new lines both subway and elevated were opened this year than in any other year since the Interborough Company began operation. The most important were the new Lexington Avenue extension on the East Side, the new Seventh Avenue extension on the West Side and the new Clark Street tunnel line to Atlantic Avenue, Brooklyn. There was a total increase of 15.15 miles operated at the close of the year. Of the 147.49 miles of new track covered by Contract No. 3 (executed in 1913 with the city for the development of new rapid transit lines) 110.71 miles have been put into operation. While the city has been much in arrears in its part of the construction program practically the entire new system is expected to be in operation by the summer of 1920. The total miles of single track in use is 330.42.

The service rendered to the community shows an increase of 17,465,733 car miles, of which 14,800,651 were on the subway and 2,665,084 on the elevated. The total car mileage was 169,473,392. As part of the work of maintaining the systems in condition to give safe, dependable service 31.64 miles of new steel rails were laid and 53,368 new ties. The elevated structure was re-enforced and strengthened and much work was done in rebuilding stairways and platforms. The subway has carried more than 1,000,000,000 since it opened on Oct. 27, 1904, with a loss ratio by train accident of less than one passenger to 1,000,000,000 carried. For additions and betterments the record of the year contains a vast number of items. One of the most important was the installation of the new 60,000 kw. turbo-generator at the Seventy-fourth Street power station, and a 30,000 kw. generator in the Fifty-ninth Street power house, the last of a set of three.

Rehabilitation Planned

Rehabilitation of the Abilene (Tex.) Street Railway is proposed and plans for bringing this about are now being perfected by business men of Abilene and present owners of the traction property. The rails, franchise, rolling stock and other assets of the company were sold at public auction several months ago to George L. Paxton and G. W. Swenson, Abilene. Since that time cars have not been operated. It is now proposed that the business men of Abilene raise a fund of $10,000 to purchase the property from the present owners, and that the property be turned over conditionally to the Abilene Gas & Electric Company. This company has indicated its willingness to spend between $30,000 and $40,000 in purchasing new rolling stock and putting the line in condition for operation. Conferences have been held between Abilene business men and A. Hardgrave, Dallas, vice-president and general manager of the American Public Service Company, which owns the Abilene Gas & Electric Company, looking to the carrying out of the proposed agreement.

Receiver for Suburban Line

The City & Surburban Railway, Brunswick, Ga., has been placed in the hands of temporary receivers by order of Judge Beverly Evans of the United States District Court, under a petition of the Columbia Trust Company, New York, joined by the Mutual Light & Water Company, Brunswick, the owner of the stocks and bonds of the railway company. Samuel C. Steinhardt, New Rochelle, N. Y., and Oliver L. Mann, New York city, are the temporary receivers. The company has been ordered to show cause on Dec. 22 why the receivership should not be made permanent.

The receivership action was instituted under a mortgage totaling $194,000 because the company failed, the petition alleges, to make proper and required deposits to the account of the sinking fund. The sum of $3,000 is involved in this item, the petition recites.

Municipalization Authorized

Under authority of the Massachusetts Public Service Commission in an order of Dec. 11 the cities of Taunton and Attleboro and the towns of Norton and Mansfield have been empowered to purchase the Norton, Taunton & Attleboro Street Railway providing that there shall be subscribed for and purchased by these municipalities in the aggregate at least 75 per cent of all the outstanding shares of stock and bonds and that at the time of purchase, there are no notes of the company outstanding.

The valuation of the railway as determined two years ago by the Public Service Commission is about $240,000. The Commonwealth Trust Company, Boston, is acting as agent in connection with the transference of the stock and bonds, amounting in valuation to $120,000. Frank Babcock, city treasurer of the city of Attleboro, Mass., is acting as the representative of the municipalities.

The four municipalities served by this company have agreed to hold one quarter each of the total purchase and through their respective City and Town Councils to appoint three men each who are to serve as a board of management. The railway will be operated under the original name and until the organization of the new board has been completed continue to be under the supervision of the present management.

Committee Purchases International Collateral

The committee representing the holders of the collateral trust gold 4 per cent bonds of the International Traction Company, Buffalo, N. Y., due July 1, 1949, interest on which was defaulted Jan. and July 1, 1919, on Nov. 28 purchased at foreclosure sale collateral which had been deposited with the Guaranty Trust Company as trustee. The purchase price was $2,000,000. The bonds authorized and outstanding to the amount of $18,335,000, of which $1,940,000 were pledged as collateral to the company's 6 per cent notes, were dated Nov. 1, 1912, and were a direct obligation of the company, secured by pledge of $4,344,000 International Railway refunding and improvement mortgage 5 per cent bonds, due on Nov. 1, 1962, by the entire $16,320,500 issued capital stock of the company and in addition $122,000 of subsidiary company bonds.

Financial News Notes

Massachusetts Roads Extend Bonds.—The $300,000 of 5 cent cent bonds of the Milford, Attleboro & Woonsocket Street Railway, Milford, Mass., due on Oct. 1, 1919, will be extended until Oct. 1, 1924, at 6 per cent.

Brunswick Officials Resign.—As a result of the placing of the City & Suburban Railroad, Brunswick, Ga., in receivership, F. D. Aiken, president of the company, and George H. Smith, one of the directors, have resigned.

New Directors for Philadelphia & Western Railway.—Albert L. Smith and C. J. Ingersoll have been elected directors of the Philadelphia & Western Railway, Upper Darby, Pa., to succeed Henry Wood and Gerald Holsman, resigned.

Towns to Defray Railway Deficit.—The citizens of the town of North Reading, Mass., at a special meeting, voted to defray the deficit incurred during the current year in operating the North Reading line of the Eastern Massachusetts Street Railway.

Abandonment Threatened in Fort Dodge.—The Fort Dodge, Des Moines & Southern Railroad, primarily an interurban road, but operating local service in Fort Dodge, has notified the Commercial Club of that city that it proposes to discontinue its service there. Service in Fort Dodge is now being given with two one-man cars.

Shore Line Lease Annulled.—The court has annulled the lease which the Shore Line Electric Railway, Norwich, Conn., had of the lines of the Connecticut Company in Eastern Connecticut, so that in the near future the Connecticut Company will have to take back these properties and operate them. The Connecticut Company has not made any plans for this as yet.

Change in Name at Rochester.—The stockholders of the Rochester Railway & Light Company, Rochester, N. Y., have voted to change the corporate name of the company to the Rochester Gas & Electric Corporation. An increase in capitalization of $1,000,000 has also been voted, making the authorized capital of the company $18,250,000.

Suggests City Lease Lines. — The Pacific Power & Light Company has asked permission of the Public Service Commission of Washington to abandon its railway service in Walla Walla, Wash. The commission, it is understood, has suggested that the lines be leased by the city from the company for one year at 3 per cent of the value of the property.

Railroad Foreclosure Judgment Affirmed.—The Third District Court of Appeals has affirmed the judgment in favor of the plaintiff in the suit of The Mercantile Trust Company, San Francisco, Cal., against the Stockton Terminal & Eastern Railroad, Stockton, and J. A. Nesbitt to foreclose a mortgage executed by the trust company to the defendants to secure an issue of bonds.

Would Issue Receiver's Certificates.—The receiver of the Springfield Terminal Railway & Power Company, Springfield, Ohio, has applied to the U. S. District Court for authority to issue $25,000 of receiver's certificates to be used for improvements to the property. The receiver states that if the issue is approved the certificates will be taken up by the bondholders' committee.

Wants Boston Elevated Appraisal.—The City Council of Boston, Mass., has passed a resolution calling for an appraisal of the Boston Elevated Railway. The resolution calls upon the corporation counsel to make a report as to whether the city of Boston has a right to secure a statement of the actual physical valuation of the elevated at the time it was placed under the control of the public trustees.

$1,500,000 of Notes Offered.—Bonbright & Company, Inc., New York, N. Y., are offering for subscription a new issue of $1,500,000 of one-year 7 per cent bond-secured gold notes, series B, of the United Light & Railways Company, Grand Rapids, Mich. The notes are dated Dec. 1, 1919, and are due Dec. 1, 1920. They are being offered by the bankers at 99¾ and accrued interest to yield more than 7.25 per cent.

Extra Dividend at Ottawa.—An extra dividend of 1 per cent is stated to have been declared on the stock of the Ottawa (Ont.) Traction Company along with the usual quarterly dividend of 1 per cent. The Ottawa Car Manufacturing Company, a subsidiary, has declared an extra dividend of 2 per cent, in addition to the usual quarterly dividend of 1 per cent, all dividends being payable on Jan. 1 to holders of record of Dec. 15.

12.8 Per Cent Decrease in Passenger Traffic. — Higher fares, an increase from 5 cents to 7 cents, for the Illinois cities in which the Tri-City Railway operates have resulted in a decrease in the passenger traffic of 12.8 per cent. Excellent weather conditions, making possible the use of bicycles and automobiles, have prevailed since the new rates went into effect and this factor is believed to be an important one.

W. P. P. Increases Dividend.—The Washington Water Power Company, Spokane, Wash., has declared a dividend of 1¼ per cent payable on Jan. 15, 1920, to stockholders of record as of Dec. 24. This is an increase over the 1 per cent quarterly rate which prevailed for the last few years. The directors of the company feel that the advance is justified because of the substantial increase in earnings and the favorable prospects for additional new business.

Payment of Bond Interest Authorized.—Special Master Lamm in the United States District Court has authorized the payment of interest on three bond issues of the United Railways, St. Louis, Mo. Payment on St. Louis Transit bonds, amounting to $224,750, on the St. Louis Railways bonds, amounting to $42,750, and on the St. Louis Suburban Railways bonds, amounting to $112,500, was due on Oct. 1 for the first two and Nov. 1 for the last named.

Halts Security Exchange.—Lindley M. Garrison, receiver of the Brooklyn (N. Y.) Rapid Transit Company, has been instructed by order of Federal Judge Mayer not to enter into a contemplated exchange of securities whereby the Brooklyn Rapid Transit Company would surrender to the Equitable Trust Company first refunding bonds of the company in exchange for an equal amount of certificates of indebtedness of the Brooklyn Heights Railroad.

Abandonment Again Threatened. — The owners of the Ocean City (N. J.) Electric Railroad are still determined to "junk" the line if the city or a company does not buy the line. That determination on the part of the owners a year ago caused the city and the company to get together and effect a compromise, with the result that the electric railway was operated last summer by a trustee, the city assuming the cost of operation. The road was successfully run under these conditions.

Right to Intervene.—Federal Judge Dyer has dismissed the application of Charles H. Cole and William B. Thompson for leave to file an intervening petition in the John W. Seaman suit against the United Railways, St. Louis, Mo., referred to in the Electric Railway Journal for Nov. 15, page 953. Special Master Henry Lamm recently recommended to Judge Dyer that the petition be denied. The Seaman suit has been argued before Judge Lamm and submitted, but a decision has not been announced.

Slight Improvement by Third Avenue Company.—The Third Avenue Railway System, New York, N. Y., reports for October total operating revenue of $1,030,115, compared with $797,504 in October, 1918, and a deficit after total deductions of $41,354, contrasted with $99,243 in the same month a year ago. From July 1 to Oct. 31 the total operating revenue was $4,085,083, compared with $3,409,708 in the corresponding period in 1918, and a deficit after total deductions of $134,197, against $213,717 in the same period a year ago.

Offer Cities Service Bonds.—Henry L. Doherty & Company, New York, N. Y., and others are offering, at 100 and interest, $10,000,000 Cities Service Company, Series "D," 7 per cent convertible gold debentures, dated Dec. 1, 1919, and maturing Jan. 1, 1966. Each $1,000 of the new issue is convertible on and after Jan. 1, 1922, into $925 par value Cities Service Company preference stock and $75 par value of the company's common stock, with all accumulated cash and stock dividends on the common from December, 1919, to the date of conversion.

Power Plants Leased.—The Pacific Gas & Electric Company has leased the plants and facilities of Sierra & San Francisco Power Company for a term of fifteen years. The Sierra & San Francisco Power Company is controlled by the California Railway & Power Company, which is in turn a subsidiary of United Railways Investment Company. It has two hydroelectric power stations in Tuolumne County and three small steam plants in other parts of the State. It now supplies power for United Railroads, San Francisco, also a subsidiary of United Railways Investment Company.

Seeks Authority for $440,000 of New Securities.—The Nova Scotia Tramways & Power Company, Ltd., Halifax, N. S., has petitioned the Board of Public Utilities for authority to issue new securities to the amount of $440,000. The proceeds from the sale are to be used as follows:— (a) to pay for the property of the Dartmouth Gas, Electric Light & Power Company, $104,586; (b) to defray engineering expenses when the present company came into existence after having taken over the Halifax Electric Company, $280,147; (c) the legal expenses connected with the formation of the company, $56,217.

Small Property Does Well.—At a meeting of the directors of the Charlottesville & Albemarle Railway, Charlottesville, Va., on Dec. 11, a semi-annual dividend of 3½ per cent on the preferred stock was declared, also a dividend of 2½ per cent on the common stock, making a total of 7 per cent on the preferred stock and 5 per cent on the common stock for the year. In addition to this a considerable sum was added to surplus. The fare of the company is still 5 cents. All the cars have been painted during the year and considerable track work and overhead work done.

London & Port Stanley Issues Attractive Report.—The London & Port Stanley Railway, which was electrified and is operated by the London Railway Commission, has issued its annual report for 1916-1919, in the form of an attractively illustrated printed pamphlet of fifty-four pages. An account is given of the last four years of operation under public ownership and with hydro-electric power. An account is also included of the electrification of the line under the Beck administration. The report contains many illustrations of the property and views along the line.

Municipal Street Railway Bonds Quickly Sold.—R. M. Grant & Company, New York, N. Y., specialists in municipal bonds, have sold at 100 and interest $2,040,000 of 5 per cent gold bonds of the city of Seattle, Wash., the principal and interest being payable from the gross revenues of the entire municipal light and power plant and street railway systems. The bonds are issued to provide funds for the purpose of making additions, betterments and extensions to the railway and light system. The bonds are dated Sept. 1 and Oct. 1, 1919, and are due serially, the last of the issue maturing in 1939.

Banker on Pittsburgh's Problems.—Alexander C. Robinson, president of the People's Savings & Trust Company, speaking before the forum of the American Institute of Banking at Pittsburgh on Nov. 24, voiced the opinion that the Philadelphia Company, long-time parent company of the Pittsburgh Railways, is the logical interest to handle successfully the financial difficulties of the traction line, which is now in a receivership. The speaker looked with evident disfavor upon all proposals of municipal ownership of the railway. He advocated the building of a subway as a solution of the traffic congestion in the downtown section.

State Purchase of Boston Elevated Proposed.—A bill for the purchase of the Boston (Mass.) Elevated Railway has been filed with the Massachusetts Legislature by Representative William H. McDonnell of Boston. The bill provides for the purchase of the railway system through the State Trustees, who would acquire the whole or a part of the capital stock of the company, provided that 75 per cent of the stock could be obtained at a price not to exceed $80 per share. The cost of the purchase would be met by the State and would be ultimately levied upon the cities and towns served by the system.

Wants Bridgeport Lines Segregated.—The city attorney of Bridgeport, Conn., has been instructed by the Council to ascertain the exact amount of money owing the city by the Connecticut Company as its share in the expense of constructing the Stratford Avenue bridge. He was further instructed to take the proper legal procedure for collecting the amount due. Besides, a resolution was introduced by Alderman Edward A. Drew instructing the city attorney to ascertain the action necessary to segregate the Bridgeport lines of the company from the rest of the Connecticut Company system.

$6,277,000 Bond Issue Authorized.—The Public Utilities Commission of Ohio has granted the request of the Cincinnati Traction Company for authority to issue $6,277,000 of twenty-five year bonds. Of this amount $4,317,000 will bear interest at 6½ per cent while the balance will bear 6 per cent interest. The proceeds of new issue will be used in part to reimburse Ohio Traction Company for money advanced, $250,000 to be used as a stablizing fund for the "service-at-cost" plan provided for in the new ordinance. The city will also be paid moneys now due it from the traction company and other indebtedness will be liquidated.

Utilities Doing Better.—In their review of the earnings statement of the Cities' Service Company, New York, N. Y., for November, the officers of the company refer as follows to the utilities: "Reports from public utility subsidiaries of Cities Service Company indicate steady progress being made in net earnings, taking the properties as a group, and while the coal strike and orders of the Fuel Administration affecting consumption of current for light may have had some slight effect, yet this was but temporary and continued progress in utility net earnings, especially those of the central station electric companies, may be expected."

Bonds Extended.—The first mortgage 5 per cent bonds of Toledo, Fremont & Norwalk Railroad, included in the Lake Shore Electric Railway, Cleveland, Ohio, which are due Jan. 1, 1920, are being extended to Jan. 1, 1925, with interest at 6½ per cent. Under the extension arrangement the $303,000 of bonds in the sinking fund are to be canceled so there will remain in the hands of the public to be extended $1,197,000. The Guardian Savings & Trust Company, Cleveland, is depositary and the holders of a large majority of the bonds have responded by sending in their bonds for deposit under the agreement. The extension of the bonds has been authorized by the Ohio Public Utilities Commission.

Economy Urged in Cincinnati.—In a letter to officials of the Cincinnati (Ohio) Traction Company, W. C. Culkins, Street Railway Director, urged the practice of the strictest economy and care in handling the funds at the company's disposal in order to keep within the budget approved prior to the first of the year, and to avoid the necessity of a further increase in the rates of fares. It was pointed out that, while the company's total operating expenses during the first eight months of the year were $10,910 less than the budget allowance, yet in three specific operating accounts the appropriations were exceeded to a considerable extent. The company was requested to show reasons for these increases and, if necessary, to submit a supplementary budget.

Receiver for Northampton Traction.—Chester Snyder, president of the First National Bank of Eaton, Pa., has been appointed receiver for the Northampton Traction Company, Easton, Pa., on the application of the Northampton Trust Company, trustee for holders of first mortgage bonds of 1903. The company owns and operates the electric railways between Easton and Nazareth and Easton and Bangor. According to unofficial reports it is said that the company has outstanding $349,000 of first mortgage 5 per cent bonds, and $437,000 of refunding and consolidated mortgage 5 per cent bonds. The property is controlled by the same interests that control the Northampton, Easton & Washington Traction Company operating in very much the same territory.

Suit Brought to Foreclose.—Bristol & White, New Haven, Conn., as attorneys for the holders of the second mortgage bonds of the Danbury & Bethel Street Railway, Danbury, Conn., recently filed a petition in the Superior Court in Bridgeport, Conn., asking permission to institute proceedings to foreclose the property. The foreclosure action was directed against J. Moss Ives, the receiver. It is actually a formality in connection with the proposed reorganization of the road by the holders of the second mortgage bonds, as a measure of self protection. The representatives of the holders of the second morgtage bonds set up in their application to the court the fact that they have not received interest upon their bonds in two years. Interest is being paid on the issue of first mortgage bonds.

Wants to Fund Its Deficits.—Legislation has been introduced in the City Council of Cincinnati, Ohio, granting permission to the Cincinnati Traction Company or the Cincinnati Street Railway to fund the deficits of the former corporation aggregating $1,500,000 over a period of twenty-five years. Under the terms of the new franchise the company is not permitted to create any obligation that cannot be repaid within twelve months. The ordinance introduced recites that the company could not comply with this provision of the franchise without increasing the rate of fare. Accordingly an amendment was sought granting permission to extend the proposed obligation over a period of twenty-five years, a sinking fund to be created which will insure the repayments of the notes or bonds by Dec. 31, 1945. The ordinance has been referred to the committee on finance.

Threaten Staten Island Suspension.—Representatives of the estate of Henry H. Rogers, which owns the Staten Island Midland Railway and the Richmond Light & Railroad Company, called on Public Service Commissioner Lewis Nixon on Dec. 20, to inform him they were ready to discontinue operation of the roads. They told the commissioner that for years they had been putting up the money to run the roads and that last month their operation cost the estate $17,000. They said there had been an annual deficit of $100,000 for many years. Commissioner Nion has requested the representatives to continue operation of the roads until after a mass meeting. The companies mentioned, operate, with one exception, all the rail facilities on Staten Island, which is included in the borough of Richmond, Greater New York.

Another Discontinuance Asked.—The Boston & Maine Railroad has petitioned the Public Service Commission of New Hampshire for permission to discontinue permanently and abandon the operation of that portion of the Portsmouth Electric Railway, extending over the "Y" so called at Little Boar's Head in the town of North Hampton and known as the North Hampton branch. This line runs from Little Boar's Head to the Hampton Depot and is little used in the winter. The railroad is also seeking authority to discontinue during the months of January, February, and March the branch line running between North Hampton and North Beach, known as the North Beach line. The railroad says that it costs more money to keep these lines clear in the winter than is taken in in fares. It was arranged to hold a hearing on the petition at Portsmouth on Dec. 16.

Ohio Company Defaults Its Interest.—Default was made in the payment of the interest due on Nov. 1 on the general mortgage bonds of the Columbus, Newark & Zanesville Electric Railway, Springfield, Ohio, which mature in 1926. A committee of the holders of the bonds in a circular issued recently says that as the railway since 1906 has been operated by another company under lease, it is of vital importance that a protective committee represent the interest of the bondholders alone, even though interest due on Nov. 1 be paid at a later date. It therefore urges holders of the bonds to forward them at once to the Land Title & Trust Company, Philadelphia, as depositary. The protective committee consists of R. N. Stimson, chairman, Alba E. Johnson and Claude A. Simpler, all of Philadelphia, as counsel. The property of the Columbus, Newark & Zanesville Electric Railway was leased in 1906 to the Indiana, Columbus & Eastern Traction Company, which in turn was leased in 1907 to the Ohio Electric Railway.

Service Resumed in Morgantown.—Operation of cars on the line of the South Morgantown Traction Company, Morgantown, W. Va., was resumed during the first week of December under the direction of Aaron J. Garlow, the receiver. The line has not been in operation since the middle of October. Some time after the road was shut down the Public Service Commission granted an increase in fare. Tickets are now sold to school children sixteen for $1 and to all others at 14 for $1. By consent of the creditors of the company, and all others interested in the litigation in the Circuit Court for the settlement of the affairs of the corporation, a decree has been prepared and agreed to under which the receiver is to pay to the West Virginia Traction & Electric Company $1,433 for rent of cars, rent of tracks, and electric current, used between June 1 and Oct. 15. Payment is to be made within three months out of the earnings of the road, and in case the revenues should not be sufficient, the receiver will issue his certificates to liquidate the old debt. The order has been endorsed to be entered by Judge Sturgiss when the special term of court opens.

Minnesota Line Doing Well.—According to Twin City papers the Minneapolis, Northfield & Southern Railway, formerly the Dan Patch line, has recently been doing well. This road, it will be recalled, fell upon evil days, went into the hands of a receiver, was sold, some of its lines discontinued and the remainder put in operation under direction of the bondholders. One of the Minneapolis papers said recently: "There is a turning of the tide in the affairs of the Dan Patch line. For six months the line has been making some money. For three months it has been making good money. In order to bring the road up to requirements that are already developed, the capital stock of the road has been increased from $500,000 to $1,500,000. Amended articles of incorporation to permit the increase have already been filed. Not all of this new stock—half common and half preferred—will be sold at once. In order to keep up the road, some $150,000 of borrowed money has been put in. The new stock will care for this indebtedness and enough more will be sold to provide from $200,000 to $250,000 in betterments, particularly more equipment. More business is now offered than the present equipment can handle. There has already been a good subscription to the new issue from directors and present stockholders. All common stock is sold at par with the preferred at practically the same figure." The property as now operated consists of 52 miles of line with thirty-two cars, most of which are in freight service.

Receivers Asked to Refund $1,217,602.—Arthur W. Thompson, president of the Philadelphia Company, has filed a petition in the name of that company, asking that the United States District Court direct the receivers of the Pittsburgh (Pa.) Railways to refund to the Philadelphia Company $1,217,602 and interest. The rail company, under the receivership, is in the custody of the court. The Philadelphia Company claims that the $1,217,602 was paid by it to various of the subsidiaries of the traction company for fixed charges which the Philadelphia Company had guaranteed. The petitioner is the parent company of the Pittsburgh Railways and formed the merger which is the Pittsburgh Railways. The petition recites that during the period of consolidation, it became necessary for the Philadelphia Company to assume responsibility for the payment of some of the fixed charges agreed to in the consolidation, and, inasmuch as the receivers have refrained from the payment of fixed charges for a long time, the Philadelphia Company paid the charges it had guaranteed. The petition is a formal move to get before the court the claims of the Philadelphia Company. All the other creditors have filed their petitions covering the sums the railways owes them, and the Philadelphia Company wished to put itself in a position where its claims can legally be taken into account by the court. In view of the plea the receivers addressed to the City Council of Pittsburgh, asking a favorable attitude toward a plan for the payment by the traction company of the fixed charges, there is some disposition to feel that the railway may soon resume normal payments to creditors.

Traffic and Transportation

Birmingham's Race Problem

Company Will Try Out Twenty-Five One-Man Cars, Using New Equipment for Segregation

The receiver for the Birmingham Railway, Light & Power Company Birmingham, Ala., has twenty-five one-man safety cars on order from the Cincinnati Car Company and it is expected that they will be in operation before Jan. 1. The first sixteen of the new cars will replace eight double-truck cars now giving a thirteen-minute service on a light traffic line passing through one of the very finest residence sections of the city. This particular line has been picked for the initial installation on account of the light travel and the small percentage of negro riders.

The problem of handling the negro passengers in Birmingham is somewhat complicated by the rather loose "Jim Crow" law in Alabama. This requires that the two races shall be separated, but it does not specify whether the negroes shall occupy the front or rear of a car, as do the laws of Georgia and the Carolinas and Virginia. It so happens that the prevailing practice in Birmingham is opposite to that in the cities of the States just named. On most of the Birmingham cars, the negroes take the front of the car, entering and leaving at the front platform.

MEANS FOR SEGREGATION

In the off-center entrance cars built for the Birmingham-Tidewater Railway, now operated by the Birmingham Railway, Light & Power Company, the doors divide the cars in about the proportion of one-third at the rear and two-thirds in front, and the rear portion is assigned to the negroes. Then again, where the company runs trailers, the motor car in front is for whites and the trailer for blacks. So one has to know the ropes, so to speak.

Now the safety car with the single front exit and entrance for both races presents a new problem. The officials have decided that, contrary to the majority practice, it will be better to put the negroes in the rear. The cars will be divided in halves by omitting the two middle seats. The white people will occupy the seats in front of this open space, and the negroes those to the rear.

With all of the seats occupied, the whites will use the open space at the center of the car for standing room while the rear platform will furnish standing room for the negroes. The front platform will also provide some limited standing room for the whites. The standing space at the center of the car will be set off from the aisle by a pipe stanchion having three vertical members. The outer two will rise to the seat height and bend horizontally to connect with the middle member, which will extend to the headlining to provide something to hang on to. It is thought that the lower wings of the stanchion will induce passengers to step around in behind it and out of the aisle, or that it will tend to set this space off so the white people will feel that this is a place reserved for them out of the way of the negroes.

Traffic Changes Suggested for Kansas City

John A. Beeler has made the first of his recommendations to the board of control of Kansas City, Mo., with respect to traffic conditions in that city. Mr. Beeler's study has extended over the entire congested district, but it has been decided to test his recommendations on a single street. The city administration, the police department and the management of the Kansas City Railways have agreed to co-operate in putting into operation Mr. Beeler's suggestions with respect to Twelfth Street. Summarized broadly the Beeler measures for Twelfth Street traffic relief fall into these eleven points:

> Stopping places in the congested zone must be relocated and combined.
>
> Double berthing must be resorted to at all stops on this street in the business district.
>
> Vehicles must keep off the car tracks, and must move in the path between the right side of the car and the curb.
>
> Street cars must be given precedence by traffic patrolmen. They must be passed across the intersections in pairs and simultaneously, east and west, whenever possible.
>
> Motor car parking must be limited during the day and prohibited in the rush hours.
>
> Additional street car collectors must be employed so as to load a double stream of passengers at the rear ends of cars.
>
> Street car collectors must see that car doors are closed promptly when proper loads are on the cars.
>
> Cars must stop only once at each passenger stopping place. After the doors are once closed and the car ready to proceed the doors must not be opened again.
>
> Car patrons must assist by using street car tickets or having exact change ready, and by presenting transfers right side up and unfolded.
>
> So far as possible cars should be operated on regular headway. Railroad crossing delays must be avoided or their effects minimized as far as possible.
>
> The front doors of street cars must be remodeled to permit of two streams of passengers entering or leaving simultaneously.

The extreme narrowness of Twelfth Street, in Mr. Beeler's opinion, precludes the use of safety zones. He suggests, instead, that the exact spot where cars stop be marked plainly. All except one of Mr. Beeler's recommendations, that of widening the front doors of street cars, can be put into effect immediately.

It was planned to put the recommendations into effect on Dec. 20.

Illinois Commission Upheld

State Supreme Court Rules That Utilities Body Was Within Its Rights in Raising Quincy Fares

The Public Utilities Commission of Illinois has the authority to raise rates for electric railway service above the limit fixed by franchise provisions, according to an opinion of the State Supreme Court handed down on Dec. 17. The decision had specific reference to the case of the city of Quincy vs. the Quincy Railway. It sustained the action of the commission in allowing the company to install 7-cent fares on its Quincy city lines.

The Quincy Railway early in 1919 applied to the commission for permission to raise fares from 5 cents to 7 cents on the ground of increased operating expenses. The application was made in spite of the fact that the company's franchise contained a clause limiting the fare to 5 cents. After a hearing, the commission allowed the company to install the higher rate over the protest of the city of Quincy. The city carried the case to the Circuit Court of Sangamon County on the ground that the fare increase was in violation of the franchise. The Circuit Court upheld the commission. The city then appealed to the Supreme Court of Illinois.

COMMISSION'S POLICE POWERS

In sustaining the commission the court held that the latter derived its rate-making authority from the police powers vested in the State government. The decision stated the court's view in definite terms. In its opening sentence it said:

> We think it has been clearly settled by the decisions of this court that the Public Utilities Commission of this State, under the public utilities act, has had conferred upon it the power of changing the rates to be charged by the public utility corporations.

After citing from previous decisions, the opinion continued:

> Under these and other decisions of this court already cited there can be no escape from the conclusion that the Public Utilities Commission has the right and authority under the police powers of this State to make the change in these rates as provided in its order and as found in this record. The great weight of authority in other jurisdictions is in accordance with this conclusion.

The decision upholds the contention of Attorney General Brundage that the commission is not deterred by franchise provisions from granting a fare increase. It is therefore of wide interest in view of its possible application to the fare situation in Chicago. The city of Chicago is at present carrying on a court action against the recent 7-cent cash fare granted by the commission to the Chicago Surface Lines. The city takes the view that the decision in the Quincy case does not affect the Chicago issue, since, it is claimed, the peculiar features of the contract between the city and the Chicago Surface Lines puts the latter outside of the commission's jurisdiction. The commission takes the opposite view from that held by the city.

Back To Six Cents

Commission Again Reduces Fare on Chicago Surface Lines Pending Valuation Findings

The Illinois Public Utilities Commission on Dec. 23 issued an order, effective at midnight on Dec. 26, reducing fares on the Chicago Surface Lines to a straight 6-cent basis. Children's fares are reduced from 4 cents to 3 cents. The existing transfer privileges are continued.

The commission's ruling, which became effective on Dec. 1, leaving the cash fare at 7 cents but making possible either a 6-cent or 6.5-cent fare by the purchase of tickets, was expected to result in an average revenue of 6.25 cents per passenger. Figures submitted by the companies for the first eighteen days of December revealed that this arrangement or fares had yielded 6.85 cents per passenger.

Means $22,163 Daily Loss

Consequently, the commission ruled that, since the company had had the benefit of the 7-cent fare during August, September, October and November, and practically a 7-cent fare during the first eighteen days of December, the 6-cent fare should be placed in effect until the final valuation of the property was completed. It is reported that the ruling of the commission will reduce the revenue of the Chicago Surface Lines $22,163 a day or $664,892 for the average month.

In issuing the ruling the commission said:

> Experience has shown that if a ticket plan is to be really effective, the ticket must be handled by the conductors and sold to the passengers on the cars, and the time has come when the petitioners must realize that if it is necessary to fix a fare which involves a fraction of a cent they must arrange, if they are to have the benefit of this fraction, to have the tickets, which will be necessary to produce such a result, sold to the passengers on the cars.

Cash Fares Predominate

The figures submitted by the company show that during the first eighteen days of December 312,315 passengers used the 6.5-cent tickets sold in strips of ten, and 4,305,979 used the 6-cent tickets which they bought in books of fifty for $3. The number who paid the full 7-cent fare was 31,799,289.

In commenting on the commission's ruling, Chairman James H. Wilkerson said:

> The order carries into effect a ruling by the commission made in April. At that time the commission defined as a policy that the companies were entitled to earn at least $8,600,000 a year as a return on their investment. To that policy the commission has adhered, notwithstanding criticism directed against it for ulterior motives, and to that policy it will continue to adhere.
>
> Following the strike in July, wages were increased largely and, judged by the experience in other cities, 7 cents was necessary. But in Chicago traffic increased in the face of increased fares, so that it became necessary to put in force an average tariff of 6.25 cents. The case is still on hearing and it has been thought best in order to equalize matters to install a straight 6-cent fare.

A straight 6-cent fare leaves the companies about $500,000 a year short of necessary revenues.

The petition of the city of Chicago for an injunction against the 7-cent fare on the Surface Lines had previously been taken under advisement by Judge McGoorty. Arguments have also been presented in the Supreme Court in another suit attacking the order of the Public Utilities Commission.

Newark to Regulate Buses

As a first step toward municipal control of jitney traffic on its streets the city of Newark, N. J., has entered into a contract with the General Omnibus Company of New Jersey for the operation of buses over half a dozen routes. The validity of the contract, which was attacked by the Public Service Railway, has been approved by the courts and within a short time operation under the agreement will begin. The company plans to put into service buses of the double-deck type.

The contract fixes the fare at 5 cents for a continuous ride within the city limits, but provides that the fare may be raised to 10 cents at the discretion of the city authorities. Under the agreement each bus will be covered by a separate insurance policy of $5,000. Besides the insurance policies victims of accidents will also have the assets of the corporation to fall back on to satisfy judgments. The company will be required to pay 5 per cent of its gross receipts to the city, the minimum tax being set at $8,000 for the first year, $10,000 annually during the next four years, $12,500 for the next five years, and $15,000 for the last five years of the contract.

Five-Cent Zones on Worcester Lines

A zone system based on a 5-cent fare for a ride in each zone, became effective on the lines of the Worcester (Mass). Consolidated Street Railway on Dec. 1. Under the new arrangement, which is to be given a thirty-days' trial, the Worcester City Hall becomes a pivot point from which rates are computed. From the city limits or natural terminals to the City Hall, the fare is 5 cents, while for a passenger continuing beyond the latter point it is 10 cents. The company's suburban lines are also zoned.

The terms of the new system were recently agreed upon at hearings before the State Public Service Commission. The plan was endorsed by twenty of the outlying towns served by the company, only two towns, Shrewsbury and West Bolyston, raising objections. Transfers are discontinued. The fare was formerly 7 cents with free transfers.

A representative of the company declared at the hearings before the commission that an increased revenue of $840,000 on the system was needed. Of this amount he stated that $277,000 was needed to meet the deficit occasioned by the rates which have been in effect since April 1 last, and the remainder to take care of the extra sum needed for increased wages.

Whitman Jitneurs Upheld

The action of the town of Whitman, Mass., in barring jitneys from its streets was overruled on Dec. 3 when Judge George W. Kelly of the District Court ordered dismissed the case against Jason E. Cushing and three other jitney drivers charged with operating their vehicles in Whitman without licenses. The court held that the regulation recently adopted by the Whitman board of selectmen forbidding licenses to jitneys to compete against the Eastern Massachusetts Street Railway could not be sustained because it discriminated against the jitneys.

The case was an outcome of the recent move on the part of the Whitman selectmen to keep jitney buses from the town to save the electric car service. Judge Kelly in his decision said that no town could pass a by-law which discriminated against competition between persons engaged in the same line of business. Under the by-law, the court decided that no one could drive through the town of Whitman with a vehicle for hire without first securing a license in the town of Whitman, so that under this section, the court ruled, the requirements of the license could not be sustained.

Zone Fare Loss $1,500,000

The experiments which it made with the zone fares cost the Public Service Railway, Newark, N. J., $1,500,000. This is the loss stated by President McCarter to have been sustained in the announcement making public news of the passing of the dividend on its common stock by the Public Service Corporation for the last quarter of 1919, referred to briefly in the ELECTRIC RAILWAY JOURNAL for Dec. 20, page 1017. Mr. McCarter's statement follows:

> In view of the difficulties which the gas company and the railway company, two of the corporation's three principal subsidiaries, have encountered during the current year, in endeavoring to meet the vastly increased costs of labor and material under insufficient rates, and especially in view of the loss sustained by the railway in the zone system experiment, amounting approximately to $1,500,000, now happily concluded, the board of directors of the corporation, after a full consideration of all the facts, has thought it prudent to omit the declaration of what would have been, under normal conditions, the last quarterly dividend upon its common stock for the current year. This is thought wise as well from the standpoint of the conservation of cash resources as from a consideration of the earnings statement.
>
> The corporation looks forward to the new year and to the future with confidence. The electric company and the gas company, with their existing rates, are functioning under fair conditions, and the railway, under present costs, with the 7-cent fare, should be self supporting; that is to say, able to pay its operating expenses, including depreciation and fixed charges.
>
> The valuation of the railway property devoted to the public use is nearing completion by the Board of Public Utility Commissioners and early in the coming year a permanent rate should be established, based on the law and the evidence in the case; the result of which should be to enable the corporation to earn a fair measure of return upon its large investment represented by the stock of the railway.

Transportation News Notes

Suggests Compulsory Accident Prevention Education.—Legislation making instruction against accidents one of the compulsory features of public school education was recommended strongly by Cecil G. Rice, of the associated bureaus of the Pittsburgh (Pa.) Railways in an address on Dec. 6 before the Western Pennsylvania division of the National Safety Council.

Children in Arms Free.—New rules which went into effect on the Seattle (Wash.) Municipal Railway on Dec. 15, provide that only "children in arms" shall be carried free. The rule is provided for in an ordinance passed by the City Council on Nov. 4. It supplanted a previous rule that children five years or under should have free transportation.

Will Reroute Baltimore Lines.—A general organization of the transit system of Baltimore, Md., is called for in plans being worked out by the United Railways & Electric Company. The company will reroute every car line in the city, with the view to the eventual installation of a complete rapid transit system. The city will co-operate in carrying out the scheme.

Would Raise Interurban Rates.—The Maumee Valley Railways & Light Company, Toledo, Ohio, has filed with the State Public Utilities Commission a proposed schedule increasing rates between Toledo and Perrysburg, Maumee and intermediate points. Single fares are increased 5 cents. The advance in the price of commutation books amounts to 50 per cent.

Free St. Louis Transfers May Go.—Rolla Wells, receiver for the United Railways, St. Louis, Mo., recently announced that he would shortly ask the State Public Service Commission for authority to make a separate charge for transfers on the company's lines. Mr. Wells stated that, in his opinion, the solution of the transit problem of St. Louis depended largely upon the abolition of free transfers.

Glen Cove Company Needs More.—C. L. Addison, vice-president of the Glen Cove (N. Y.) Railroad, on Dec. 17 notified the Glen Cove City Council and the Nassau County Board of Supervisors that, unless the company were granted an increase in fare it would suspend operation. Last September the company asked for a modification of its franchise to permit it to ask the Public Service Commission for higher rates.

Eight Cents in Mansfield.—The Richland Public Service Company, Mansfield, Ohio, has notified the Mansfield municipal authorities that beginning Jan. 1, 1920, it will charge 8-cent cash fares. The company proposes to issue seven tickets for 50 cents. The rates are to continue in effect for six months and, under the terms of the company's franchise, will then be subject to revision.

Miners' Ticket Rate Lowered.—The Public Service Commission of Pennsylvania has issued an order directing the Eastern Pennsylvania Railways, Pottsville, to reduce the cost of ticket books for miners from $3.50 to $3. The order further directs that a traffic check be kept on the zones affecting Coaldale, Summit Hill and Brockton, and that a report be submitted to the commission next February.

Newspaper Rates Raised.—The Public Service Commission of Ohio has authorized the Cleveland & Eastern Traction Company and the Cleveland & Chagrin Falls Railway to install a rate of 0.75-cent a pound for the transportation of newspapers. The commission had previously suspended a rate of 1 cent a pound, the present rate being 0.5-cent. The new rate becomes effective on Jan. 1, 1920.

Ten Thousand Collisions in Detroit. Cars of the local and interurban lines of the Detroit (Mich.) United Railway were involved in more than 10,000 collisions with motor-driven vehicles during the first ten months of 1919, according to figures recently made public by the company. The financial loss resulting from these collisions, which averaged thirty-three a day, amounted to approximately $250,000.

Baltimore Fare Order Modified.—The Public Service Commission of Maryland has set Oct. 1, 1920, as the date on which the present 7-cent cash fare shall cease to be effective. The commission has ruled in a supplementary order that, subject to modification, the former 6-cent fare shall be restored on Oct. 1, unless the company before that date has applied for a continuation of the present rate or for a higher one.

Six Cents in Sedalia.—The Public Service Commission of Missouri has made an order increasing the railway rates of the City Light & Traction Company, Sedalia, Mo., from 5 cents to 6 cents for adult passengers and from 2.5 cents to 3 cents for children. The new rates will remain in force for thirteen months. Meanwhile, the company is directed to file a valuation of its property holdings with the commission.

Pennsylvania Bus Line Halted. The Public Service Commission of Pennsylvania has ordered the discontinuation of a motor bus line operating between Easton, in Northampton County, and Riegelsville and Kentnersville, in Bucks County. The bus company had failed to obtain a certificate of public convenience. The commission took action on the complaint of the Philadelphia & Eastern Electric Railway, Doylestown, with which the bus line competed.

Express Service on Bay State Lines.—The Eastern Massachusetts Street Railway, Boston, Mass., will institute a freight service shortly throughout its system in Essex County, Mass. The plans provide for the maintenance of both day and night lines which will link up with the lines now operating south of Boston and thus establish connections with the Providence and Fall River boats for through freight to New York.

Seven Cents Asked in Nashville.—The Nashville Railway & Light Company, Nashville, Tenn., has petitioned the State Public Utilities Commission for an increase in fare to 7 cents. The increase is asked pending an investigation of the company's financial condition by a board of three members, representing respectively the company, the commission and the city of Nashville. Upon the findings of this board a permanent rate would be based.

Interstate Zone Fares Raised.—The Interstate Commerce Commission recently granted the Washington Railway & Electric Company, Washington, D. C., and its subsidiaries, the Washington & Rockville Railway, the City & Suburban Railway and the Washington-Interurban Railroad, a flat increase of 1 cent in cash fare per zone on their lines in Maryland. The application for an increase was filed with the commission some time ago. The new fares became effective on Dec. 1. They will expire on May 1, 1920.

Jitneys Barred in Salem.—Following the cutting-off of electric railway service in Salem, Peabody and Beverly, Mass., by the Eastern Massachusetts Street Railway, the Councils of these municipalities have voted to revoke licenses for the operation of jitneys within the city limits. The company resumed service on Dec. 19 after an interruption lasting one day, in which the inability of the jitneys to handle the traffic was made clear. The action of the company was in accordance with the policy of refusing to operate in competition with the jitneys. The elimination of the latter from the Salem division leaves the Bay State system without jitney competition in the eastern district of Massachusetts, with the exception of Quincy.

Eight Cents Now Charged in Kansas City.—The Kansas City Railways on Dec. 14 began collecting 8-cent cash fares on its lines in Kansas City, Mo., under authority of the State Public Service Commission. The ticket-rate, when five or more tickets are purchased at once, remains at 7 cents. Metal tokens are sold on the cars at the rate of two for 15 cents. The cash and ticket rates were formerly 7 cents. P. J. Kealy, president of the company, recently stated that a sixty-day trial of the 7-cent cash fare had demonstrated that the public would not buy tickets when the cash and ticket rates were the same. The fare in Kansas City, Kan., remains at 6 cents. Two cents additional are collected from passengers crossing the line from Kansas into Missouri.

Personal Mention

L. O. Lieber, electrical engineer of the Los Angeles (Cal.) Railway, has resigned. Mr. Lieber plans to enter other business. He has been connected with the company for the last eleven years.

Thomas A. Cole has resigned as claim agent of the Los Angeles (Cal.) Railway. Mr. Cole had been identified with the company for more than twenty-five years. He will devote his time to private business.

C. M. McRoberts has been appointed claim agent for the Los Angeles (Cal.) Railway, succeeding Thomas A. Cole, retired. Mr. McRoberts has been assistant claim agent of the company for the last eight years.

J. H. Suttlee has been appointed master mechanic of the Johnstown (Pa.) Traction Company. Mr. Suttlee was formerly master mechanic of the Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa.

I. C. Shellenberger has been appointed auditor of disbursements of the Chicago (Ill.) Surface Lines to succeed A. L. Dewey, who died recently. Mr. Shellenberger was formerly chief clerk of disbursements, and has been succeeded in that position by C. W. Meyer.

Alexander McDonald has been appointed traffic superintendent of the Winnipeg (Man.) Electric Railway. Mr. McDonald succeeds R. R. Knox, whose promotion to be assistant to the general manager of the company is noted elsewhere in these columns. He has been connected with the Montreal (Que.) Tramways since 1887.

R. G. Staplin, claim agent for the Shore Line Electric Railway, Norwich, Conn., has resigned to accept a similar position with the Hartford Accident & Indemnity Company, Hartford, Conn. Mr. Staplin joined the company on Oct. 1, 1913. Mr. Staplin is a member of the New England Street Railway Club and the National Safety Council.

Harry Clark, who has been engaged for the last twenty-five years in electric railway management in New York State, has resigned as treasurer and assistant general manager of the Empire State Railroad, Syracuse, N. Y., to become associated with the Watson Products Corporation, manufacturers of automobile trucks and accessories.

S. M. Gallaher, who has been manager of railways of the Monongahela Valley Traction Company, Fairmont, W. Va., since 1917, has severed his connection with the company to join the Cleveland (Ohio) Electric Illuminating Company as head of the engineering and construction departments. Mr. Gallaher was formerly general manager of the Charleston (W. Va.) Interurban Railroad.

Mr. Gaboury Elected

Official of Montreal Tramways Chosen to Head Canadian Electric Railways Association

Arthur Gaboury, superintendent of the Montreal (Que.) Tramways, was elected president of the Canadian Electric Railways Association at the Association's recent meeting. At the Atlantic City convention of the American Electric Railway Transportation & Traffic Association he was elected to its executive committee. Mr. Gaboury, who is in his forty-sixth year, has always lived in Montreal and has from his boyhood been connected with the local electric railway systems. After completing his college course at St. Laurent College, he went to work in 1894 first as conductor and then as motorman with the Montreal Street Railway to gain a full knowledge of the practical end of the transportation business.

ARTHUR GABOURY

In 1901, on the occasion of the visit of the Duke of York to Montreal, he was appointed assistant inspector to aid in the handling of the extra traffic occasioned by this visit, and soon thereafter became depot clerk at the central carhouse. A few months later he was transferred to important new carhouses at St. Denis Street as chief clerk, having charge of the suburban line to Sault au Recollet.

In 1903 the claims department of the railway was separately organized and Mr. Gaboury was put in charge as claim agent, which position he retained until 1906 when he was made assistant superintendent. A year later he became superintendent.

In his position as superintendent Mr. Gaboury has had an active part in all movements looking toward the improvement of electric railway service, such as the proper training of employees, the safety campaign, the regulation of street traffic, etc. He has been a member of the Canadian Electric Railways Association, which he now heads, since 1903, and has filled positions of greater and greater importance in the association since that year. He is equally interested in the American Association.

R. R. Knox, traffic superintendent of the Winnipeg (Man.) Electric Railway, has been promoted to be assistant to the general manager of the company. In his new capacity Mr. Knox will be attached to the office of A. W. McLimont, vice-president and general manager, for special assignments. He has been connected with the transportation business in Winnipeg since 1895, and for the last twenty-one years has held the position of traffic superintendent. His new appointment has met with the whole-hearted approval of the Winnipeg public, since Mr. Knox has taken a leading part in municipal affairs for many years. He has been a member of the Winnipeg School Board since 1908.

J. F. Trazzare has been appointed to the position with the Georgia Railway & Power Company, Atlanta, Ga., formerly held by W. T. Waters, publicity agent. Mr. Trazzare's appointment contemplates the organization of a new department of the company to be known as the employment and public relations department, of which he will have charge. Previous to the war, Mr. Trazzare was with The Aluminum Company of America, where he had to do with the broad phases of labor. Before that he was a newspaper man for a number of years. During the war he served the War Department in connection with the industrial plant protection work of the Southeastern Department. While he has spent much time in publicity work, this is his first engagement as a publicity agent and his first connection with the electric railway field.

D. H. Blanks, who has been chief engineer of the Monongahela Valley Traction Company, Fairmont, W. Va., for the last three years, has been appointed manager of railways of the company. Mr. Blanks was graduated from the University of Missouri in 1906 with the degree of civil engineer. He spent several years in construction work for various steam roads, first with the Pennsylvania Railroad, later with the New York Central & Hudson River Railroad and still later with the Long Island Railroad. He then went to Mexico, where he was employed by the Southern Pacific Railroad on engineering work. He subsequently became connected with the Carter Construction Company, for which he was engaged in building the line between Cumberland and Connelsville for the Western Maryland Railroad. In 1916 he joined the Monongahela Valley Traction Company as chief engineer.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES　　BUSINESS ANNOUNCEMENTS

Stocks of Wood Tie Preservatives Are Low

Production Cut Down by Labor Scarcity —Usual Fourth Quarter Slackness Apparent—Decline in Sales

Recent sales of wood tie preservatives show a decided falling off. Although the fourth quarter is usually a period of dullness, it is particularly so this year because of the scarcity and unproductiveness of labor.

Present stocks of materials are very short and although it is replenished continually, producers are finding it difficult to quote on large quantities for spring delivery. Production is behind and has been hampered somewhat from strikes.

Buying is of an irregular nature and although prices have not advanced for some time there is rather an inclination more towards an advance than toward a reduction of prices for first quarter.

Market conditions are firm on creosote oil which is the base of most preservatives. Business has been fairly active and some contracts for first and second quarter have been signed by large producers although the price was not given. There is very little creosote available in the market at present. Prices are unchanged at 40 cents per gallon for the 25 per cent grade and 20 cents per gallon for the 15 per cent grade.

Deliveries to railways on medium-sized quantities of wood tie preservatives can be made in from one to two weeks.

Metal Market Situation

Copper Selling at 18.25 to 18.50 Cents a Pound from Producers, With Outside Market Higher

Since the last metal market report numerous changes have occurred in the price of metals. Electrolytic copper, under date of Dec. 23, is being sold by producers at 18.25 to 18.50 cents a pound for delivery at buyers' works. The unusual feature of this market is the higher price which the outside market places on its copper. These dealers have established premiums of 1 cent or more per pound for deliveries over the first and second quarters of next year. Their first quarter quotations are 19.25 to 19.75 cents and second quarter 19.75 to 20.75 cents a pound. Producers are refusing to sell to the outside market of dealers, preferring to deal directly with the consumer.

The prices three weeks ago were as low as 18 cents a pound, the lowest at which the metal could be bought since its rise of several months ago. During this recent downward turn of the market from the 23½-cent level, some large sales of the red metal have been made, and consumers in many cases have covered their requirements to a considerable extent. Of course, production in some mines has decreased in the last month, and a continued coal shortage will force further reduction, it is said.

In some cases consumption during the past few months has been about on the level of production, even where this production has been normal. Prices, of course, have been sacrificed in this buying. Present domestic consumption of copper is estimated about 30 per cent greater than that before the war, the wire drawers and electrical industry being the greatest consumers. The foreign orders are, of course, very low because of the unfavorable exchange situation.

The market for copper scrap is 1½ cents lower, commensurate with the new metal prices, and heavy wire and copper scrap is quoted at 16.50 to 17 cents.

Lead prices were advanced on Dec. 6 $3 a ton, bringing the New York price up to 6.90 cents a pound. The market is strong and producers are well booked up. The outside market holds quotations up to 10 points above that of the American Smelting & Refining Company.

Active Interest Shown in Steel Ties

Inquiries Good With Average of Sales Light—Good Delivery Quotations Now Although Future Uncertain

Reconstructed and extended track mileage is expected to be less this year than ever before. This has been partly responsible for the falling off of sales in mechanical ties. Most of the work which has been done during the past year has been forced reconstruction on pavement improvements or on account of franchises.

Present market conditions for mechanical ties show an improvement over the earlier part of the season. One manufacturer is accepting orders for mechanical ties based on the present price of steel, the shipments to be made at any time during the spring construction season. Prompt deliveries are the rule at present, although orders now pending are expected to cut quite deeply into present stocks.

Raw material contracts have been fairly well taken care of by the steel manufacturers although deliveries are gradually becoming lengthened. Only one mill is making delivery at present in less than a month, the majority of others being from six weeks to three months.

Although prices are about the same as last spring and manufacturing conditions are good, it is impossible to predict for the future on account of the condition of the steel industry. For the time being, however, present prices will be maintained although there may be revisions during the first quarter of 1920. A spurt in business is looked for beginning about the first of February and continuing throughout the year.

A considerable number of railways expect to commence using mechanical ties for the first time this year, while a number of others, who have completed several miles of concrete construction, will build extensions. Labor for track work has been scarce and can be obtained only at a prohibitive figure. There has been no difficulty in getting rails except that this year the railways have not been able to finance rail purchases and relaying rails have been rather hard to obtain.

Good Deliveries Being Made On Trolley Wire

Prices Are Holding Firm on the Finished Product—The Demand Is Only Fair

Small sales of copper wire for trolleys and transmission are the rule nowadays. The buying has been reduced to a maintenance basis and very little new construction that requires either trolley or transmission copper is being undertaken. An order placed last week for ten miles of copper trolley is the best reported for several weeks although in former times, orders for this or larger amounts were regular and rather commonplace. Copper has dropped off considerably from the war time prices of 23½ cents, and at present is holding around the 18½-cent level but this has not been sufficient to cause a drop in the finished product, the price of which remains unchanged according to latest reports. Labor is a big item and therefore has an important bearing on the cost of the finished wire.

Stocks of copper have been permitted to dwindle but at no time has there been a shortage or failure on the part of the manufacturers to make prompt delivery. This no doubt has been due to the small amount that is being purchased.

Sales of composition copper and brass trolley wire have been good and are reported to be 25 per cent ahead of last year's sales. Business is fairly regular all throughout the year, and as a matter of fact, the sales during August, September, and October on this wire have increased considerable over the corresponding months of last year and the prospects are that sales for this winter will be even better. Stocks are unlimited and any demands can be met that are placed upon the manufacturers.

Prices are dependent upon the cost of ingot copper, although labor is largely a controlling factor. The present tendency of the price, however, is to follow that of ingot copper. Large individual orders have been placed and deliveries at no time have been held up by manufacturing conditions. At present deliveries are four to eight weeks on large orders, although where customers have emergency requirements, they are taken care of immediately.

Rolling Stock

Ashtabula (Ohio), Rapid Transit Company is expected to be in the market for new cars. M. H. Turner, City Manager, is in charge of the property.

Omaha, Lincoln & Beatrice Railway, Lincoln, Neb., has placed an order with the American Car Company for two double truck cars for delivery about March 1. The cars will be equipped with Westinghouse 508 motors, General Electric C P 27 compressors, Brill 71-1 trucks and with 26 in. Carnegie steel wheels. The cars are to be used on an extension between Lincoln and Havelock, Nebraska, which will be completed by the time the cars arrive.

Franchises

Atlanta & Anderson Electric Railway, Atlanta, Ga.—The charter of the Atlanta & Anderson Electric Railway, which proposes to build an electric railway from Atlanta to Anderson, S. C., has been extended for a period of three years.

Los Angeles (Cal.) Railway Corporation.—The Los Angeles Railway Corporation has applied to the City Council, for a franchise to maintain and operate a double track on the newly opened portion of Broadway, from Tenth to Rico Streets.

East St. Louis & Suburban Railway, East St. Louis, Ill.—The East St. Louis & Suburban Railway has been authorized to use the streets of Belleville, Ill., east of 23rd Street during the month of December for the sum of $200. The permit was given in lieu of a franchise.

Northern Texas Traction Company, Fort Worth, Tex.—The Northern Texas Traction Company, a Stone & Webster property, has been granted a franchise by the city commission of Fort Worth, for double tracking its line on East Terrell Avenue from Forest Avenue to Evans Street, Fort Worth.

Track and Roadway

Sacramento Northern Railroad, Sacramento, Cal.—The right-of-way of the Sacramento Northern Railroad from Telama to Red Bluff has been purchased by the Sears & Horning Company. The right-of-way from the Sacramento River to St. John, in Glenn County, has been sold to the same company. The Northern Realty Company, holding company for the Sacramento Northern Railroad has also sold a site, at the corner of Oak and Ninth Streets, Chico, Cal.

Capital Traction Company, Washington, D. C.—J. H. Hanna, general manager of the Capital Traction Company, has announced a comprehensive improvement program for the company. It is planned to spend $1,100,000 on new equipment and track construction. The company will purchase forty new cars at a cost of $500,000, will repair and relay tracks at a cost of $300,000 and will install additional power house equipment at a cost of $300,000.

Rock Island Southern Railway, Rock Island, Ill.—The Rock Island Southern Railway has been directed by the Public Utilities Commission of Illinois to repair all dangerous bridges; to secure sufficient power to operate its cars on schedule time; to re-surface the tracks of the Aledo and Alexis branches; to repair and maintain its passenger cars in safe and sanitary condition; to repair all of its pole lines and to maintain suitable terminal facilities at Rock Island.

Tri-City Railway, Davenport, Ia.—The Tri-City Railway will build 1800 ft. of trackage on Twenty-seventh Street, south of Fifth Avenue, Moline, Ill.

United Railways of St. Louis, St. Louis, Mo.—Petitions signed by 6000 residents of Lindenwood and Gratiot, in the southwest section of St. Louis, have been presented to Rolla Wells, receiver for United Railways of St. Louis, asking for the extension of the company's system to those districts. The petition suggests that the Tower Grove line be extended for one mile west of its present turning point at Woods and Arsenal Streets to either Ivanhoe or McCausland Avenue and south on either one of these thoroughfares to Lindenwood Place. The length of the proposed extension would be two and a half miles.

Ocean City (N. J.) Electric Railroad.—The State Board of Public Utility Commissioners has granted permission to the Ocean City Electric Railroad to surrender its franchise and abandon certain of its tracks in Ocean City.

Public Service Railway, Newark, N. J.—The New Jersey Board of Public Utility Commissioners has approved the ordinance passed by the Board of Public Works of Paterson on Sept. 23 last providing for the removal of certain tracks of the Public Service Railway on Sumner Street, between Clay and Essex Streets; Essex Street, between Sumner and Beach Streets; Beach Streets, between Essex and Market Streets, and Market Street, between Beach and Straight Streets.

Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio.—The Cincinnati, Lawrenceburg & Aurora Electric Street Railroad is seeking a direct entrance to Cincinnati. The plan contemplates construction of a line from Anderson's Ferry to the Dixie Terminal in Cincinnati. The cost of a direct entrance is estimated at $750,000.

Dallas (Tex.) Railway.—The Dallas Railway which, under the terms of the franchise granted two years ago, is under bond to construct within a specified time two interurban lines each 30 miles or more in length, has been granted an extension of time in which to begin work to Jan. 8, 1920.

Dallas (Tex.) Railway. — Richard Meriwether, general manager of the Dallas Railway, has announced that all improvements, extensions and betterments now under way in Dallas will be completed by Jan. 1, 1920. These include the rebuilding of the Jefferson Avenue line from Lancaster to Polk, a distance of nearly 2 miles; rebuilding part of the line on McKinney Avenue, and the extension of a line to Oakland Cemetery out Myrtle Street.

Virginia Railway & Power Company, Richmond, Va.—The Virginia Railway & Power Company will expend approximately $85,000 on improvements to its lines in Portsmouth, Va. The improvement program was recommended by Burton Marye, engineer of the State Corporation Commission.

Power Houses, Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal.—The Pacific Electric Railway has opened large car shops in Torrance, Cal. The buildings at Seventh and Almeda Streets, Los Angeles, formerly used as car shops, will be used as a freight depot.

Boston (Mass.) Elevated Railway.—The Boston Elevated Railway has placed in service its new Back Bay loop terminal. Surface cars from the Harvard Square, Dudley Street and Chestnut Hill sections will pass through the loop, which has entrances on Boylston and Newbury Streets.

Northern Massachusetts Street Railway, Athol, Mass.—Damage estimated at $100,000 was caused to the car house and contents of the Northern Massachusetts Street Railway at Orange, Mass., on Nov. 23 by a fire believed to have been caused by spontaneous combustion in a coal pile.

Texas Electric Railway, Dallas, Tex.—The Texas Electric Railway has purchased the Union Telephone Building at McKinney, Tex., from the Southwestern Telephone Company and will

shortly begin the erection of an additional building to be used as a terminal. Separate waiting rooms for whites and **negroes will be provided, as well as** comfortable quarters for trainmen. It is expected that the new station will be **ready for occupancy about Jan. 1, 1920.**

Trade Notes

J. Benton Porter, ship-propulsion specialist, has been transferred from the Philadelphia office to the New York office of the General Electric Company.

Edward Wray, assistant general manager of the Sangamo Electric Company during the past two years, has resigned, effective Sept. 1, on account of ill health.

William L. Swormsted has been appointed manager of the Washington office of the Westinghouse Lamp Company, succeeding C. R. Whitney, resigned.

Westinghouse Electric & Manufacturing Company announces the appointment of Vernon R. Buxton to the Boston sales office as switchboard specialist in the supply department.

George F. Simons, who recently was district manager for the Detroit and Cleveland offices of the Edison Storage Battery, has resigned to enter the industrial truck field.

Lakewood Engineering Company, Cleveland Ohio, is offering three awards, totalling $1,750, for the three best analyses of the application of its new Tier-list truck.

Jensen & Garlock, Chicago, Ill., have formed a partnership and will make financial investigations, installations of systems, and will specialize on federal income, capital stock and state taxes.

Gibb Instrument Company, Detroit, Mich., announces the discontinuance of its line of electric pyrometers in order to confine its efforts entirely to the manufacture of welding apparatus.

Ingersoll-Rand Company, New York, N. Y., has established a branch office in Dallas, Tex., in charge of R. H. Brown, Jr., who has been connected with the St. Louis office for several years.

Chicago Pneumatic Tool Company on Oct. 1 removed its Birmingham office from the Brown Marx Building to 1925 Fifth Avenue, North, where a service station and complete stock will be maintained.

H. M. Byllesby & Company, Chicago, Ill., announce that General George H. Harries, who recently returned to this country after twenty-seven months active service in the U. S. Army, has resumed his duties as vice-president of the company.

Thomas S. G. Menezes, 12 Depot Lines, Karach, India, desires catalogs from engineering firms wishing a representative in Mesopotamia. On demobilization of the Mesopotamian Expeditionary Force he intends to do business in Basrah and Bagdad.

Russell Stoll & Company, New York, N. Y., have opened a Chicago office with Roy E. Shawlin as Western manager. The Chicago office will establish distribution in the Middle West on fittings, fixtures and electrical specialties.

General Electric Company, Schenectady, N. Y., recently distributed a semiannual bonus amounting to approximately $75,000 among 2000 employees of its Pittsfield, Mass., works. All of the 2000 employees have been with the company for a period of five years or longer.

Yarnall-Waring Company, Chestnut Hill, Philadelphia, manufacturer of power-plant devices, announces that L. G. Chase, formerly efficiency engineer, Rosemary Manufacturing Company, Rosemary, N. C., has been appointed mechanical engineer of this company.

Jeffrey De Witt Insulator Company, Huntington, W. Va., announces that W. D. A. Peaslee, formerly professor of electrical engineering of the Oregon Agricultural College, has joined the staff of the company. Mr. Peaslee was a captain in the engineers during the war and saw service in France.

Richardson-Phenix Company, Milwaukee, Wis., announces the appointment of L. E. Strothman as vice-president and general manager of the company. For the past several years he has been manager of the steam turbine and pumping department of the Allis-Chalmers Manufacturing Company.

The Parsons-Moorehead Machinery Company, Hostetter Building, 237 Fourth Avenue, Pittsburgh, has been organized to do a general machinery business. William L. Moorehead of this company was formerly vice-president of the Duquesne Electric & Manufacturing Company, while Mr. Parsons has been doing a general machinery business for several years.

The Chattanooga Armature Works, Chattanooga, Tenn., has just completed a portion of its plant, making an addition of 3000 sq.ft. to its floor space. The old frame building was removed and brick construction substituted. It has now complete repair shops to take care of electrical machinery and special coils. The company manufactures armatures and field coils for the different makes of motors and generators and represents the Van Dorn Electric Tool Company and the Lincoln Bonding Company, both of Cleveland, Ohio.

Hyatt Roller Bearing Company, New York City, announces the appointment of Earl E. Eby, sales manager of the industrial bearings division, to the board of directors of Hyatt, Ltd., a new company formed to market the Hyatt bearing in Europe. Mr Eby will devote his entire time to this work, with headquarters in New York. G. O. Helmstaedter, formerly Chicago district manager, has been promoted to the position of sales manager to fill the vacancy.

Canadian Westinghouse Company, Ltd., announces that H. U. Hart, chief engineer of the company, has been appointed general manager, succeeding Mr. Merrick, resigned. Mr. Merrick, however, remains vice-president and a member of the board of directors of the company. C. H. Mitchell, formerly assistant superintendent of electrical department, has been appointed assistant manager of the Canadian company's works. R. E. Cullings has been appointed general foreman in charge of the electrical department at the Essington works. H. C. Thomas has been appointed assistant to the manager of the St. Louis office.

Janette Manufacturing Company, Chicago, Ill., manufacturer of alternating-current and direct-current motors and motor-generators, is moving into its new factory building at 556 West Monroe Street. This is a seven-story and basement building, comprising 60,000 sq.ft. of floor space, or about six times the amount of floor space occupied in the old West Jackson Boulevard Building. In addition to increased space, the company is adding considerable new equipment for a much larger production. In order to satisfy the present demand, the output will be increased at least 500 per cent, according to advices from the Janette company.

New Advertising Literature

Vitreous Enameling Company, Cleveland, Ohio: An illustrated leaflet describing its R. L. M. standard industrial lighting reflectors.

Inter-State Machine Products Company, Inc., Rochester, N. Y.: Bulletin No. 500 describing its Sterling electric siren fire alarm.

Tubular Woven Fabric Company, Pawtucket, R. I.: A booklet "Proof of the Pudding," or on giving the advantages of Duraduct portable cable.

Roller-Smith Company, New York, N. Y.: Revised bulletin sheet No. 96, which covers its Columbia switchboard-type induction watt-hour meters.

The Cutler-Hammer Manufacturing Company of Milwaukee, Wis.: A leaflet telling about its line of alternating-current and direct-current drum controllers.

Condit Electrical Manufacturing Company, South Boston, Mass.: Bulletin No. 414-2 on type E-4 oil switches and circuit breakers, whose maximum ampere capacity has recently been increased to 800.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Bulletin on the Diesel oil engine, with an explanation of the principles of this type engine, and with details of the engine alone and as installed in power plants.

Nachod Signal Company, Inc., Louisville, Ky.: Illustrated bulletin on type-CD signals, intended for electric railways of nominal 600-volt line potential, equipped with wheel or sliding shoe trolley. The signals are adapted for two-way movements on single tracks. The bulletin carries catalog number 719.

OCT 20 1919
PRINCETON

ELECTRIC RAILWAY JOURNAL

Report of the Atlantic City Convention of the American Electric Railway Association and Affiliated Associations

October 6-10, 1919

Report of the Hearings of the Federal Electric Railways Commission at Washington, D. C.

September 29 to October 4, 1919

McGRAW-HILL COMPANY, INC., TENTH AVENUE AT 36TH STREET, NEW YORK

Table of Contents

of this issue

Editorials 1

The Atlantic City Convention

Pages 2 to 92

Wage Scales Must be on Reasonable Basis....... 2
By J. H. Pardee

Men With the Nerve to Tell the People the Facts Are Needed............................... 5
By Job E. Hedges

Relationship of Items of Cost Under Pre-War Conditions and Today........................ 9
By F. W. Doolittle

Can Service Costs be Collected From the Traveling Public?.................................... 14
By J. D. Mortimer

Are High Costs of Service Likely to Develop Permanent Competition?........................ 15
By L. H. Palmer

Essential Features of the Service-at-Cost Plans:

Some Features of the Cincinnati Plan—*Walter A. Draper* 18
The Youngstown Service-at-Cost Franchise—*R. P. Stevens*............................ 21
Cost-of-Service Plan—Montreal—*J. E. Hutcheson* 24

Gasoline vs. Electric Motor for Street Railway Work 27
By Norman W. Storer

The Preparation of Data in Connection With Rate Cases.................................. 29
By Clarence R. Bitting

Symposium on the One-Man Safety Car:

Safety Car a Success in Kansas City—*P. J. Kealy* 31
General Observations on the Birney Car—*J. C. Thirlwall* 33
Service and Jitney Competition—*G. H. Clifford*. 35
Standardization of Birney Safety Car—*Gardner Wells* 36

Accounting Measures to Meet Business Depression in the Industry......................... 37
By Earl A. Saliers

Fare Collection With Frequent Changes in Rates 40
By W. A. Doty

Metal Tickets as a Substitute for Multiple Coins 42
By J. F. McLaughlin

American Association Proceedings.............. 43
Proceedings of the T. & T. Association........... 53
Collection of Zone Fares....................... 68
By George Kuemmerlein, Jr.

Engineering Association Proceedings............ 69
Claims Association Proceedings.................. 83
Accountants' Association Proceedings........... 85
Manufacturers Take Important Step............ 86
Purchasing Agents and Storekeepers Organize... 87
Problems of the Purchasing Agents............. 88
Publicity Men Meet to Organize................. 89
The Value and Necessity of Publicity........... 90
By W. Dwight Burroughs

The Washington Hearings

Pages 93 to 130

Federal Commission Holds Final Hearings...... 93

Philadelphia's Answer to the Traction Question.114
By T. E. Mitten

Street Railway Situation in Pittsburgh.........116
By E. V. Babcock

Possible Operating Economies and Sales Methods 117
By Walter Jackson

What Ails the Street Cars?.................. 122
By John A. Beeler

Fair Return on Railway Properties.............125
By Edward W. Bemis

Camden's View of the New Jersey Zone Plan....126
By E. G. C. Bleakly

How the Railways Can be Rehabilitated........127
By Morris Llewellyn Cooke

Relief for Present Traction Conditions.........129
By Thomas L. Sidlo

ELECTRIC RAILWAY JOURNAL
CONVENTION DAILY

PUBLISHED BY THE McGRAW-HILL CO., INC., TENTH AVENUE AT THIRTY-SIXTH STREET, NEW YORK CITY

Copyright, 1919, McGraw-Hill Co., Inc. Published weekly. Entered as second-class matter June 23, 1908, at the Post Office at New York under the act of March 3, 1879

Permission to mail this special edition in Baltimore has been accorded the publishers by the Post Office Department

Vol. 54, No. 15 Baltimore and New York October 11, 1919

AS THE REGULAR issues of the ELECTRIC RAILWAY JOURNAL are not appearing, owing to printing conditions in New York, we have enlarged this issue of the Convention Daily to give the report of the Atlantic City Convention and the final hearings of the Federal Electric Railways Commission at Washington. When we are able to resume printing in New York, we shall begin with the issue of Oct. 4 and will follow that with other issues which have not appeared. We believe that the proceedings of the Atlantic City Convention and the study of the electric railway situation which is being made by the Federal Commission at Washington are the most important events of electric railway interest during the year. Hence, we need not apologize to our readers for devoting all the space in this number to these two vital topics.

Lessons of the Convention

THAT a brighter day is dawning for the industry seemed to be the happy thought of the thousands of delegates who left Atlantic City last week at the close of the thirty-eighth annual convention of the association. A note of optimism was in the air, and despite the dangers which still threaten the railway utilities, the change in public attitude toward transportation agencies now apparent appeared to have given a hopeful impetus to the men on whose shoulders the burden has been carried during several critical years. From Hedges to Harries this call for closer co-operation and courage was sounded in the various meetings.

While the general registration was somewhat below that of the 1916 gathering, the attendance at the sessions of the American Association as well as of the affiliated associations was larger and more enthusiastic. As expected, interest in fare problems predominated. The members let it be known that the thorough threshing out of the electric railway problems in Washington had begun to show results in their own localities. Leaders of the industry who gave their time and effort to work on the Committee of One Hundred must have felt compensated in the general acknowledgment that their endeavors had borne fruit. Another notable feature of this convention was the active participation of manufacturers in several association meetings—particularly in the discussion of safety car and fare-collection problems. Co-operation of this sort will continue and be productive of helpful suggestions. Action taken last week allies the manufacturers with the A. E. R. A. on a permanent basis, and the industry will be better able to cope with its problems because of this solidified organization.

General Harries referred to the contest between the irresistible and the immovable—the irresistible increase in operating expenses and the immovable rates of fare. Those who were fortunate enough to take part in this convention must feel that while operating costs may not decrease for years to come, the fare situation is improving. The public has been aroused to a consciousness of the truth. The electric railways will be saved. These thoughts have strengthened the morale of railway leaders. With a new sense of courage the forces of fair play must prevail.

The Outcome of the Washington Hearings

THE Washington hearings have been concluded. The all-absorbing question is now as to the outcome. A vast amount of testimony has been presented and certainly the commission has heard about every possible conception of the situation, even some so unsound as to be ridiculous. But there has been full and free recitation of facts and opinions from eminent authorities, and based on these, whatever the commission may recommend as an unbiased national tribunal free from all local prejudices and petty politics, cannot but make a profound impression upon the public in general. It seems to have been so thoroughly established that the difficulties of the railways are very real and are the result of causes largely beyond their control, that the commission's report must surely endeavor to set the public right on this and on the essential character of the industry. And we believe the work of the commission will have a great influence for rational and fair dealing.

Perhaps this probable phase of the report, serving to clarify the public mind and tone down its antagonistic attitude, will be the greatest accomplishment of the commission's sincere endeavor. The commission is without direct power and can only give shape and the force of its eminence to broad recommended principles for the guidance of local communities in working out their own specific problems. So, with the report of the Federal Commission made public, attention will again revert to individual companies.

It seems to us after having heard the full hearings, that the settlement of the individual railway problems will in general rather naturally follow two consequences. Those companies which can restore their credit under a reasonable service-at-cost franchise providing an automatically flexible fare and at present a slightly higher fare and income, will go on as private corporations. Those companies which are unable to restore their credit will be forced to the use of the credit of the state or municipality, which sooner or later means some form of public ownership.

That there will be considerable tendency toward the latter solution seems inevitable, for the public in some communities is so antagonistic that it would do anything rather than help the company continue in control. But the way is surely being paved for better conditions of operation under either the one plan or the other, and, broadly speaking, the end of the black clouds can be seen in the distant sky, from under which our essential industry must emerge and be restored to a sound basis. There will be more receiverships, but undoubtedly the anxiously awaited report of the commission will be the beginning of a better era.

Wage Scales Must Be on Reasonable Basis

In an Address Before the American Electric Railway Association Atlantic City Convention President J. H. Pardee Outlined Principles Which Need Consideration in Wage Adjustments—He Paid a Tribute to the Work of the Association's "Committee of One Hundred" and to the Loyalty of the Manufacturers in the Membership

THE thirty-eighth annual convention of the American Electric Railway Association was held at Atlantic City, N. J., on Oct. 6-10. The first session was called to order at the Greek Temple about 10 o'clock on Oct. 7 by President J. H. Pardee, who presented the annual address of the president. Among other things President Pardee said:

The past two years have been fraught with events of great moment to the world. The changes set in motion by the war have had a marked effect upon our political, social and industrial life, and upon no industry has this effect been more pronounced than upon that in which we are all engaged, so that even the continuance of the service which we are rendering is in doubt.

The question as to the continued life of the electric railway industry is in the first instance a question of cost, whether the price of the product which we are producing can be brought into such relation to its cost as will enable us to furnish the service which the needs of the public require and to attract into our business the capital necessary for the rendition of this service.

J. H. PARDEE

It is evident that the predominant factor in this is the cost of labor, and that the entire problem of so-called "low fares" is largely a problem of increasing the efficiency of labor as well as management and of adjusting wages upon a scale commensurate with the service that is performed. The return that capital shall receive does not primarily enter into the proposition at all. Today this return has practically ceased, with the result that the credit of these utilities is so impaired that the money needed for extensions and improvements and the introduction of economical devices, all working to the reduction of the cost of service, is no longer forthcoming. Investment in public utility enterprise is not and cannot be controlled by the government. Those who possess savings, which are capital, are free agents as to the disposition of those savings, and they will invest them only in those enterprises where a fair return is in prospect and where the safety of investment is assured. In consequence, these increased costs must be borne either by the users of the service, through an increase of fares, by a reduction in the cost of operation, or by the taxpayers through subsidies, or by all three. As a practical matter, however, under present governmental supervision, it is the public that pays, either through increased fares or decreased service, so that the question of wages is a matter between the wage earner and the passenger.

Excessive wages are a tax upon the fares, inefficient labor is similarly a tax and the adjustment of wages is a matter which vitally concerns those who use street railway service.

In this adjustment the public is represented by the management of the electric railways. The efforts of these managements towards maintaining a reasonable wage level is exercised for the public, and the railways thus become the agents of the public in the disputes that arise in consequence of labor's demands.

Determination of Wage Scales

In the negotiations which are constantly going on between labor and these public utilities, the utilities have, through a combination of circumstances, been barred from bidding in the open market for the labor necessary to operate the properties. When the national administration set up the National War Labor Board as a body arbitrarily to fix the recompense for labor, it but accelerated the development of a method which was even before this time establishing itself in industry. The war has ended and the activities of the War Labor Board have ceased, but the method of fixing wages through arbitration and by the award of some tribunal has been so firmly planted that unless conditions vastly change, it is this method that will be pursued for a number of years to come. As practical men we must accept, for the time being at least, the system which has thus come into being, and our efforts should be directed towards perfecting this machinery so that substantial justice may follow, not only for the wage worker, but for the public, which pays the wages and the representatives of which we are.

It is evident to me that in some way and somehow standards must be created by which wage scales may be formulated and the amount and character of service rendered for these wage scales be definitely determined. In the present crisis which confronts us, efficiency of labor as well as management is essential to a proper solution of the electric railway problem. The public has a right to demand from the management, and from labor under the management, the highest degree of efficiency obtainable. It is as true in our business as it is true in any other branch of human activity that the prices of the product and the price paid for creating the product depends upon the amount of production, and that we cannot continue to decrease production and increase wages unless the price obtained for the product is vastly increased, which in the last analysis means that the rewards for this service shall come, if they shall come at all, from the labor and efficiency in other branches of industry.

Collective bargaining is the basis of the method of wage adjustment under which we are now working, and collective bargaining argues a monopoly. The law of supply and demand is abrogated and the law of competition as a regulator of prices is set aside. Regulated monopolies are in many instances desirable. The business of local transportation, for instance, should, in the interest of the entire people, be a regulated monopoly, but an unregulated monopoly is abhorent alike to economic law and to the system of government under which we in the United States are living. Arbitration between one responsible party and one irresponsible party has never and can never be productive of permanent good or for long serve to settle disputed questions. If labor is to enter into an agreement as to its wages, then labor must assume responsibility for the carrying out of the agreements. If labor is to be allowed the privileges of collective bargaining for its services, then the agencies through which their collective bargaining is done must be endowed with some corporate personality which can be held to account for the maintenance of its agreements and the carrying out of the awards made by the tribunals to which it submits its claims for adjudication. If the privilege of collective bargaining be granted to labor by the public, steps must be taken to prevent that privilege from being converted into a bludgeon with which to coerce the public into compliance with extortionate demands. Strikes upon regulated public utilities are not directed against capital to secure a fair share of the profits of the industry—they are in fact directed against the public. They are, when proper means of arbitration are provided, a crime against the public and should be so treated.

These are the facts of a situation that is too little realized by the people of this country, who have been educated to the idea that the question of wages is a question as between capital and those who work with their hands and have lost sight of the fact that they as individuals and as a class are directly interested in the great problem. In the case of the public utilities, already regulated and already, through the operation of laws or because of economic reasons, cut down to the lowest possible return that will secure the capital needed for their continuance, the issue is particularly clear-cut. It cannot be too forcibly brought to the attention of the public that such increases in street railway fares as have occurred in this country are due not to the demand of capital for increased return or for the continuance of the return already being received but to the necessity of providing revenues to meet the increased demands—and I am not here arguing as to the justice of these demands—of the wage earners on the various properties.

HEARINGS OF FEDERAL COMMISSION

Before this condition or any of the conditions which are now causing the collapse of the local transportation utilities of this country can be corrected, the education of the people of the United States to the true state that exists is absolutely essential. An immense step forward in this process of education has been accomplished through the deliberations of the Federal Electric Railways Commission, appointed by the President of the United States. I shall not refer in detail as to what has thus been accomplished. The report of the Committee of One Hundred to be presented to you later in the session will explain what the commission has done. Its report has not yet been made, and we do not know what remedies it will suggest for the solution of the questions submitted to it for investigation. We do know, however, that it has succeeded in awakening the public to the realization of the fact that the electric railway problem is national, in that its causes are national; that it intimately affects the interests of each individual, and that unless it can be satisfactorily solved the entire economic structure of the country will be disturbed, and that a readjustment of relations between these utilities and the public is essential, not only to owners and investors in the properties, but to the communities that are served.

We know, moreover, that a direct solution of the problems through the federal commission or through the national government is impossible and that the process inaugurated by the Washington hearings, to become effective must eventually be localized, so that the facts elicited will be brought home to each local situation. I am convinced that the association would be remiss in its duties to its members and to the industry as a whole and the public, if it ceased its efforts with the termination of the life of the Federal Electric Railways Commission and did not further extend this process of education which we all recognize as distinctly beneficial.

I believe that the most helpful thing in connection with the deliberations at Washington was the fact that there was a fair and impartial tribunal before which all interests could appear and could give voice to their ideas and present the facts of the situation as they saw them, and it is indeed remarkable that among so many diverse interests there should be such unanimity of expression as to the fundamental principles involved.

PUBLIC EDUCATION REGARDING FACTS URGED

My suggestion to this association is that it should endeavor to extend as far as possible, and by methods akin to those that have been used, this process of public education, that it should not only lend its assistance, but should take active and vigorous steps in securing the creation of public forums in various sections of the country before which the same issues may be presented more and more localized, and before which there would be the same freedom of discussion as has given to the federal hearings their greatest value. The great mass of valuable information, the enormously useful concensus of opinion which the federal investigation has brought out should not be allowed to become buried in the formal archives of the commission. It should be put into use. The principles enunciated have already received a national application and should be given, next, a sectional and then a local application, in ways which I think will readily suggest themselves to those who give the matter thought and consideration. It is for this reason that I recommend to you the continuance of the Committee of One Hundred until such time, as, in the opinion of the committee itself, its usefulness is at an end.

I cannot too highly commend the great work which the Committee of One Hundred has accomplished. Its organization was, in the first place, and the success of its efforts was, in the second place, only possible because in the American Electric Railway Association the industry had an organization equipped to safeguard its interests and take constructive action in its behalf. The present usefulness has never been more thoroughly demonstrated. At the midyear meeting of the association I asked for co-operation of both the member companies and the individual members in carrying out the work which was before us. A splendid response was the result.

RELATIONS WITH MANUFACTURERS

In connection with this matter of co-operation, I desire on behalf of the railway members of the association to publicly express their thanks to the manufacturer members for the magnificent way in which they have supported the activities of the organization. The records show that practically the same group of manufacturers have been behind the organization in all of its numerous enterprises in behalf of the industry. By their membership, by their contributions and support of the War Board, the Committee of One Hundred, and by their participation in the splendid exhibit which forms so important a part of this convention, they have demonstrated their loyalty. It is incumbent upon us to acknowledge the spirit of co-operation which has brought into closer touch the operating and the manufacturers' interests centered in the industry. It is a propitious augury for the future usefulness of the American Electric Railway Association.

It was through this co-operation alone that we have been enabled to do what we have done. A continuance and an extension of this co-operation is essential at the present time. In the main, we all face the same difficulties and the same problems. It has been shown to us what we can do when we act together. It has been proved beyond the possibility of a doubt that the association, of which we are members, can be of vast assistance, not only in connection with the greater matters of policy, but with the more intimate details of the operation of the properties intrusted to our care.

OTHER ACTIVITIES OF ASSOCIATION

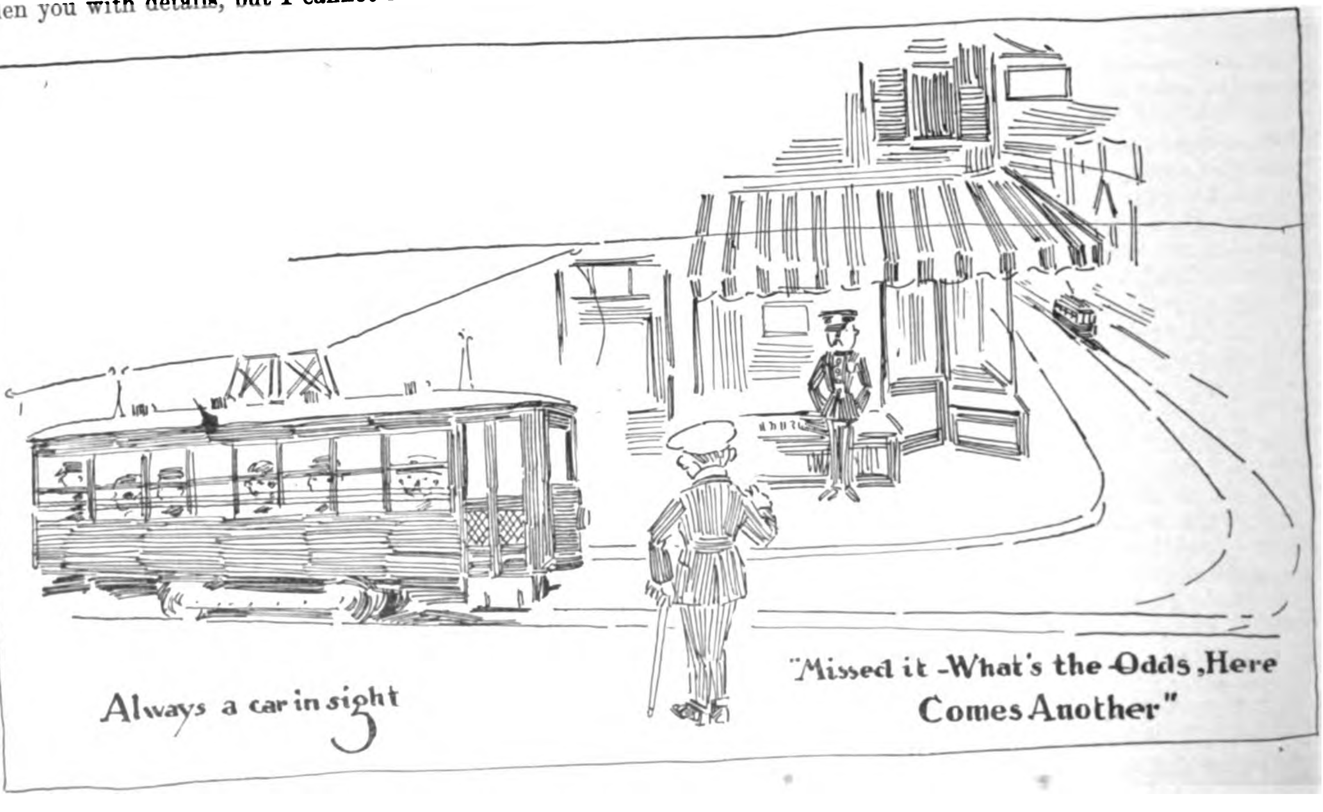
You will later hear of the work that has been accomplished in connection with the subject of railway mail pay and of the interest that has been shown in connection with federal legislation. The thorough presentation of the case of the electric railways in both of these instances has been made possible because in the association, the industry had an organization equipped to act in its interests and act promptly.

The "collection and dissemination of information" was one of the objects for which the organization was created. During the past year the service performed by the association in connection with this matter has been widely extended and it is still being extended. A special engineer, whose qualifications for the task are beyond dispute, has been appointed to take charge of this service, and as a result, the work has been more than doubled. I do not propose to burden you with details, but I cannot refrain from calling attention to the fact that more than 1000 inquiries concerning all the details of electric railway operation have been promptly and completely answered through the office of the secretary. The value of this service to all electric railway operators cannot be easily over-estimated. The many letters of appreciation received from executives to whom this information has been furnished indicate a realization of its value. The association has become, as was intended by its organizers, a clearing house of information. There are great possibilities in the extension and perfection of this branch of the association's activities. In many other ways and in many other respects the association can be of increased service to its members.

The extension of the present activities and the addition of new activities means that your organization must be strengthened both financially and in the matter of membership. The dues now being paid are lower than those in any other national association of the kind. They require readjustment, and I recommend that there be appointed at this session of the convention a committee of five, who shall consider the question of dues and shall report its findings at Thursday's meeting.

I desire, at this time, to make acknowledgment to Secretary Burritt and his efficient staff for the work which he and they have performed for the association and for the industry during the year. To Mr. Burritt's untiring energy and his executive ability is due the fact that we have been able to accomplish the very many things that have been accomplished during the past year. I feel that, personally, I owe him a debt of gratitude—a debt which is shared by all member companies and by those electric railway companies which are not members of the association.

Gentlemen, I am an optimist as to the future. I believe that the clouds are clearing away, and that by wise, intelligent and constructive action, through the machinery of this great association, we can hasten the day when the essential industry which we represent shall be re-established upon a basis which will enable us to perform the functions for which it was created and will assure those who, through local transportation companies, loaned their savings to the public service, a reasonable and an assured return.


Always a car in sight
"Missed it - What's the Odds, Here Comes Another"

Men with the Nerve to Tell the People the Facts Are Needed*

By JOB E. HEDGES
Receiver New York Railways

COPYRIGHT BY PIRIE MAC DONALD, NEW YORK

Whatever Happens Wrongly in This Country Is a Matter of Default—The American Public Will Act Fairly if It Is Informed as to the Facts; It Should Have the Opportunity of Drawing Its Own Conclusions from the Same Major and Minor Facts as Are in Possession of the Utilities—The Situation in New York City and Some of the Causes Leading Up to It, Are Discussed

TO BE entirely consistent I must disclaim any technical knowledge of this industry except what has been gathered by some five or six months of a rather tempestuous career, during which I have been threatened with indictment, a strike, lack of fares and almost everything you can think of. But be that as it may, I am like the president of your association, an optimist, and I have to make a few reflections, and you will pardon me if they are offered gratuitously. But I am still of the belief that however many points gathered together may be useful to the world the ten commandments still have validity.

I was in a gathering yesterday of the street railway interests in New York City called together by the Public Service Commissioner, in which a suggestion was made that there should be a congregation of minds and thought and some solution offered which might bring order out of chaos in the street railway situation in New York City. In the midst of that hearing a letter was read from the comptroller of the city, which I mention merely by way of illustration, in which, speaking for the administrative board of the city, he alleged that there could be no solution of any kind in which the city participated unless the Federal Court reversed itself on all the positions it has so far taken, and that those who sought higher fares should have orders to restore conditions to the situation in which they were, and the city should be made a party in the receivership.

I see by the morning papers that proceedings for contempt of court, based on that statement, have been instituted. That is not a part of my thought, except to show the suggestion and illustration. And I want to point out that the president of your association is responsible if my remarks are not entirely technical, because he gave me that thought in one of his suggestions, and the thought I have in mind in this connection is that we must go on with this question of publicity until the Committee of One Hundred, indeed, shall have done its work. Permit me to say, that the Committee of One Hundred should never be discharged, and I will give you my reasons, which are the only excuse I have to offer for my being on my feet.

Difference Between Theory and Practice in Government

It is very easy for men in the intricacies of competition and in the diversified industries of this country to forget general principles and to substitute personalities for ideas, and one of the words I want to interject at once into this discussion is the word "politics," and I want to interject it in its broadest sense, its most wholesome sense, and in the sense of its being a governmental necessity.

The difference between the theory and practice of our form of government is antipodal. This country is founded on the proposition that every man is ready, able and willing to vote "yes" or "no" on any topic. That would be so, were it true. The fact that he is not—the fact that most of them never can be and that many of them do not want to be has nothing to do with the theory, but it has much to do with the activities of men who are able to, and must, bear the burdens of the general average.

There is no topic in this country from the street railways to any other topic, in its final essence, which is not a political topic, and I want to make myself very clear that I am not talking of anything that bears on partisanship, because I am a very ardent partisan.

There are only two relations—and I am not trying to be academic—in this country that are unaffected by the casting of the ballot. One is the matter of worship, and the other is the privacy of the home. There is no other human relation which is unaffected, directly or indirectly, by the casting of the ballot. There are few questions which arise in this country that can be considered economic questions of themselves; academically, yes; theoretically, yes; but to be put in operation they must follow the casting of a ballot that places somebody in a position to speak officially on something that affects the community at large and affects every possible ingredient of it.

Whatever happens wrongly in this country is a matter of default. It happens because somebody did not do something to prevent somebody doing something that he did and when it is all over we pass resolutions, repledge ourselves to the nation, condemn somebody, disperse and go home and as a rule tell the family that we made the motion in the meeting.

New York City Situation

And that simple child-like process has been going on for years, until the other day on the east side in New York City, in explaining the matter of the increase of fares, owing to the withdrawal of certain lines there that were not paying, I made the statement that I could not see why I had any right to operate those lines. I could not in the simplicity of my thought understand what right I had to use capital for operating expenses. And having decided that I suggested the matter to the court, and the court said: "Your position is sound and you will not be directed to operate those lines." Therefore the honest proposition was not to do it—that was perfectly simple.

I met an assistant district attorney of the city of New York and he commented on the order directing me to withdraw the service on those lines and he suggested that the time had now come for the withdrawal and recall of judges by the rope, the same as was done in the time of Charles the Second. His history was a little inaccurate, as well as his ideas. He subsequently made that statement in an open meeting. That statement attracted a total of about three columns in the New York press. In other words, a sworn officer of the law sought to inculcate the doctrine of physical force in this country, and his utterance attracted just about that degree of attention.

---

* Abstract of address presented at meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 7, 1919.

Now, I cannot see any reason in the world why any topic of any kind affecting any industry should not be discussed in the open always. I attended a meeting yesterday in which it was suggested that we talk behind closed doors. It did not make any difference to me where we talked or what was said, provided it was said. The most terrible thing to face today is fact.

Now, here is a great industry which exists all over the United States affecting everybody. The troubles affecting this industry are widespread. They go to securities, they go to domestic and civic comfort, they go to the question of rents, they go to the question of orderly conduct, and this problem is just getting before the public mind.

I heard a judge over in New York, at this meeting I referred to on the East Side, a Municipal Court judge, make the statement that he had visited all the main cities of the United States (he made this statement with a left-hand gesture), and while rates are being lowered in many of these cities and the companies are making money at a 5-cent fare, he said that he did not see why the rates of fare should be increased in New York City. Somebody asked me why we should ask for more than 5 cents in New York, while they were getting transportation for 3 cents in Cleveland. Out of my simplicity and inexperience I said I could not see any reason why they should, except they were not getting it for 3 cents in Cleveland. Another man said: "Should a railroad company violate its contract when it has agreed to carry passengers for 5 cents?" I said, "No, absolutely they should not." Then the question was: "Why are they doing it?" I said: "They are not doing it." Then the query came: "Well, what is the trouble?" And I replied, "They just are not able to do it, but the contract remains just the same." Then, one of the gentlemen said: "Mr. Hedges, if a man makes a contract to manufacture a certain number of suits of clothes for a certain price and then the price of material and labor rises, should he continue to furnish the clothes at the same rate he contracted to furnish them?" I said, "Sure, there is no question about it, but suppose he does not have the cash? What do people over on the East Side do in this clothing business? You just call a little meeting of creditors."

Then they understood it. Then I told them that as the man has some material on hand, and as somebody wants the clothes and as the creditors do not want to sell the material at less than it cost, they form a committee of creditors and let the man continue in the business.

Then I said: "You make 6 per cent over here, don't you?" and there was an audible smile over the room, and I said, "Then you just let the man go ahead and manufacture the material he has on hand, give him a little relief, and he manufactures and sells the clothing, and after that they decide whether they will let him continue in business, and they all have an interest in it."

RESPONSIBILITIES OF CAPITAL

Now, I do not know much about capital, never having had much. I had never been in such close proximity to the "interests" as I have been since I have been a receiver. I have never before been so near Wall Street and men of large sums of money, and I have very little respect for the courage of men of substantial means and substantial business. I am a great believer in the synchronizing of the brain and spine. Most of these men seem to devote their energies to securing these large sums of money and letting the republic go on as it will. They usually try to get enough money to take care of their progeny, and let the public take care of itself.

I am not worried about the man who commits violence. I am not worried about the man who sets fire to a house, or tries to. He will be taken care of by reason of the righteous indignation of the people, but what this country needs most is some plain substantial people of nerve who dare to tell the facts and have confidence in the people and understand them and can talk in a language that people can understand. This technical business is all right for "us" technical people, but it does not get anywhere except with the technical people. We are a minority, and the majority cast the votes, and you cannot get by the vote proposition, either.

A lady called at my office the other day a little confused. She said she understood I was the receiver of the New York Railways Company. She said that she held some stock in the Interborough and was a good Democrat. Naturally, I use the word "good" advisedly. She was a lady and an enrolled Democrat in the organization and had fought her way on the general committee. She heard a candidate for the Assembly in her party utter certain remarks, and she came down to tell me about them and gave me a written record of them. The statement was as follows:

> **"Mr. ———————, in his speech, said that Hylan and the administration intended to wreck the street railways of this city and take them over for us, then raise the fares, and that the revenues so received would come into our own pockets"—it was not certain whether he meant the public or not—"and then see the patronage we would have to give you all."**

Now, in order that there shall not be the slightest touch of partisanship in my remarks I want to state that the County Committee in New York representing the distinguished party of which I am a humble member in its resolution declared that the street railways of New York could carry passengers at 5 cents and make money. It did not happen to know anything about it. It had made no investigation about it, and the man who wrote the resolution could not understand it if he had made an investigation, and it was a cheap way to get cheap votes, from cheap people, for a dishonest proposition.

It is not necessary to argue economic propositions when these things are going on.

REASONS FOR PRESENT UNREST

Why is there the unrest in this country which exists? Let us talk like home folks for a moment. The reason is that after 143 odd years we have not Americanized this country. It is no better off, so far as the American spirit goes, than it was fifty years ago. We must have people from the other side—they are desirable, but the whole thing has been allowed to go by default, until what we suffer from is intelligent men who are morally inactive, and who are competing with men mentally active without morals, and the great quorum is the uninformed general public which is not given the facts.

When men can go abroad in this country and talk about a unity of title and a right without an obligation, the country is in danger, and we know as a matter of fact that the form of government set up in Russia was conceived in New York City by a man who went up and down in the East Side and preached that doctrine and was allowed to do so without molestation because it was no one's judgment to stop it. Under such circumstances we need not be disturbed in our own minds because the general public is disturbed.

RAILWAYS WILL BE FORCED TO STOP

This association is interested in an increase in the rates of fares on electric railways. Where is all of what I said pertinent to that problem? There is not a person who can ride for 5 cents who would not like to ride for 4 cents for the rest of his life. No one is going to be unduly active in giving up any extra money for fares, yet it is the general consensus of opinion from men who know that the railways in New York City cannot continue to operate at the present rate of fare—it cannot be done. It cannot be done, and that being the case, what is going to happen?

I only know what is going to happen in my situation. When my cash balance gets to a point, which it will in about ninety days, where I cannot maintain the reserve I should maintain and continue solvent business operations, I am going to ask the court to stop the running of the cars, because it would be dishonest to run them under those circumstances, and I refuse to be a crook for popularity. I believe the American citizen on the average is on the level, and I want to state, with great seriousness, that the problem in this country is the problem of getting the facts on any single situation into the minds of all the people so they can draw their conclusions from the same major and minor premises, and then the problem is solved.

HUMAN ASSOCIATION A MATTER OF CONTRACT

This question of human association is a matter of contract, not of choice. It is not one of expediency and business efficiency, it is a matter of contract. Let me illustrate without being too academic. Every once in a while we refer to the Constitution of the United States when we cannot think of anything else to talk about, usually about election time, and abandon it after that. We say we are the greatest people in the world. So we are, when we are operating. That constitution has three very simple and childlike and fundamental things in it that we have all learned by heart and pay no attention to. They are the right to life, liberty and the pursuit of happiness.

That is just as simple as daylight, but I want to lay down the proposition as a matter of philosophy and government of law that there is no such thing in this nation under the constitution as a right without an obligation, and the demonstration is simple. If I have the right to life, liberty and pursuit of happiness you have it also, I cannot have it alone. If I have it it is your obligation to recognize it, because you admit the proposition. If you have it it is my obligation to recognize it, because otherwise I have no right to it. You see, it is perfectly simple. Therefore, we are never going to settle the question of labor and capital by any formula that was ever organized by man in Washington or elsewhere until every human being recognizes and admits as a part of his active open life that his first obligation, after that to the God that made him, is to the government under which he lives, and when he recognizes that, the rest of it follows as a matter of course, because it is a human compromise within limitations fixed by law.

That is one of the lessons I want to bring here, because I believe in it profoundly.

HOW A STRIKE WAS FACED

When I saw an announcement that the men were going to move for a strike on my lines shortly—that is the Court's lines—I did not know what to do, so I thought it out quietly according to general principles, leaving out the fact that I am a receiver of the railways. So I wrote a little cordial note to the men on the lines, and told them man-to-man like, that there were only two things I could see involved in the situation. One was whether a human being could work for another human being at a rate he agreed to work for, and the other was whether property was inviolate, and I intimated that as the law furnished people to substantiate these things, if anybody failed in his duty I would ask to have him removed from public office. It struck me that these were simple propositions, and I used the only instrument of law furnished me, the only method by virtue of which I could protect people who had a right to look to me for protection.

I then sent that letter, and a day or two after my letter was sent to the District Attorney charging me with conspiracy to force a man to do something that the law said he ought to do, and up to the present writing I have not been honored with an indictment on that proposition. Now, that is not uttered by way of jest, by way of referring to any individual, but by way of saying, through an illustration what I want to say, and that is I believe the American people are sound at the core if you go to them man to man and talk to them in a language they can understand.

What is the use of talking about economics? What is the use of discussing whether you have a 5 or 6-cent rate of fare, or any cars? We must get back to fundamentals, and these fundamentals are the responsibilities that all men must assume, the capable men and the less capable men, in the solution of these problems, and they must be approached with an honesty of purpose and fairness of mind.

Now, that is one lesson I have to bring here. I do not know much about it. I do not know much about a good many other things connected with the business, like electrolysis, and I do not care much about it. If you cannot get a man to put in the ballot box a ballot that is to elect somebody to a position of responsibility who will be mentally, morally and intellectually on the level, it does not make any difference about these reports. They are temporary relief to the superheated, solicitous mind.

You may not have heard of it, but I once ran for Governor, and the fact I am here proves I was not elected. The man who beat me was impeached—it was not my fault—but I went through a campaign without making a misstatement of fact or making a compromise I could not carry out, and when men will trade applause for untruth and will seduce the uninformed, you do not need to talk about Bolshevism in this country. The intellectual Bolshevists are the men in this country who are the troublesome element—the men of outward and visibly interior decency, whose actual contribution to the decency of life could be summed up in a regret.

THE FARE QUESTION MUST BE SOLVED

We have all got to get down to business, whether we want to or not. This fare question is going to be solved, of course, sometime, after a lot of money has been lost and after a lot of people have been impoverished who were not responsible for any of the conditions. The main argument I have heard in New York against an increase in fare is that somewhere, sometime, somebody took some money from some one who did not have title to it. That happened some years ago. As I recall things through reading about them there may be something in it. I do not know, but you do not have to give up religion because you catch a minister taking a drink. I do not understand that the divine ordinance of matrimony has to be abandoned because Eve made an error of judgment on a moonlight night in the Garden of Eden.

But I cannot get up any sympathy, and it is perfectly apparent I am not a candidate for office this time, because if I ever do run again I shall run on the platform of telling the truth, and I have not any sympathy for a man with a lot of money who howls because somebody else is doing something somebody else can understand.

We have just got through the war. I remember years ago that in our campaigns we discussed a question of having an army and a navy. The people said: "No, we cannot do that, that would breed militarism." That was not the reason—that was the conversation. The reason was that we would not pay the taxes, and we saved a few hundreds of millions of dollars at the expense of a half score of billions of dollars and 250,000 odd dead and maimed soldiers. This is the greatest post-mortem country in the world.

Then we used to talk about our merchant marine. The reply to that was, "no," and the no was pretty universally expressed. The reason given was that that would mean fostering industries at the expense of the government, paternalism. That was not the reason. The reason was we could not figure out the advantage per capita, and therefore we did not do it. And for that reason it was necessary for us to hire the vessels of other nations to help us carry our soldiers over there to prevent their coming over here.

The gentleman who received the medal this morning had a topic for his paper which is very profound, and profounder than many of us appreciate, "do your bit." And the one thought I want to leave here is this: While we are talking about efficiency and electrolysis and a lot of things like that, which are all right, do not let us forget that these are academic things of no value unless they are applied to something that somebody understands.

PEOPLE MUST BE EDUCATED

Now, the American government is being functioned largely today by people who think differently from what we do, do not know our institutions or are indifferent to them, and we are surprised when we get in the midst of a great topic like the question of rates of fares for the purpose of continuing a great industry, when there is not an immediate response on the part of those in public life to assist in the problem. It is an economic principle, politically administered, that is what it is—the question of fares always will be, and if they should be raised tomorrow in the city of New York, 6 or 7 or 8 cents, to meet the requirements of the return on investment, the return to stockholders and the payment of interest on bonds, the discussion of the merits of it must be kept up or it will be undermined.

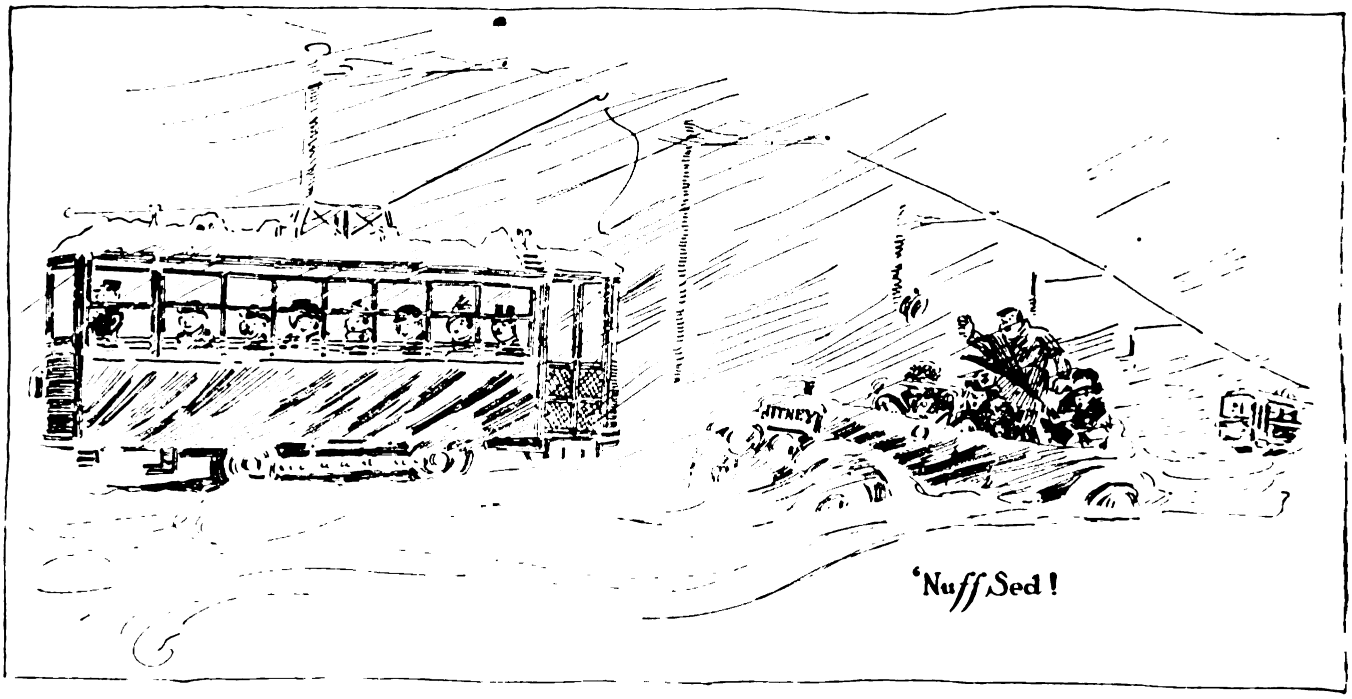
The penalty of doing business in the United States of America is paid in the price of educating the public to proper realization of the problems involved in that business, and a man who fears to do it, lest it will cause a little row, the man who is timid about it, who fears that his bonds will fall off three-eighths of 1 per cent or possibly 20 per cent, or he may lose a stockholder, who may disagree with him, does not appeal to me. I may be wrong in that, but if men of substance have not the nerve to get back of these problems and make them understood and appreciated by the less intelligent part of the community, and the people who are less endowed with this world's goods, the problem will be the same.

The greatest thing in the United States today is to be the chairman of the executive committee of an uplift society. It is becoming a profession. Some one has to do it. I do not think that the man of limited means is disturbed because another man has a large amount of money—I think what disturbs the man with little money is the vulgar display of wealth surreptitiously gained. Every man owes it to every other man, as a civic proposition, so to conduct himself and his business and human affairs that he will not disturb the civic contractual relations between citizens predicated in the constitution.

The man of mental substance or social substance, real or alleged, who is afraid to argue the proposition out before the general public as against the alert, active, aggressive man without principles is no better off than that man, when you consider the thing from the standpoint of usefulness to the community.

EVERY RIGHT CARRIES AN OBLIGATION

In closing I want to say a word, and I say it without any pride of opinion. I have too much intelligence not to know that in five or six months a man cannot pick up information or acquire knowledge of things and events that justify him in talking to other people of wider experience in giving advice. But I do know that beneath all business, beneath every combination in this country, beneath every association as a part of the antagonisms or what not, is a very great fundamental proposition centered in this thought—that in this country there is no such thing in law, or constitution or judicial interpretation as a right without an obligation. And that obligation demands as a matter of civic uprightness that men with intelligence and responsibility shall go to the great body of people, who are just as well intentioned in the first instance, but with a less advantageous opportunity of securing information, and telling them man to man what it all means, and they will respond. Then these difficulties, which will always exist more or less, while human people are alive, will be smoothed out, and then we will not have to settle so many things academically. It is a good deal better to have something you own, and not be nervous when a stranger taps you on the shoulder, than it is to have a lot more and have it taken away from you.



'Nuff Sed!

Relationship of Items of Cost Under Pre-War Conditions and Today*

The Effect of Higher Costs of Labor and Materials on Operation Are Analyzed and Illustrated by an Example—Movement Charges Have Increased More Rapidly than Terminal Charges—Effect of Minimum Wage and Higher Pay for Overtime on Rush-Hour Cost

BY F. W. DOOLITTLE
Milwaukee Electric Railway & Light Company

THE fact of high prices is one that does not need to be dwelt upon for emphasis today. With exceptions so few as to be negligible, prices today are so much higher than those existing in 1914 that all industry has found it necessary to rearrange the budget of revenues and expenditures in order to continue in existence. Probably no single fact of recent history has been discussed so fully, and with all so ineffectually, as the high cost of living. These high costs are both a cause and an effect. High prices for food and clothing, for rents and service, bring about increased wages, and these increased wages in turn make the cost of food and clothing and all other commodities into which wages enter, higher than before.

The electric railway industry has been before the public with a schedule of increased costs of labor and materials, continuously during the past three years, and in many instances, the revenue of the companies has been increased substantially because those in authority have realized that the increased costs must be met if service was to be continued. That continuity of service is the persuasive reason for granting relief, appears to be a fair conclusion, because public authorities have generally permitted such increase in revenues as would tend to provide the companies with funds to meet increased wages, increased cost of power and increased cost of materials and have stopped there. Very little consideration has been given the increased cost of money, for the money which is already invested must stay in the industry, and the new money necessary to permit the industry to expand and serve prosperous and growing communities is a requirement relatively remote in the minds of public regulators. Consequently, relief has not been granted to the extent that the company might compete in the open market for funds with which to extend its service to meet the expanding needs of the communities they serve.

It may be urged that it is idle in view of the general consciousness of high price levels to discuss their cause, yet the persistence of high costs is a matter of great importance. It has been said, and not infrequently, that existing high costs are temporary and that the industry should bear the burden during the few years when these costs will obtain. It would be a rash individual indeed, who would publicly announce his convictions that costs would never be lower, yet it is the opinion of many who have given this matter careful thought that the present high prices are likely to remain for many years, because the process of fattening the anemic dollar is one which cannot be hastened and which is beset with difficulties, the full extent of which is little realized. If the present high costs are but a matter of a few months, the problem of maintaining the solvency of the industry is far different than it must be if lower prices are to be experienced only after a considerable period of years.

Increases in costs, while much accelerated of late, have been in process before the war, as pointed out in the studies on cost of service made for the Bureau of Fare Research of the association in 1914. Since 1914 material prices have approximately doubled. The average wages which sustained the noteworthy increase of from $627 to $711 from 1902 to 1912, reached $906 according to the 1917 census figures, climbed over $1,100 since, and the ultimate aim of labor as disclosed by the testimony before the Federal Electric Railways Commission contemplated a minimum standard of $2,000 based on present conditions of cost of living.

From a review of the historical facts as to gold production, commodity production, changes in currency, and particularly as to the effect of wars upon prices, the conclusion is indicated that the future trend of prices will continue upon the present high level for some time. This conclusion is inevitable whether the reasoning is based upon the quantity theory of money or whether it proceeds upon other ground. The minimum period assigned during which prices will continue abnormal varies from five to ten years. This general conclusion as to future price trends must be recognized in regulating the future service rates of public service companies. Wage rates and the cost of materials will continue on a high level. This will affect the current expenditures for operation and for reconstruction, while extensions and additions to fixed plant, deferred on account of the war, must be financed on the basis of high prices.

To supply adequate credit for these future operations and at the same time to preserve the public confidence in the security of past investments, regulatory authorities must recognize the higher level of prices. Security of investment and a commensurately increased rate of return should be the fixed points toward which rate regulations must aim if the development of public service enterprises is to be placed and kept on a parity with that of other industrial undertakings.

COMPARISON OF COSTS ON HYPOTHETICAL RAILWAY

The preceding rather general discussion may well be supplemented by figures indicating in a general way the magnitude of the problem of those who are charged with the duty of continuing to render street railway service under the conditions of private operation regulated by government authority. The method to be followed will be a comparison of present-day costs of operation with those existing in 1914, through the method of applying 1919 prices to the quantities both of labor and materials purchased in 1914. There has, therefore, been assumed a hypothetical property which in 1914 carried 100,000,000 passengers for a revenue of $5,000,000. This company had 185 miles of line, practically all of it double tracked and 625 cars, including the reserve equipment necessary to permit periodic shopping. These cars made during the year 1914, 17,500,000 miles in a little less than 1,900,000 hours, or at an average speed of a little less than 9½ m. p. h.

---

* Abstract of paper presented at annual meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 9, 1919.

The operating expenses of this company in 1914, including $500,000 or 2 per cent on the cost of its property set aside for depreciation, amounted to $3,750,000, and there was available for return on investment in the property $1,250,000, or 5 per cent on a total cost of property of $25,000,000.

An analysis was made of the 1914 operating expenses of this hypothetical company, and each class of labor and kind of material has been separated and classified. The resulting comparative condensed income account is shown in Table I.

TABLE I.—CONDENSED INCOME ACCOUNT—STANDARD CLASSIFICATION

	1914		1919	
Operating revenue		$5,000,000		$5,000,000
Operating expenses (including replacement insurance) *		3,750,000		6,163,000
Maintenance of way and structures	$575,000		$875,900	
Maintenance of equipment	575,000		970,300	
Power	615,000		1,149,000	
Conducting transportation	1,225,000		2,225,000	
General and miscellaneous	385,000		492,800	
Taxes	375,000		450,000	
Net operating revenues		$1,250,000		$1,163,000 †

* Maintenance of way and structures $320,000
Maintenance of equipment 110,000
Power 70,000
† Deficit.

Each type of labor and each of the principal items of material was increased in the percentage that prices current in the latter part of this year bear to prices which were current during 1914. Use has been made of index numbers, of the records of several of the larger companies, and particularly of information compiled by this association, to determine a fair average increase by types of labor and types of material during the past five years. The operating expenses, which were $3,750,000 for this hypothetical company in 1914 would amount today to $6,163,000, or an increase of 64 per cent. This increase has been far from uniform, being least in general and overhead expenditures and highest in those expenditures which involve the maintenance of track and buildings, particularly the former. This is undoubtedly accounted for by the large increase in the cost of lumber products and manufactured metals with the fact that common labor has generally shown a higher percentage of increase than that which has been gained by the skilled and semi-skilled classes. Through organization, skilled labor has been able to effect an artificial scarcity, and early gained wage increase by this method. Today there is a shortage of unskilled labor far more acute than any artificial shortage of skilled labor which has been produced in the past.

TABLE II.—CONDENSED INCOME ACCOUNT—FUNCTIONAL CLASSIFICATION

	1914		1919	
Operating revenue		$5,000,000		$5,000,000
Operating expenses (including replacement insurance) *		3,750,000		6,163,000
Costs varying with car-hour	$1,125,750		$2,049,050	
Costs varying with car-mile	876,950		1,482,720	
Costs varying with mile of single track	150,000		312,620	
Cost varying with number of passengers	332,800		486,490	
Costs of electrical energy (car-mile)	472,500		930,100	
Administrative and overhead expense burden	417,000		452,020	
Taxes	375,000		450,000	
Net operating revenues		$1,250,000		$1,163,000 †

* Cost varying with car-mile $210,000
Administration and overhead expense burden 290,000
† Deficit.

This hypothetical company, then, which had $1,250,000 available for return on investment in 1914 would under present conditions find itself failing to meet operating expenses by $1,163,000. This would, of course, quickly result in insolvency, and many companies have already reached that stage. That some have not is accounted for by increased earnings without proportionately increased costs and by certain lessenings of expenditure, some of which are due to increased efficiency, but many of which can in no wise be termed economy. In such cases maintenance programs have been cut and depreciation reserves are being omitted for the purpose of meeting current operating deficits.

Following the practices outlined in "Costs of Urban Transportation Service," the detailed operating expenses have been separated into those varying with the different statistical units and the results disclosed in Table II. This separation is that now customarily employed in the analysis of electric railway operation.

The derived unit costs of operation may then be directly compared as shown in Table III.

EFFECT OF INCREASED BUSINESS

It is of interest to carry the calculations a little farther in an effort to see what effect a possible increase in business and betterment of traffic conditions have on the deficit in net operating revenue. Let us assume first an increase of 20 per cent in the volume of business during five years and then make the further assumption that this 20 per cent increase in traffic can be carried without departing from prior standards of loading by means of an increase of 10 per cent in the car-miles operated. By intensive study and constant watchfulness on the part of the transportation department, the average speed has been increased to 10¼ m. p. h., and the number of car-hours operated is therefore the same as in 1914. Under conditions above described 20 per cent more passengers would produce on the 1914 rates of fare $1,000,000 in revenue and occasion operating expenses of a little less than $400,000, so that the deficit from operation is reduced from $1,163,000 to $560,000. Assuming further that the amount available for return on investment is held at the amount earned in 1914, the company must have $1,685,000 additional revenue or unit revenues of a little less than 7 cents per passenger. Nor will such revenue as this be long sufficient if the community is growing and has need for additional investment in its transportation facilities. A reasonable return on the investment, which in the light of present financial conditions must be placed at not less than 8 per cent, necessitates the addition of another ¾ cent on the fare of each revenue passenger. These computations take no account of the very serious matter of decreased riding following upon increased fares, but it is evident that if there is any serious reduction in volume of traffic the fare must approach 10 cents per passenger, which is about the figure one would expect would result from the approximate doubling in price of most of the articles entering into the rendering of service and the failure of the industry to earn a reasonable return in 1914.

TABLE III.—COSTS PER UNIT

		1914	1919
Operating expenses (including replacement insurance)			
Costs varying with car-hour		$0.60	$1.09
Costs varying with car-mile		.05	.085
Costs varying with mile of single track		400.00	835.00
Costs varying with number of passengers		.33	.49
Costs of electrical energy (car-mile)		.027	.053
Administrative and overhead expense burden Taxes	per cent.	26.8	17.1

MOVEMENT CHARGES INCREASED MORE RAPIDLY THAN TERMINAL CHARGES

The preceding discussion has concerned itself with flat rates of fares. When an analysis is made with terminal and movement expenses, such as is necessary in determining the costs of operation under a zone system of fares, it is noted that movement costs have increased at a far greater rate than terminal costs. The detailed analysis indicates that with terminal or fixed expenses increasing 12 per cent, because of increased costs of operation, movement expenses have increased 82 per cent. This is due to the fact that movement expenses consist principally of those varying with the car hour, comprising platform labor. Assuming an average length of ride of 2 miles, 2½ cents represented in 1914 those costs which would be independent of the length of ride, while passenger-miles costs would be 1½ cents. On the basis of 1919 costs with no increased traffic the terminal costs would be increased to 2½ cents per passenger-mile, while movement costs would be increased a full cent per mile traveled. This indicates that the increases in platform costs are increasing the discrimination between long and short-haul riders which existed under 1914 conditions. Increases in the labor item are making long-haul traffic increasingly unremunerative. The conclusions which have been reached in previous studies, therefore, as to the paying haul for a single fare and the analysis of the cost components underlying the zone system of fares must be greatly modified because of the effect of increased wages.

Reference should also be made as to the influence of the increased costs noted upon the computations previously made of the cost of complying with standards of service. In the studies previously made under this title for the association, it was pointed out that with a typical distribution of costs, an increase of 10 per cent in the car-hours furnished during the period from 6 to 8 a. m. and from 5 to 7 p. m., platform labor would be increased 3.88 per cent; carhouse handlings 13.27 per cent, while power plant and car investment would be increased 10 per cent. Because of the large element of stand-by charge in the cost of furnishing service during rush hours there is not a corresponding increase in the labor component, as there would be if labor were under all conditions provided at a fixed rate per car-hour. It is necessary to consider, however, the very important influence of the minimum wage and the requirements of time and one-half for overtime in computing the costs of such added rush-hour service.

CONCLUSIONS STATED

1. The tendencies towards higher cost of operation noted in studies made prior to 1914 have developed into revolutionary changes in price levels.

2. It is believed that these changes are permanent rather than transitory or temporary in character and affect all components of the cost of service, including return upon the investment.

3. The analysis of cost of service made for a typical property indicates that the increases in fundamental costs incurred can only be partially offset under the most favorable and economical conditions of handling traffic.

4. Because of the large influence of the cost of platform labor, the new level of costs result in far greater increases in those costs which vary with the miles traveled per passenger than in those costs which are fixed in their nature irrespective of the length of haul. This indicates that the discrimination which has always existed between long-haul and short-haul passengers is constantly becoming greater and that our previous ideas of the cost components in a zone system of fares must be modified.

5. The increased cost occasioned in complying with higher standards of service during rush hours is vitally affected by the recent additions to costs of labor arising out of the application of the minimum wage and the provision of higher unit pay for overtime work.

Are High Costs of Service Likely to Develop Permanent Competition?*

By L. H. PALMER

Assistant to President United Railways & Electric Company, Baltimore, Md.

No Substitute Has Yet Been Developed for Railways in Hauling Large Numbers of People, But a Serious Effort Should be Made Effectively to Meet Bus Competition for Short Hauls—This Suggests the Use of One-Man Cars and the Adoption of a Zone System of Fare Collection—The Motor-Bus May Still Render Useful Service to the Public in Its Own Field

HIGH COSTS of service must be met with higher car fares, if the properties are to continue to operate. Therefore, this topic can be phrased another way: Will high car fares foster the economic operation of other forms of transportation, as competing agencies?

The subject presupposes, I should say, that the higher costs of service are permanent, and I believe that this is a correct statement, although it is hard to delimit or define the situation accurately. It may be reasonably expected that some expenses, principally for materials, will be reduced from their present high levels. New forms of machinery or improvements over present models will undoubtedly contribute to bringing down certain of our production or maintenance outlays. It is difficult to see how the prices of labor can recede materially, and as labor is the predominating item in the operating costs of electric railways, that fact in itself makes for the permanency of the higher expenses. Then too, in the last analysis, labor is a very large item in the costs of all materials and supplies. This condition furnishes the basis for the belief that the prices for needed articles will not drop to former levels. It seems to be the judgment of practically everyone that this country and the world in general is on a much higher price level than that existing in 1914, and that this higher level will be maintained, even though it may drop off somewhat from its present position.

As a first step, therefore, I believe that these higher costs are permanent. Will they develop permanent competition?

POSSIBLE FORMS OF COMPETITION

At present the suburban steam line service is taking business away from some electric roads whose fares have been increased, but there is a movement on foot to raise suburban and commutation steam road rates to a level commensurate with their increased expenses, and such increases will rectify this condition.

I do not think we need permanently to fear the loss of business through people walking. When rates of fare are raised, people occasionally start to walk to show their displeasure at the action of the company, but this method of competition is short-lived, and it is not long before those who try to boycott the cars are using them whenever their business or convenience demands.

---

* Abstract of paper presented at meeting of the American Electric Railway Association, Atlantic City, N. J., Oct. 9, 1919.

The horse-drawn vehicle has largely been eliminated by the self-propelled motor car, and as a competitor for street cars, I think we can fairly consider it obsolete and in the discard. The bicycle is used somewhat, particularly by younger people, but I think its effect upon the street railway business can be considered negligible, although the motorcycle and the motorcycle with a side car undoubtedly take away a good deal of business in the same manner as does the private automobile. When the United Railways & Electric Company of Baltimore was authorized to increase its adult fare from 6 cents cash to 7 cents cash, or four tickets for 26 cents, on Sept. 18, 1919, the bicycle dealers of the city put a half page joint " ad " in the daily papers saying " Why pay increased car fare—Ride a bicycle and save money," etc.

One of the exhibits filed with the Federal Electric Railways Commission in Washington, and contained in this year's report of the committee on code of traffic principles of the Transportation & Traffic Association, shows startlingly the increase in the total number of motor vehicles in the United States, and all our experience tends to show that the number of motor cars in the hands of the public is increasing appreciably each year.

Therefore, the competition of the private automobile from the standpoint of taking business away from the companies, both city and interurban, is most serious. Moreover, it tends to accentuate somewhat the peak load, as it takes off of the cars, in the middle of the day, many of the shopping and marketing people. It also takes away some of the later morning peak business, and earlier afternoon peak business, but does not affect appreciably the high industrial peak load. It is a kind of competition that it is practically impossible to combat, because the man who owns and operates a motor car is willing, apparently, to spend more in the operation of his car for a trip to and from work, or on personal errands, than he would spend for a similar trip on the street car.

I have drawn a distinction between jitneys and motor-buses; my idea being that the term " jitney " as a Ford or other small automobile seating five people in a touring body, or eight to twelve people in a specially constructed body usually provided with longitudinal seats. Motor-buses include the larger types of chassis and body, the biggest of which carry up to sixty people seated, when double decked. The jitney never has more than one man as a crew, whereas the largest type of motor-buses usually employ a conductor in addition to the chauffeur. The experience of the past five years has shown that the small jitney is not a permanent element, but where the factor of permanency comes in it is rather a phase that develops into the larger motor-bus, and so I have not treated this irresponsible form of transportation at any length. I do not believe over a long term of years the jitney is a serious menace to street railway traffic, but I think that of all the forms of competition specified, the motor-bus is the one which holds the greatest possibilities of permanent competition.

The trackless trolley has not been utilized in this country to any degree, and from what I can learn of its operation abroad there seems little to recommend it. It can be dismissed, therefore, with merely a passing reference. The field for its operation is likely to be pre-empted on the one hand by the trolley car, if business is heavy, and on the other hand by the motor-bus in sparsely populated sections. Competition due to steam or motor-boats is largely a special situation, and one that will not be experienced by many companies.

COMPETITION IN FREIGHT

Turning now to the question of freight, we find that where high costs are reflected in increased freight charges, the suburban and interurban electric railroad is faced with the possibility of motor-truck operation for competition in handling freight. This is dependent practically always upon the provision of good roads by the state or other authorities, for which the motor-truck operator pays practically no charge.

In addition to the actual kinds of competition which have developed, there are other factors which have a material bearing not only on the character of the competition, but upon the extent of its permanency. Among them are public regulations, taxation, including highway or road maintenance, the attitude of the public and the public authorities, physical conditions, limitations of congestion, the operation and handling of the street car service, and the method of collecting the higher costs from the public.

There is a realization on the part of many people, including a number of public officials, that electric railways are being ground down too hard by heavy burdens of taxation. As an instance, all fair minded men conversant with the situation recognize the fallacy of the trolley companies paying the first cost of pavement and later for the maintenance of paving as done under the present general practice. The levy of such kinds of special taxes against street railways, where service-at-cost plans are effective, is recognized clearly as having to be met by the car rider; hence the distinct trend away from tax burdens where such plans are in effect. While on the subject of public restrictions and burdens, it is interesting to know that the employees of the electric railways recognize the unfair character of the present competition. When like burdens are placed upon the motor vehicle as upon the electric car, it is going to discourage in great measure this form of competition.

The independent bus operators usually also have the indulgence of the public, being looked on as individuals who are trying to make a living, and the motion of persons bucking a big corporation creates sympathy in the minds of many. Where it is possible, however, to make the citizens of the community realize the benefits conferred upon it through the development and safeguarding of regular and dependable service on the electric railway, the sentiment in favor of motor-bus operation is likely to be negligible, and if allowed to operate, the competing agency will not be permitted to escape bearing its just portion of the burdens of taxation and operation. Here is an argument for intelligent publicity that you must all recognize as vital.

RESULTS FROM RAILWAY BUSES IN BALTIMORE

In Baltimore, the United Railways & Electric Company has been operating a service of one-man motor-buses, seating sixteen people, for over two years, as an alternative or supplemental service. As such, it has fulfilled a distinct purpose; as a money-making proposition it has not been a success. After proper reserves are set up for accidents and depreciation and after taxes (and we have heavy tax burdens in Baltimore) are allowed for, we feel that the service has done well to break about even on operating expenses, depreciation and taxes. We had a costly accident, due to a collision with a gasoline tank wagon which resulted in the gasoline catching fire and seriously burning some passengers, and it will take some years to wipe that account off our books. Had it happened to an independent company with only its bus operation as assets, the business would have been wiped out. It seems to me also that the Fifth Avenue bus operation in New York is largely a supplemental service, rather than a directly competing one.

The rising tide of operating costs affects bus operation as it does electric railways, our wages for chauffeurs and automobile mechanics are high, and the prices of the various supplies needed, including tires, gas and oil, have increased by leaps and bounds. The motor-bus is not immune from the much discussed " high cost of living."

and the same economic factors affect it as affect electric lines. It is not clear, therefore, why under approximately equal conditions, motor-buses should have any especial advantages enabling them to operate much less expensively than street cars.

BUS OPERATION CONSIDERED

In studying this question of competition, one of the significant facts is the short haul that is given by jitneys and motor-buses for a 5-cent fare. This is noticeable in New Jersey where the traffic counts of the Public Service Railway show that most of the business taken away from the railway is composed of passengers living within 3 miles of the center of the city and much of it within 2 miles. The Fifth Avenue Company in New York City charges 10 cents. The motor-buses that have recently been put on some abandoned storage battery, crosstown routes in New York City are operating distances of only about 3 miles, with no transfer privileges. In a recent prospectus of a new motor company that announces ambitious plans for inaugurating bus service in large cities, it states: "The 5-cent rate of fare for every 3 miles of route will be the approximate rate of gross income." Obviously, the average length of passenger haul will be less than 3 miles. This draws attention distinctly to the fact that at present the street railways are being penalized because of their long single fare routes. The long-haul riders are being carried at a loss and are eating up the net income of the companies. How long could the motor-driven vehicles compete with the electric railways if compelled to operate at present the long routes and the unprofitable ends of schedules and service as we have to do?

At this point it might be noted that the extent to which these higher costs of service develop competition in any of its forms depend upon how these higher costs are collected from the public. For instance, in the case of a pedestrian: If the fare charged for a short ride is 3 cents, and the service is frequent, he will nearly always ride; but, no matter how frequent the service, if a 10-cent fare is charged, he will often, if not usually, walk. Supposing, as an extreme example, the fare is 20 cents: The potential short rider would always walk except during very inclement weather or when in a great hurry.

There are no bus fares of less than 5 cents, to my knowledge, and their charge in city service is usually 5 cents. Now the greater the differential between higher car fares and the bus fare, the greater the opportunity for permanent short haul competition. Such conditions point towards the absolute need of apportioning the increased costs of service over the traffic in accordance with its ability to pay. That, I believe, presupposes some general relation between the fare demanded and the cost of service based on length of haul. This forecasts the need, under such conditions, for some sort of zone system, or else some special inducement to short riders. The situations surrounding individual properties will have much influence in determining the forms that these fare systems will have to take in order to be effective in retaining business and meeting competition.

PHYSICAL AND WEATHER CONDITIONS ARE FACTORS

Physical conditions have a good deal to do with the possibility of permanent competition. Cities that are built on comparatively level ground with wide streets and smooth pavements offer a much better field for operation than those with narrow streets or severe grades, or where much of the paving is poor.

Similarly, for interurban passenger or freight transportation by motor truck, a smooth and well built highway is essential. Most of us are familiar with state roads, constructed for the use of the people as a whole, which have within a short time been worn down and torn to pieces by heavy motor trucks, whose operation has brought little, if any, benefit to the district which has paid for the roads, but on the other hand has taken away revenue from agencies already established which were in a position to handle the traffic.

The question of weather conditions is another factor affecting competition. Where winters are severe, the motor-bus operates with much less dependability and regularity, and to that extent is not so efficient a public carrier as the electric road. To electric railway men it seems manifestly unfair to let a competitor take away the easy, more profitable and fair weather business, but when travel is light, as in the evening, or when it is stormy to have this competitor fail to operate and expect the railway to provide the service needed.

In the larger cities, the problem of street congestion due in great part to the private automobile, is a most serious one, and even under efficient traffic regulations, and traffic regulations as a rule are none too efficient, the limit of effective capacity of many important streets is reached, during busy portions of the day. Under such conditions, the introduction of motor-buses adds a complication which operates seriously against the free movement of all classes of traffic through the city. Due to the generally smaller carrying capacity of the buses, it would be impossible in many places to provide the same facilities with motor-buses that are now furnished by street cars, without completely filling the highways, and retarding vehicular movement to an intolerable degree.

CONCLUSIONS

To sum up then, there is no question but that the field of usefulness of the street car in the public service has been limited and is being restricted through the increasing use of private automobiles, particularly during the middle of the day and the evening hours. But for handling great numbers of people from their homes to their work and back again, there is no substitute that has been developed that will take the place of an efficiently operated street car system, excepting, of course, elevated and subway roads.

Such a car system comprehends frequent service, proper routing of cars, prompt handling and dispatching, comfortable, clean and well maintained rolling stock, adequate and well kept up plant in other departments of the operation, efficient transportation department work, courteous and alert crews, and a sustained and constant effort to serve and please the traveling public.

In most cities, it will mean the operation of numbers of modern light weight, one-man cars, enabling the provision of more frequent service. A zone system of fares will help to equalize the competition with motor-buses, and the results of the struggle in New Jersey, where the initial zone ride can be had for 3 cents, it is thought will throw some light on this question before long.

As a supplementary service, and for purposes of traffic development, the motor-bus has a field of distinct usefulness and one that we should avail ourselves of to the utmost. The motor-bus must be accepted as an auxiliary to our present service. Under equal conditions, and with fair regulation and public control, and with efficient operation on the part of the electric railways, I believe that the higher costs of transportation will not as a rule, make for permanent competition, for the costs of bus operation are rising about evenly with those of electric railways. It will be necessary, however, for the operators of the roads to meet the problem intelligently, and with resourcefulness. They must meet the new situation open-mindedly, and they must have the vision and the courage to break away from the old practices and methods of former days.

Can Service Costs Be Collected from the Traveling Public?*

By J. D. MORTIMER
President the North American Company
New York, N. Y.

Railways Must Be Grouped in Accordance with Their Ability to Collect Higher Fares—Some Cannot Be Made Self-Supporting, Others Can Be Re-established Financially if Permitted to Charge More, While the Remainder Which Constitute the Largest Number Occupy an Intermediate Position—The Situation Is Analyzed, and Five Conclusions Are Given

THE QUESTION of whether the costs of production can be collected in the selling price of goods and service is not limited to the street railway industry. The same question confronts the producers of many essential commodities. It is not confined to this country; it confronts the producers of coal, steel and transportation in Great Britain. It is likely to confront the producers of coal and transportation in this country. The high costs of production appear to be most serious in those industries where the amounts paid labor form large proportions of the total cost and where the further use of machinery to reduce labor effort is limited by what are apparently natural conditions.

That cost of production may, through increased wages and reduced quantities of production, so raise the selling prices of commodities as to place them beyond the reach of the ordinary populace and even of many industries, seems to be sensed by labor leaders although it is not yet openly acknowledged. This economic trend forms the real background of the demand for the nationalization of British coal mines. The advocates of nationalization hope thereby to attain much higher wages and earnings than are now considered practicable where private industries must pass the costs on to the consumers. With the nationalization of the mines the government may subsidize their operation, *i. e.*, absorb a part of the costs of production through taxes and assess and collect taxes from the individuals according to their ability to pay.

As a plan for changing the relative distribution of income, it possesses merit. As a plan for increasing or conserving wealth or rewarding producers in accordance with their efforts, it fails dismally. The scheme of nationalization of mines and other industries has been designated socialistic. To the extent that it contemplates a complete redistribution of income and a large reduction in human effort, it is not socialistic. But fundamentally, it is no more socialistic than the general labor movement as we know it in America. It is only a matter of extent to which the advance toward the ultimate goal has been completed.

The electric railway that has during the last two years collected from riders all the reasonable costs of service is an exception. If any such railway exists, its fame has not extended beyond its own community. The costs which have been most difficult to collect are those resulting from increases in wages paid to labor, as shown by Mr. Doolittle; these form by far the largest proportion of the increases in cost of service.

Electric railways divide themselves into four classes in their attempts to meet the increased costs of service, viz.:

1. Railways that have not been permitted to increase their rates;
2. Railways that have been permitted some increase in rates partially to meet increased costs;
3. Railways that have been permitted to increase rates to as high a level as the operators thought wise and where the increased costs have only been partially met;
4. Railways that have not raised rates because the operators feared that higher unit fares would result in less aggregate revenues.

In our subsequent discussion we are not so much concerned with the legal and economic limitations on rates experienced in the past as we are with the conditions that now confront us.

Railways now divide themselves into three classes as affecting their ability to collect increased costs through larger revenues, viz.:

1. Railways so situated that increased costs cannot be met out of any possible increased revenues that can be collected from the car riders;
2. Railways so situated that all increased costs can be readily collected by either an increase in unit fare or adoption of a distance tariff scheme of fares;
3. Railways falling in the twilight zone, lying between the classes first mentioned where increased revenues may be obtained by forced stimulation, which if continued sufficiently long and accompanied by proper changes in service and scheme of fares can be made to produce the higher costs of service.

The future of electric railways which cannot be made to support themselves holds out no hope for private owners. There are three alternatives open to such railways, viz.:

1. They may be abandoned as have already many such railways;
2. Their operation may be subsidized by taxation so as to produce a guaranteed return on the invested capital;
3. They may be operated by the government authorities and supported by taxation.

The railways which fall within this class have not been definitely determined. They are more generally confined to the smaller cities, where density of possible traffic is small and where walking competition is keenest because of short distances of movement. Most of us know of one or more electric railways which fall within this group. There is no kind of cost-of-service plan which will keep these railways going.

The tax-subsidy plan of support affords whatever advantages private operation may offer, but its working out for best results is complicated and difficult for the people to understand; it also imposes upon the private owners substantial obligations appertaining to the supply of future capital. Then, too, constitutional provisions in some states will prevent the enactment of legislation necessary to make the subsidy plan operative.

The simplest and most readily understood solution of the problem of this group of railways is public ownership with operation reinforced by taxes.

The railways that can readily collect the increased costs of operation if given authority to do so, permit no extended mention in this discussion. Such railways will generally consist of those serving large populations of high density where the length of passenger haul is long and the service is high speed. The New York subways are typical examples.

---

* An address delivered before the Atlantic City convention of the American Electric Railway Association, October 9, 1919.

The position of the ordinary electric railway falling in a group lying between the extremes just discussed is not so clearly defined. It is to an inquiry affecting this class of railways that this discussion is primarily directed.

MONOPOLY IDEA EXPLODED

For a good many years the electric railway was regarded as a monopoly. It was viewed as a menace to the social order which must, under no circumstances, go unrestrained. It was, if recollection serves, even denominated a double-dyed monopoly arising first from the special privileges which it exercised in occupying the public streets, and second because its natural characteristics made it impossible, even though the opportunity for competition existed, to supplant it. The idea of monopoly carried with it exclusive control of price and such necessity of use as compelled people to pay the price. The only limit to the price according to the then prevalent theories was the ability of the customer to pay. What the traffic would bear was generally considered to be the amount of loose change the average passenger customarily carried in his pocket. Collecting costs of service from the traveling public according to this theory was simple. The only question was how much more in monopoly profits the street railway company could get away with.

One of America's foremost economists, thirteen years ago, said, " There is evidence going to show that the price for street car service in our great American cities which yields the largest net returns to the street car monopolist is 5 cents. Apart from all legislative control, it is not probable that in our great cities it is in the interest of the owners of street car property to charge more than 5 cents. With our high average of well-being and our readiness in the expenditure of money, a 5-cent fare reaches down into the masses of the people. Doubtless it is too high a fare for the lowest social strata, and yet it reaches so far down that probably the increase in traffic from a lower fare would not offset the loss in profit on each passenger transported. In a country like Germany, on the other hand, a 5-cent fare would probably be too high to yield the largest net return to the monopolist, inasmuch as, with the lower general average of economic well-being and the greater frugality, a fare so high would not reach down far enough into the masses of the people to induce a sufficiently large traffic to be most remunerative."

Based upon this preconceived idea of the fundamental nature of the business, public regulation was brought into play fixing the price in the privilege or franchise conferred, and commissions were created to chasten and curb this natural monopoly. An effective straightjacket was placed upon the industry.

" The sting of private monopoly," said another text-book writer ten years ago, " lies in the fact that without competition to keep rates down to a basis of cost, including reasonable profits, the natural tendency of those in control of the business is to establish rates at the point where they will yield the maximum of profit taking into consideration the amount of the business. The first requisite of a good franchise is to pull the sting of the monopoly."

The monopoly idea was a perverted economic notion. The special privilege to occupy the streets turned out to be a privilege to pave and clean the streets for the use and benefit of any other kind of transportation. The reputed natural characteristics, which were presumed to charm off competition, never caused Henry Ford a moment of anxiety. The economic regulation which compelled people to ride somehow was supplanted by the legal regulation which compelled the cars to travel whether the people rode or not.

Even the attitude of economists has changed. The writer last referred to appeared before the Federal Electric Railways Commission two months ago. He is quoted as suggesting that fixed-fare franchises are now a liability and not an asset as they had been in years gone by, and that this fact should be considered to the advantage of the city in arriving at any valuation. In other words, having removed the " sting," he is now out after a portion of the " hide."

Where regulating officials finally conceded the necessity for increased revenue and attempted to increase existing fares, they found to their surprise that traffic did not respond the way it was reputed to respond in a well-intrenched monopoly. They found that a 40 per cent increase in unit price failed to produce a 40 per cent increase in revenue, and relief which was conceived to be adequate generally fell far short of being even an emergency ration.

SIMILARITY WITH OTHER BUSINESS ENTERPRISES

The problem of collecting the costs of service from the traveling public must be viewed on the same basis as that of price determination in any competitive enterprise. There must be stability of market, the price must be within the patron's ability to pay, the confidence and good-will of the purchaser is essential, consideration of the factors of custom and competition is important and the psychological appeal must be such as to induce liberal patronage. Enterprises which can achieve these essentials of salesmanship and collect the cost of the product or service sold, including a commensurate return, are successful enterprises.

The flat rate failed principally because it ignored several of these principles. Its miscalculation further lay in the disregard of change in length of haul, character of service and higher standards of comfort which, with increase in fundamental costs, resulted in the failure to yield the cost of service.

No one will question the stability of the market for our service. The trend of our population has always been toward the city, and under present conditions will continue to be so. According to the 1917 census estimates, there are 219 cities with a population in excess of 30,000. These account for 32 per cent of the total population of the nation. In 1890 at the beginning of the traction industry there were only 103 cities of this size comprising 20 per cent of the total population.

Our prosperity as a nation has resulted from the growth of our cities. Our huge advance in national wealth arises from city products. During the period 1912 to 1917, when net income of the electric traction industry, according to the census figures, decreased 17 per cent, the assessed value of property in the 219 cities now over 30,000, increased 23 per cent. This increase in land values aggregating nearly $7,000,000,000 exceeded the total investment in the entire electric traction industry.

Increased centralization and congestion, with inability to widen thoroughfares once established, result in making traffic on rails the most feasible and economical means of city transportation. So certain is this process of concentration that capital is attracted to centrally located realty at smaller returns than that prevailing in any other form of private enterprise. The stability and growth of the market for electric traction service is assured.

What price can the community afford to pay for such service, and is it possible to collect it from the traveling public? During 1917, before high prices had confronted the industry, the average operating revenues, according to the census, were $15.20 per capita, less than 3½ per cent of the income per capita, and a little more than 1 per cent of the estimated true value of the realty per capita. The charge for the most important service that makes city life possible is, in fact, of small proportion, and to double it would add no hardship to the community. The annual expenditure, for luxuries, such as talking machines, silk shirts, and the operation of pleasure automobiles, far exceeds the total increased revenues needed to restore the electric railway industry to a solvent and flourishing condition. The question is not ability but willingness to pay the actual cost of service.

Psychological Causes of Present Disabilities

We come, then, to the first of the intangible considerations—the confidence and good-will of the purchaser. The American citizen has a reputation for being a free spender but he is mortally afraid of being "stung." The success of the small storekeeper, in spite of his frequently unconscionable surcharges on the cost of living, lies in his apparent hard-working honesty. Confidence begets trade. No business, no matter how carefully it may follow the Old Testament prohibition against usury, could survive the persistent attack upon its essential honesty that has been directed year in and year out against the electric traction industry. The additional patronage that grows out of good-will means the difference between mediocre and good business. The loss of patronage that comes with boycotting means the difference between mediocre business and failure. The railway business labors under a peculiar handicap; it is the only business which is required to discriminate between its patrons. The passenger who is required to stand feels that the passenger who enjoys a seat is being favored. It can never be placed in as favorable a position as other businesses until this discrimination is done away with or compensated for in the price paid for a ride.

How this confidence may be re-established is not a mere problem of public policy or public education. It is far more fundamental. So deep-seated has been the idea that the street railway business is a profiteering institution, that even where bankruptcy is apparent to everyone it is complacently regarded as a sort of poetic justice. Fair value must be determined, earnings must be audited by disinterested tribunals. The fact that the business is under strict regulation which does not permit of profiteering must be firmly established and thereafter every attack which ignores these facts must be fought and resented in the same way that any law-abiding citizen would resent being called a crook. We are so well advised as to the motives underlying such attacks, that we are prone to disregard them as "old stuff." And, so the process of attrition gradually operates against a business because it lacks personality. The demagog and venal press are as cowardly an outfit as any blackmailer, and they can be reached through fearless and aggressive publicity.

Systems of Pricing Service

It is not alone the protest against unreasonable profits which leads to decrease in patronage, but dissatisfaction with any price system which permits one patron to get more for his money than another. No merchant would expect to satisfy all his customers by a policy of selling them clothing, groceries, etc., on the basis of their needs at a fixed price irrespective of their requirements. Yet, this is exactly what is happening with the flat rate of fare. The patron who is paying a flat fare for use of the street car for a short ride feels that he is not getting his money's worth compared with the passenger who gets a longer ride on the system for the same price. Disregarding other considerations, a distance tariff should be more conducive to restoring confidence than a flat rate.

Custom and competition are two considerations of importance when making any change in price. The customary price for the same service is a large handicap where it is necessary to increase the price if volume of sales are to be maintained. The baker recognized this fact with the 5-cent loaf. He decreased the size of the loaf rather than increase the unit price. It was not until the strong arm of the Food Administration was imposed that any successful increase was made over the unit 5 cents. The tobacco, drug and candy industries have recognized the same fact in gradually decreasing the size of package for the same price. It is not necessary to refer to the many devices of the able merchant in overcoming this difficulty. Changes in trade name, supposed changes in the quality of goods, fundamentally different processes of merchandising, are all utilized to overcome the barrier of custom.

We frequently hear the statement "give better service and the public will willingly pay increased fares." Assuming that headways are regular and not inconveniently long during non-rush hours, increased service according to accepted standards would consist in increasing the number of cars used during rush hours. This very costly increase in equipment yields a very limited increase in service and it is doubtful whether the change in service standards would make any marked impression upon the traveling public. European practice of first and second-class service, the first with, and the second without seats, has remote possibilities. The railroads are gradually approximating classified service through extra-fare requirements.

Meeting Competition

The principal competitors of the street railway are, of course, walking and the automobile. A price system must be designed to minimize the effectiveness of this competition. The competitive advantage is not merely one of cost but of convenience. Taxicab service is, of course, many fold more expensive than street-car service. The additional price paid for the average convenience is very great. Considering the normal cost per capita of street railway service and the advances in the price of shoes, it is questionable whether the walking route is as cheap as it seems. The distance tariff has, of course, great advantages over the flat rate of fare in minimizing competition. The radius of the automobile for hire is short and the inducement of low fares to reduce walking should be substantial. The highest practicable speed of cars is essential, since the sacrifice that competes with money expenditures for a car ride is that of time rather than of physical effort in walking. Frequency of car service produces reactions similar to those of speed and comfort.

It must be confessed that there is no particular psychological appeal in the traction business as now constituted to induce liberal patronage. It cannot adopt as its motto "The more you ride, the more you want to." Time was, when the rail was flanked by cobblestones and wooden sidewalks and a trolley ride was our most popular outdoor sport.

Is it possible to restore the old-time zest and flavor? Other competitive businesses have done so. The old-fashioned drug store, when the population became too disgustingly healthy to require patent medicines and a few prescriptions, blossomed forth with soda, candies, cigars and minor household furnishings; the Yankee notion corner was transformed into the 5 and 10-cent store; and the barber shop threatened with rapid extinction by the safety razor, transformed itself into a beauty parlor and raised its prices besides. Is the industry lacking in constructive imagination? Or, is the trolley ride as prosaic as a postage stamp which it does not pay to flavor to induce use? The low number of rides per capita, less than one ride per day—indicates a minimum of patronage. an absence of convenience or pleasure riding and a dearth of salesmanship. We call it "the riding habit," a proper designation. Riding is habitual and forced, rather than attracted.

The street railway performs a personal service, in most cases to a tired customer. The personal service required is as much a rest as it is a ride. Mental and physical fatigue contribute largely to the critical attitude toward the service. There is little complaint from the morning crowd; there is much complaint about the evening rush. Frequency of stops, low speed and the monotony of the journey are the main reasons for discomfort.

The service can undoubtedly be made more comfortable and more satisfactory even though more expensive. But, in the interest of the passenger it must popularize travel during the non-rush hours. It must meet the insane demand to go home *en masse* by persuasive appeal to go home a trifle earlier or later in comfort. No employer can withstand the demand for staggered hours, if the laboring man wants it. Smoking privileges, moving pictures, barber shop literature, jazz music—there is some solution awaiting the genius of salesmanship.

An analysis then of the possibility of merchandising street railway service, considered as a competitive business, leads to the conclusion that, given a free rein like any competitive business in the making of rates and in arranging service, there are prospects of collecting the increased costs of service from the traveling public.

Effects of Changes in Fare Scheme

Any change in fares, whether increases in flat rates or change from the flat rate to the zone or distance tariff, carries with it a disturbance of traffic. If we analyze the reaction we find that this may develop into three phases. There exists first a temporary withdrawal of patronage—a sacrifice of usual comfort in the interest of economy—often unconscious but evident in total sales. Gradually there is a recession to normal conditions. There may be in addition a feeling of resentment greater than any pocket interest. In this second phase, withdrawal of patronage may constitute a boycott more lasting in its effect on traffic. Finally a protest so severe may be encountered as to result in mob violence and actual interference with service. How lasting these impressions may be and what can be done to prevent or overcome them are local problems of salesmanship. The success of the business depends upon voluntary patronage and the problem of transition in price is of importance.

A flexible plan of fares which will move the traffic, and which will permit of minor adjustments, up or down, from time to time is also important. The railroads were more fortunate than the traction industry. They determined their own scheme of rates, based entirely upon the theory of charging what would create and move traffic. The differentials thus instituted became fixtures which even regulation, when it arrived, could not disregard. Difference in charges for the long and short haul, difference in charge for on-peak and off-peak traffic, difference in charges for summer and winter service, commutation rates and special fares, are all possibilities that merit consideration.

The effect of fundamental changes in the basis of fares upon existing realty values has been of concern in some quarters. There is a feeling that the existing rate of fare is a sort of inalienable property right attached to the real estate which must not be disturbed. Investigation shows that the effect of rates of fare on actual realty values has been much exaggerated. No doubt existing fares are a persuasive talking point for the real estate promoter but their influence because of the small annual charge involved has been proved to be negligible. The existence of a wide, flat-fare area did not promote settlement, and the existence of a zone fare or distance tariff did not hinder development. And realty can no more lay claim to permanence of street car fares than it can to permanence of the ozone laden atmosphere and the unrestricted view that originally surround it.

By-Products of the Business

This discussion would be incomplete without some reference to the question: Has the traction business any by-products which may augment its revenues? Undoubtedly the rate of fare which it is necessary to charge the traveling public to meet the cost of service will be affected by the possibility of auxiliary revenues. Concessions in passenger cars in addition to advertising may be an important source of revenue. Express, package delivery and mail, if it is ever permitted to carry a fair charge, also merit more intensive cultivation. Finally, the possibility of utilizing idle or lightly-loaded tracks for the movement of freight, building materials and the collection of ashes and garbage, with or without auxiliary automobile truck service, are worthy of consideration. These latter services raise problems of city planning and can only be brought about through the initiative of municipal officials. These services would tend to relieve congestion and reduce wear on pavement, and would largely expand the territory available for small manufacture by providing transportation facilities now limited to frontage on railroads and docks.

Conclusions

1. The high price levels of the last few years with the resulting increases in costs of electric railway transportation have required increases in selling price of the railways' product. Increases in flat fares have resulted in either decreased volume of business or lower rates of increase. These facts, together with the prevalence of gasoline-motor competition in certain sections of the country have raised the question as to whether it is possible for the electric railway industry to collect from the traveling public the increased costs of service.
2. Railways naturally group themselves into three classes. The first class embraces those electric railways where the conditions are such that there is no hope within any reasonable length of time of making the railway self-supporting by any adjustment of fares. The second class embraces those railways which by reason of density of traffic, length of haul and speed of service readily permit the increased costs to be collected either by an increase in flat rate of fare or by adoption of some distance tariff scheme. The third class comprises those railways lying midway between the first two and where there appears to be an opportunity to collect from the traveling public the increased costs of service without making the service so expensive that it is unattractive, but which will require changes in the scheme of fares and the adoption of changed methods of operation.
3. The factors which have permitted other lines of business to remain prosperous during these periods of high price levels and even to enlarge their volumes of sales are numerous and afford many suggestions to the electric railway industry.
4. The psychological aspects of increased fares and the mental reactions caused thereby group themselves into three classes, finally developing into mob violence. Reactions of this kind must be anticipated, prevented if possible and in any event minimized if the electric railway is to retain its dominant position as a transportation medium and compete successfully for new capital with other lines of industry.
5. The real question confronting the regulating authorities to-day is not that of preventing the electric railways from earning too much but rather that of permitting the railways to earn sufficient revenues to continue to operate, maintain their credit and to expand their facilities. Electric railways should be given greater freedom of action in determining upon the form and magnitude of their rate schedules and in the character of service which they render.
6. There are what may be called by-products of the business which electric railways, if possessed of ability to procure additional capital, may exploit with profit. The development of such by-products would assist in restoring the electric railway industry to the position of a going business and go some distance in making it unnecessary for municipalities to lend their credit in the purchase and expansion of the ordinary surface electric railways and to lend their taxing power in supporting railway operation.
7. The opportunities for selling higher priced service seem to be sufficient to warrant a serious attempt and the chances of being able to collect the increased costs are now greater than the chances of failing to do so.

WALTER A. DRAPER

R. P. STEVENS

J. E. HUTCHESON

Essential Features of the Service-at-Cost Plans

Up-to-Date Information Upon the Working of the Cost-of-Service Plans at Each of These Important Cities Is Given by Railway Men Who Can Speak with Authority

Cincinnati

BY WALTER A. DRAPER
Vice-President
Cincinnati Traction Company

Youngstown

BY R. P. STEVENS
President
Mahoning & Shenango Railway & Light Company

Montreal

BY J. E. HUTCHESON
General Manager
Montreal Tramways Company

Some Elements of the Cincinnati Franchise[*]

A Valuation Was Reached by Agreement, Then a Flexible Fare Was Allowed Depending Upon Degree of Operating Efficiency

BY WALTER A. DRAPER
Vice-President Cincinnati Traction Company

THE Cincinnati settlement was not undertaken purely because of the war conditions nor had the Cincinnati company reached the end of its franchise. On the contrary, the company had a franchise with many years yet to run, with a provision in it, however, that twenty years after its date it could be revised by the city as to all its terms and conditions and a rate of fare fixed "according to the then cost of carrying passengers" and a further revision period fifteen years later. The first revision period fell at a time when any revision of fares based on the cost would necessarily have been upward. Instead, however, of fixing a rate that would be equitable according to the "then cost," which would have to remain in effect for the next fifteen-year period, the City Council adopted the plan by which the rate of fare should be equitable according to the cost at any and all times.

The provision regarding revision was one of the points in an attack upon the legality of the revision ordinance, it being held that the original framers of the State law, and the franchise granted thereunder, had no intention of providing for a revision upward and the provision, therefore, could be used only for a revision downward. The court, however, held that no matter what the framers of the act had in mind, the language was clear and the power to revise according to the then cost must contemplate a possible upward as well as a possible downward revision. The court also held, as to the claim that a sliding scale under the service-at-cost plan was not a fixing of the rate according to the then cost, that, as a matter of fact, the service-at-cost plan was a most equitable way in which the rate could be made to be according to the "then" cost at any and all times.

VALUATION MADE BASIS

As in all service-at-cost ordinances, the valuation was the foundation upon which the structure was built. This was gone into most completely. Three years before the work of drawing the revision ordinance was begun the city asked the Public Utilities Commission of Ohio to make a valuation of the property of the Cincinnati Traction Company, as under the law it could do. The commission in turn ordered the company to make a complete inventory and appraisal of the property as of a certain date and proceeded through its engineers to check the inventory as it was progressing. The work consumed many months and the resulting physical valuation showed not a great difference as between the finding of the two sets of valuation engineers, though in the matter of superseded values, overhead and franchise values there was a wide divergence. The cost to reproduce new was found by the commission to be $27,378,851.88 and by the company $27,640,490.22. The commission allowed for superseded values, paving, etc., an amount bringing the total valuation up to $30,141,102.87, while the company's claim for the same things brought its figure up to $33,198,567, with a claim for franchise value in addition, which was disallowed.

The valuation finally used in the ordinance, however, was reached by agreement, both the city and the company having protested the finding of the commission, but agreeing between themselves. The valuation in the ordinance was arrived at by recognizing outstanding securities which represented very nearly the cost-new valuation found both by the company and the State, together with an allowance for superseded value, and was $31,847,950 for the purpose of calculating the return and $30,847,950 as the purchase price. In addition to being able to purchase the plant for that figure, the city can, if it prefers, bring condemnation proceedings and secure the property at the price awarded in such procedure.

---

[*] Abstract of paper presented at meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 8, 1919.

The control exercised by the City of Cincinnati is divided between the legislative and the executive departments, the City Council exercising all functions in relation to the rights of the company under the grant and any changes therein and also all extensions, routes and motive power. In an official created under the city charter, known as the Director of Street Railroads, an appointee of the Mayor, is vested the control of service, type of cars, transfers, contracts, accounting, budget, kind, amount, rate and purpose of new securities; and in short every act and every expenditure bearing upon service and its cost. Understanding this complete control which is retained by the city in return for granting the company the right to charge fares that will yield revenue sufficient to meet all requirements, the reason for a budget of expenses, incentive to economical operation, elasticity of depreciation charges, cost of money, etc., will be the more readily understood.

SPECIAL FEATURES IN THE FRANCHISE

One of the knotty questions to be solved was the disposition of the franchise tax paid to the city. For years the company had been paying a tax of 6 per cent on its gross receipts, amounting in the year of the revision approximately to $325,000. Two opposing ideas clashed in the treatment of this matter. One held that as this was to be a service-at-cost arrangement the street railway system should not be made a special tax gatherer for the city, but the car rider should have his ride at as low a cost as operating expenses, statutory taxes and return on investment could allow. The other school adhered to the idea that a great many car riders pay no direct taxes to the city, and it was but fair that they should contribute in this way, especially as the company pays no paving charges, except for paving disturbed. That this 6 per cent tax amounted to a third of a cent on every car ride was used as argument by both sides, one contending that so large a tax should not be put on the car riders and the other holding that only a third of a cent ought not make any difference to anybody. The fact that the city needed the revenue was, after all, the deciding factor, and the car riders now pay in the aggregate $350,000 a year as a special tax to the city. This payment, while made as certain as the company's return on investment, is not paid until after that return, however, thus strengthening the company's position financially.

Particular effort was directed by those framing the revision ordinance to secure the greatest degree of elasticity. In the matter of rate of return, for example, those securities already outstanding and accepted as part of the valuation are allowed the rate of interest heretofore paid on them, which in one case is as low as 5 per cent. Instead, however, of fixing a certain rate on all future securities it is provided that the allowance shall be exactly what the new money costs, and the safeguard is then thrown around this provision by requiring that the amount, character, rate, method of retirement and price at which new securities are sold shall all be subject to the approval of the city and the Public Utilities Commission of Ohio.

In the matter of depreciation, the amount and the method as now charged by the company are retained for a period of five years, after which the Public Utilities Commission will fix the rate of depreciation charges.

Probably the most strikingly elastic feature of the ordinance is that which exercises the control of expenditures. Instead of a certain allowance for operation in various accounts, which experience has shown must vary from time to time requiring negotiations with the city for changes in such allowances, the Cincinnati plan compels the company to file with the Director of Street Railroads forty-five days before the end of the calendar year, an estimate of gross receipts and budget of operating expenses for the ensuing calendar year classified under the General Accounts of the I. C. C. system. No expenditure can be made in any of these general accounts in excess of the budget allowance except upon supplementary estimates approved by the director.

The operation of this budget plan puts the company in the position that it can insist and show clearly that the allowances for the year should be sufficient to operate the property and keep it in repair, and if its estimates are not allowed it has recourse to arbitration. Furthermore, if the city desires to increase the budget estimates to meet its demands for greatly increased service, the building and operation of many extensions or an unusual amount of track reconstruction, all in excess of what the company estimates should normally be or can be done without increasing fares, the company may point out what it will mean if the estimates are so increased, and the increases are then made with a full realization by the Director of Street Railroads and by the car riders that it will mean higher fares. It is not a case of shifting responsibility but merely of giving the people who pay the bills the option of deciding.

Considerable attention was given in drawing the ordinance to securing a plan that would put changes in rates of fare into effect as expeditiously as possible, and the result was the adoption of a rule that is automatically acting. If in two calendar months before the reserve fund is established the receipts are not sufficient to meet the requirements the next higher rate of fare must be put into effect at the first of the next calendar month. There are no preliminaries except fixed periods of advertising and posting of notices. Reports to the city and approval by the city are unnecessary because the books and accounts of the company are not only open to, but are being subjected to, constant examination by the city, there being an accountant representing the Director of Street Railroads in the accounting office of the company at all times. So, the city is completely advised of the situation, thus making formal notices and approvals a mere unnecessary formality.

After the reserve fund is established naturally the change in fare upward or downward will not be made on two months operation, but deficits will be paid out of the Reserve Fund until it is reduced to below $250,000. This reserve fund is first established by $250,000 from the sale of securities and then from gross receipts until it reaches the sum of $400,000 which is called the Normal Sum of the Reserve Fund. It can then be used if need be, but fares cannot be reduced until there has been a further accumulation up to $650,000.

CONSIDERATION OF FRANCHISE

During the public hearings on the question of a revision of the company's franchise the fear was expressed that if the company were assured that rates of fare would be put into effect that would provide earnings sufficient to meet all requirements it would not exercise care and economy in operation, but assured of its own return, would spend money freely on the theory that the car rider had to pay it anyhow, so why worry?

It was pointed out that the very complete control exercised by the city would act as an approval or disapproval of every expenditure. While this in a measure allayed the fears of many who still retain the suspicion of public utilities that years of the old régime of mutual hostility and distrust engendered, there were others who saw that a better way than to penalize laxity and inefficiency was to put a premium on efficiency and the result was a shining spot in the Cincinnati ordinance providing that, instead of a mere return sufficient to pay operating expenses, taxes and fixed charges, the company can participate in the surplus over this amount depending upon its ability to operate efficiently and its exercise of this ability. If the rate of fare can be kept at 6 cents the company will receive 20 per cent of the surplus instead of having it all go to the reserve fund to reduce fares. If the rate is 5½ cents the company's share is 30 per cent, and if 5 cents the company's share is 45 per cent. If our friends who are predicting a general 10-cent rate all over the country are correct there is not much hope that the company's participation will be more than a moot question, but the principle is there and in new settlements made it should be embodied in a more workable and certain form. The idea of making the participation inversely proportionate to the rate of fare appears reasonable, but there should be some participation no matter what rate may be in effect.

THE RESULTS SUMMARIZED

The Cincinnati plan has now been in effect just one year. What are the results?

The initial rate of fare under which the plan started was 5 cents cash, no reduced rate for tickets. It was known that this rate would be insufficient, and the advance Jan. 1, 1919, to 5½ cents; April 1 to 6 cents; July 1 to 6½ cents and now Oct. 1 to 7 cents, have but carried out the company's prediction when the ordinance was passed that on the basis of expenses then the fare should be 6 cents, while if there were further increases in operating expenses that rate would not be sufficient. The further increases did come, notably, in the award of the War Labor Board increasing trainmen's wages.

The people of Cincinnati have thoroughly understood the reason for these advances. It is apparent that they want good service and are willing to pay what good service, as they themselves can readily see, in these days of high prices must cost. There have been here and there some expressions that if the company would pay no rentals and no interest on bonds or other securities the fare would not go so high, but the company has been frank and explained the situation quite fully in the newspapers and otherwise, and the people see the necessity of maintaining the company's credit in order that it may get the money with which to make improvements. Furthermore, when they have realized that the company's own stockholders have not as yet participated in the working of the new plan and that the greatest beneficiaries have been the employees who have received higher wages and they themselves who have received improved service, they have awakened to the fact that while they are paying more for everything that they buy the increase in car fare is one of the smallest and, under the service-at-cost plan, the most logical and scientifically made.

The 7-cent fare now in effect is expected to produce just about enough to provide the current requirements. There is, however, a deficit resulting from the operation during the past twelve months at a lower rate, and theoretically this deficit will have to be met also out of earnings. The problem now is to wipe out this deficit without its remaining as a cause of further increasing fares.

The experience in Cincinnati points out the advisability of avoiding the creation of a deficit at the beginning of the working of the service-at-cost plan if possible.

The experience of Cincinnati from higher fares has been encouraging to those who believe that the public is becoming educated to the necessity of higher fares in order to preserve and improve street railroad facilities. During the month of August with a 6½-cent ticket and 7-cent cash rate in effect the ticket fares were 69.54 per cent and the cash fares 30.46 per cent of the total adult revenue passengers, so that instead of an increase in rate of 30 per cent the increase in rate was 33.04 per cent. The number of revenue passengers carried increased 2.04 per cent over the same period of 1918, which is under the normal increase in Cincinnati, but still an increase in spite of the higher fare. The result was an increase in passenger revenue of 34.67 per cent. It is believed that this result is due to the general understanding of the people of Cincinnati that they now actually control the operation of the street railroad system and that, as the company has explained as clearly as possible, they can have just the kind of service they are willing to pay for; and also to the appreciation by the people of the fact that even with general operating conditions in Cincinnati much more costly than most other cities on account of extreme grades and narrow streets, the fare under the service-at-cost plan is under that in many cities where the increase in fare has been made arbitrarily, or at least on a less scientific basis.

A tangible result of the enactment of the revision ordinance in Cincinnati has been the appreciation by the bankers of Cincinnati of the stronger position in which the company is placed thereby. The requirements for money during the time that the company has been going through the period of low fares under the new plan, as well as money for improvements, has been urgent; and the bankers, recognizing the necessity to the community of continued adequate and improved street railroad service, have provided the funds to keep the company in a position to function properly. The next decisive step under the ordinance will be working out the future financing of the company. It is confidently believed that the new plan will pass this test also, and if it does it will be a vindication of the optimistic opinion sometimes expressed that when the people of a community are given the facts and their aid enlisted in working out a problem along lines that are fair to them, they will not only thoroughly understand and appreciate the problem, but aid in its solution.

MERITS OF SERVICE-AT-COST PLAN

I cannot refrain in closing to call attention to one possibility under the service-at-cost plan in Cincinnati, or in any other city where it may be adopted, and that is, the solution of the transportation problem by whatever advancement of the art or by whatever replacement of existing methods by radically different ones may be attempted. One question asked of street railway operators at the early hearings before the Federal Electric Railways Commission was, if they believed that existing street railways should be protected not only against the evident and accepted unfairness of unregulated jitney competition, but against any new method of transportation that by its inherent efficiency or cheapness would put the street railroad out of business. It now appears improbable that the street car on city streets can be superseded by anything more efficient because of the necessity for as large a unit as possible moving in the smallest space and by the most economic power; but even supposing that enormous motor buses of some type could be devised, which would eliminate the impossible congestion that would result from turning passenger carrying business over to any existing form of gasoline vehicle and which could be operated more cheaply and carry passengers more comfortably, the street railway interests could not successfully oppose the development of a carrier of this sort. No industry can stand long in the path of progress. But if such a new development should come what agency could more logically and efficiently operate the new system than the existing transportation company under city control?

The Cincinnati service-at-cost plan not only provides for the amortization of a considerable amount of existing securities but contemplates the amortization of future security issues. The impossibility of a top-heavy capitalization, therefore, is apparent and any new transportation method, either in the way of motive power, type of vehicle or place of operation, could be undertaken by the existing system through the issuance of securities under the direction and approval of the municipality, where it could be shown that the new system would be more efficient or more economical or more desirable for the traveling public even at an increased cost. In all fairness the present worth of the existing transportation system as found and fixed by the municipality ought not to be ruthlessly dissipated; and if a more efficient plan is devised the old one should be amortized and the new one put into operation, through the medium of the existing company acting directly under the control of the municipality, thus protecting the honest investment as ascertained by the municipality when the service-at-cost plan is adopted and at the same time giving the public the benefit of the best there is in urban transportation.

This would remove the possibility of antagonism to new methods that might be evidenced by an independent and uncontrolled street railroad system and insure the adoption of the most modern means of urban transportation that might be developed and its operation by an efficient and experienced organization.

The Youngstown Service-at-Cost Franchise*

Many Difficult Features, Commonly Called "Local Conditions," Affecting Operation in Youngstown Have Been Satisfactorily Solved—Four Alternatives Are Suggested

BY R. P. STEVENS
President Mahoning & Shenango Railway & Light Company, Youngstown, Ohio

FREQUENTLY, when the subject is broached of replacing the form of grant under which street railways customarily have been operated in all sections of the country since the infancy of the industry with what has come to be known generally as a "service-at-cost" franchise, objection is raised that the plan is not feasible here, there or elsewhere because of complicated local conditions. Our experience in Youngstown in turning from the older form of franchise of limited duration, with fixed rate of fare and ill-defined, irresponsible regulation of service, to the newer and, as many think, better plan of operation is demonstrating that this objection is not insurmountable. The Youngstown service-at-cost franchise was modeled largely after the so-called Tayler grant, though it departs from that model in some particulars, but the complications to be untangled before the city railways could be set up as a distinct property capable of operation under the service-at-cost plan, were many and difficult.

The lines to be included within the city property represented approximately one-third of the entire system (59 out of a total of 178 miles) held in common ownership, lying within four counties in two states, giving city service to four communities and tied together by three main lines of interurban railway. In many years there had been no distinct line of demarcation between the three interurban lines entering Youngstown and the local lines serving the various parts of that city and immediately adjoining villages. Due to common ownership and operation, the interurban cars had carried local passengers promiscuously. Here, then, primarily a sharp division must be made, so that city traffic proper might come under the new plan, interurban traffic be made distinct from it, and at the same time both types of service be adequately maintained.

A further complication was that several of the largest industrial plants lay just outside the city limits in other cities. They were most important traffic points to citizens of Youngstown and, therefore, their inclusion within the city system became both necessary and desirable. These lines extended into three other cities adjacent to Youngstown and were operated under franchises requiring a 5-cent fare to any point in Youngstown. At first this seemed almost insurmountable but was overcome very readily by obtaining new franchises in each city. In the two small cities lying east of and immediately adjacent to Youngstown, the new franchises provide that the fare shall be the same as that charged in Youngstown under the service-at-cost franchise, but in the city of Girard, to the west, the new franchise provides that the fare shall be 1 cent greater than the fare at any time charged in Youngstown.

Another situation in this same connection that had to be met was that our working agreement with our car-service employees, divided into six locals, was entered into in common through negotiations with a joint board. One of the interurban divisions was worked entirely and another to the extent of 50 per cent by Youngstown crews, and the extra list used in common with the Youngstown city lines. Here not only physical but labor conditions called for a solution.

Again, the central carhouse and car shops, where virtually all the major repairs to cars for the entire system had been made for a period of years, must be included as an essential part of the city property, yet work on cars from other parts of the system must be done there, at least for a time, as a matter of proper economy.

HOW THESE COMPLICATIONS WERE OVERCOME

Permit me to outline the manner in which these conditions were met before mentioning others of a still more complicated character. First, it was decided that the service to the large industrial plants lying beyond the city limits must be included within the territory of the proposed city system. This supplied the line of demarcation for the city district, differing somewhat from the lines of the municipality. It also decided where the interurban lines extending respectively east and west from the city ended. All traffic within these points was to be local traffic and no local traffic was to be carried on interurban cars; but provision was included in the franchise for the right to continue the operation of the interurban cars over the city tracks to the center of the city.

The situation as regards the third interurban line involved presented a different aspect and was not so simple, as this line was covered by the existing franchise which was about to be given up. About 3 miles of this 15-mile line lay within the city limits, much of it on private right-of-way. No distinct city service had ever been rendered over it, though it carried local passengers. It was chiefly the entrance to the city for traffic arising without the city. To turn one-fifth of the line over to the city system in these circumstances would be simply to bite the interurban line off short, possibly seriously to interfere with the preponderant right of the outside traffic to enter the city.

Therefore, none of this line was included within the city property, but it was provided that the rate of fare charged within the city on this line should always be the same as on the city lines and, further, that the city should have the right at any time to inaugurate city service under the control of the railway commissioner over the part of the line within the city the same as on the lines embraced within the city system, and that the compensation for this privilege to be paid by the city system should be the same as that paid by the other interurban lines mentioned for the use of the tracks of the city system.

These arrangements disposed of the division of the tracks and overhead. As stated, it was necessary to include the chief car shops of the company in the city system and yet provide there for heavy repairs to outside equipment. This was done by the inclusion in the ordinance of a clause providing for the right to make such repairs as might be

---

[*] Abstract of paper presented at meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 8, 1919.

necessary upon the payment of the shop costs and proportion of overhead.

The ordinance provided for the complete corporate autonomy of the company, thus giving the company full control over matters relating to employees. Therefore, the question of operating interurban cars from the same regular and extra lists of men operating the Youngstown cars could not be specifically treated in the franchise, but it was the plain intent of the plan that the city and interurban lines should be entirely separate and the complications that might arise, especially at times of labor shortage, over a question of preference in manning local or interurban runs may readily be imagined. Therefore, it was necessary to withdraw, as soon as practicable after the ordinance became effective, the freight and passenger interurban runs that had been filled with Youngstown crews and place them elsewhere.

This was done by gradually filling these runs from the other ends of the divisions affected, a simple enough proceeding were it not for the dissatisfaction that such a proceeding might cause among the car service men.

THE POWER SITUATION WAS COMPLICATED ALSO

Aside from these distinctly railway matters we had other obstacles to meet and overcome. We had a combined railway and light and power property. The current for both railway and lighting and power purposes was generated at three power stations, one within the city and two outside. The station in the city of Youngstown was used for both railway and lighting purposes, while part of the railway power used within the city was generated at a station some miles outside the city, the two being tied together by transmission lines. In addition, exhaust steam and some live steam from the station in the city was used for our central station steam heating system. The chief substation for the city's street lighting system and for domestic purposes was located in the city power station. The commercial direct current circuits for elevators and the like were fed from the same machines as were the trolley feeder circuits.

We must untangle this complication and in order that the city railways might be a complete property in themselves, provide for them a power house of their own. This was one of the knottiest problems presenting itself in the negotiations between the city and the company. It was solved by including the Youngstown power station as part of the city railway property, excepting the lighting substation; the strict division of the source of power for the various uses mentioned; provision for the mutual exchange of power between the two power stations directly affected as occasion might arise; and provision, first, for the right of the company to continue to use steam from the power station boilers for central station heating purposes, and, second, the manner of payment for such steam. Proper metering arrangements made such a plan possible without serious dislocation of any of the businesses involved.

A NEW COMPANY ORGANIZATION WAS PREFERABLE

The organization of a separate company immediately to own the franchise and to have full control of the property either through ownership or lease was not practicable in Youngstown, because of the most serious complication of all that confronted us, the mortgages on the property as a whole. These would not permit of a subdivision of the property or a relinquishment of the old franchise unless a new one was substituted. The advisors of the city authorities were firm believers in the potency of a separate company with a large proportion of local shareholders as the best means of assuring the continued and certain success of the plan. The experience in Cleveland had led them to that conclusion. Accordingly, the franchise which was framed looked to such a consummation in Youngstown.

But the funded debt of the company owning and operating the facilities from which were to be carved a complete city system was chiefly in the form of a blanket mortgage covering railway, light and power, steam and gas properties, irrespective of municipal lines or limits. This mortgage still had some time to run. It did not contemplate the segregation of the property into various local units. Yet the piece of this property that must be set aside for separate operation and eventual ownership, must be a complete railway property in itself.

The setting up of a district operating organization, the opening of new sets of accounts and similar steps for the separate handling of the city railways under the service-at-cost plan, were comparatively simple and were carried out coincident with the taking effect of the new franchise, but the setting aside of the property, in a financial sense, was something quite different and could not be accomplished so speedily or easily. Still it was one of the definite objects of the new pact.

The difficulties caused by the mortgage conditions were met in this way: The city naturally desired a separate company in fact as well as in name; it wanted to deal with a corporation that had no interest save that covered by this service-at-cost compact, and there was no reason why this desire should not be satisfied, provided sufficient time were granted to make the necessary rearrangements of the funded debt.

This was done in connection with the provision for the purchase of the railway property by the municipality at any time it might elect by placing a premium on the value of the property if a separate and distinct company were organized and limiting the time within which this separate organization must be set up. The provision is as follows:

> "* * * In the event the city shall purchase and take over the street railway property of the company covered by this ordinance during the life of this grant or any renewal thereof, as in this section provided, then it shall pay for the same the capital value of said property, increased or diminished, as in this ordinance provided, and in the event that the company shall cause within forty-eight months from the date this ordinance goes into effect, a corporation to be formed under the laws of the State of Ohio for the purpose of owning and operating all of the lines and property covered by this ordinance and all additions, betterments, extensions and improvements added thereto, and said corporation shall actually take over, so own and operate aforesaid property and the total issued and outstanding capital stock and all bonded and floating indebtedness by it incurred or assumed, shall, at such time of taking over, be equal to the whole capital value as it may then be under the terms of this ordinance and no more, and shall thereafter whenever it becomes necessary to sell stock of such company to secure money for any purpose herein provided which requires the par value of such stock so sold or expense thereon to be added to the capital value, give all reasonable and fair opportunity to the citizens of the city of Youngstown to buy said stock at its par value, then a further sum equal to 10 per cent of the capital value so appearing at such time of purchase shall be paid by the city. * * *"

The start on the organization of the new company called for by the ordinance was made immediately after the franchise became effective. The company was chartered and organized with a nominal capital; the organization set aside by the parent company to operate the city property became the operating organization of the new company, with the only points of contact between the two resting in the president, treasurer and general manager, and the way was cleared for the financial reorganization necessary to meet in full the city's requirements with what seems an ample period ahead, even in these times, to accomplish that purpose.

DIFFERENCES BETWEEN THE CLEVELAND AND YOUNGSTOWN PLANS

The objects of the Youngstown plan are identical with those of all similar plans, as follows:

1. Adequate service for the people of the community, assured through the supervision of the service by a commissioner appointed by the city.

2. Adequate revenue to pay for this service, assured through a sliding scale of rates of fare automatically changing in accordance with the needs of the service.

3. Fair return upon the money invested in the property, assured through basic and definite means of ascertaining that investment and the rate of return to be paid thereon, and made a part of operating expense.

Naturally in every community there will be minor differences in the manner of applying these broad principles of the plan. Such was the case in Youngstown, especially as compared with the Cleveland plan after which it was modeled.

For instance, the capital stock and bonds outstanding against the property at the time of the ordinance taking effect has no bearing on the value on which a return shall be paid. The property to be included within the city system was specifically enumerated and set forth in the ordinance and upon this an agreed valuation was placed. This valuation is permanent; upon it the return is paid. As extensions or improvements are made, or as existing property is sold, the value upon which the return is paid fluctuates.

Again, there is a difference in the rate of return. For the property originally included in the system, this is fixed and invariable—7 per cent per annum. Upon capital additions from time to time it is provided that the return shall not be at this rate, but at the rate actually required to obtain money at the time. This entirely eliminates the necessity of the company taking any chance on the cost of money in the future and avoids just such controversies as that now existing in Cleveland over the rate of return to the stockholders.

Another difference, and an important one, is the fact that there is neither a minimum nor a maximum limit set to the rate of fare. A range of nine rates of fare is set forth in the ordinance and it is further provided that in event of the next to the last rate set forth in either direction becoming effective, the Council shall establish another rate in the same ratio as the rates set forth in the ordinance so that always there are two more steps in the sliding scale of rates ahead of the rate in effect.

The rates are for both cash and ticket fares. The provision for transfers is that they shall always be charged for at one cent each, regardless of what the cash fare may be. In this particular there is some difference from the Cleveland plan where at times the refunding of the charge for transfers provides essentially free transfers.

Another rate provision of interest is that the city and the company may at any time agree on any fare, regardless of the prescribed order in the schedule, thus permitting of the prompt meeting of an extraordinary situation. This is a valuable asset to the company.

Other differences have been touched upon in detailing the steps that were necessary in segregating the property, while there may be some in connection with the provisions for arbitration and the right of the municipality to purchase the property, but the details of these would require too lengthy a discussion to permit of their treatment in this short paper. Suffice it to say that the machinery for arbitration and the subjects that may or may not be arbitrated are set forth at length. The city's right to purchase may be exercised at any time during the life of the grant or any extension thereof upon six months written notice, or at the termination of the grant. In the latter event the 10 per cent premium referred to before is not to be paid for the property.

At any time the grant, or any extension thereof, has less than fifteen years to run, the company has sole control of the matter of making extensions or betterments and has the right to set up an amortization fund during the balance of the life of the grant for the entire value of the property. This is an important safeguard, as it practically means a perpetual franchise unless the city elects to buy the property, and the company is not left hanging in mid-air with a large investment and no way of recovering it at the expiration of the grant.

RESULTS AT YOUNGSTOWN HAVE BEEN ENCOURAGING

So far as our experience has run in the period of eight months that the service-at-cost plan has been in effect, there is no great difficulty in operating under its provisions. Indeed, there have been distinct advantages and comparatively few disadvantages. To be sure we must remember that public officials of a city are frequently better politicians than they are business men and that realization of the identity of interests of the company and the city—the essential fact of a partnership existing—is arrived at somewhat slowly. At times there is apt to be a reversion to the age-old habit of "heckling" the street railway as a means of impressing one's constituency, especially in times like the present when costs and, therefore, fares continue upward in their movement.

In Youngstown there was an immediate and definite improvement in the service possible, because, with the beginning of operation under the plan, the means were provided, or assured, to pay for it. At first there were many complaints made by persons impatient for revolutionary improvements, and considerable agitation for all sorts of extensions of lines, but this ebullition simmered down till now there is wider and more general satisfaction with the service than at any time in the last two years or more, and this in face of a steadily advancing rate of fare.

Thus, the company has been relieved of a great deal of bickering and fault-finding and, moreover, the necessary advances in the rate of fare have been put into effect without the slightest friction. Indeed, a number of citizens have shown their appreciation of this fact to the extent of constituting themselves unofficial inspectors and checkers, always with good intentions but not always with as good results.

SOME SUGGESTIONS ARE MADE REGARDING FUTURE SERVICE-AT-COST FRANCHISES

In closing permit me to make a few observations which may be helpful in the negotiation of service-at-cost franchises elsewhere.

In our franchise the paving provisions are the same as in the old franchise. The street railway and, therefore, of course, the car-rider is required to pay for new pavement between the rails and 1 ft. on either side, to pay for repaving and to pay for maintenance of this paving. This is not fair to the car-rider.

I am also of the opinion that perhaps a better provision than that in our franchise with regard to transfers may be drafted. The placing of a monetary value on the transfer (excepting possibly under a few conditions) is correct in principle. It is, in a sense, the application of the zone principle where a true zone system of fares might not be practicable or desirable. But if the cash and ticket fares are to vary, why should not the cost of a transfer vary in like manner? My suggestion is that an intermediate rate for transfers be interposed between the steps in the cash fare rates as the higher figures are reached, so that a 2 or 3-cent charge for a transfer might be provided and thus the relation between the cost of carrying passengers on one line and on two lines be maintained.

But most important of all is the rate of return. I do not believe that any existing provision on this subject is entirely satisfactory. Here, perhaps, there should be a "sliding scale" also, so that business acumen and managerial efficiency might be spurred to greater effort by the incentive of increased reward. To be sure, a fixed, assured return, approximating to a degree a guaranty, has excellent features. It places the securities of the company operating under such a plan upon a solid foundation and makes them very desirable for conservative investment and for trust funds and gives to capital stock something of the virtues of a bond.

Human endeavor is brought to its best under a system of reward and penalities and this is no less true of the management and operation of street railways than of any other enterprise. It has been suggested that, as the rate of fare is lowered through efficient management, the rate of return to the investors represented by that management be increased and vice versa, the rate of return probably fluctuating between a fixed minimum and maximum; but we all know that in the present era of ascending costs such a system would work a decided hardship. The increased costs have been beyond managerial control and to penalize the invested capital as a result would not be just. Moreover, the cost of money has advanced in much the same way as have the costs of material and of labor, so that, in the present circumstances at least, the plan for a lower return as fares increased would be departing from rather than meeting the course of the money market, a market just as important to us as those wherein we buy our supplies and our labor.

Again, we must remember that the interests of the company and the city officials in such circumstances might not always be identical. Ordinarly, we might expect both to work with the aim of reducing fares to the lowest feasible level, but the people of a community might well be willing to pay 6, 7 or 8 cents for a ride, or whatever other rate might become customary. Then, if skillful management and earnest application to reducing costs were to bring about a situation wherein a lower fare might be put into effect and an increased return earned, the people, through their representatives, the railway commissioner and councilmen, might elect, rather than to reduce the fare, to make an unprofitable extension of the lines, thus defeating the effort of the management to earn a reward by diligence and efficient work.

SHARING OF SURPLUS PROFITS NOT VITAL TO THE PLAN

Whatever else may be said of the service-at-cost plan, this matter of the sharing of surplus profits, of an increasing and decreasing return to the management of the lines, remains an open question, and if it could be solved satisfactorily would put the service-at-cost plan beyond question, but this feature is not at all vital to the adoption of the present plan as the most practical and equitable solution of the street railway problem yet offered.

I emphatically differ with those making recent public statements attempting to give the impression that service-at-cost plans are all failures, and feel that the claim is hastily born of ignorance of the facts and is very ill-advised.

In my opinion there is not a city street railway in the United States that can survive on a 5-cent fare alone, pay all its proper charges and properly finance itself to keep pace with the community it serves, and still the impression has been erroneously heralded broadcast that a 5-cent fare is sufficient in some cities and should be in all, greatly damaging the case of the universal pleading for a just return on money honestly expended. My conviction is that the ultimate solution of our problem rests in efficiency, honesty and a 10-cent fare. Investigations have proved that increased fare within reasonable limits will, if properly applied, produce increased gross and I fail to see why, if proper measures are taken, we cannot get 10 cents for ten cents' worth of merchandise. The bread man, the milk man and the popcorn man have taught us that a dime is only worth a nickel and is just as easy to get as a nickel used to be, so why should we wait until our properties are further dissipated?

The choices, therefore, that I have to offer are a 10-cent fare, municipal ownership, service-at-cost, or dissipation of your property and, as a result, stagnation of the community it should serve.

Montreal Cost-of-Service Plan *

Essential Features of a Contract Negotiated by the Company and a Commission of Five Representative Business Men Authorized by the Provincial Legislature

BY J. E. HUTCHESON

General Manager Montreal Tramways

IN 1916 the Montreal Tramways possessed on the Island of Montreal, under its name or under the names of the companies absorbed by it, franchises in thirty municipalities; twenty-seven of which were exclusive; twenty-three, terminable between the years 1922 and 1961, and seven, interminable. The contract with the city of Montreal as it existed in 1892 was of thirty years duration, expiring in 1922. The company's system was operating under fourteen municipal councils.

The consideration for the use of the streets in the city of Montreal was an annual payment on the basis of a percentage of the gross earnings which applied only to the revenue from operation within the city limits as they existed in 1892. The tariffs, with free transfers, in each municipality were fixed for the duration of the respective contracts. In 1916 the average fare per revenue passenger on the entire system was 4.12 cents, and for total passengers 3.04 cents.

From time to time, during several years prior to 1917, the city requested the company to make extensions of tracks in municipalities which had been annexed. While admitting that in certain sections there was need of further service the company maintained that the city of Montreal could order extensions beyond the contract requirements in the areas annexed only by making a new contract covering such annexed areas.

This led to negotiations between the city and the company. No progress was made until the Provincial Legislature, in 1917, passed an act creating a commission of five prominent citizens of Montreal to prepare a contract that would safeguard the interest of the citizens and the shareholders of the company; such contract to become law when signed by the members of the commission and the company, and ratified by the Legislature.

After thoroughly studying the matter the commission unanimously concluded that a form of service-at-cost plan was the only equitable basis upon which a street railway franchise should be made. The company agreed to negotiate on this basis, and finally on Jan. 28, 1918, a contract, for a period of thirty-five years, covering the company's entire system was signed by the officials of the company and the commission. This was ratified by the Provincial Legislature on Feb. 9, 1918.

The new contract provides for the "Montreal Tramways Commission," consisting of three members appointed by the Lieutenant-Governor in Council, to serve for ten years. This commission has control of the service—may fix the speed of cars; may establish routes, stopping and transfer points; may fix passenger density per car-mile; may stipulate types of rolling stock and of track construction; must approve of all renewals and extraordinary maintenance expenditures, and is empowered to examine and audit all receipts and disbursements. The necessary expenses incurred by the commission in the performance of its duties are to be paid by the company and form part of the operating expenses.

Any party in the case may appeal to the Quebec Public Utilities Commission from any decision of the commission on any question of law or jurisdiction relative to the contract, as well as from any decision rendered by the commission relative to the provisions of the contract. Such appeal shall be final, except on questions of law.

---

* Abstract of paper presented by title at meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 9, 1919.

The act provided that the Montreal Commission should make the tariffs uniform for the territory comprising the city and the five municipalities within the city limits; such territory to be known as the "uniform tariff territory." Outside this territory the commission may fix different rates providing that these do not unjustly burden the rest of the system, and providing further that the municipalities outside the territory may, with the consent of the commission, agree to pay the company any part of the excess of their respective services for the purpose of obtaining lower rates.

Guarantee Fund Is Provided

The company by yearly installments of not less than $100,000 is to provide out of its own resources a special fund of $500,000 to be known as the "guarantee fund," to be used to meet all liabilities and other debts (except mortgage debts) incurred by the company, prior to the coming into force of the contract, through the operation of its system, and to provide for the payment in each year of any portion of excess expenditure as hereinafter defined, which shall be found by the commission to have been unnecessary for the payment of penalties imposed upon the company, and also to guarantee fulfillment by the company of all obligations assumed by it. This fund when created is to be maintained by the company at $500,000.

The gross revenues of the company are to be disposed of for the following purposes and in the following order: (1) Operating expenses and taxes and operating profit; (2) Maintenance and renewals fund; (3) Return on capital value; (4) City rentals; (5) Contingent reserve fund; (6) Division of surplus.

The commission for the first year of operation is to allow the company out of gross revenues a sum for each revenue car-mile, under certain specifications as an operating allowance. The company is so to increase the transportation service, under the direction of the commission, that the permissible average density of traffic per car-mile, during the first year of operation under this contract, shall not be excessive. Thereafter the commission is to redetermine and fix annually the amount of operating allowance and permissible average car-mile density, based upon the experience of the preceding year.

Company Is Allowed an Operating Profit

If at the end of any year the commission shall find that the company has kept within 2½ per cent of the operating allowance the company may take out of gross revenues a sum to be known as the "operating profit," which shall be equivalent to one eighth of 1 per cent on the total average capital value for that year. Any excess over the above expenditure is to be known as the "excess expenditure," which is to be taken from the gross revenues to an amount not exceeding one eighth of 1 per cent on the average capital value for such year, and the operating profit shall be reduced accordingly. And if the excess expenditure shall exceed this amount the company shall receive no operating profit, but shall pay such excess out of the guarantee fund, unless the company shall have been able to convince the commission that the excess expenditure was unavoidable. Then the commission is to permit the company to take out of gross revenues the additional amount required to cover such excess expenditures and also award the company the full amount of the operating profit less any part of such excess expenditures which may be found to have been unnecessary. If the unnecessary part exceeds the amount of the profit, the balance is to be paid by the company out of the guarantee fund.

For the purpose of maintenance, renewals, etc., a "maintenance allowance" per car-mile is to be placed in a "maintenance and renewals fund." The allowance is to be adjusted annually so as to maintain the fund at $500,000.

Return on Capital Value Is Set at Six Per Cent in Normal Times

The capital value of the tramways system is fixed at $36,286,295, including all physical assets added to the system up to Dec. 31, 1917. As its usual return upon capital value so fixed, the company is to receive in quarterly payments out of gross revenues a sum equal to 6 per cent on such capital value. From time to time hereafter, as money is needed for betterments, additions to and extensions of plant, required by this contract or approved by the commission, such money, except to the extent that monies for such purposes are payable at the time from the maintenance and renewals fund, are to be supplied by the company, and the amounts so supplied and actually expended for such purposes under the supervision of the commission shall, plus net interest expenses during construction, be added to capital value, and the company is to receive out of gross revenues an annual return of 6 per cent on such amount.

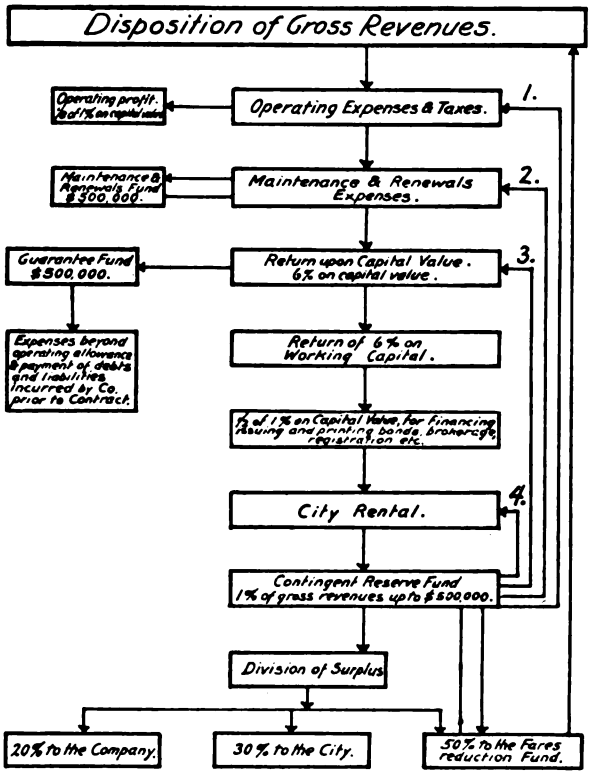

Disposition of Gross Revenues.
Operating profit. ⅛ of 1% on capital value
Operating Expenses & Taxes.
1.
Maintenance & Renewals Fund $500,000.
Maintenance & Renewals Expenses.
2.
Guarantee Fund $500,000.
Return upon Capital Value. 6% on capital value.
3.
Expenses beyond operating allowance & payment of debts and liabilities incurred by Co. prior to Contract.
Return of 6% on Working Capital.
½ of 1% on Capital Value, for Financing, issuing and printing bonds, brokerage, registration etc.
City Rental.
4.
Contingent Reserve Fund 1% of gross revenues up to $500,000.
Division of Surplus
20% to the Company.
30% to the City.
50% to the Fares reduction Fund.

DIAGRAM SHOWING PRINCIPAL FEATURES OF MONTREAL COST-OF-SERVICE CONTRACT

As the capital established at the sum of $36,286,295 does not include any working capital, it is agreed that any working capital required shall be furnished by the company, and upon this working capital the company shall receive a return of 6 per cent.

For the purpose of covering the expense to be incurred by the company in procuring additional capital it shall out of gross revenues receive annually an amount equivalent to one-half of 1 per cent of $36,286,295, for discounts, commissions, printing and engraving, exchange, legal and other expenses incidental thereto when issuing bonds or debenture stock and for printing and engraving, transfer and registration fees and listing on stock exchange when issuing stock.

The city is to receive out of gross revenues, over and above all other amounts to which it may be entitled under the contract, or otherwise, the sum of $500,000 per annum payable quarterly.

Other Financial Considerations

One per cent of the gross revenues is to be paid annually into a contingent reserve fund, until this fund amounts to $500,000. This fund is to be used whenever it shall be necessary to make up any deficiency in the payments listed earlier in the order of priority therein established. Upon the termination of the contract, the company shall repay any monies borrowed from the fund and the total amount then in said fund shall be distributed as follows: to the city, 30 per cent; to the company, 20 per cent, and to a "tolls reduction fund," 50 per cent.

All the portion of the gross revenues remaining after the payment of the charges described is to constitute the divisible surplus, and is, at the end of each year, to be distributed as follows: to the city, 30 per cent; to the company, 20 per cent, and to the tolls reduction fund 50 per cent. The tolls reduction fund is to be held in trust for the patrons of the company for the reduction of tolls, and administered by the commission.

Provision for Reduction in Fares

Whenever at the end of any year the amount in the tolls reduction fund exceeds $1,000,000 the commission may, and whenever the amount in said fund shall exceed $3,500,000 the commission shall, reduce the fares or tolls of the tramways system. For the purpose of effecting said reduction, an amount not exceeding 25 per cent of the total amount in such fund, at the close of the year preceding the year when such reduction is to be made, is to be taken out of the tolls reduction fund, and added to gross revenues, and the commission thereupon is to reduce the tolls to an extent that, in the aggregate for the year, is at least equal to the amount so taken out of the tolls reduction fund, but does not exceed such amount, plus 75 per cent of the amount which during the last preceding year flowed from gross revenues into the divisible surplus. Thereafter, at the beginning of each year, an amount shall be taken from the tolls reduction fund and turned into gross revenues equal to the amount so taken from said fund at the time of the reduction of tolls; but when the total amount remaining in said tolls reduction fund at the end of any year is less than the amount taken annually from such fund for the increase of gross revenues as above provided, the appropriation from said fund to gross revenues shall for the time being be discontinued, but the tolls shall remain as previously reduced until it shall be necessary as hereinafter provided to increase them.

If the tolls reduction fund, in spite of its depletion for such reduction in tolls, shall again increase to an amount in excess of $2,500,000, the tolls shall be further reduced.

If in any year the gross revenue shall be insufficient to provide for the payment of all sums mentioned, and if the contingent reserve fund is less than $300,000, the commission shall forthwith from any monies in the tolls reduction fund appropriate the amount necessary to bring the contingent reserve fund up to $500,000. If there is not sufficient money in the tolls reduction fund, the commission is forthwith to increase the tolls to the extent necessary to provide at least sufficient gross revenues to meet all the payments described earlier.

At the termination of the contract the tolls reduction fund is to be the property of the city.

The Application of the Contract Provisions in Practice

In conformity with the provisions of the contract the Tramways Commission on June 24, 1918, set the rates of fares as follows:

1. From midnight to 5 a. m., 15 cents.
2. From 5 a. m. to midnight, 6 cents cash or five tickets for 25 cents.
3. For school children from five to sixteen years of age, on week days and between the hours of 8 a. m. and 6 p. m., seven tickets for 25 cents.
4. Transfers shall be issued free to school children specified above, and to all passengers traveling on cars between 5 a. m. and 8 a. m. on week days only. At all other times a transfer shall be issued to any passenger paying his or her regular fare at a charge of 1 cent.

The car-mile allowance for the first period of operation under the new contract was set as follows:

Operating expenses and taxes—22 cents per car-mile for cars equipped with motors, and 15 cents per car-mile for trailers.

Maintenance and renewals—7.9 cents per car-mile for cars equipped with motors, and 5.2 cents per car-mile for trailers.

This decision was appealed and the Quebec Public Utilities Commission rendered its decision on Sept. 20, 1918, fixing the rates as follows:

1. Day tariff, 6 cents cash or a ticket sold at the rate of five for 25 cents.
2. School children, a ticket to be sold at the rate of seven for 25 cents.
3. Special day tariff of a ticket to be sold at the rate of six for 25 cents, to be good only between the hours of 6 and 8 a. m., and 5 and 7 p. m. on week days only.
4. Night tariff, 15 cents cash.

Each passenger paying a fare shall be entitled to a transfer free of charge.

As the Quebec Public Utilities Commission did not fix any allowances per car-mile for the expenses of operation as provided for in the contract, the Tramways Commission on Oct. 2, 1918, fixed these as follows:

Operating expenses and taxes—20.1 cents per car-mile for cars equipped with motors, and 13.7 cents per car-mile for trailers.

Maintenance and renewals—7.33 cents per car-mile for cars equipped with motors, and 4.8 cents for trailers.

This gave an average allowance per car-mile for operating expenses and taxes of 19.93 cents and for maintenance and renewals of 7.26 cents.

The actual costs for the twelve months ending June 30, 1919, were, for operating expenses and taxes, 21.74 cents, and for maintenance and renewals, 7.26 cents. As the company justified before the commission the over expenditures made during the year, the actual cost per car-mile was allowed.

The company did not receive the full benefit of the increased rates of fare during the year, as they only became effective from Oct. 3, 1918. The average fare per revenue passenger increased from 4.1 cents to 4.8 cents after the new rates came into force.

For the year ending June 30, 1920, the Tramways Commision by its decision rendered on Aug. 29, 1919, fixed the rates of fare as follows:

1. Day tariff—from 5 a. m. to midnight 7 cents cash, or a ticket to be sold in series of four for 25 cents.
2. Special day tariff—ticket to be sold in series of five for 25 cents, to be good only between 6 and 8 a. m. and 5 and 7 p. m., on week days only.
3. The present outside night tariff and school children's tariff to remain in force.

The per-car-mile allowances are as follows:

Operating expenses and taxes—24.7 cents per car-mile for cars equipped with motors, and 17.4 cents per car-mile for trailers.

Maintenance and renewals—8.54 cents per car-mile for cars equipped with motors, and 7.05 cents per car-mile for trailers.

The above decision was appealed against by the city as being too high and by the company as being too low. Experts from the office of Bion J. Arnold, engaged by the city, were heard and they supported the company's figures. Arguments by counsel for both sides closed on Oct. 2, and judgment will be rendered in the near future, which I feel sure will not be more unfavorable to the company than to confirm the Tramways Commission decision of Aug. 29.

Gasoline vs. Electric Motor for Street Railway Service*

Electric Traction Will Profit Indirectly from Any Progress Made in the Direction of a Self-Propelled Vehicle But at Present the Gasoline Motor Cannot Compete with the Electric Motor as Railway Motive Power

BY NORMAN W. STORER

General Engineer Westinghouse Electric & Manufacturing Company,
East Pittsburgh, Pa.

IN ITS commercial development, the gasoline motor has produced almost a revolution in modern civilization. In its far-reaching effects on the human race it ranks with the steam engine, the telegraph, the telephone, wireless telegraphy and electric transmission of energy. The war caused a great advance in the development of this motor, and in its accessories and application, resulting in high weight efficiency and improvement in service performance. A late estimate states that there were, on July 1, 6,353,233 registered motor vehicles in this country alone.

THE EXCELLENT GASOLINE MOTOR SHOULD NOT BE PUT TO WRONG USE

The use of the gasoline motor for motor-buses is on the increase, and there is now talk in some quarters of applying it to street railways. With all due respect to the promoters of this scheme, and to the gasoline engine itself, in the light of past experience I must rank this proposition with others of the past twenty years in which extravagant claims have been made for some new invention or for a new application of an old scheme before it had been thoroughly tried out. There is danger of ruining the reputation of a perfectly good piece of apparatus by applying it wrongly.

Two instances of the above occur to me. A few years ago a new type of storage battery was shown on the market under the name of one of the world's greatest inventors. All the art of the promoter was used in exploiting it. Its application to street cars was a foregone conclusion, since it would eliminate the overhead trolley and the feeder copper. For use with the battery a new type of car of extremely light weight was adopted as the only one suitable. The use of these light cars helped to show street railways how little power is actually needed to carry people, and how great had been the waste from the use of heavy cars. This type of car pointed the way to the light cars that are now coming into use so rapidly, but the cars did not furnish a wide field for the battery. This followed because the battery could not meet the requirements of the service. The railways have taken the light car, but have left the battery which had been pushed by unwise friends into service for which it was not fitted. We are all ready to admit the value of the battery for certain classes of work, but when it comes to competing with power supply from an overhead contact wire to the same type of motor on the same type of car in ordinary city service it has made very little headway. Its application to heavy locomotives, when it is possible to get power by overhead wire or third-rail, seems out of the question.

Another instance is in the use of the so-called frictionless bearing. In discussion before this association some years ago, I was one of several unable to agree with the enthusiastic friends of the ball bearing who were claiming for it virtues that would justify its immediate and widespread adoption on all electric railway equipment. Since that time the bearings have found a limited field in light equipment, but considerable development is still necessary before they will be acceptable for the larger cars.

In both of the above cases, the apparatus was and is of great value in certain classes of work, but the attempt to make a universal application has so far failed. In saying this, I do not wish in any way to cast aspersions on the great work that has been accomplished along the lines mentioned. On the contrary, I would be more than pleased to have the wildest predictions come true. Similarly, I would be greatly pleased if a gasoline motor could be produced that would meet the arduous requirements of street railway operation so successfully as to effect distinct savings in the total cost of service.

THERE ARE SEVERAL BASES FOR COMPARISON OF THE TWO MOTORS

It is necessary first, to consider the requirements for street railway service from a practical, common-sense standpoint and, as far as possible, the relative merits of electric and gasoline motors for meeting them. A motor for street car service should, first, have the right speed-torque characteristics to enable it to maintain the desired schedule. Second, it must be reliable; inherently able to withstand severe service and even abuse without breaking down on the road. The cost of repairing actual physical damage caused by a breakdown is usually insignificant compared with that entailed by delay and by interference with other cars.

If a motor can meet these two requirements it then becomes a question of relative cost, including first cost, maintenance, depreciation, and power cost. Frankly, I believe that the electric motor is almost ideally suited for street railway service, from the above standpoint.

Now, how about the gasoline motor?

GASOLINE MOTOR IS WEAK ON ACCELERATION

Of course, the gasoline motor can be applied to street cars and can make them run, but the speed-torque characteristics are not at all well adapted for the work. One would not consider the simplest form of electric motor for a street car if it had to be used with a friction clutch and a transmission that required the power to be cut off entirely in changing speed.

What would one think of a motor that had to be kept running with power on continually and that absorbed from 25 to 30 per cent of its normal power when running idle? This is the case with the gasoline motor, only that the conditions are probably worse. It has no starting torque and very little torque at low speed. It must reach a considerable speed before enough torque can be exerted to start the car, and then it must lose all the excess power in the friction clutch and gears. Of course, the several gear ratios help to balance this weakness, but at the best the gasoline motor would give a very poor acceleration for a street car unless the car was very much over-motored.

---

* Abstract of paper read at Atlantic City Convention of American Electric Railway Engineering Association, Atlantic City, N. J., Oct. 9, 1919.

At this point some one will say that his automobile will accelerate faster than a street car, but it must be remembered that the average automobile motor will develop 25 to 30 hp. per ton of load, while the electric street car has only about 7 hp. per ton of load. It is scarcely probable that it would be economical to apply gasoline motors large enough to give as good an acceleration as is easily possible with an electric motor with a single gear reduction. The poor acceleration together with the high friction loss during coasting periods would require the gasoline motor to develop a great deal more power than an electric motor on the same schedule.

RELIABILITY IS AN INHERENT VIRTUE OF THE ELECTRIC MOTOR

On the score of reliability there can be no question regarding the motor that is operating in enormous numbers on our streets and roads every day, one that has operated continuously for from fifteen to twenty hours at high speed in driving an airplane across the Atlantic Ocean. We must admit that the gasoline motor is doing great work in automobile service, and the most marvelous feature about the ocean trip referred to is the fact that the motor was able to work uninterruptedly for so many hours. Now, no one would give a second thought to an electric motor that had operated continuously for twenty-four hours, as it is such a common occurrence. There is no reason why it should not operate continuously for months without a shutdown if necessary. This, in a measure, is a fair comparison between the gasoline and electric motors from the standpoint of reliability.

I do not imply that the electric motor is 100 per cent reliable, but it is vastly more reliable than a gasoline engine. This is true, not simply on account of the higher state of development but because reliability is inherent in the type of motor. Never in the history of the mechanic arts has there been such a concentration of technical skill and ability as has been applied to the gasoline engine.

While the gasoline engine is sufficiently reliable for use on automobiles and trucks, it remains that a degree of reliability reasonably satisfactory for these purposes, and even for motor-buses, would be entirely unsatisfactory on a street car. An independent vehicle can be held up for a few minutes almost anywhere without blocking the traffic, but a delay to a street car may hold up a dozen or more other street cars.

Gasoline and gasoline-electric cars have been used for years on branch lines of steam railways. Probably the most reliable form of such cars is the gasoline-electric car, which has the engine in the front end, where it drives the generator, the current being applied to standard electric railway motors. While a number of such cars have been placed in service, little has been heard of them for several years past and the number seems not to be increasing.

In one case in which I am familiar a car of this kind was applied on a line where there was apparently a real place for it. It was, however, taken out after a few months of operation, the chief reason being the unreliability of the gasoline motor and the accessories. The electrical apparatus gave entire satisfaction, and I believe the car is now operating on another line where the traffic is dense and reliability is of less importance.

THE ELECTRIC MOTOR EXCELS IN LOW MAINTENANCE COST

Assuming now for the sake of argument that the gasoline motor can perform the same service with equal satisfaction and reliability as the electric motor, how do the two compare in cost? As to first cost, the advantage will lie with the gasoline motor on lines where infrequent service is maintained, and where the cost of transmission and distribution form a relatively large part of the total cost of an electrical installation. It may even be possible, also, that a gasoline car would cost less than an electric car; but there are no reliable data on which to base estimates. However, it is not the first cost with which we are concerned in the case of the gasoline motor; it is the cost of maintenance, depreciation and power.

ROAD WITH GASOLINE CARS WOULD NEED LARGE SHOPS

The operating cost of automobiles and trucks is very high, and the mileage covered is insignificant compared with that required of an electric car. Hence, although the total cost of maintaining a good automobile or truck may seem to be reasonable, when it is not related in terms of cost per mile it is very disturbing. The cost of maintaining the transmission of motor-buses is extremely high, but there seems to be no way of avoiding it unless resort is made to the electric transmission system which adds considerably to the weight and cost of the equipment. It is probable that the street car system operated with gasoline motors would require at least four times the shop space and facilities that are needed for operation of a similar number of electric cars, and that the cost of maintenance would be in proportion.

Now, as to the repairs. It is to be noted first that the electrical equipment on the street car is accessible and relatively easy to maintain, while the reverse is true of the gasoline motor. It is probable that this condition can largely be overcome, but if this is done successfully the motor is going to be placed so that it will occupy space that ought to be available for passengers.

The electric motor in street car service is ordinarily good for at least twenty years of life; that of the gasoline motor is relatively short. It is said that the motor for the high-speed airplane is not expected to last longer than 150 to 200 hours of flight without a complete overhauling. Of course this is very arduous service, but the motor operating in the best service is scarcely good for more than five years, even with the very small mileage which it makes. The depreciation of the motor is undoubtedly several times as rapid as that of the electric motor.

Fifteen years experience with motor-buses in London has shown the life of the gasoline motor to be about five years. The relative depreciation of gasoline and electric equipment is shown by the fact that it is difficult to borrow money for a motor-bus company for a period longer than five years, while a street car line may borrow money for twenty years.

GASOLINE COST WILL BE A DETERMINING FACTOR

There is one feature of this comparison where it is possible to give rather definite estimates, namely, in the cost of power. An electric car with modern equipment will use from 100 to 150 watt-hours per ton-mile. An 8-ton car will thus take about 1 kw.-hr. per car-mile, costing from 1 cent to 2 cents, depending on the locality. The gasoline motor in the best automobile will average scarcely more than 20 ton-miles per gallon of gasoline in city service where the machine is required to make frequent stops or slowdowns. On this basis an 8-ton vehicle would run about 2½ miles on a gallon of gasoline.

With gasoline costing 25 cents per gallon the cost of fuel will be 10 cents per mile for an 8-ton vehicle as compared with 1 cent or 2 cents for the corresponding electric vehicle. Even if the mileage per gallon were greatly increased it would scarcely be probable that it could reach 30 ton-miles per gallon, and even with that the cost of power would be about 7 cents per mile, or under the most favorable conditions three and one-half times as much as the cost of electricity. It must be remembered that the electric truck competes very successfully with the gasoline truck when the radius of action is not too great, in spite of the handicap of carrying the battery.

If to the cost of electric power are added interest, and depreciation and maintenance cost for a distribution system, it will be found that a line having a car every five minutes for eighteen hours per day would average about 0.8 cent per car-mile. A car every half-hour would be six times as much, or 5 cents per hour, allowing the cost of the trolley construction to be $5,000 per mile.

In the foregoing nothing has been said of the auxiliary features that must be considered for a street car. The electric car has, of course, electric lights and heating; the air compressor is driven by a small electric motor, and fans are frequently installed in the cars operating also from the line current. How can these features be supplied when the motive power is a gasoline motor?

To secure electric light which is necessary in these days, a storage battery and a generator driven from the engine are essential. To secure heat for the car it will probably be necessary to have a stove heated either by coal or oil. There might in some cases be the possibility of utilizing heat from the engine, but in most cases it would be very difficult to apply this, about as difficult in fact as to utilize the heat of the starting rheostat on the electric car for heating the car. It is an uncertain element and can scarcely be considered at present. If air-brake service is to be applied to the car, as would probably be necessary with cars of larger size, a compressor, driven either from the large engine by a clutch or by a separate engine, would have to be provided. Thus the problem confronting the company which wishes to build gasoline-driven street cars to compete with electric cars is a large one.

An important feature which has not thus far been considered in connection with gasoline-driven street cars is the necessity which exists in many places of providing for multiple-unit operation of cars. It would seem to be impracticable to build multiple-unit street cars driven by gasoline engines.

It is probable that the effort of anyone who is undertaking to apply the gasoline motor to street cars will result in a considerable number of features that will be valuable entirely apart from the motor itself. If the effort is made it is certain that the experience gained with automobiles and trucks will be applied with good results to the construction of a street car. Possibly this will result in a very great improvement in the design of cars. Street railway men should welcome any features of this kind and should utilize them to the fullest possible extent.

Motor-buses are undoubtedly going to be increasingly used for handling city traffic, and especially for supplying suburban places where the traffic is not sufficient to pay for the construction of the railways. For such service, as well as for a great deal of heavy trucking, the gasoline motor will find a profitable field, but when it comes to the operation of cars on rails where power can be supplied from a trolley wire or third-rail there is no possibility of its competing with the electric motor.

The Preparation of Data in Connection with Rate Cases[*]

A Systematic Scheme Is Recommended for Tabulating the Accounting and Statistical Data Which Are Desirable in Rate Cases, and Suggested Forms Are Given

BY CLARENCE R. BITTING
Day & Zimmermann, Inc., Philadelphia

THE preparation of accounting and statistical data for rate cases and their presentation to public service commissions and the public are of unusual importance at this time, for practically all public utilities are so burdened by mounting costs of materials and labor that they must either receive higher rates or forego dividends to which the stockholders are entitled on their investment. The former is the fair alternative.

In a number of recent rate cases it has been contended that a public utility should take the "lean" years along with the "fat" years, and that the stockholders should stand part of the increased cost of operation, but a public utility has no "fat" years because as soon as it is earning more than a fair return someone brings action before the regulating commission to have the rates reduced. Obviously when rates are insufficient relief should be accorded to the utilities.

A company which is capitalized 50 per cent bonds and 50 per cent stock, all of which represents tangible property, would on a 7 per cent return earn two and one-third times its interest requirements, assuming 6 per cent interest on bonds. This would, of course, make a very salable security from a banking standpoint, but unfortunately very few companies are able, due to financial conditions, to finance their construction through the sale of stock. Of 234 companies tabulated by the writer, only fifty-seven have preferred stock. It will, therefore, be seen that practically 80 per cent of the companies are restricted to the sale of bonds for their financial requirements. A series of calculations which the writer has prepared establishes conclusively that a company receiving a return of 8 per cent can with safety finance capital expenditures through the sale of bonds, preferred stock and common stock; at all times paying a dividend of at least 6 per cent on the common stock and still retaining a portion of its earnings in surplus to meet unforeseen accidents, obsolescence and the superseding of property through improvements in the art.

NUMBERING AND TABULATION OF DATA

To begin with, a plan of numbering and indexing data and exhibits should be adopted. A plan which has been operated very successfully is based on the following main divisions:

1. Income statements by years.
2. Income statements by months.
3. Miscellaneous income statements.
4. Ways and structures.
5. Equipment.
6. Power.
7. Conducting transportation.
8. General and miscellaneous.
9. Taxes.
10. Depreciation.
11. Non-operating income.
12. Fixed charges.
13. Surplus.
14. Balance sheets.
15. Increases in wages and materials.
16. Comparisons with other companies.
17. Traffic and service statistics.
18. Estimates.
19. Investment and valuation data.

Each main account or classification should be prepared on a separate sheet or sheets of the size prescribed by the commission before which the case will be heard. In this connection it might be well to state that where an exhibit of larger size must be presented it should be prepared on a size that is a multiple of the regulation size so that it can be readily folded to such regulation size.

---

[*] Abstract of paper presented at meeting of Accountants' Association, Atlantic City, N. J., Oct. 7, 1919.

An idea may be formed of the subdivisions of the various main divisions by quoting from sections of index to exhibits filed in a recent rate case.

INCOME STATEMENTS BY YEARS

1 —Chart of earnings by years.
1 A —Summary of statement by years.
1 A 1—Detail of revenue.
1 A 2—Detail of maintenance—ways and structures.
1 A 3—Detail of maintenance—equipment.
1 A 4—Detail of power.
1 A 5—Detail of conducting transportation.
1 A 6—Detail of traffic.
1 A 7—Detail of general and miscellaneous.
1 A 8—Detail of taxes.
1 A 9—Detail of fixed charges.
1 A 10—Detail of non-operating income.
1 A 11—Detail of surplus charges.
15 —Principal wage increases.
15 A —Chart showing periods affected by recent wage increases.
15 A 1—Chart showing hourly wage for platform employees.
15 B —Statement showing cost of materials, ways and structures.
15 B 4—Chart showing range of prices for rail (per ton).

For the use of a witness, it is well to have a cross-indexed copy of the exhibits for ready reference. For instance, under "4" should be filed all of the various exhibits dealing in any way with maintenance of ways and structures.

A very satisfactory method of binding consists of the use of press boards between each of the main divisions of the exhibits and any principal or special exhibits, all to be marked with thumb tabs and bound with metal binding posts.

The preparation of accounting data showing the capitalization and capital expenditures of the company is difficult. Practically all of our traction systems are the result of a series of reorganizations, purchases, consolidations and mergers and in many cases the books of the original companies have long since been lost or destroyed through accident.

In a valuation the engineer will present the cost to reproduce the property new and also the same figure less depreciation. His task is relatively easy compared with the task of the accountant in ascertaining the capital employed. However, I feel that no statement of the cost to reproduce the present property of the company should be made until a reconciliation has been prepared by the accountant. Of course this will not check with the actual figures shown on the engineer's report but will serve as a rough check on his report and also as an explanation of the capitalization of the company.

The best method of preparing such data is to make a statement showing the cost of the various underlying and predecessor companies, also the cost to the organizers of the present company. As a rule the engineer's report or correspondence showing the estimated value of the property at the time it was acquired is available, and this statement should be summarized and the difference between such estimated value of the property and cost of property to company should be made and this difference set up as a separate item.

Securities issued for promotion services and discounts on bonds issued at the time of organization should be shown as separate items, also the cost of superseded property, if available, should be shown. While some opponents of increased fares hold the view that possibly excessive prices were paid for the underlying companies, a careful reading of newspaper files for a few years preceding the date of the consolidation will, in most cases, show a growing demand on the part of the public for the elimination of the disagreeable features of competitive operation of the street railway system. The only method of eliminating these disagreeable features was the consolidation of the various lines then operating, and no man was compelled to sell his property for less than his price. The public demanded consolidation and should pay the cost of same.

The estimated average depreciation for the time the property was operated by the present company should also be shown as a deduction. This statement should check in round figures with the present cost to reproduce the property and would be an additional item of proof in establishing the fair present value of the property devoted to public service.

FORMS AND CHARTS RECOMMENDED

A series of suggested forms for compiling and presenting this information was then exhibited. They included the following:

A form covering the cost to the present operating company of the various predecessor and underlying companies, together with the cost of additions, betterments and extensions made by the present company.

A form reconciling the cost to reproduce the property, as shown by engineer's report or appraisal, and the book value of the property.

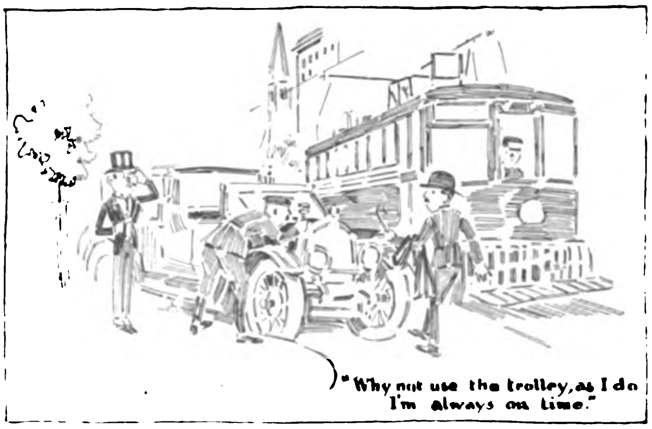
A form reconciling the cost to reproduce the property, less accrued depreciation, based on the same reports as used in the previous form. While this form shows accrued depreciation deducted from the cost to reproduce the property, the author explained that the statement was presented only because a number of regulating commissions use depreciated value for a basis of figuring fair return.

The fourth form was a condensed balance sheet, which should be supported by detail schedules for each item.

A fifth chart, prepared from the condensed balance sheet, showed the relation between the value of the physical property and other assets of the company with the capitalization and reserves.

The sixth statement gave operating statistics and the seventh, other statistics of interest, such as: growth in population, growth of company in miles of track operated, passengers carried per thousand of population, etc.

The author also recommended the use of graphic charts of which samples were presented.


"Why not use the trolley, as I do
I'm always on time."

Symposium on the One-Man Safety Car

Striking Testimonials of Operating Men, Manufacturers and Consulting Engineers on What the Frequent Service Car Has Accomplished and What May Be Expected of It in Reducing Costs and Increasing Revenues—The Standardization Feature of the Car also Weighed

Safety Car Scores a Success in Kansas City*

As a Jitney Eliminator the Car Takes Second Place Only to the Proper Kind of Ordinance—Exceptions to Standard Design

BY P. J. KEALY
President Kansas City Railways

ONE of the most distinguishing features of the American public is its impatience of delay. The average person wants a car at a corner at the time he arrives there. A wait of a few seconds and he begins to complain, and nowhere is a minute quite so long as one spent on a corner waiting for a street car. We recently had a case where the wife of a prominent citizen was transferred from a turned back car to another following. The first car was put on a wye to wait for the next one, and when her husband complained of the incident he emphatically stated that his wife had been made to wait on a side track in the hot sun twenty minutes. The matter was investigated and the traffic checks at four different points showed that the car for which she waited was two minutes behind the one she was on. At the most she actually waited not to exceed three minutes. An attempt was made to explain to the husband, and he declared the dispatchers were liars and that reflection had been cast upon the veracity of his wife. If she had said that instead of waiting twenty minutes it seemed like twenty minutes, she would have been more accurate. This illustrates the attitude of the average person when waiting for a car, and if while in that frame of mind, a jitney, no matter how overloaded, shows up, the street car company loses a fare. If the distance is not too great he walks and a short-haul passenger is gone.

Now it is manifestly impossible to run heavy double-truck units using from 3½ to 4 kw.-hr. per car-mile in charge of two 50 to 60 cents an hour men past this corner often enough to please this prospective customer. The chances are one car in every five to seven minutes will only carry enough passengers in the non-rush period to keep the crew from being lonesome. But this does not keep our friend from feeling that he should have 60-cents-a-car-mile service on a 20-cent line.

REDUCED HEADWAY MEANS BUSINESS INCREASE

The safety car solves the problem. Just about the time he is getting to the jitney or the walking frame of mind the safety picks him up, the company gets the fare, and the passenger is pleased. Unquestionably, reduced headway means a business increase, depending upon the circumstances surrounding the line and the traffic. Naturally the largest revenue increases reported are from smaller cities where riding is often a matter of convenience and not of necessity. On lines where the bulk of the traffic must ride, this increase will not be so marked except where jitney competition is encountered. And the jitney thrives upon long headways and infrequent service. As a jitney eliminator the safety car is second only to the proper kind of ordinance and sympathetic police regulation.

However, as a net revenue producer combining both the increase in gross and the decrease in expense, the safety car holds out inducements that no management today can afford to overlook. Any piece of equipment that will pay for itself in three years is a good buy, and a net revenue increase of from $1,700 to $2,000 per car per year can overcome a host of objections.

I am not one of those whose enthusiasm leads them to believe that the little car can be used wherever there are tracks. Like everything else, it has its limitations. On a line where a minute headway with the large units cannot handle the business, the safeties will not fit. We have one line in Kansas City which runs from 60 to 67 cents per car-mile. During the day it has practically no peak except for about twenty minutes in the afternoon. Using the safeties there would be about as wise as trying to pour a quart into a pint measure. On lines where the large unit headway is more than four minutes with receipts under 30 cents per car-mile, they can be used.

Their only limitations are traffic density and not operating. As far as the latter is concerned they can be run wherever there are tracks and power. We put them through the congested district in Kansas City over eight blocks where the headway is thirty seconds, and they maintain schedules like any other car. The Sunset Hill line, like all lines in Kansas City, has heavy grades, and an average speed of 11.27 m. p. h. is obtained over the larger part of the route. As a matter of fact, there is nothing new in the idea of one-man operation. We have never had anything else. The limitations of the safety car are not due to its method of operation but to the square feet of floor space passing a given point as compared to the number of people boarding the car at that point.

NINETY-FIVE SAFETY CARS IN KANSAS CITY

We have given the safety car a fairly good test in Kansas City and the results of five months operation justified an order for sixty-five which will give us ninety-five in all.

We received twenty-five in April intended for a number of outlying lines in different parts of the city. However, there had been so much discussion as to the advisability of their use on a typical city line running through the congested district in conjunction with the large units, that we decided to give safety car operation a thorough trial under such conditions and see where the bugs in them were.

The Sunset Hill line is 7 miles long. It runs for twelve blocks through the exclusive residence district, then for seventeen through a thickly built-up residence district of the better class, then for fifteen through semi-residence and business, and for twelve through the congested retail district of Kansas City. We had been running a four-minute headway during the afternoon rush and eight minutes during the non-rush.

Here are the results of five months safety car operation on this line:

First, to the public:

A maximum of twenty-five cars at present as against twenty; an afternoon rush headway of two and a half minutes as against four minutes; a non-rush headway of six minutes as against eight, a 32 per cent increase in car-miles; a 51 per cent increase in car-hours. According to the statement of one man who formerly was a chronic kicker, it now looked during the evening rush hour as if there was a car in sight out his way all the time. A maximum crowding limit is set; when fifty passengers are on the car a "car full" sign is displayed and no more taken on.

---

* Abstract of paper presented at meeting of Transportation & Traffic Association, Atlantic City, N. J., Oct. 7, 1919.

Second, to the company:

An increase of $4,119 in gross revenue over the increase for the same period on the entire system; a saving for the five months period in power and wages alone of $12,916, or a total increase in net revenue directly due to the safety car of $17,035 for five months, or at the rate of $40,884 per year. The average cars on this line are less than twenty per day, making a net annual revenue gain of $2,000 per car. This is conservative as it does not take into account the decrease in car maintenance expense and includes all the car-house expense due to disabled cars, pull-ins, instruction, etc. Furthermore, there are very few jitneys on the line served by the safety cars.

Prior to the introduction of the safety car on this line the average number of stops per mile was seven, the average time per stop 7.7 seconds, the average number of passengers twenty-one. Safety-car operation gives the following results: Average schedule speed, excluding layover, 9.87 m. p. h.; average schedule speed, including layover, 8.97 m. p. h.; average equivalent stops per mile, 6.82; average duration per stop, 8.4 seconds; kilowatt-hour consumption per car-mile, 1.325; average passengers, 14.8.

In the congested district the average schedule speed is 6.29 m. p. h. The average equivalent stops per mile, 11.9; the average duration of actual stops, 10.02 seconds.

Congested district loading is facilitated by the use of street collectors. This, however, is no added expense, as we have always used them in the downtown district during the rush hour, loading the front end of double-truck units.

During the five months operation in Kansas City on this line there has been no reduction in vehicle accidents over previous operation. However, there have been no accidents which could be traceable directly to the safety cars. On the contrary, certain classes of accidents have been entirely eliminated by reason of the safety devices. For example, of the 1,900,000 passengers carried in the period, there has been but one step accident and that was caused by passenger attempting to board the car and slipping off a slippery step. In other words, such accidents as we have had would have occurred with the double-truck unit.

As I stated before, I do not believe, with some of the safety-car enthusiasts, that it can be used in large cities on all lines. I am sure, however, that within its traffic limitations, disregarding any increase in passenger business, the increased service and decreased expense it makes possible justify its adoption in any city. On those lines where it is applicable I also believe it is the only method of providing the frequency of service our public demands within the limits of our present revenues.

SOME CHANGES MADE IN EQUIPMENT

So much for the service and revenue characteristics. Now a word as to the type of equipment. When our company purchased the first order of cars, we desired to make certain changes but were emphatically told by the car companies that any change would tend to mitigate against the success of the car. The plan, in short, was to provide a standard car. Because of its being a standard car it could be manufactured in large lots and the cost of both material and of the construction thereby appreciably lessened. So we put aside our personal wishes in the matter in order to help to this new panacea—the "standard car." Yet the cars had hardly been placed in operation in Kansas City before the builders were seeking to sell us a different type of truck. Shortly afterwards we bought five additional cars and these and the sixty-five lately purchased are no longer the so-called "standard car," but the type of car we think best suited to our traveling public.

After all, the "safety car" is an operating idea, and this idea we feel can be expressed in different forms. I do not mean to convey the thought that the car should be redesigned. Such is not the case. We do feel, however, that from an engineering standpoint the underframing of the original safety car was exceedingly weak; the coupling connection was poor; the arrangement of the underframing members not of the best and, in a desire to reduce weight, weakened beyond the point of safety. The notion of reducing weight is commendable and these matters are more or less comparative. In fact, the radical innovation with respect to the reduction of weight in a safety car and as carried out, not only in the design of the underframing but in the entire design of the car, is one of the most commendable features of it. Yet the larger street mileage of this country is built on track centers to provide for an 8-ft. 8-in. to 9-ft. car. The standard safety car was originally designed for Stone & Webster's lines in Texas where the centers are narrow. As a result, these cars are but 8 ft. in width and with the consequent very narrow aisle.

They were built for Southern climates and the standard safety car comes along therefore without interior side or headlining. The standard safety car had eight heaters, yet the builders are now recommending twelve. I think a sufficient number of these points have been stated to develop the reasons why the original safety car, as such, was unsatisfactory to us, and why in our future orders we have made changes in order to remedy what we considered inherent weaknesses in the design as originally arranged.

Many of these changes are predicated upon the notion that the car presents too radical a departure from the established order of things to expect the public to take to it. In other words, if a man is accustomed to riding in a Pierce-Arrow, you must not reasonably expect him to pay the same fare for riding in a Ford without a complaint. You ought to start with an intermediate priced car, although it has perhaps truly been stated that the difference in price between a high-priced car and the cheap car is largely in the number of accessories on the former. So, in the cars lately purchased by the company, we have changed the original design as follows, holding to the original width and length:

About 500 to 600 lb. additional has been placed in the underframing and the members somewhat rearranged. The coupling arrangement has been changed so that the coupler is concealed. A 5-in. channel has been used at either end of the car for the bumper instead of the original 3-in. channel and the bumpers have been covered by a thin sheet of steel. in order to prevent boys from riding on the rear of the cars, the former exposed bumper providing a most convenient foothold for such class of passengers.

The interior of the car has been equipped with both side and headlining. The number of heaters have been increased, including one front cab heater. Steel wheels have been substituted for cast chilled iron, in order to eliminate the large number of flat wheels which shortly developed in the operation of these cars. We found the step heights objectionable, and by lowering one member at the front end of the car have succeeded in getting a 2-in. ramp and reducing each of the step heights 1 in. The car, in our opinion, was excessively noisy, therefore rubber pads have been provided where the body rests on the cantilever springs.

Now as to the seating arrangement. I know that many will take issue with me, but our observation in the five months operation in Kansas City convinces me that the public will not walk back through a long, narrow aisle. In fact, the idea of the original seating arrangement with a long narrow aisle is directly counter to developments in seating design in street cars for the last ten years, the advantages of the loading well being completely pushed aside. It may be that the traveling public in Kansas City is peculiar in that respect, but the cars purchased by us were to provide service for people who have that characteristic, and we feel it is easier to fit the car to the public than to expect the public to accommodate themselves to a certain design of car. We have, therefore, removed the first two cross-seats on each side and placed longitudinal seats instead. This provides a loading well and does away with the objectionable congestion about the front door which these cars developed during the rush-hour period. Experience with both designs has proved the one with the loading well to be superior.

The motorman's curtain arrangement is a source of annoyance and excessive maintenance on the car originally designed, there being three curtains, one of which was continually out of order and generally found stored in one corner of the car. We have changed the rail somewhat in the front of the car to permit two curtains being used and also to furnish the motorman more complete protection against intruding passengers.

We have also taken the various switches, fuses, etc., which litter up the front of the car and put them in one cabinet on the floor conveniently near the motorman's left foot against the inner side of the car. We have likewise provided a small box in which the motorman can keep his trip sheets, collected transfers and report blanks, etc., and have also placed a small wooden tray in front of the motorman for his punch and watch. The builder, at our request, has provided sanitary molding throughout the car and has so arranged the corners where the side plates join the floor as to permit the car to be more readily cleaned and eliminate dust pockets. We have arranged for the side sash to lap at the upper part of the lower sash in order to make the car more waterproof and also changed the back center seat underneath the rear window so it becomes a folding seat, this due to the difficulty in replacing a trolley with a fixed seat, our experience being that a motorman replacing a trolley generally jumped on a seat and as a result in a short time a large number of them were broken.

RESULTS OF SAFETY CAR OPERATION, SUNSET HILL LINE

May to September, Inclusive

	1918	1919
Receipts		
Total	$87,645	$93,412
Per car-mile, cents	26.25	21.11
Per car-hour	$2.623	$1.846
Direct Expenses, Wages and Power		
Per car-mile, cents	13.31	7.14
Per car-hour	$1.33	$1.63
Operating Data		
Car-miles	333,852	441,443
Car-hours	33,408	50,601
Wages		
Per car-mile, cents	8.68	5.55
Per car-hour, cents	86.8	48.4
Power		
Per car-mile, kilowatt-hour	3.86 kw.	1.325 kw.
Per car-hour, kilowatt-hour	38.6 kw.	11.57 kw.
Net Revenue		
Per car-mile, cents	12.94	13.97
Per car-hour	$1.292	$1.224
Total cost	$44,435	$31,519
Total saving		$12,916
System increase five months		2.02 per cent
Sunset Hill increase		6.72 per cent
Sunset Hill increase over system increase		$4,119
Total increase in net revenue due to safety cars		17,035
Total yearly increase at the rate of		40,884
Increase in net		$40,884
Increase in car-miles, per cent		32.22
Increase in car-hours, per cent		51.46
Increase in rush-hour cars		5

Decrease in rush-hour headway, from four to two and one-half minutes
Decrease in non-rush headway, from eight to six minutes

Now as to the seats. Against the advice of the car builders we have decided to put in cushion seats. In our opinion, the car as originally furnished is entirely too cheap. In an endeavor to provide a cheap unit it has been actually skinned to the point where it was really difficult to get the public to patronize it. It was too radical a departure, and no point illustrated this feature more than the seats themselves, which were fragile, uncomfortable and differed radically from the seats which our public has been accustomed to even in our older obsolete cars. As a result, in the cars just delivered and now under order, we have decided to install cushion seats. Theoretically they may not be one bit more comfortable than the slat seat but the public to whom we are catering in Kansas City are accustomed to and desire a cushioned seat, and we deem it our business to furnish them with what they wish. We are certain that the added cost of these seats is more than offset by the good-will which will result from their usage and from the additional favorable opinion which the safety car will meet. Of course, our experience has been slight, the cars have only been operated five months, but the explanation given here is our best opinion, and really, when analyzed, the changes do not affect the car greatly. In fact, with all the improvements and changes above mentioned, the car will weigh slightly under 16,000 lb.

The weight of these cars has been overemphasized. We have now builders and master mechanics seriously discussing the advisability of a 16,000 lb. or 17,000 lb. car and analyzing the relative benefits and cost of both, whereas up to this time we have operated cars weighing as high as 57,000 lb. seating thirty-five passengers, which did not seem to worry either the car builder or the master mechanic. For a road which has several hundred cars weighing more than 50,000 lb., it really seems a waste of time to discuss whether or not the safety car should weigh 16,000 or 17,000 lb. As a matter of fact, three fat passengers taking the place of three lean ones would make just as much difference in weight as the additional weight consequent upon the slight changes we have made would place on the car.

General Observations on Birney Cars*

The Results of a Recent Trip to Inspect Safety Car Operation Are Given—Conclusion Reached that the Car Is Well Adapted to Operation in Large Cities

By J. C. Thirlwall
Railway and Traction Department General Electric Company

IT HAS BEEN my privilege during the past six months to have made a trip on which I was enabled to study and secure first-hand information on the operation of Birney safety cars in some twenty cities scattered over the country from Bridgeport and Richmond in the East to Pomona and Seattle in the West. The impressions obtained are based on talks with officials of the various properties, with the men operating the cars and with passengers riding them; and in all the installations visited, with one exception, the verdict was unanimous, that this new form of transportation is a complete success and equally popular with the riding public, with the trainmen, and with the management. In the cities I visited there are in operation today approximately 400 standard safety cars and about fifty one-man cars of other types. The cities visited range in size from 15,000 to 30,000 as in the case of Pomona, Riverside and Redlands, Cal., up to the very largest in which safety cars have yet been used, including Portland, Seattle and Brooklyn. Various methods of applying safety cars were observed from straight car for car replacement through varying degrees of improved service up to one instance where the number of cars was more than doubled. The notes that I am presenting today are simply a brief summary of the results obtained.

---

* Abstract of paper read before the Transportation and Traffic Association, Oct. 7, 1919, at Atlantic City, N. J.

The Pacific Electric Company in California has thirty-five cars distributed among the smaller towns through which their interurban lines operate, namely, Stockton, San José, Fresno, Pomona, Redlands and Riverside, with populations ranging from 15,000 to 30,000. They have used the Birney cars to replace older single-truck types without any change in frequency or schedule speed. Since all of the lines on which this has been done were lines of extremely light traffic, they have met with no difficulties and have secured a saving of more than $2,500 per car per year on platform expenses alone, with probably a slight additional saving in power and maintenance. The public has secured a more comfortable vehicle, and without any change in speed or frequency, passenger receipts showed a slight but satisfactory increase after the safety car went into service.

In Fort Worth where they have forty Birney safety cars, nine lines are equipped and on six of these the installation was on a car for car basis, these being routes where single-truck cars had previously been used and where the traffic was extremely light at the time the installation was made, although at the present time the riding is fairly heavy on all of them. On two of these lines, however, the speed was materially increased with the Birney car and headways thereby reduced. On the remaining three lines, the number of cars was increased and the running time materially shortened; the net result on the nine lines has been an increase of about 30 per cent in the mileage operated today as compared with what was given before the Birney cars went into service. The population has been increasing so rapidly during the past three years that it is difficult to estimate the effect of the improved service on earnings, but on these lines with 30 per cent more mileage they are taking in 70 per cent more money this year than they were two years ago. Each safety car is handling considerably heavier traffic than did the cars they replaced, and in spite of their heavier traffic, they are making considerably faster schedule speeds. For instance, on one line where the earnings have risen from 20 cents per car-mile to 27 cents per car-mile the present schedule speed is 10.2 m. p. h. where it was formerly 8.5 m. p. h. On another line where the earnings have risen from 19.4 cents to 24 cents per car-mile the speed is 10 m. p. h. where formerly the schedule speed was 8.4 m. p. h. On a third-line, where the earnings have risen from 21 to 28 cents, the speed was increased from 6.9 to 10 m. p. h. They are handling this greatly increased traffic at a very materially reduced operating cost on the main items of power, maintenance, platform wages, depreciation and expense. They estimate that the life of their rails on these lines will be extended fully 50 per cent, and their judgment is based on three years of operation. The original lot of cars that went into service in this city in November, 1916, have stood up excellently, and their maintenance has been considerably lower than that of the cars they displaced.

In Austin, Tex., a city of about 35,000, seven safety cars took the place of a like number of older single-truck types, and they estimate that their savings in wages, power and maintenance amounts to about $2,500 per car annually. No heavy traffic conditions were encountered here, and no difficulties in operation have been experienced.

In Portland, Ore., where they have twenty-five safety cars, an attempt was made to replace large cars on lines of heavy traffic on a car for car basis. The results were not encouraging. Schedules were slowed down, the union platform men objected to the new form of operation and to such a degree that it was frequently impossible to crew up the entire number of cars required daily. Even under these circumstances the company's records indicated savings of approximately $2,000 per car annually, but it was pretty evident that additional cars would have to be operated on shorter headways to prevent criticism on the part of the public and of the employees.

The Birney car is inherently so much faster than the older single-truck type that it can usually make a considerably faster schedule with a single operator than the old car with two men, but where double-truck cars are replaced on lines where riding is really heavy there is less difference in the accelerating and braking rates in favor of the Birney car, and greater delays result from one-man handling of passengers. The net result, unless additional cars are put on the lines, thereby reducing the number of passengers handled per car trip, is to slow down schedules, to which the public seriously objects.

In all the other cities which I visited the Birney cars have been used for the most part to improve service, more cars being used than formerly, and in some cases higher schedule speeds being operated. For instance, in Houston, on the first line equipped seventeen Birney cars took the place of ten double-truck cars, the running time was shortened and the mileage increased about 80 per cent. They have there thirty-one standard safety cars and fourteen older cars with safety features which are being operated with one man. Of these fifty-five cars forty-eight are regularly operated. On the entire seven lines equipped they formerly operated 160,000 miles per month. With the safety cars this has been raised to approximately 200,000 miles per month, an increase of 25 per cent. The results from this improved service have been very gratifying for they have made possible this increase in mileage while still showing a considerable decrease in operating expenses, and the receipts on the lines concerned have risen nearly in proportion to the improvement in service.

In Beaumont, where twenty-four safety cars are being used, they now operate thirty-five cars where in July 1918, they were operating only twenty-two. Three out of four lines are now using one-man cars, and the entire system shows an increase in mileage of 50 per cent as a result of safety car operation. The result has been that in spite of an increased fare, which was secured largely through the promise of improved service with safety cars, they are carrying more people today than they did last year, and with only a very slight increase in total operating expenses.

In Terre Haute, a city of 75,000 population, where Birney cars have been operating for a year, five lines were equipped with twenty-six cars. Although single-truck cars of no greater capacity than the safety cars were displaced, additional cars were put onto each line and schedule speeds increased, giving the public about 30 per cent more service. Here again, the increased receipts amply justified the cost of the improved service, although total costs of operation were reduced. The entire installation enabled the company to change from a thirty-car system to a forty-two car system and has been so entirely successful that arrangements have recently been made to equip every line in the city with safety cars. This, I believe, will be the first city of such size to be entirely equipped.

In Dallas they have twelve safety cars which were used to improve service about 50 per cent on the one line they have equipped. The increased receipts resulting from this installation amply justifies the improvement in service while the cost of operating the line was somewhat reduced.

In El Paso, where they operate twenty standard cars and five old single-truck converted safety cars, they have equipped seven lines for all-day operation, increasing the service 30 per cent through the day and 50 per cent during rush hours. In general, their receipts have increased almost proportionally to the increased mileage, while their operating accounts are materially lower. All cars in El Paso are equipped with meters, and the average consumption of the Birney cars on level track is 0.92 kw.-hr. per car-mile. Their average on all lines including some with extremely heavy grades is 1.03 kw.-hr. per car-mile. The average consumption for their 20,000-lb. single-truck car is 1.45 and for their 39,000-lb. double-truck cars 2.5 kw.-hr. per car-mile.

In Tacoma, Wash., with a population of 120,000, they are operating sixty-one standard safety cars. In this instance, radically increased service was given when applying the new cars, but data as to increased earnings resulting therefrom are not available because traffic on the entire system was growing so rapidly, due to increased population and war industries. An interesting comment was made, however, that during the shipbuilding rush last year they regularly handled eighty to eighty-five people in their Birney cars without any damage to the bodies, trucks or equipment, but because of these heavy loads and some very severe gradients they found it necessary to raise the braking pressure on the cars to 120 per cent of their light weight. They say that this has caused no trouble with flat wheels, the empty car being too light to cause wheels to flatten when they slide. The comment is that they have been able to meet with these cars tremendous increases in traffic at a very materially lower operating cost than would have been the case with older types.

Seattle, a city of 400,000 people, has sixty standard safety cars on which the comments are much the same as in Tacoma. The cars here operate on some lines through the most congested traffic in Seattle where rush-hour headways on the downtown portion are about thirty seconds. They have experienced no difficulties in maintaining schedules equal to those of their larger two-man cars.

In Bridgeport, a factory city of about 180,000 population, the initial installation of nine Birney cars replaced four double-truck cars. This is the most striking example of improved service that I know of. Under the circumstances, operating costs were somewhat increased, although the cost of power was reduced (since nine Birney cars weigh less than four double-truck cars), but the increased receipts resulting from this installation and which could be attributed to nothing else but the improved service, have been sufficient to pay a more liberal return on the cost of the cars than has been obtained in most installations where the cars were applied on a straight replacement basis.

In Brooklyn, in their initial installation of twelve cars, they doubled their all-day service on two lines and materially increased their rush-hour service, giving about 90 per cent more mileage. Here too, there was an increase in operating expense since the new cars were simply added to their existing service, but the increased receipts resulting therefrom convinced the company that there was a wide field for their efficient use in Brooklyn and led to their recent purchase of 200 cars.

In Trenton, N. J., where they now operate twenty safety cars they were applied on a ratio of three new cars in place of two old cars, which gives 50 per cent more service to the public. The increased riding resulting therefrom has more than justified this action, although on the original installation there was no question but that car for car replacement could have been made without any operating difficulties.

In Richmond, where twenty of these cars are in operation, the public gets about 40 per cent more service, the company has reduced its cost of operation, and the public sentiment, as reflected both by letters of commendation and by increased riding, has been extremely favorable.

In general, my trip convinced me more thoroughly than ever before that the real field of the safety car is not on lines of extremely light traffic and earnings, but on all-day runs of the majority of lines in most of the larger cities; that the best results in every city of any considerable size will be obtained by using the cars to stimulate riding and to increase gross revenues by better service; that to the public better service means shorter headways more than anything else, although greater comfort, higher schedule speeds and increased number of seats are all important factors. It has been demonstrated beyond the shadow of a doubt that the Birney car, properly applied, can handle a considerable part of the service in any sized city; that they can operate successfully on extremely short headways and under the most congested conditions of vehicular traffic, and that they can make schedules at least as rapid as the cars they displace and very frequently schedules much faster. I am convinced that there is no city in the United States in which a considerable part of their all-day runs could not be handled more efficiently and more economically with the Birney car than with any other type now in existence. Its general design is entirely satisfactory. Some minor modifications in structure may be desirable, but the Birney safety car as a standard is no longer an experiment. It has established itself indubitably as a complete and absolute success.

Service and Jitney Competition*

The Birney Car Was Designed to Compete with the Jitney—How the Automobile Effected a Change in Car Design

By G. H. Clifford

Vice-President Northern Texas Traction Company

JITNEY operation was responsible for the design of the modern one-man car, the thought being at the time that we should furnish to the public a service embodying the attractive features of the jitney. Everyone familiar with jitney operation will agree that in addition to the novelty of riding in an automobile for a nickel, the service was attractive because of its superiority in frequency and speed. The one-man car was designed so that its cost of operation would permit frequency of service; its seating capacity, weight and equipment were designed for better average speed and safety.

Students of transportation will agree that the public of today is interested only in service, and that the two important elements in service are: "Giving them a car when they want it" and "Getting them to their destination as quickly as possible." This is what the jitney was able to do and what is being successfully done with the modern one-man car.

That jitney operation was economically unsound and impossible as a means of furnishing complete transportation service, everyone now agrees, but it is equally true that the jitney when permitted to operate on short hauls in profitable territory will furnish a service of such frequency and speed that the operation of one-man cars will not prevent them from hauling quite a percentage of the traffic. Operating under such conditions the jitney is not, in a real sense, a competitor of the street railway, and can only be stopped by prohibitive legislation, which has been enacted in most parts of the country. Therefore, I would not take the position that any service which might be inaugurated with one-man cars would eliminate jitney competition, but the one-man car will, to a great extent, provide all the attractive features of jitney service and in addition economically furnish the entire transportation needs of the public to the extent that when jitneys are eliminated the public is adequately cared for and is well satisfied.

---

* Abstract of paper presented at meeting of Transportation & Traffic Association, Atlantic City, N. J., Oct. 7, 1919.

STREET CAR FASTEST BEFORE AUTOMOBILE

Before the advent of the automobile the street car was the fastest vehicle on the street. The question of speed being at that time satisfactory to the public, their thoughts ran more to the design and riding qualities of a street car approaching the Pullman car. Street railway managements wanting to meet the desires of the public built heavier cars of greater seating capacity with which car-mile earnings were increased. The cost of operating cars of such weight and seating capacity made infrequent schedules necessary. Time was not then considered as valuable as today, and people were content to learn the schedule of the line and watch the clock for the hour of their departure. If perchance they missed their connection or the car was late, there were no friendly automobiles to speed their departure and their nickel found its way to the street railway office. The automobile has now made the street car almost the slowest conveyance on the street and has taught our riding public the possibilities of time saving, which can only be accomplished with frequent and rapid service.

The low cost of operating the Birney one-man car makes it possible to satisfy the restless public of today, which, if not given a frequent and rapid service, will demand jitney operation or use the friendly automobile on many occasions. The modern one-man car is a most radical departure in urban transportation, and like every innovation it was difficult for operating managements to agree to give it a trial, and whenever a tribute is paid to the designer of the car no less credit should be given to his untiring energy and efforts in the education of operating managements to the idea and in gaining the co-operation of the manufacturers, who have at a great expense stood behind their equipment and made possible the great success which the car has attained.

The car has passed the experimental state. The public is enthusiastic about its operation where "improved service" has been the slogan in its introduction, and as the people from various sections of the country learn of the advantages of this operation, they will demand it and insist upon it in spite of all that can be said by those who for various reasons may not take kindly to the idea, and certainly the street railways will find it to their advantage from the many viewpoints outlined in the committee report.

Standardization of Birney Safety Car*

Quantity Production Made Possible Through Standardization Will Decrease Cost—Establishment of a Clearing House for Proposed Improvements Is Suggested

BY GARDNER WELLS
Consulting Engineer, New York

THE Birney safety car is bringing about astonishing results in increased receipts and decreased expenses. It is believed that still better results can be obtained through maintaining a fixed policy with regard to standardization. In this consideration there are three principal factors, namely: financing of equipment, quantity production and the maintenance of some sort of a bureau or clearing house to carry out the policy with regard to standardization.

When street railway companies were making money, or thought they were, the financing of equipment was usually an easy matter, and for the most part each company had its own type of car. Freakish fashions seemed to rule in many cases, and as usual this was expensive. Each company prided itself on being better than its neighbor, which was all very commendable as long as money was being made and the public did not object, but was not in the interest of economy. Street railways are now seeking in every way they can to retrench, and many of them are turning to the standard car as one means of relief.

The difficulty of obtaining money to finance the car is, of course, the first obstruction that is met with. The fact that a car is standard, however, appeals to the banker. It is good collateral in cases where cars are purchased through trust certificates. If a company becomes so insolvent, however, that due payments cannot be made, these cars may be resold by the banking concern owning them, and if the standardization plan is adhered to, they would be acceptable almost anywhere. In other words, they would be a kind of negotiable instrument.

There have recently been two or three instances where for temporary political reasons safety cars could not be used in the localities for which they were intended. They were consequently shipped to other parts and were put into immediate commission without alterations. Who knows but that the safety car may take the place of the dollar as a medium of exchange. It has most of the qualities that metallic money has, in that it is small, light, durable and may be easily transported and stored.

With regard to quantity production, we can do no more than generalize just at present. But that was about all that could be said in connection with the operating results that it was thought would be obtained before safety cars were put in service. The writer knows of a case whereby substituting safety cars for double-truck cars on one line of a company on a two-for-one basis, the receipts were more than doubled after a few weeks time. During the same period the receipts on the remaining lines in the locality in which the cars were operating remained practically stationary. The safety car expenses per car-mile were, of course, materially reduced. Predictions had been made in the above case that the increase in earnings would be only about 50 per cent instead of the 100 per cent actually obtained.

In the case of quantity production it would not be possible to predict just at the present time exactly what savings can be made. It is believed, however, if the matter is taken hold of in a united way, that a material good can be accomplished, because if large quantities of articles of practically the same type can be manufactured cheaper than the same quantity with constantly varying types. The same holds true in connection with repair parts.

Someone has called the Birney safety car the Mazda lamp of the railway industry. The standard of the Mazda lamp is sometimes changed for the better. No one would think, however, of asking for a special Mazda lamp to fit "local conditions."

Undoubtedly improvements will be made from time to time in connection with the Birney car. But in the process of evolution the great danger will be that "sports" will be produced that will hinder rather than help this process. Motor equipment, wiring and all parts should remain standard. Even painting, it seems to me, should be standardized. The standardization of four motor cars which was started by the War Board should be carried out. It is believed, therefore, that some central body or clearing house should be established to keep the process of evolution in proper line.

In connection with the whole subject, as outlined above, a canvass of many of the principal operating companies was made recently in behalf of one or two companies interested in the matter, in order to get a general opinion in connection with the same. With one or two exceptions relative to minor details, the ideas have been favorably met with and in most instances heartily indorsed.

---

* Abstract of paper read at meeting of Transportation & Traffic Association, Atlantic City, N. J., Oct. 7, 1919.

Accounting Measures to Meet Business Depression in the Industry*

Affluence and Business Depression Occur in More or Less Regular Cycles—Rates Should Be Sufficiently High to Permit of an Accumulation of Reserves in Good Years to Offset Losses During Periods of Depression—Correct Accounting Practice Is a Real Factor in Lasting Prosperity

By EARL A. SALIERS
Professor in Yale University, New Haven, Conn.

ELECTRIC RAILWAY men have numerous problems pressing upon them for solution, and more should not be added unnecessarily. The increased price of all that enters into cost of service is probably permanent. Price levels are higher because money is more abundant. Those who have been unable correspondingly to increase revenues are seriously handicapped. We may feel that present evils are sufficient and that to look into the future is courting trouble. But it is always best to plan a lasting success and doing so requires sound business foresight.

THE SWING OF THE PENDULUM IN BUSINESS AFFAIRS

The events of the future are at best uncertain, but not altogether so. Economic events follow each other in a kind of rhythm. Periods of prosperity are followed by periods of depression. During the past 150 years these manifestations have seemed to obey a kind of law comparable to the swing of a pendulum, and their recurrence has continued under changing conditions of government and finance.

The business world passes through cycles marked by alternate periods of activity and depression, but the theories which ascribe mathematical precision to this process have, I think, been largely discredited by facts. As more accurate statistics are now compiled of the output of mines, factories and farms, also of foreign trade and credit, we may expect these to yield information to the future inquirer.

Business depressions are distinctly modern phenomena. Before the organization of business on the modern scale there occurred extremes of scarcity and sometimes starvation in certain communities because of failure of local harvests, but these misfortunes bore none of the earmarks of business depressions. They resulted from failure in production due to natural causes. But the world is now unified —a great mart wherein occurs interchange of commodities between most distant parts. Harvest failures in one section are counter-balanced by successes elsewhere. The average productivity of the world does not vary greatly from year to year. Much of the raw material of industry is produced independently of the seasons. This is true of mineral and forest products which alone constitute more than 60 per cent of the freight tonnage of railroads in the United States. In the organization of business, and not in any known natural phenomena, do we find the best explanation of business depressions.

ACCOUNTANTS CAN AID IN MITIGATING THE SEVERITY OF DEPRESSION

Under the supervision of Hon. Carroll D. Wright, an investigation of the alleged causes of industrial depressions was carried out and the results were published in the first annual report of the Commission of Labor in 1886. So many possible causes of depressions were recorded therein that one writer has suggested that an attempt to find the true causes among such a number (about a hundred) would be like "hunting for a needle in a haystack." Many of these, however, can be eliminated by a process of selection and the really important possible causes of depressions will be found to number not more than twenty. Of these some of the most important are inflation, want of confidence, uneven production, extravagance and unemployment. I think that effect is often confused with cause. Thus it is conceivable that unemployment as a result might be mistaken as a cause of depressions.

Fortunately, we accountants can leave to the economists the further discussion of the causes of depressions, for we are more interested in the fact that they do occur than in their more or less remote origins. It is for us to do what we can to diminish the evil effects of depressions. By being forehanded we may help to diminish their severity, and the spread of a knowledge of accounting principles will be a potent preventive of financial disturbance. But should the possibility of future business depressions influence our policies to any great degree? If so, are we to adopt distinct measures or merely to shift our general policy to a somewhat more conservative basis?

Radical plans and revolutionary suggestions I shall not offer. The accountant's duties are constructive, nevertheless he is limited by existing conditions to fixed methods of procedure more or less.

The first noticeable effect on manufacturers of a depression is a falling off in orders; on transportation companies, a decline in revenues. This means less money with which to meet fixed charges, pay wages, make replacements of worn-out machinery and disburse dividends. Retrenchment becomes necessary and the form which it takes determines whether or not the enterprise has good staying power. Some obligations must be met to avoid foreclosure, and upon the payment of others current operations depend. There are also certain classes of repairs which cannot long be deferred without reducing the efficiency of the service.

ASSETS MUST BE CONSERVED THROUGH AMPLE RATES

A large part of the investment in electric railways is in the form of fixed assets. The term "fixed assets" is a misnomer, however, except in case of land which is for most purposes really a fixed asset. Many so-called fixed assets are wasting assets, differing, however, from materials currently consumed, such as fuel, oil, etc., in that they last a relatively long time and serve for the same purpose hundreds or even thousands of times. Now this investment in cars, track, buildings, etc., enters into the cost of service which an electric railway performs quite as truly as do wages paid to conductors, motormen and laborers, or the money paid for coal used to generate power. But it differs from the investment in inventories of supplies and from wages, salaries and repairs, in that it is replacement, and consequently the actual disbursement of cash takes place at infrequent intervals. The length of these intervals corresponds to the useful lives of the assets. If, for example, steel rails will last thirty years, then that part of the cost of service represented by the wear and tear of steel rails need give rise to cash disbursements only at the end of a thirty-year period. Much capital is so invested that replacements are necessary only after twenty or thirty years.

---

* Abstract of paper presented at meeting of Accountants' Association, Atlantic City, N. J., Oct. 7, 1919.

What I desire to emphasize is, that when funds have been tied up in construction of a permanent character, the wear and tear resulting from their use in giving service is an element in the cost of that service and should be reimbursed to the company in current charges for service. If this is not done the company will fail in the long run.

Assume the case of an electric railway corporation which constructs its plant at a cost of $10,000,000, this amount being spent to purchase rails, rolling stock, etc., which, let us further assume, has an average normal useful life of ten years. Of course in practice the replacement of the entire plant will not be made wholesale but piecemeal; yet this fact does not affect the general proposition that on an average of ten years the cost of the fixed assets is wholly consumed in giving service. There enters into cost of service each year about $1,000,000 of expense which is liable to be neglected in fixing a fair charge for that service for the reason that it may be omitted for several years and the company will have enough revenue to meet current obligations nevertheless. I appreciate the practical difficulty of establishing an equitable charge, but that does not affect the principle at stake.

SERVICE CANNOT BE SOLD INDEFINITELY BELOW COST

Carrying our illustration to its logical conclusion, let us assume that five years pass during which enough revenue is obtained each year to pay current obligations. No attention, however, is given to the fact that one-half of the average useful life of the fixed assets is past except in so far as occasional renewals have become necessary. I contend that in failing to make a charge sufficient to cover not only current expenses but also the exhaustion of capital invested in fixed assets, the company has made a gratuity to the public in the form of service below cost, that this policy leads toward bankruptcy, and that it should be avoided, if possible, by making adequate charges *from the beginning*. If ten years pass before any charge is made for use of plant, it may be difficult to explain why the charge should be increased although the increase is wholly justifiable.

One thing should be noted, namely, that to get back from the public during the next ten years what was given them during the first ten, and at the same time make necessary replacements the company will be compelled to charge twice the normal cost resulting from wear and tear on its plant; for since it neglected each year of the first ten to charge $1,000,000 for use of plant, to which it was wholly entitled, it should with propriety be permitted to charge $2,000,000 each year for the next ten. This illustration may be extreme in its neglect of details, but it proves that nobody can be prosperous on an annual deficit.

I need not be specific about what should be done with the money collected each year of the ten when an adequate charge is made. That is a matter of practical finance to be determined by circumstances. If it is neither distributed as dividends nor otherwise improperly used it acts as a financial bulwark and does more than any other feasible thing to place the company on a basis that will enable it to weather future business depressions.

Let us see how this works out. Experience teaches us that we should expect a considerable depression at least once in twenty years, also that the duration of severe depressions is not ordinarily more than two or three years. Since the organization of our present government no period of twenty consecutive years can be selected which does not present evidence of depression in some part. Perhaps the same might be said of shorter periods of time. When past experience shows what we may reasonably expect in the future we ought to shape our acts accordingly.

How much a depression will reduce revenues is problematical. It differs with different industries, and public utilities are in some respects more fortunate than manufacturing concerns because of the very fundamental character of the service that they perform. Nevertheless they cannot escape altogether. Where men are unemployed they do not ride daily to and from factories; moreover, freight and express shipments are diminished. Reduced revenues result, hence reduced disbursements. What, under these circumstances, is the difference in staying power of the company which has been adequately reimbursed for all costs of service and the company which has failed to secure a return of expired investment in plant?

The answer to the question rests partly with the disposition of capital thus returned, but if it is employed legitimately the company is going to benefit and the particular form which the funds assume is not vital. There will exist, either in distinct form or suffused through the volume of the assets, a quantity of wealth which will afford cash or the credit to secure cash when it is needed. This is true because funds destined for the replacement of fixed assets may be deviated from that purpose for a time without evil results. It may be that a portion of such funds can be permanently turned to other purposes.

Bankers are coming to depend more and more upon certified balance sheets, and being conservative men, they will not grant loans unless assured that balance sheet values are real and not merely the reflection of values now extinct. We cannot hope to prevent our balance sheets from becoming discreditable if we do not put back into property what we take out of it.

PANICS AND DEPRESSIONS RESULT FROM THE SAME CAUSES

Sometimes financial depressions are preceded by panics. Panics are more intimately related to the stock and money markets than are depressions, but they spring from the same general causes—over-speculation, over-expansion and over-confidence—and when such conditions are fundamental and widespread the resulting panic is fairly certain to be followed by depression. Panics aggravate the evil results of depressions by placing an artificial emphasis on the necessity of reducing credits, thus causing greater contraction than conditions warrant. However that may be, the contraction affects liquid funds and circulating capital more than it does invested capital, because income from capital permanently invested is oftentimes fixed by contract and because it cannot be immediately withdrawn to meet pressing demands elsewhere. The income from some invested capital may increase but it is generally diminished, and the need for funds to supplement this reduced income is above normal at a time when those who possess them are least inclined to make loans.

As a consequence of the above we must study the amount and character of the current assets, not as abstract sums but in the peculiar relationship which they bear to the current liabilities. In the long run the status of the current assets may be less vital than that of the fixed assets, but when sharp turns in prosperity occur, such as accompany severe panics, great embarrassment may occur when fundamental conditions are good. The fate of many enterprises is then quickly decided. The ones to be tried most severely are those that allow an insufficient margin of safety in providing for the liquidation of their current liabilities. Just what constitutes an adequate margin of safety depends upon various factors—chiefly the character of the business. Men familiar with the details in a given case are better fitted than I to say whether such a margin exists; I wish merely to emphasize as a matter of principle the necessity of having it. The electric railway business is a very fundamental and stable one, hence the cost of an adequate margin of safety should not be burdensome. The financial world suffers first, and it takes time for the effects to be transmitted to all industry, during which time some opportunity is given to forestall its worst effects.

BUSINESS FAILURES HAVE WIDESPREAD EFFECTS

Every business has customary lines of discount and credit. These cannot be neglected without creating trouble at a time when credit is weak and cash at a premium. Therefore care must be taken that in normal times there shall exist a margin of current assets over current liabilities big enough to absorb the force of any sudden contraction, because contraction is accompanied by a scarcity of new credits, and as the word itself signifies, an attempt to reduce old credits. There are always some enterprises just on the ragged edge of solvency and if under stress they cannot secure help they fail. The more of such failures there are, the more liable are stronger concerns to be carried down. No enterprise can perish without leaving a series of consequences that, like circles in water produced by a falling stone, diminish in intensity as they flow outward, but affect a continually increasing number of other organizations. The failures of weak concerns are cumulative in effect and have two possible results; either their effects are neutralized through the absorption of their losses in the surpluses of strong companies or else the strong ones are also destroyed or weakened so much that a long period of liquidation follows and then reconstruction must be carried out on a more conservative basis.

We must provide business shock absorbers in the form of reservations and margins. These raise a corporation above the dead level of existence. To the extent that we do this we place ourselves in a strategic position and accomplish most through the least sacrifice. Honest statesmanship sometimes prevents war at small cost. Conservative accounting procedure may conceivably prevent panics and depressions and will at least diminish their severity. The spread of sound accounting practice has a beneficial effect which is cumulative in nature. Not only are those newly converted to its use directly benefited, but others as well, because common losses are reduced. Correct accounting practice is a real factor in lasting prosperity.

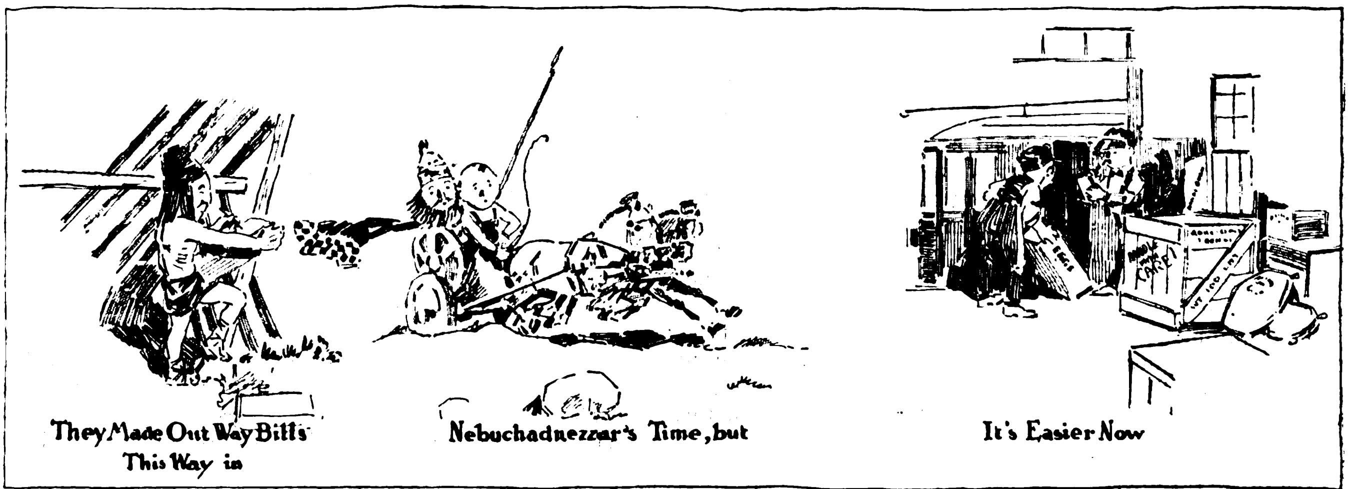
The diseases of the business world resemble those which attack the living organisms. It has been said that the difference between a man and a clock is that when the clock runs down it stops, but a man keeps going after he runs down. We are sometimes compelled to keep going when the logical thing to do it to stop, take stock of affairs, find the trouble and apply a specific remedy. But we need not shut off the power and stop the machinery if we act promptly, any more than a man needs ordinarily to enter a sanatorium if he looks diligently to his health before he loses it. A man is overworked when the vital forces are consumed faster than they are replenished. The same is true of a corporation—it cannot undergo continuous drain on its reserve forces without damage to itself.

The steps necessary to meet business depression are those which constitute conservative policy. We will all agree that those measures which can be taken as preventives are better than makeshift cures instituted at the last moment. A system of accounts has a purpose as well as a detailed procedure. Corporations are usually organized for an indefinite period of existence and the accountant should shape his policy to meet the demands of tomorrow. He cannot do this unless he recognizes the true character of fixed assets and how they fit into and form part of invested capital. The plan of "service at cost," already adopted in several large cities, emphasizes the necessity of determining what the elements of cost are. L. R. Nash, of Stone & Webster, and others have shown that service is not "at cost" unless in cost there is included an adequate charge to cover the use of fixed assets as well as to provide for current expense.

It has been and still is the belief on the part of many that all that can be accomplished by the measures that I have been considering can be equally well accomplished through a general surplus account to which there is carried each year part or all of the annual profit. Certainly there can be no objection to a surplus account, but we must keep distinctly in mind that no real surplus ever exists so long as invested capital expired is not returned, through the rates. The surplus account, when properly used, is distinctly an excess account into which undistributed profits are collected.

Ordinarily there is nothing to prevent the distribution as dividends of the entire surplus, because it is in no way related to the problem of preservation of investments. Many so-called surpluses are in reality not surpluses at all, because all proper costs are not charged and the apparent profits exceed real profits by just the amount that the company understates its cost of operation. A paper surplus is a delusion and tends to create a feeling of confidence not justified by the real condition of affairs.

What I have said is based on the assumption that revenues are adequate. That they are not always so I am fully aware. How to make them so is a matter affected by factors quite irrelevant to the discussion in hand. I mention it here because I am not unsympathetic with the difficulties that usually have to be surmounted before effective things are accomplished.


They Made Out Way Bills This Way in
Nebuchadnezzar's Time, but
It's Easier Now

Fare Collection with Frequent Changes in Rates[*]

Experience in Denver Shows That There Is Little Complication When Fares Are Changed If Metal Tokens Are Used—Simplification of Collection Devices Is Necessary to Relieve the Conductor of Many of the Extra Duties Incident to Odd-fare Collection

BY W. A. DOTY
Auditor Denver (Col.) Tramway

FARE collection systems in this country may be divided into two general classes, the "collect" system and "prepayment" system.

The "collect" system is that in use where the conductor passes back and forth through the car, making the collections from the passengers and registering the different classes of fares collected. The registration may be a single-fare classification or there may be two, three, or four classification of fares, such as cash, tickets, transfers, half-fares, etc.

The objection to the collect system is that the full revenue to the company is dependent upon the alertness of the conductor, for unless he actually solicits the fare required from each passenger there is no provision for the company to receive its revenue. Due to many causes beyond the conductor's control his attention is diverted from fare collection and his company does not receive the revenue to which it is entitled. For this and other reasons the writer is not in favor of this method of fare collection and will not consider it further in this paper.

In the "prepayment" system the fare is collected as the passenger enters the car, the conductor actually receiving the fare and recording it on a register; or, passenger depositing certain classes of fares, usually cash fares, in a fare box. The conductor registers the fares as deposited in the box and receives transfers and paper tickets direct from the passenger. With few exceptions, notably Detroit and Cleveland, he also registers these as received.

When fare boxes are used in the prepayment system, the fare is deposited in the box by the passenger, thus affording the passenger an opportunity of depositing the correct amount of his fare upon boarding the car. This generally obviates the objection to the collect system based upon the necessity for the conductor to solicit the fare from each passenger.

There are types of fare box which are closed to the conductor, everything deposited in the box by the passenger remaining in it until the boxes are removed and sent to the treasurer's office and the receipts for the day determined by the contents of the box. Such boxes are usually designed to receive paper tickets. Other fare boxes, known as "registering fare boxes," are so constructed that the fares deposited by the passengers are registered as they pass through the box and the coins are immediately available to the conductor for change and resale to subsequent passengers boarding the car. The latter boxes are sometimes equipped so that in addition to registering the pennies, nickels and dimes, they will register metal tickets. These boxes generally do not receive paper tickets.

The equipment used in Denver is of the registering type, registering pennies, nickels and dimes and two different metal tickets. The fares deposited in the box by passengers are registered on an overhead register by the conductor. In addition, the conductor registers on this overhead register the tickets and transfers which he receives.

With the advent of the 6-cent fare in Denver the fare boxes were equipped to register two different metal tickets in addition to the customary denominations of money. One is a large metal ticket for half fare, which is sold at 3 cents, while the other is a small metal ticket for adult fare which is sold at 6 cents. These metal tickets register through the fare box separately in quantities as distinguished from the registration of the money which is done in terms of dollars and cents.

By this method of fare collection we have been enabled to collect practically 100 per cent of our passenger revenue through the fare box. Prior to the installation of this system, a number of revenue tickets were printed for different industries throughout the city. The printing of these paper tickets was some expense, and there was a considerably larger expense for handling and burning the tickets to prevent their reuse. Since these tickets were not deposited in the fare box, there was some loss through careless handling by the conductor. Under the old system there were collected and handled through the different departments between 8,000 and 10,000 revenue tickets per day. Under the present system these have been eliminated. The amount of revenue is now accounted for in the cash collections each day without increased labor.

LESS THAN $2,000 LOST IN RAISING FARES

When the Denver Tramway changed from a 6-cent fare to a 7-cent fare, which it did temporarily from Dec. 26, 1918, until Jan. 14, 1919, inclusive, it accepted the original 6-cent metal ticket for a 7-cent fare, effective with the date of the increase in fare. This resulted in a loss to the company of 1 cent each on the metal tickets outstanding, a total of $1,894. Of this amount, however, it was estimated that about $350 of the profit went to the trainmen because the company did not require them to turn in their working supply of tickets the day before the increase in fare went into effect. Upon the reduction from a 7-cent fare to a 6-cent fare the same plan was followed, in other words, the company accepted the same metal ticket for a 6-cent fare that had been good for a 7-cent fare the previous day. Due notice of the change was given the public when the fare was reduced from 7 cents to 6 cents and the working supply of tickets in the possession of the trainmen were redeemed so as to cause them no personal loss. The tickets in the hands of the public upon this occasion resulted in a profit to the company of $1,313. No complaint was heard and, generally speaking, the entire transaction seemed to be satisfactory to the traveling public. The experience of the company shows that when a fare increase is anticipated the public will not invest in more tickets than would be sufficient for one week's car fare.

On an average 200,000 cash fares are collected in Denver per day. From the date the 6-cent fare went into effect,

---

[*] Abstract of paper presented at meeting of Accountants' Association, Atlantic City, N. J., Oct. 9, 1919.

Sept. 15, 1918, there were collected for the ten days following approximately 50 per cent of the fares through the medium of full fare metal tickets. In about fifty days more this percentage dropped off to about 40. On account of the frequent changes in rates which have resulted from political agitation and the consequent uncertainty as to what the fare might be, the percentage of cash fares collected through the medium of metal tickets was still further decreased to about 33⅓ per cent of the cash collections and this has continued to the present. At the time the company was collecting 50 per cent of its revenue thus, approximately 170,000 adult metal tickets were outstanding in the hands of the public, not including those in the hands of the trainmen. Today, there are 160,000 metal tickets in the hands of the public exclusive of those in the hands of the trainmen. It follows therefore, that a 1-cent increase in the fare would cause the company to write off a value of $1,600 in order to increase the value of the tickets in the hands of the public to the new rate, and there would be a profit of the same amount upon a reduction in fare.

Pending Cost-of-Service Plan Makes Topic Important Locally

The cost-of-service franchise which will be voted upon in Denver on Oct. 22, provides that immediately upon its adoption the Board of Control shall prepare a sliding scale of fares. If the ordinance is adopted and a sliding scale of fares made effective as contemplated therein, it is expected that the fare will increase or decrease at approximately one-half cent intervals. The change of one-half cent then will be equal to one-half of the amount set out above or $800 as the difference in value of the outstanding metal tickets in the hands of the public when changing from one fare to another at one-half cent intervals. The practical result of all this is that in changing to the next higher schedule the company by accepting metal tickets at the old rate is postponing to the extent of about 7 per cent of one day's earnings the time before it realizes the full benefit of the increased fare.

The company believes this to be the practical way to make these changes. To secure an adequate supply of metal tickets carrying a different value for the different schedules of fares will require an investment of at least $2,500 for each schedule. Of course there are other methods which might be followed, as for instance, having paper tickets printed for the different rates of fare. This would likewise require additional investment in tickets, additional clerical expense in handling them, together with other objections previously cited, all of which, in the writer's judgment, are sufficient to cause us to adhere to the metal ticket plan.

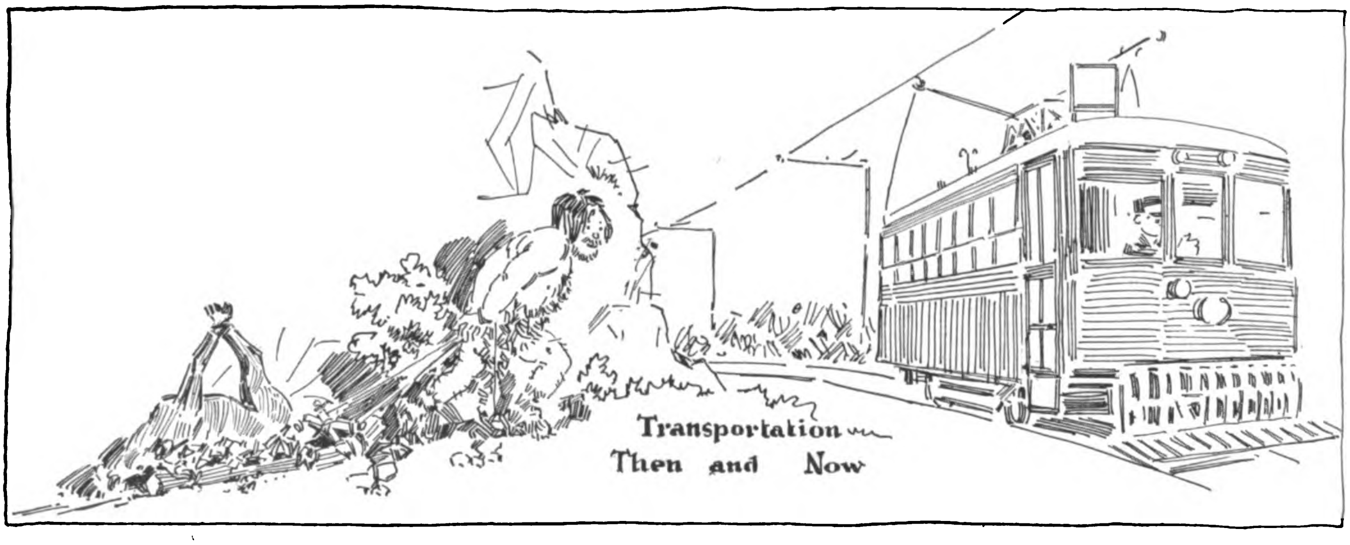
Under cost-of-service there should be close relationship between the utility and the public, and the public is interested to a large extent and is in effect in partnership with the utility in making the plan a success. Under these conditions and especially when adequate and full publicity is given the public, not only concerning the change in fares with special reference to metal tickets, but upon other matters concerning service and features in which the public is vitally interested, little, if any, complaint will be experienced.

Fare Collection Devices Need Simplifying

There is a problem confronting the electric railways in the matter of fare collection greater than many of us apparently realize, particularly with respect to the duties imposed upon the conductor. A typical nine-hour run requires more than 3,200 separate operations of the conductor, in addition to his preliminary work upon taking the car and the closing work necessary upon leaving the car, such as calculating register differences, wages, turning in trip sheets and cash, etc. This is nearly 400 operations per hour.

The largest element of expense entering into the operation of the electric railway is labor. A long step towards the saving of labor is no doubt represented in the safety car. However, with the safety car the time which the operator has to devote to the collection of fares must necessarily be a great deal less than that now devoted by the conductor under two-man operation. One of the prime needs of the industry is for increased production per individual operator. This cannot be met by longer hours because the tendency is, and no doubt will continue, for labor to demand and receive shorter hours. The solution then, must be sought in some improvement of the mechanical appliances for the collection and registration of fares, including also the issuance of transfers.

The time has arrived when substantial sums spent in developing and perfecting mechanical appliances will be justified if the result will meet the demands of the accounting officers of the utilities and at the same time eliminate most of the 3,200 motions now demanded of conductors. Substantial progress in this direction has been made, but some one machine should be developed which will meet most of our present requirements almost automatically, or at least with a minimum of effort on the part of the car operator.



Metal Tickets as a Substitute for Multiple Coins

Ten Advantages, for Both the Car Rider and for the Operating Company, Are Listed in Favor of the Metal Ticket

By J. F. McLaughlin
Engineer Houston (Tex.) Electric Company

I AGREE heartily with the views of the committee on the collection and registration of fares that the use of tickets is desirable under many conditions, and in its preference for metal tickets. There is no doubt that where reduced rate fares are in effect the greater portion of the receipts of the company will be from ticket sales. In cases where the ticket fare and the cash fare are the same, the general tendency of the public is to pay the cash fare, and they will, in a great many cases have to be enlightened as to the desirability of using metal tickets. It is my belief, however, that the advantages from the use of metal tickets, both to the street car patron and the company, are such as to warrant a liberal use under all conditions, provided:

1. That they are sold only at company's offices, stations, and outside agencies, and no sales are made on cars;
2. That all fares are placed by the passenger in an approved registering collection device;
3. That the metal ticket is made of good material and difficult to counterfeit.

Advantages of Metal Tickets

As for the advantages accruing from the use of the metal ticket, it is my contention that its usefulness and value are greatest in taking care of rates of fare where an increase or decrease involving fractions of a cent are desired in an effort to arrive at an equitable rate of fare. In this connection, it frequently happens that the public mind, opposed to any increase in rate of fare, particularly one as large as a cent or over, would be willing to grant some relief through the means of a ½ cent or ¾ cent increase. This would also anticipate situations where a fraction of a cent increase in fare would give a company the necessary additional income; or where it was desired to work out a fair rate on the basis of fraction of a cent increases made over a period of time, on the theory that such increases would not be appreciably felt or objected to on the part of the public, and the traffic losses accordingly reduced to a minimum.

Due to the financial difficulties of the industry, many agreements are being worked out by the communities and companies on a basis of service at cost. In these franchises rates of fare are often expressed in fractions of a cent and changes in fare are frequently made on the basis of a proper net income. The use of metal tickets permits charging fares involving fractions of a cent and the transfer from one fare schedule to another without change of coin. In this connection it is advisable, on the day before reduced fares go into effect, to redeem, if the patron so desires, all outstanding coins at the high rate; and in case of increase of fares, to prevent the buying up of a large number of coins, by limiting sales made after notice of increase in fare is posted. It may be found desirable, in case of an increase in fare, to use a coin of different design.

The following is a brief list of some of the other advantages which can be realized from the use of metal tickets, whether or not operation is under a service-at-cost plan:

1. The amount of cash handled by conductors and operators is reduced to a minimum, and there is accordingly less chance for dishonesty.
2. The company receives a large portion of its receipts prior to the time that the service is rendered to the customer, which is desirable from a financial and merchandising standpoint.
3. Their use tends to decrease congestion in loading of cars by eliminating the necessity of making change, which (a) adds to the convenience of and tends to eliminate irritation of passengers; (b) decreases length of stop and fosters higher schedule speed; (c) permits conductors and operators to give more attention to the prevention of accidents.
4. The use of metal tickets tends to foster more riding, on the same theory that more money is spent by an individual purchasing on a charge account than if cash is paid for each purchase.
5. The use of metal tickets tends to make the patron forget that he is paying an increased fare, and the psychological effect on the car rider is therefore much better than if he is constantly reminded of the increase in fares by the use of multiple coins.
6. The use of one coin is preferable to two or more as it enables the conductor or operator to see plainly just what has fallen on the inspection plate of the fare box, which is especially desirable at points of heavy traffic where there is considerable likelihood of a passenger attempting to pass in without paying. Or, as frequently happens, he may drop a coin of smaller denomination into the fare box and then contend both coins were dropped and full fare was paid. In eliminating this cause of possible friction between the conductor and car rider, the metal ticket is most valuable.
7. Any fare value may be placed on a metal ticket.
8. The advantages from use of tickets increase as the number of units in the rate of fare increase.
9. The use of metal tickets does not involve any more detail work for the accounting department than that necessary to handle multiple coin fares.
10. Metal tickets can be sold at the company's office, stations or outside agencies without commission in rolls or envelopes of ten or other multiple, and recognized as a medium of exchange throughout the city or town.

This Umbrella doesn't Cover Me Any More

---

[*] Abstract of paper presented at meeting of Transportation & Traffic Association, Atlantic City, N. J., Oct. 8, 1919.

American Association Proceedings

Service-at-Cost Franchises, Valuation, Zone System and Economics of Electric Railway Operation Were Principal Topics at Atlantic City Meeting—Committee of One Hundred Was Commended Also and Relations with Manufacturers Were Adjusted to the Satisfaction of All—President Pardee Was Re-elected

PRESIDENT PARDEE called the first meeting of the American Association to order on Tuesday morning at 10 a. m. in the Greek Temple. After reading his presidential address, which appears on another page, he called upon Secretary Burritt to read the report of the executive committee.

Report of the Executive Committee

The report of the executive committee prepared by Secretary Burritt is to be printed in the annual proceedings. This report covered in detail the activities of the association from the close of the 1916 convention and in itself was very complete. Among the many activities mentioned in the report were the opening of the association's offices in Washington and the work performed there during the war, and since, the appointment of the Committee of One Hundred to present the railways' case before the Federal Electric Railways Commission. Mention was also made of plans for the enlargement of the scope of the association's information bureau and the placing of an expert transportation engineer in charge. This change, it was hoped, would bring forth better results in the future to the company members who are seeking information on many and varied subjects. The report also contains the usual statistics regarding the memberships taken out during the current period, together with the estimated budgets of revenues and expenses for the three fiscal years covered by the report.

Report of the Secretary-Treasurer

The secretary-treasurer then gave an extended report of the activities of the association during the past year in his annual report. He said that since the War Board ceased its activities, the Washington office had been continued under the direction of W. V. Hill, who has represented the association in matters requiring attention before Congress and bureaus of the federal government. The mid-year meeting on March 4, 1919, was mentioned. The work of the Committee of One Hundred was described, and statistics were given of the number of contributed articles and questions and answers which had appeared in *Aera* during the past year. A considerable section of the report was given to the work of the Bureau of Information, and a number of its principal activities were mentioned. These included special researches, of which forty-three were conducted during the past year, the answering of special inquiries and the publication of bulletins on topics of electric railway interest. One of the most active matters with which the bureau has had to do has been to keep pace with the rapid changes in the rates of fare. The bureau has issued twelve bulletins during the year giving the fare situation in cities where increases have been granted. It has also issued six bulletins on wages during the year and has maintained a complete file of working agreements and wage contracts. It has also made a special drive to secure the complete financial returns from all electric railway companies, and an average of 143 companies have been reporting this year compared with eighty-seven last year. The largest individual undertaking handled by the bureau during the past year, however, was the preparation of evidence used before the Federal Electric Railways Commission. To do this in the allotted time it was necessary to reinforce the association's statistical staff by statisticians and other clerical assistants loaned from local member companies. The principal use of the information thus collected was the preparation of twenty-five large charts, showing in graphic form the present and former condition of the electric railways, and the tabulation of this information in statistical form. The bureau also assisted in compiling information required in the railway mail pay investigation.

INCOME STATEMENT: TEN MONTHS ENDING AUG. 31, 1919

Revenues	
Admission fees:	
Railway companies	$190.00
Manufacturing companies	470.00
Total	$660.00
Annual dues:	
Railway companies	$40,847.00
Manufacturing companies	9,241.50
Individuals	1,344.00
Total	$51,432.50
Miscellaneous income:	
Interest on deposits	$299.51
Interest on investments	134.79
Sale of year books and proceedings	159.73
Sale of engineering manuals and binders	70.45
Sale of "Cost of Urban Transportation Service"	31.50
Sale of bibliography on valuation	5.00
Sale of miscellaneous pamphlets	151.41
Sale of convention exhibit space	19,448.55
Sale of dinner tickets	7,495.00
Total	$27,795.94
Aera:	
Advertising	$12,134.51
Subscriptions—Railway companies	3,353.00
Subscriptions—Manufacturing companies	1,421.00
Subscriptions—Individuals	896.00
Subscriptions—Company section members	2,392.36
Paid subscriptions	159.17
Sale of extra copies	39.85
Sale of binders	3.50
Total	$20,399.39
Total Revenues	$100,287.83

Expenses	
American Association	$52,330.49
Accountants' Association	14.00
Claims Association	1,438.85
Aera	22,123.79
Total Expenditures	$75,907.13

Statement of Membership

Company Members	Railway	Manufacturing	Total
Member companies beginning the fiscal year, Nov. 1, 1918	319	161	480
Reinstated member companies	12	11	23
New member companies	19	46	65
Total	350	218	568
Resignations	8	2	10
Net company membership	342	216	558
Withdrawn—Now under United States Railway Administration	3	0	3
Total, Aug. 31, 1919	345	216	561

Individual Members	
Individual membership beginning the fiscal year, Nov. 1, 1918	850
Reinstated individual members	1
New individual members	21
Total	872
Resignations and deaths since Nov. 1, 1918	10
Net individual membership Aug. 13, 1919	862

Company Section Members	
Company section members beginning the fiscal year Nov. 1, 1918	1361
New company section members	775
Total	2136
Resignations and deaths since Nov. 1, 1918	198
Net company section membership Aug. 31, 1919	1938

The income statement and statement of membership for the ten months ended Aug. 31, 1919, appear on page 43.

At this point the recommendation made by President Pardee in his address for the appointment of a committee of five to take up the consideration of increasing dues was acted upon and approved by the convention. The appointees on this committee were not announced at the first session.

In the absence of Calvert Townley, chairman of the committee on electrolysis, the report of this committee was read by Secretary Burritt. It stated that the committee had had no meetings during the war but had recently begun to take up more active work. It also commented briefly on the work which is being done in co-operation with the Bureau of Standards, which had appointed a committee comprising all interests concerned, known as the American Committee on Electrolysis. The American Electric Railway Association electrolysis committee is represented on the research sub-committee of this national electrolysis committee by P. W. Ripple.

Company Sections and Individual Membership

Martin Schreiber then read the report of the committee on company sections and individual members, an abstract of which follows:

In spite of the effect of the war and other unfavorable conditions in the electric railway industry, the company sections of the American Electric Railway Association have held their own.

Since the last report of the committee in 1916, the joint section of the Toledo Light & Railway Company was formed and now consists of approximately 1500 members and about 900 of these are employees of the railway.

If there was ever a time when it was good business to push the company section work it certainly is right now. We have been clamoring for publicity and proper public relations. We have admitted that some of the shortcomings of the industry have been due to a lack of publicity and education of the public. Now should it not be the most natural thing to begin our education at home? How can one possibly expect the public to know all about our business when many times our own men are not apprised of the facts. All of you have been acquainted with the statements from the patrons of your roads that certain things, like the operating details or policy, are not right and that your own employees agree with the patrons or are silent on the subject.

There is only one way to eliminate such a complaint and that is to educate the employees who hold the pulse of the public in their hands, so that the employee knows what is in the official mind as far as the policy of the company is concerned and what is required in other departments as well as his own. It does not matter how big the men are who are filling the upper positions, they cannot practically protect the company's interest with the people at large and it remains for the employee on the street, in the workshop and in the office to absorb some of the company's ideals as a preparation for answering public criticism.

This means that better-informed men must be produced for the subordinate positions. Are there any better ways to do it than by the company section? The report referred to the splendid work that is being done in Toledo. The fine spirit of co-operation and genuine good-fellowship that is being realized there is to be commended.

In the chairman's opinion one of the most important considerations in handling employees today is that of getting real human beings to occupy supervisory jobs. There are many bosses in many industries in this country that are not fit to handle men and they wouldn't get results at any wage.

Besides what the company section can do for the railway there is another important function in connection with the association. Company sections mean more individual members. An association without a flourishing, active membership cannot be very progressive. The individual members are what give the "pep" and the personality to the association work. It is they who determine whether the association is going to stand still, or develop into a real, virile useful organization.

The committee wants to urge upon every official to help the company section movement. If you already have a section just think what Toledo has done—increased its membership 400 per cent in the last year. Toledo has almost one-half of all employees in the company section. If the other companies would do what Toledo is doing the American Electric Railway Association could increase tremendously in power. The ELECTRIC RAILWAY JOURNAL has offered a beautiful silver cup for the section that starts out with the largest number of members. At present that cup reposes in Providence. Don't let it get tarnished. Give the employees of your property a chance to see it some day.

The committee report was signed by Martin Schreiber, chairman; W. J. Flickinger, H. Friede, H. H. Norris and Charles L. Redfern.

Prize for Best Company Section Paper

President Pardee announced that Alexander Jackson, superintendent of time-tables, Public Service Railway, had been awarded the medal for writing the best paper presented before any company section. The title of Mr. Jackson's paper was "Doing Your Bit." Mr. Pardee asked James H. McGraw, one of the members of the committee on award of the medal, to make this presentation.

In his presentation remarks Mr. McGraw commented upon the great value of the work which is being done by the company sections. He emphasized the thought expressed in Mr. Schreiber's report that the company sections offer a splendid opportunity for the education of employees and for developing a spirit of loyalty and team work. He expressed surprise that there are only twelve company sections and said there ought to be fifty; that there are only 2000 members and ought to be 50,000. "Service is the big word in this age," he said, "and it cannot be had without efficient management and loyal employees. Many of the papers which have been presented had been of great interest to the committee and had evidenced a knowledge which bespoke the splendid educational value of the company sections."

Mr. Jackson responded briefly by saying that he was proud to receive the award as a recognition of his endeavor to assist the industry in its time of stress. He lamented the lax methods which many employees follow in performing their duties and pointed out that present conditions demand closest attention and the utmost diligence.

The meeting was then addressed by Job E. Hedges, receiver, New York Railways. After which the meeting adjourned. Mr. Hedges' address appears elsewhere.

Wednesday's Session

The second session of the American Association convened on Wednesday morning in the Greek Temple with President Pardee presiding.

Valuation

In speaking of the report of the committee on valuation, which was the first order of business, President Pardee said that this was one of the most important matters before the association and spoke particularly of a public service commissioner who had read all the commission decisions on valuations to date and who had said his mind was much confused as to the principles involved.

The report was read by George Weston. It was printed in full in the issue of this paper for Aug. 2, 1919, page 222.

Mr. Weston said prior to reading the report, that the text refers to the importance of valuation for rate-making purposes and also discusses the fundamentals considered necessary to build property values.

P. J. Kealy, Kansas City, in commenting on the report said that it contained one or two radical steps, namely, that it considers only cost of reproduction new and allows no deductions for depreciation and secondly, that bond discount is not included in the value of the property. With reference to the first—the cost new less depreciated value was originally developed by the Wisconsin Railroad Commission and to the valuation thus determined was added "going value" to offset the amount of accrued depreciation deducted. This plan caused considerable confusion in attempting to show what was meant or included in "intangible values" with the result that street railway valuations including such items have been severely attacked. The Wisconsin Commission has now changed its principles and bases the return on the plan outlined in the report. The valuation in Buffalo followed the same principle and since the report of the committee has been published the Washington and Missouri commissions have accepted this theory as their practice. With regard to financing, the committee believed that this concerned the owner only and that it was immaterial whether or not the stock was sold at par or at a discount, providing discounts were amortized out of earnings. He also expressed appreciation for the untiring efforts of Mr. Weston for his persistency in pushing the work of the committee to a conclusion.

W. H. Sawyer, East St. Louis, said one particular phase of the report predominates as most commendable and constructive, namely, "reproduction cost new as of date of inventory undepreciated" and claimed that this plan was right and fair and that the committee or the association could take no other attitude and urged the companies to use the committee report as a Bible and follow the plans as outlined.

President Pardee announced membership on convention committees as follows: On the committee on resolutions, J. N. Shannahan, chairman; R. P. Stevens, L. E. Gould, B. F. Weadock and Edwin Gruhl. On the committee on nominations, John J. Stanley, chairman; J. R. Lovejoy, A. W. Brady, J. H. McGraw, L. S. Storrs, E. F. Wickwire and L. C. Bradley. On the committee on dues, P. J. Kealy, chairman; John G. Barry, Frank R. Coates, J. H. McGraw, C. L. S. Tingley, B. A. Hegeman, Jr., and W. H. Sawyer.

President Pardee called to the attention of the convention the full page advertisements appearing yesterday in the larger newspapers in and around New York, Newark, Philadelphia and Atlantic City, referring to the necessity of higher electric railway rates. He paid Mr. McGraw a fine compliment for his far-sighted publicity.

Federal Legislation

The report of the committee on federal legislation was presented by C. L. Henry, an abstract of which follows:

The sub-committee of the committee on national relations was appointed on June 28, 1919, to give attention to federal legislation affecting electric railways. Two meetings were held and in the interim W. V. Hill, manager of the Washington office, kept the committee fully informed as to all legislation affecting electric railways.

At the July 26 meeting the proposed plans of the Short Line Railroad Association were reviewed and it was decided to defer definite action until the introduction of the bill being drafted by the sub-committee of the Senate interstate commerce committee. The committee disapproved the proposed plan of the Short Line Association, of taking away powers now vested in state commissions and placing them with the I. C. C., taking the position that the business of the electric railways, being very largely of a local character, should remain subject to the jurisdiction of the local authorities except as to interstate business.

A number of bills were introduced in both Houses proposing varied plans for the return of the roads now under government control to their owners, etc., all tending toward vesting with the government enlarged powers of control through the Interstate Commerce Commission or other tribunals to be created. There is also what is known as the Plumb plan, which need not be commented upon, for it is believed that Congress will not give it very much attention.

The bills that are receiving serious attention are known as the Cummins bill (S. 2906) and the Esch-Pomerene bill (H. R. 4378, S. 1256). These bills involve electric railways, particularly interurbans, engaged in interstate traffic.

The committee, on Sept. 22 considered these two bills and unanimously decided that electric railways should be eliminated entirely from the provisions of the Cummins bill, excepting the sections that amend certain provisions of the commerce act. Amendments were drafted, accordingly, and submitted, with a letter of explanation, to Hon. Albert B. Cummins, chairman of the Senate committee, on Sept. 23. This letter reads in part as follows:

> It is apparent that the purpose of Senate bill 2906 is to return the roads now under federal control to their owners. Very few electric railways are now under such control, and substantially all other electric railways should be excluded from the general provisions of this bill. There are, however, a few electric roads now under federal control and some few others desiring to be under federal control. If this is found desirable, they could be considered and classed with steam railroads in any legislation enacted returning railroads to private ownership. In such case a slight change in the amendments which we propose would be necessary.
>
> The distinction between steam and electric interurban roads is well known and is constantly recognized by the courts, Congress, and the several state legislatures in dealing with the transportation question. Upwards of 60 per cent of all electric railway mileage in the country is strictly city mileage, and not to exceed 5 per cent of the gross earnings of all electric railways, city, suburban and interurban, is derived from interstate traffic.
>
> No one will contend that city electric railways are to be classed, for purposes of operation, with steam railroads. The interurban electric railways are, to a large extent, affected by their local surroundings; they must depend largely upon revenue earned from local communities served, and they are affected to a greater extent by the competition of motor vehicles—they must be considered by themselves. Any attempt to fix general rates of fare for all common carriers would result disastrously to this industry, for passenger fares and freight rates must be considered with relation to the territory in which they operate. They are properly under the control of the Interstate Commerce Commission in all things relating to interstate business, but they should not be put under the various regulations and restrictions of the pending bill.
>
> To have the wages and working conditions of electric railway employees under the jurisdiction of, and fixed by, a body that passes upon like questions for steam railroad employees can but be disastrous to the electric railway industry, for the action of such a body would be certain to be dominated by the ideas of steam railroad employees whose duties are very dissimilar to the electric railway employees, and would be likely to result in onerous burdens being placed upon the electric railways, possibly beyond the ability of the communities and companies to bear.

To carry out the ideas expressed the committee prepared and presented proposed amendments to exclude all electric railways from all the provisions of the pending bill except such sections as simply amend the interstate commerce law.

The Esch-Pomerene bill proposes to amend certain sections of the Palmer act which very materially increases the powers of the Interstate Commerce Commission, vesting with that body many of the powers now under the jurisdiction of state commissions. It, by its terms, included electric railways, and particularly all those engaged in interstate traffic.

Charles E. Elmquist, president of the National Association of Railway and Utility Commissioners, appearing before the House committee, offered amendments to Section 2, of this bill to make it unnecessary for electric railways to obtain from the I. C. C. a certificate of necessity for making extensions of lines and permits to abandon any portion of lines in operation; to Section 5, relating to pooling and consolidation of operation; to Section 17, requiring approval of the Interstate Commerce Commission of the issuance of securities. Mr. Elmquist took the position that authority to pass on questions of this nature should be left with the state commissions. The committee concurred in the views taken by Mr. Elmquist.

Members of the committee also conferred with Messrs. Esch and Sanders, of the House committee, leaving with them copies of the letters submitted to Senator Cummins, stating that these, reflected the views of the committee on any legislation pertaining to the general railroad problem involving electric railways. The committee was assured that its views would be given careful consideration by the committee before reporting out the bill.

Compensation for Carrying Mail

The report of the committee on compensation for carrying United States mail was read by L. H. Palmer in the absence of Chairman Curtis. An abstract of the report follows:

For a number of years past the electric railway companies have been endeavoring to obtain increased compensation for handling United States mail. As a result, partly of the representation made to the joint committee of which Senator Bourne was chairman, a law was passed in 1916 giving the I. C. C. the jurisdiction to establish rates of pay for the carriage of the United States mails.

Promptly after the passage of the 1916 act, the Interstate Commerce Commission after taking up the question of pay for steam railroads notified the electric railway companies that it would fix a date in the near future to take up their case in regard to mail pay, and on June 9, 1919, the commission commenced its hearings in Washington before Attorney Examiner G. N. Brown. The Post Office Department was represented by former Second Assistant Postmaster General Joseph Stewart, and the electric railway companies were represented by S. S. Ashbaugh of Washington, former counsel of the New Haven Railroad and for the Short Line Railroad Association in their mail pay litigation. Mr. Ashbaugh was assisted by Special Engineer Welsh of the association and by committees of railway operators selected by the association. F. W. Doolittle prepared the basis for the statistical evidence and the theory upon which the testimony was delivered.

Since the conclusion of the hearings on Aug. 4, 1919, the committee has prepared a brief for final presentation to the commission and also considered an oral argument which will take place at a date to be set by the commission after the briefs are filed. Much study has also been given to the formulation of rates for city and interurban service and for pouch and independent car service, although no conclusions as to the final rates have been reached.

The committee prepared definitions for city and interurban service and submitted them to the association for approval with the idea that they may hereafter be considered standard. These definitions are:

1. *City service* is defined to be that performed by cars operated solely within the limits of a municipality or from within the same, to adjacent suburbs at comparatively low speed. Such cars are usually operated without dispatching or signal systems. This service is construed to include what is called "Suburban Service."

2. *Interurban service* is defined to be that performed by cars operating between communities through rural districts at higher speeds than city service and under rules and conditions approaching more nearly steam railroad practice.

The Post Office Department, through Mr. Stewart, has asked for a conference, and a sub-committee consisting of Messrs. Curtis, Kealy, Tingley, Riddle and Palmer has been appointed to act with Mr. Ashbaugh at these conferences.

Inasmuch as the Post Office Department has been engaged so continuously in the preparation of the argument for presentation of its side of the steam railroad case, it has not been possible to hold this conference to date, and the committee recommended that it be continued in office for the ensuing year, in order to complete the work now in hand.

While progress has been made, the committee stated it was impossible to render a final report, but felt confident that results may reasonably be hoped for, as a result of the evidence introduced at the country-wide hearings.

C. L. Henry referred to the report as a most efficient and accomplished work and called attention to the strength of the association organization in that these hearings were planned and held coincidently with the work of the Committee of One Hundred.

S. S. Ashbaugh said that counsel for the Post Office Department in the argument of the steam railroad case before the I. C. C. had stated that side and terminal service was to be performed by the department, but as yet the exact date had not been set as to when this would take effect. Never, he said, did a case receive more loyal support than did the electric railway case and he urged the electric railways at this time to refrain from taking advantage of the plan to eliminate side and terminal service, until the commission sets a date for the steam railroads, and the association's committee presents its case, which would be submitted before the holidays.

Arrangement as Regards Manufacturers

Vice-President McCulloch took the chair to enable Mr. Pardee to speak with regard to the proposed plans concerning the manufacturers. He stated that the plan for an affiliated association had been abandoned and the proposed amendments to the constitution and by-laws amended so as to provide five members on the executive committee of the parent association. Such members to be nominated as usual and elected at the convention.

J. H. McGraw stated it was a very happy solution of the whole thing and personally believed that this was a red letter day in the history of the association. He urged that manufacturers be given a responsibility and said they would respond if such responsibility was put upon them.

H. C. Clark, chairman of the committee on changes in constitution and by-laws, read the report allowing manufacturers representation in an affiliated association and two members in addition to the president on the executive committee of the parent association. An amendment was offered by C. L. Henry so as to allow five manufacturers to be on the executive committee of the American Association and do away with the proposed separate manufacturers' association. The amendments as amended were approved unanimously.

The amendments as passed were as follows:

Sec. II. Par. (b). The president and vice-presidents shall be elected at the annual meeting of the association and shall hold office for one year or until their successors are elected. All such elections shall be by ballot, and a majority of the votes of all the company members present shall be necessary to an election. The secretary and treasurer shall be appointed by the executive committee. The offices of secretary and treasurer may be held by one and the same person; and the work of the treasurer's office shall be performed in the secretary's office.

Sec. VI. Par. (a). The entire charge and management of the affairs of the association shall be vested in an executive committee, which committee shall consist of the president, the vice-presidents, presidents of the affiliated associations, and five others who shall be connected with member companies engaged in the business of manufacturing or selling materials for electric railways. The past-presidents of the American Electric Railway Association and its predecessors, the American Street and Interurban Railway Association and the American Street Railway Association, shall be honorary members of the executive committee, but without the power to vote.

Sec. VI. Par. (b). The five members of the executive committee representing manufacturer member companies shall be elected at the annual meeting of the association. All such elections shall be by ballot and a majority of the votes of the company members present shall be necessary to an election.

Engineering Standards

F. R. Phillips then presented the report on standards of the Engineering Association which stated that the Engineering Association is conducting a campaign to promulgate a more universal use of its standards and recommended practices, and is mindful of the fact that it will be somewhat difficult to arouse great interest in such prosy matters in view of the larger problems of finance and public relations which now engross attention. Nevertheless, it should be borne in mind that whatever plan may be decided upon as a solution of the great problem now before the industry to be successful it must include the economical operation and maintenance of the physical property. To this end the Engineering Association proposes to devote its energy. Uniform practice and standardization of parts lends itself admirably to the accomplishment of such purposes.

In the prosecution of this campaign the association is aware that standardization should not be carried to the point where it will in any way interfere with the progress and development of the art. Moreover, it is known that operating conditions and requirements in many respects are by no means identical throughout the country and any attempt to set up hard and fast rules of procedure and specifications to fit all conditions would be a waste of time and effort.

However, the number of devices and the variety of materials in common use among the railways is too large and the benefits which can accrue from the standardization of such items is great. The relationship between sensible standardization and economy is so close that the terms might be called synonymous. Standardization is necessary to the successful operation of the prime essential of low unit cost, known as "Quantity Production." It will effect a saving in operating costs through simplification of methods of handling materials in the storerooms; it will materially reduce the amount of money invested in supplies; it will produce economies in maintenance by reducing the investment in tools, patterns and machinery; it will accomplish a saving in overhead expense through a reduction in design and development charges in the engineering and maintenance departments; it will aid in producing more prompt deliveries of materials and supplies for the reason that manufacturers will be able to carry stock in anticipation of orders; it should be of immense benefit to manufacturers, since it will offer a means of bridging the gaps and leveling the demand peaks permitting a more stabilized output.

As an illustration of the efficacy of sensible standardization attention is called to the work of the Master Car Builders' Association and to the Institute of Electrical Engineers. Imagine if you may the undesirable chaos that would follow a substitution of practices embodying the individual desires of operating officials for the wonderful compendium of standards found in steam railroad practice. Furthermore, consider the remarkable and most commendable achievement of Automotive Engineers when in five days the standard "Liberty" motor was designed, thereby accomplishing in one stroke what otherwise might have required years, the production of motors in sufficient quantity to meet the war requirements of the government.

For fifteen years the Engineering Association has been engaged in standardization studies. When it is remembered that the electric railway industry has undergone rapid and radical development, its work deserves the unqualified support of our whole membership. What we seek is your co-operation and support. There has been put in your hands a pamphlet entitled "Why Use the Engineering Association Standards?" On the last pages you will find a list of our standards. Take the pamphlet home with you. Secure a Manual. Ask your department heads to come prepared to discuss the standards of the association at our or your staff meetings. If in your opinion these standards do not properly meet your requirements tell us all about it, suggesting the remedy.

In the association booth at the outer end of the exhibit hall you will find a number of devices and materials kindly loaned to us by manufacturers which represent in some part the standardization work of the association. Constructive criticism is solicited in order that we may more fully meet your needs and desires. The Engineering Association is worthy of your attention. It needs your active support.

Service-at-Cost Plans

The next subject on the program was "Some Features of the Service-at-Cost Plan." Two papers were presented, one by Walter A. Draper, Cincinnati Traction Company, describing the situation in Cincinnati and the other by R. P. Stevens, Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, describing the conditions in that city. These papers appear in abstract elsewhere in this issue. It was announced that the paper on the same subject by J. E. Hutcheson of Montreal and the report of the Committee of One Hundred would be presented at the Thursday session.

A. W. Brady, Anderson, Ind., at the request of President Pardee, then spoke about some of the results obtained by the Committee of One Hundred. Mr. Brady said that he would not go into details of the work of the committee because that would be mentioned in the report, but those who have followed the case closely know that the position of the electric railways had never before been put before the country as clearly as it had been in the testimony presented. The trouble up to this time has been to get the public to realize what the real fault is, and it is hoped that the result of the Washington hearings will be to prove that the troubles are not local but general, and that the public utilities should have living wages just as other industries have. He spoke particularly of the debt of gratitude which the industry owed to General Tripp, President Pardee and others, who had given their time to the prosecution of this case.

Thursday's Session

The Thursday session of the American Association was called to order by President Pardee at 10 a. m.

Zone Systems

The first matter taken up was the report of the committee on zone systems, which was read by W. H. Sawyer, chairman of this committee. The large attendance and the marked attention that was given to this report showed the great interest that was being taken in the subject. An abstract of the report follows:

In this report the committee assumed that everyone appreciated that the net income of the average electric railway is now so inadequate as to constitute a menace to the future prosperity and the upbuilding of the resources of our country, as money enough is not available for the proper maintenance and continuance of past service, to say nothing of extensions, improvements and betterments.

There is no one cure-all or panacea for our existing ills as the details of the solution will vary in different localities. It is the duty of the industry to find the solution.

In general higher net revenue can be secured only in one or more of three different ways: Operating economies; substantial increase in revenue per passenger; substantial increase in number of passengers carried at a profit.

As to operating economies, street railway executives, operators and manufacturers have, ever since the advent of electric railways, been continually at work to effect such economies, and only because these have been taken advantage of that the electric railways for more than a generation have continued to exist on a 5-cent fare.

Present day illustrations of their efforts are the elimination of stops, the automatic sub-station, the light weight safety car, and power saving devices. Many companies have been unable to take advantage of these economy devices because their extremely low net earnings have ruined their credit thus preventing the obtaining of the necessary funds to put these improvements and economies into effect.

Attention is also called to one of the most just, equitable and fair ways to reduce the cost of service namely the elimination of paving costs and assessments. Operating expenses could also be reduced by elimination of all taxes, license fees, needless passes to city employees and other antiquated and discriminatory franchise requirements.

Under the present conditions where the bare cost of service is actually the controlling factor in either state regulation or municipal contract in fixing fares, there is real justification for eliminating all taxes on car lines just the same as is done for the patrons of municipal water works, highways, and other public improvements.

As to "increased revenue per passenger," the natural assumption is that the normal, logical way to increase revenue per passenger is to increase the flat rate fare to 6, 7, 8, 9 or even 10 cents. A review of the experiences of companies with horizontal increases in fares, demonstrates that there are positive limitations to the extent to which revenues can be increased by this method. Indeed, in many cases the possibilities of larger revenues from further increases in flat rates have been reached or at least closely approached. The loss in traffic, due to discouraging short distance riding may deprive the railway of a profitable class of business and raises the question as to whether it is possible to work out a practical system of fares which will still preserve an attractive rate for short distance riding, and at the same time increase the revenues of the company to the necessary extent. If the increased flat rate does not prove adequate in some localities, some other solution to increase revenues must be found. It is the duty of the members of this Association to go out of the beaten path to investigate other methods, to suggest and work out details and to force to attention new or other methods.

As to "increased number of passengers," this would naturally be assumed to include an investigation of zone systems. A zone system properly applied may also increase the average revenue per passenger and it is our belief that it will tend to encourage riding.

In discussing zone systems of fare collection it is most necessary that the terms used be defined, in order to eliminate confusion and misunderstanding, due to inaccurate terminology. With this thought in mind, the following fundamental definitions of terms as used in the body of this report are submitted:

A zone system of fares is one in which the fare varies with the distance traveled, and might properly have been called a "distance system."

A zone is one of the relatively short subdivisions of more or less uniform length, into which a route is divided for the purpose of fare determination.

Uniform rate zone system is one in which the fare is directly proportional to the number of zones traveled in or through, that is, one in which the fare per zone is the same in each zone, including the first.

Initial charge zone system is one in which the fare for the initial zone of any ride is greater than that for the succeeding zones.

Fixed minimum zone system is one in which a certain rate per zone is charged, with a definite fixed minimum fare, which minimum disappears when the sum of the zone charges exceeds it.

Central area zone system is one in which a flat fare or uniform charge, regardless of length of ride, within an established central area, is combined with zone charges on routes which extend beyond such central area.

The uniform rate zone system is a form which has been in use in England and other foreign countries for many years, and has apparently encouraged short-haul riding and improved the service load factor. It is most discriminatory in favor of the short-haul rider, because cost of service is not directly proportional to the distance traveled.

In many localities there is a distinct danger that the uniform rate zone system would result in lower gross and net revenue on account of the large percentage of passengers that may be carried below actual cost. One of the principal objectives of any zone system is that it encourages riding but great care must be taken that the short haul rider is not unduly or unfairly favored. It might be noted that in general the English tramways are municipally owned; discrimination is flagrantly practiced, and the rate of fare and length of zone are very largely based on what the traffic will bear, rather than upon what is fair and equitable to all classes of passengers. Furthermore, this system involves the maximum of fare collection difficulties, although it should not be condemned on that account.

It has been widely claimed that zone systems produce congestion of population. If this were true, congestion would be more highly developed in foreign cities using this form whereas in reality congestion is not found to any greater degree than in many of our flat rate American cities. The tendency, however, in European cities is towards a more even spreading of the occupied territory, rather than to the uneconomical, haphazard and spotted development so frequently found surrounding our cities; it is probable that the zone system has something to do with this, thus changing the sociological argument to favor the zone system.

The initial charge zone system definitely recognizes the principle of assessing "the cost of service" on each passenger including the "readiness-to-serve" cost. The rate may be based on a definite allocation of costs, or it may be modified as dictated by the presence of competition or other factors. As it unquestionably costs more per unit of distance to carry a short haul passenger, an equitable system of fares must recognize this fact. Competition or other factors might make it advisable to reduce or to increase the initial charge below or above the actual cost and conversely change the zone rate but actual costs should never be ignored in the consideration of the problem. The more nearly the initial charge represents the actual cost, the nearer is the approach to the equitable rate. On the other hand the short haul rider usually is a convenience rider and the discrimination in his favor may be advisable in some places. Fare collection, in connection with the initial charge zone system, presents practically the same problems as with a uniform rate zone system.*

The fixed minimum zone system has been used for years in fixing steam railroad passenger rates, and has been commonly followed by both interurban and suburban electric railways. This basis provides for a certain rate per mile, with a definite fixed minimum fare, which minimum disappears when it is exceeded by the mileage rate. In common with the uniform rate zone system the fixed minimum system is less equitable than the initial charge system, in that the "readiness to serve" cost is not equally included in the fare of each passenger, and practically disappears as a separate element in the rate. While all fares under this system do not approximate the cost of service as closely as under the initial charge system, they are more nearly equitable to the several classes of passengers than under the uniform rate system.

---

* Earlier issues of the Daily announced the immediate inauguration of the system by the Connecticut Company, and the application of the Public Service Railway for permission to abandon a somewhat similar plan which has been in operation for a few weeks on its lines.

Fare collection in connection with the fixed minimum system differs from that of the uniform rate and initial charge systems in that the fares collected from all passengers coming within the fixed minimum are the same, while under the other two systems such passengers would pay varying fares depending on the distance traveled.

The central area zone system is essentially a compromise between a flat fare system and some other zone system. It retains the benefits of the simplified collection of the flat fare for a substantial proportion of the total number of passengers who take or complete their whole ride within the central area.

The central area system has been used in several instances, because it had been felt that a zone system of fare collection for fares applicable to dense traffic conditions had not been satisfactorily developed. With the development of a better system of zone fare collection, one of the chief reasons for the central area zone system diminishes in importance. The central area system would probably be considered by the public as the least radical change from flat rate. Where this system is considered, particular care should be exercised that the central area is restricted so that it produces its share of the necessary revenue.

There may be other applications of the above four forms of zone systems different from those described and several combinations of the above forms of zone systems might be made, but these four cover in general the principal practical applications. Any one of them means a radical change from the flat fare system prevalent in most American cities. All of them tend, if properly applied, to encourage the riding habit, but also tend to complexities in fare collection and registration.

Care should be taken that the lengths of the zones established in any of these systems are not so short as to involve excessive difficulties in fare collection or registration. The requirements of a successful scheme of fare collection are the same in connection with any zone system as with a flat fare system, but in addition, provision must be made against abuses by passengers in over-riding. To meet these requirements, except where the traffic is light, it will probably be necessary to furnish each passenger with some sort of an identification check showing the zone in which he boarded the car, and to collect his fare as he leaves the car. To care for the details of this operation, several systems of fare collection are in progress of development at the present time.

The greatest obstacle which has heretofore limited the application of a zone system to electric railway lines handling heavy traffic has been the problem of fare collection. The limitations imposed by fare collection requirements must be for the present at least a factor of prime importance in applying zone systems to urban properties, and any zone system which does not give promise of adequately protecting the revenues, without unduly affecting the speed of operation, should not be attempted. The developments in methods of collection and registering zone fares are dependent upon public co-operation, and the collaboration of operating officials and manufacturers of registers and other mechanical collection devices.

Your committee believes that the manufacturers will find it to their advantage to give the most careful study to the requirements which must be met and to the evolution or adaptation of their product to meet these requirements. In other words, we are stating that the zone fare collection and registration problem is not yet nor can it ever be solved as simply or satisfactorily as flat fare collection and registration. Distinct definite progress has, however, been made, and the problem to-day is not considered as serious as a few years ago. Wherever a zone system is applied which is reasonably satisfactory in other regards, we believe that the problem of fare collection need not occasion its abandonment. The history of the art shows that where engineers and manufacturers have been given an opportunity to design and apply a needed device in practical service, they have generally succeeded. From the manufacturer's standpoint the greatest obstacle to improvements in methods of collection and registration of zone fares is that the operators have not as yet had sufficient experience to determine their requirements. Experience thus far secured from zone systems in this country shows clearly the necessity for careful investigation and in each case the procurement of reasonably complete and accurate statistical records upon which to outline an equitable system and estimate the results thereunder.

The public, municipal authorities, and members of regulatory bodies should realize that the zone system as applied to American urban conditions is still in the process of evolution. Even when the greatest care has been exercised in the investigation preliminary to the formulation of a zone plan some measure of uncertainty as to the result of the plan is bound to exist. Unnecessary changes should be avoided, because they are bound to affect traffic conditions and create some measure of public irritation. The wisest policy is for public authorities to give to the companies a large measure of liberty in trying out proposed plans. After a system becomes effective, the results can be much more accurately determined and such changes as are necessary to protect either the public or the company can be made intelligently and without prejudice to the rights of any party in interest. If a liberal policy is pursued by the car rider and by regulatory bodies, and if the companies through the agency of this Association freely place at the disposal of the industry the results of their experience with zone systems, we are confident that the progress made in the solution of this great question, which is of such vital importance to all concerned, will be most helpful.

The public in many instances will object to a zone system as its application does not eliminate the fact that at least some riders will have to pay a higher fare than under the traditional flat rate. In many instances an application for a zone system will cause objectors to appear in opposition, with the usual complaint that while the company may be entitled to additional revenue, the zone system is not the way to secure this revenue, as it radically discriminates as compared with past flat fare practice. These excuses are not really valid objections to the application of the zone system in their particular locality. But are objections which may be raised and must be taken into account from a practical standpoint. So long as a company can secure a net revenue which is a fair return and will invite necessary additional capital, the company should, of course be willing to serve the public in the way it desires. The aim should be to please and satisfy all customers, or riders, but none of them can be really satisfied unless the necessary revenue to maintain and expand the service is received.

The committee distinctly appreciates that a zone system, at this time, is not applicable to all communities, and especially is this true in towns and smaller cities, but as yet sufficient experience is not at hand to justify the committee in setting definitely a minimum limit either in population or length of haul where a zone system would not be applicable.

Your committee on zone systems recommends that where a flat rate of fare is inadequate most serious thought and study should be given to the various zone systems. It is the thought of this committee that where and when any zone system is contemplated the fact that the purchasing power of the dollar has decreased should be fully taken into account to the end that the minimum charge per passenger be not set too low. In view of the great importance of the zone system to the industry and the probability of numerous important applications of such a system in the next few months, it is the judgment of your committee that the Association should continue to give careful study to this problem in order that the results which are secured by various companies may be placed at the disposal of the industry.

The report was signed by W. H. Sawyer, chairman, and L. S. Storrs, R. P. Stevens, Thomas Conway, Jr., A. S. Richey, L. H. Palmer, C. L. S. Tingley, J. H. Hanna, J. F. Hamilton.

DISCUSSION ON ZONE SYSTEMS

Following this report, Walter Jackson read a paper entitled "Zone Fares for City Railways." He said that even as late as a year ago the idea of a zone fare for city railways was strange to American electric railway practice, with the exception of the Milwaukee plan which had been instituted in 1914. In speaking of the complexity of the zone-fare system, Mr. Jackson said that no differential fare system could possibly be as simple as one where every passenger tenders the same rate of fare and gets no receipt of any kind. He described the system that is in most common use in foreign countries and outlined the advantages of simplicity.

The difficulty of fare collection, Mr. Jackson said, was closely related to the matter of complexity. He referred to the operation of the Glasgow Corporation Tramways, which were carrying the extraordinary number of twenty-five passengers per car-mile on one of their lines and said that the carrying of from fifteen to twenty passengers per car-mile on English roads was not at all extraordinary. He believed that the collection of a zone fare in America should be considerably easier than in England because our cars are arranged so that the passengers are all on one level, and our average cars seat fewer passengers.

In regard to how such a system would be received by the public, Mr. Jackson thought that it would not be received with disfavor, particularly if certain advantages to the traveling public were added at the time that such a system was introduced. He said that the argument that the zone fare is responsible for congestion in foreign cities is an erroneous one. Housing conditions in the older cities of Europe antedated the institution of their tramways, and as a matter of fact under a sensible zone system the citizen pays less rent to counterbalance any higher rate of fare and there is no unearned increment for the land owners. In referring to the advantages of any correct zone system, Mr. Jackson said that the advantages seem to outweigh any disadvantages or complexity and that such a system offers an opportunity of trying to secure both maximum revenue and maximum usefulness. In concluding Mr. Jackson said that there are a great many other things that could be said about the subject, but he hoped that the two points given would serve as an incentive to further investigations.

Following the paper by Mr. Jackson, another was to have been read by Thomas N. McCarter, describing the Public Service Railway's zone system, but as Mr. McCarter was unable to be present this paper was not presented.

A paper on the relationship of items of cost under pre-war conditions and today as prepared by F. W. Doolittle was read by Garret T. Seely, Metropolitan West Side Elevated Railroad. This paper is abstracted elsewhere in this issue.

The next paper presented was that on "The Collecting of These Costs from the Traveling Public" by J. D. Mortimer, North American Company, and read by Edwin Gruhl of the same company. Mr. Mortimer's paper is also reproduced in this issue. Following this paper a letter was read by Bion J. Arnold, Elgin & Belvidere Electric Railway, stating that when his men went on strike, Mr. Arnold assumed operation of the car and ran it on schedule until the men came back to work without any change in condition.

Committee of One Hundred

The report of the Committee of One Hundred which was to have been given on Tuesday by Chairman Guy E. Tripp, Westinghouse Electric & Manufacturing Company, was presented by Joseph K. Choate, J. G. White Management Corporation. An abstract follows:

The report of the Committee of One Hundred first cited the offer of President Pardee to the Federal Electric Railways Commission to present in behalf of the association and the industry a complete case as it appeared to the executives and operators of the properties, then the prompt appointment of the Committee of One Hundred, then the appointment by the committee of sub-committees on finance, information and service, presentation and recommendations.

In commenting on the work of these committees, General Tripp said that the committee on finance had not only provided the funds necessary for the work but had been of material assistance in arousing the interest of railway companies, the bankers and the manufacturers. Through the courtesy of the Electric Bond & Share Company, the services of W. J. Griffen were placed at the disposal of this sub-committee. The crux of the entire case was, of course, in the hands of the committee on presentation, which, as a preliminary to its work, prepared an outline, published at the time in the ELECTRIC RAILWAY JOURNAL. This outline was closely followed in the subsequent appearances before the commission. Bentley W. Warren acted as counsel, and to him was intrusted the actual presentation of the case to the commission. Mr. Warren was greatly assisted by Edward Gruhl of the North American Company and H. C. Clark of the association. The gathering of the statistical data, which were the most complete ever presented to a body in the United States, was possible because of the efficiency of the association's staff, and acknowledgments of indebtedness for assistance were made to Secretary Burritt; James W. Welsh; Stone & Webster; Ford, Bacon & Davis; Connecticut Company; Electric Bond & Share Company; J. G. White Company; Henry L. Doherty & Company; Hodenpyl, Hardy & Company; Republic Engineers, Inc.; Public Service Railway, and to the witnesses who appeared to present the claims of the association.

The work of the committee on information and service was to disseminate the information at the hearings. The information sent out was simply a summary of the testimony of witnesses, as much attention being given to those witnesses being called directly by the commission or directly representing the public as to those called by the association. The success which attended the committee's work was due in a large measure to the generosity of B. G. Collier, who placed at the committee's disposal the services of Lambert St. Clare and Perry Arnold. The Associated Press carried from 600 to 2000 words daily in 700 papers, the United Press 400 to 800 words in 750 papers, the International News Service from 500 to 2500 in 300 papers, and a very large number of special stories were sent out by the 300 special correspondents who made Washington their headquarters. Longer articles appeared in weekly papers. In addition the association published each day a digest of the testimony at the preceding day's hearings, 55,000 copies of this report being printed and mailed each day. This digest, which ran about 6500 words or so, was sent to all members of the association, non-member companies, mayors of all cities of more than 5000 population, members of public service commissions, city officials other than mayors, labor unions, members of the investment bankers' associations, governors of states, members of Congress and the President and his Cabinet, as well as to a number of individuals in this country and outside of the United States. When the commission was not in session, the digest was published twice weekly, amplifying the proceedings before published. At the conclusion of the first three weeks of the hearings, the committee published and distributed some 60,000 copies of a pamphlet containing a summary of the striking points in the testimony of each witness. As a result of these efforts, editorial comment was carried by papers in practically all of the important cities of the country, and a perusal of these editorials is striking evidence of the value of the work of the electric railway commission in educating public opinion to the facts in the traction situation. The committee on information and service further extended its activities to include the preparation of material for pamphlets and circulars to be issued by the individual companies, and also the preparation of a series of car posters and car cards which carried some of the most interesting facts brought out at the federal hearings.

The committee on recommendations has kept in close touch with all the testimony, has held several meetings at which this testimony was discussed, and it exercised general supervision over the preparation of a brief which will be submitted by counsel of the commission at the conclusion of the hearings.

In conclusion the report said:

"Your committee believes that the benefits derived and which will be derived from the work of the federal commission on electric railways are of extreme importance to the industry and will many times repay the efforts that have been expended by everyone concerned in connection therewith.

"The publicity given to the situation has already had a beneficial effect. The country has been brought to a realization of the fact that the traction problem is universal and applies to all parts of the country and that it involves certain fundamental matters which cannot be solved by the companies alone and that the interest of the public in a proper solution is as great as that of the companies themselves. The national aspect given to the situation has to a large extent eradicated from the public mind the belief that the condition of local companies is due entirely to local causes, and the way has been prepared for the correction of specific situations through this education of the public to the knowledge of general conditions.

"The benefits of co-operation in public utility affairs and especially in the affairs of the electric railways has been illustrated by the success of the task undertaken by your Committee of One Hundred. We cannot too strongly urge a continuance of this co-operation.

"We believe that in this time of stress, when the future of the industry is at stake, co-operative action is absolutely essential and that the machinery already erected by the American Electric Railway Association affords an opportunity for further constructive efforts in behalf of the industry."

COMMENTS ON THE REPORT

In commenting on the report, F. R. Coates, Toledo Railways & Light Company, said that the work of the Committee of One Hundred must be continued. In the past, he said, the railway operators have been too apologetic, but they must now stand up for their rights. The Committee of One Hundred has done an excellent work, and Mr. Coates suggested that either the committee or the association get out publicity material to the employees. He also urged that more effort be put forth to get every non-member company into the association.

George E. Hamilton, Capital Traction Company, Washington, said that there never was a time when dangers were more theatening and when the association should feel more confident due to its preparations. The Committee of One Hundred has done a big work, said Mr. Hamilton, and has carried this to a degree of efficiency which foretells wonderful results. It is now realized that the public must be educated, whereas in the past the public has, in fact, been miseducated. The electric railways must have the support and confidence of the public and the publicity work of the Committee of One Hundred must be carried on. Mr. Hamilton said that there is already a perceptible change in the attitude of the public and he attributes this to the publicity work of this committee. The association, he said, has placed itself in a stronger position than ever before. Defeat is impossible and the dangers will surely be eliminated.

An earnest tribute was paid to Philip Gadsden by H. G. Bradlee, Stone & Webster. He said that one of the first to recognize the national character of the electric railway problems was Mr. Gadsden, who for more than two years has devoted practically all of his time to this work. Mr. Gadsden was instrumental in the formation of the War Finance Corporation, worked with the War Labor Board, and the appointment of the Washington Commission was largely due to his efforts. "We owe Mr. Gadsden a great debt of gratitude," said Mr. Bradlee, "not only as street railway operators, but as public citizens." Referring to the Committee of One Hundred, he said that the work of organization, presentation and publicity has been wonderful.

W. H. Sawyer, East St. Louis & Suburban Railway, said that it was a pleasure to stand-up and have a chance to say a word in commendation of the work of the Committee of One Hundred. The railway industry, he said, does not fully appreciate what this committee has done. Their work has proved indisputably what the national situation is today. The importance of the work of the committee cannot be overestimated, and this work, together with that which the association will do during the coming year, will place the industry again on a stable foundation.

The paper on "Are These High Costs of Service Likely to Develop Permanent Competition?" by L. H. Palmer, United Railways & Electric Company, Baltimore, was presented by the author. This was followed by an address by Brig.-Gen. George H. Harries, H. M. Byllesby & Company.

General Harries said that he had recently read an article by a newspaper correspondent who had taken a trip around the front, entitled "The Romance of War." In the speaker's opinion the romance of the war was shown by the fine spirit of the American Expeditionary Force. It is recorded of the Israelites that they were required to make brick without straw. The A. E. F. was not required to make brick, but if it had been and no straw was available it would have found 250 substitutes for straw. He told the story of a stevedore at Brest who was sick but worked hard for nineteen and a half hours without rest to unload food from an arriving ship, and of a cook without assistants who worked continuously for twenty-seven hours over a hot fire to provide food for 2200 men.

Speaking of his personal experiences in Berlin, he said that if the armistice had not been declared so soon the Germans would have had a better knowledge of the fact that they were beaten. He was in Berlin in charge of the American interests there when the beaten German army returned. The soldiers returned bearing banners and laurel wreaths and with bands playing "the Watch on the Rhine" and other patriotic airs. It was a time when any of them could "watch the Rhine" only vocally, unless he had the written permission of a commanding officer of the Allies.

During the early weeks of General Harries' stay in Berlin the American officers were gazed upon with curiosity. Then the outbreak began between the Spartacans and the government. The Germans seemed to exhibit a wish to govern themselves without knowing how to do so. Then followed two weeks of gunfire in the Berlin streets, but it was rather tame gunfire. General Harries told the story of a French officer who wished to cross the street during one of these fusilades. He waved his hand when instantly the gunfire was halted and the officer crossed the street. Both Spartacans and government furnished "guards" for the protection of the American headquarters, and at one time guards of both parties were outside. The food conditions in Berlin at that time were not good. General Harries remarked that he had been obliged to live on other occasions on horse flesh. It was not bad, but he did not care for the sauce in which it was served in Germany. He also ventured the statement that there were more skin wrinkles in Germany in the square inch than in any other country in the world, caused when a waist measurement is reduced from 75 in. to 44 in. German methods may be good when applied to Germans, but they are certainly not good when applied to other nations. As an instance he said that some time after being in Berlin he received a letter from one of the government officers suggesting that he wear civilian clothes on account of the feeling in Berlin against Americans. General Harries replied that he is not accustomed to have Germans tell him what clothes he should wear.

Another instance mentioned by him was of a gathering of some 80,000 Germans one night on the "Unter den Linden" shouting "Kill Americans," "Down with Wilson." No violence was attempted, however. On another occasion there was a thoroughly organized demonstration of "Hate" before the American headquarters. Thousands of Germans marched by the headquarters in sections. Just after one section had passed it would stop. Then the paraders would look toward the headquarters with growling face and French fits but uttering no sounds. Then the section would move on and the next section would repeat the action. This lasted for some three hours.

In General Harries' opinion it is the general policy in Germany now to foment industrial trouble in the countries with which Germany had recently been at war. In this way, Germany believes it can gain a marked industrial advantage and also reduce the severity of the peace terms. It is in close harmony with Lenine and Trotsky and is bent on the domination of Russia.

General Harries said he should not talk about war to such a gathering, as utility operators are always at war. They seem to be between the "irresistible," in the form of increasing operating expenses and the "immovable" in the form of rates. Nevertheless, a defensive army is always a beaten army, and it is time the railways assumed the initiative and attacked. Information to the public is the weapon. Be sure, he said, that the employees are trained and ready, for they can do more damage than anybody else. Pot the sniper speakers and writers, send tanks after the machine gun men, hold the initiative and never let the other fellow get it. Shell them out with arguments that cannot be stopped. Get the initiative and hold it.

Reports on Dues and Resolutions

The report of the committee on dues was then presented by P. J. Kealy, Kansas City Railways Company. Mr. Kealy said that it is evident that some rearrangement of dues is essential. The committee recommends that it be continued in order to report to the executive committee, and if the executive committee concurs, it can prepare such changes as necessary to present to the next mid-year meeting of the association.

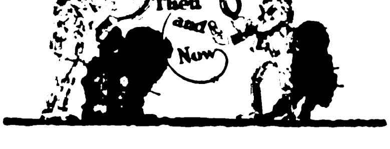
J. N. Shannahan, Newport News & Hampton Railway & Electric Company, presented the report of the resolutions committee. These included a resolution urging upon the public the necessity for fair and unprejudiced consideration of the electric railway situation to insure the collection and distribution of accurate information, and protect both the public and the industry against further damage by spreading of mis-information to the end that the necessary new capital may be obtained to provide the service demanded by the public. Further resolutions extended the thanks of the association to the technical press, to the chairman and members of the various committees of the convention, to the president, secretary and officers of the association, and recorded the sorrow of the association at the loss of those members who had been claimed by death since the last meeting of the association.

Election of Officers

The report of the nominating committee was presented by James H. McGraw. Mr. McGraw said that in presenting the names of the new officers, the committee had endeavored to take into account all conditions surrounding the industry and the fact that the greatest piece of work which has ever been done by any national public utility association has been accomplished during the past year. The year upon which the association is entering is the most critical in the history of the industry. The officers elected were.

President, John H. Pardee, Eastern Pennsylvania Railways; first vice-president, Richard McCulloch, United Railways, St. Louis; second vice-president, T. S. Williams, Brooklyn Rapid Transit System; third vice-president, R. I. Todd, Indianapolis Traction & Terminal Company; fourth vice-president, Philip J. Kealy, Kansas City Railways; and as members of the executive committee the officers, past-presidents and John G. Barry, General Electric Company; William S. Bartholomew, Westinghouse Air Brake Company; S. M. Curwen, the J. G. Brill Company; Thomas Finigan, American Brake Shoe & Foundry Company; B. A. Hegeman, Jr., National Railway Appliance Company.

Following the election of officers, President Pardee said that he had strenuously opposed re-election, because he had for ten years stood for rotation of office. He said that he had been prevailed upon against his wishes, and that the success of the administration during the past two years had been made possible only by the co-operation of all its members. He thanked the convention and said that he feels sure all members will continue to co-operate in the same manner during the coming year.



L. C. BRADLEY
President

Proceedings of the T. & T. Association

Notable Reports Were Presented at Atlantic City Meeting, Covering Principles of Traffic Regulation, Agreements for Joint Uses of Tracks and Terminal Facilities, Collection and Registration of Fares, and One-Man Car Operation—Safety-Car Film Prepared Under Auspices of One-Man Car Committee and Four Manufacturers Was Exhibited—Meetings Were Devoted to Discussion of Committee Reports—W. H. Collins Was Elected President

W. H. COLLINS
President-Elect

THE tenth annual convention of the American Electric Railway Transportation & Traffic Association was called to order on Monday Oct. 6, 1919, at 3 p. m. with President Bradley in the chair.

Secretary E. B. Burritt abstracted the annual report of the executive committee which covered the work of the association from the close of the 1916 convention. He called attention to the discontinuance of committee work due to the war and the new policy, followed this year, of having but one subject for consideration at each session. He also stated that the report of the convention would be printed in bulletin form and distributed to all members.

Secretary Burritt then presented his report as secretary-treasurer. This report stated the subjects assigned to committees for investigation and report at the convention; the work performed at the association offices and commented on the decrease in expenses due to companies paying the traveling expenses of committee members. The only expense now chargeable to the association was the cost of printing its reports and proceedings and minor expenses incurred at headquarters. Both reports were accepted as presented.

President Bradley's Address

President Bradley, in calling the session to order, stated: The Transportation & Traffic Association is twelve years old and meets today in its tenth annual convention. The conventions planned for the years 1917 and 1918 were abandoned because of the disturbed conditions produced by the World War. Hence the assemblage today is under conditions which represent almost a colossal change from those which obtained when, in Atlantic City on the evening of Oct. 12, 1916, the association adjourned its last convention.

When the Transportation & Traffic Association elected him president he promised there would be a good convention. If that prediction falls short of accomplishment, it certainly will not be the fault of the men who have served on the executive committee. They have engaged most earnestly in the work of preparation for the convention. They have attended meetings at great sacrifices of time which they could ill afford to spare with so many matters at home pressing for attention, and at great expense, when most rigid economy seemed everywhere essential. Mr. Bradley also expressed warm appreciation of the energies and devotion of the members of the special committees which have studied and prepared reports on subjects to be presented for consideration.

At former conventions it has largely been the rule to have presented for consideration a large number of subjects prepared by standing and special committees in addition to special papers on timely topics. This year a radical change has been made as but four subjects will be considered. The purpose of thus concentrating the efforts of the association is to enable the convention thoroughly to discuss the reports, to digest them properly and to obtain an interchange of views from all sections of the country. These subjects are: (1) code of traffic principles; (2) one-man car operation; (3) collection and registration of fares; (4) proper basis of compensation for use of city tracks.

THE FUTURE OF THE INDUSTRY

The permanency of street railway transportation, in some form, is unquestionable. That, from time to time, the art will be developed to cope successfully with every reasonable and just demand made upon it, is the confident belief of everyone who has studied existing conditions. In the train of a war which has disorganized, if it has not destroyed, economic order throughout the world, no doubt it is reasonable to expect many ideas and "isms," which are the outgrowth and off-shoot of pre-war or post-war conditions in Europe, will find their way into this country. From those countries, where there has been oppression and autocratic rule, these ideas, strange and out of keeping with free American principles of government, will continue to come to us. Municipal ownership is one of them. But municipal ownership is un-American. It is contrary to every principle of American government and has no place here.

The industry will continue under private ownership. The people will demand it upon a basis which will provide adequate service and at the same time compensate the owners for the money, skill, initiative and labor required to produce that service. But the management of this great industry, upon which urban population is so largely dependent in the pursuit of its daily avocations, will require and will receive, even greater brains and energy in the future than has been devoted to it in the past.

I repeat, the street railway business in America has fallen to the lowest ebb it has reached since it emerged from a disconnected chaos into a great national industry, and this is in spite of the fact that the executives of street railways have waged a fight to save the industry from that disaster, threatened constantly during the last few years, which excites the admiration of every man connected with this business. To be associated with such men fills one with a just pride. Their resourcefulness, their ability, their courage has been splendid. There is nothing in the annals of modern business to compare with the magnificent fight they have made and are now making. And for the reason that their cause is right, that it is just, that it is American, it is bound to win.

The saving of the street railway industry means not alone the salvage from threatened spoliation of billions of money invested, but it means the preservation to the people who use them constantly and essentially in the routine of their daily lives of the systems of urban transportation which have been evolved through the years of street railway operation.

PROGRESS NECESSARY

But, there is more to the street railway business than its financial side. Important as that is, of scarcely less importance is the duty devolving upon those into whose keeping is given the responsibility for its daily operation. Coordination of effort all along the line is absolutely essential to the successful working out of the problems and difficulties which are everywhere present in the street railway industry.

It is not sufficient to pursue those policies and methods which heretofore have been deemed adequate and sufficient. The industry is constantly confronted with new problems, and to meet and master them requires the best that is in all operating officials! Nothing less will suffice. The stress of these times demands not only effort, but an elastic managerial policy, not only willing to welcome advancement in the art, but capable and resourceful in evolving improvements in practice and betterment in equipment.

New methods must be developed to meet the new conditions and successfully to overcome the new ordeals. Better ways and means of accomplishing the plans laid out are certainly essential to the life and salvation of the street railway business, as it is known today, and it is squarely up to those directly charged with operating responsibilities, to bring to bear upon the problems encountered all the genius and all the power they can command.

Efficiency, service and development should be the controlling trinity of all the operating men if they are to measure up to the example set along financial lines by the executives. And if this is done, I unhesitatingly predict, with the utmost confidence in that judgment, a new era in street railway transportation.

The finished product of the street railway is service. Demands for service are constantly changing. New difficulties are constantly arising. New and strange requirements are being made upon the management. To meet these it is essential that there be exerted not only herculean efforts, but an intelligence backed by a courage that knows no fear, to develop and adopt changes in method which will make possible the rendering of proper service. Improvement in operating methods, and by this is meant detailed supervision of all parts of the companies' business is essential to reach the standard required by the new conditions with which the industry is now struggling.

LIVE TOPICS FOR SETTLEMENT

Some parts of the business are being discussed at this convention by other affiliated associations. But within the category of the Transportation & Traffic Association several important phases of management should be brought to the attention of the industry.

1. *Traffic Regulation.* The committee on code of traffic principles will present to the convention a thorough and comprehensive study of this question. Street car service has gradually become the slowest of all paid means of transportation. To this condition there are many contributing causes, but the dominant one is street congestion. This is due to the rapid and enormous increase in the use of automobiles and the fast growth of American cities. A lack of uniform traffic laws and regulations, rigorously and impartially enforced, tends to place an insuperable handicap upon street car schedules.

2. *Skip Stops.* The skip-stop system, inaugurated during the war as a fuel-saving device, has demonstrated its value in increased speed in car schedules, time saving to the passenger and economy in operation. The efforts of the management of the industry throughout the whole country should be co-ordinated toward developing the skip stop, which certainly should be retained upon every street railway system in America.

3. *Safety Cars.* This subject will be presented to the convention in complete form. The four elements most essential to adequate street car transportation are reliability, speed, comfort and safety. Any development in the art of transportation which does not embody improvement in at least one of these elements is a step backward. The safety car combines not only one but all of them, and the industry has not yet fully comprehended its indebtedness to C. O. Birney whose skillful research and vision of future needs are embodied in its design. The possibilities of improved service, increased revenues and economies in operation which the safety car offers are so far-reaching that every electric railway official owes it both to the public and to the railway, which he serves, to become fully informed upon every phase of its design and operation.

4. *Collection and Registration of Fares.* The report of the committee on collection and registration of fares should receive wide and varied discussion. That, certainly, is one of the pressing problems of the day. It will be coupled with valuable data on fare boxes and prepayment cars.

5. *Energy-Saving Devices.* The experience of those companies throughout the country which have been foremost in the scientific and economical use of current, deserves careful study on the part of the industry.

6. *Traffic Checks.* There is nothing more necessary than a simple, complete and satisfactory system to record traffic conditions. Correct information as to the traffic at all hours and upon all parts of a system, is a condition precedent to economical, adequate and proper service. Service is the finished product of the business. It is the friction point of contact with the patrons. A thorough knowledge of the service rendered and the demands for that service are absolutely necessary to proper operation. Assuming that the riding public is willing to pay a fair charge for the service, without such checks and proper records how is it possible to know what is given, and if that service is adequate or is too much or too little? In all other departments of operation, in a well-regulated street car system, the management may have instant recourse to full information and accurate data. But seldom are the conditions of traffic, which service is designed to meet, so recorded as to be immediately available in determining the quantity and character of service best suited for the needs of those who use the street cars.

7. *Supervisory Force.* One of the present weaknesses in street car transportation in this country is the lack of an intelligent and properly trained supervisory force. Co-operation between municipalities and street railway companies in traffic regulation and other matters which interfere with reliable car schedules, will be of little avail unless the supervisory force is well trained and fully competent. The development of an efficient personnel is a constant and tremendous task; but without it very little progress can be made toward improvement in the one thing the public is most interested in—Service. Other departments engaged in supervision of street railway operation, in practically every case, are in the hands of a highly trained and intelligent personnel. Does the personnel of the supervisory force measure up to the standards of these departments? Certainly if efficient service is to be had the supervisory force must measure up to the highest possible standard. It is the direct point of contact with the public served, and service is the thing in which the public is most vitally interested. Whether a street railway undertakes to furnish a 4, 5, 6, or 10-cent service, it must be done with the same degree of efficiency and system as is employed in other phases of operation. The determination of the character and quantity of this service may not safely be delegated to

those without authority and who are not fully advised as to the company's financial status and all other problems affecting public relations.

8. *Employees' Welfare Work.* Attention is called to the importance of this work along lines calculated to make service of employees as nearly 100 per cent efficient as circumstances will permit. Different companies have varying methods of accomplishing this end. It is, however, recommended that the incoming executive committee consider this subject as one for presentation at the next convention.

9. *Accidents.* I understand the Claims Association is presenting to its convention information about every phase of the accident situation. Very little progress can be made by that association without the fullest co-operation on the part of the Transportation & Traffic Association. The rapid increase in automobile and vehicular traffic on city streets is creating a situation which threatens to become very nearly as serious as the lack of adequate revenue. The passage and enforcement of adequate laws regulating traffic is absolutely vital. The subject of accidents is an integral part of the special report of the committee on code of traffic principles which is being presented to the convention.

In closing President Bradley urged the importance of full and frank discussion on the floor of the convention, of all of the problems confronting the industry, for without such an interchange of ideas the convention would fail to accomplish its broadest and most important purpose.

Upon the completion of his address, President Bradley mentioned the appointment of the two usual convention committees and prior to the close of the session announced the following: As members of the committee on resolutions, H. B. Potter, Boston Elevated Railway; Arthur Gaboury, Montreal Tramways, and R. T. Sullivan, Mahoning & Shenango Railway & Light Company; and as members of the committee on nominations, L. H. Palmer, United Railways & Electric Company of Baltimore; Richard Meriwether, Dallas Railway, and J. N. Shannahan, Newport News & Hampton Railway, Gas & Electric Company.

Code of Traffic Principles

The next subject on the program was the report of the committee on a code of traffic principles, which was presented by H. B. Flowers,* chairman. The reading of the report was followed by an extended discussion.

In this report the committee endeavored to carry out the commission of the executive committee that there should be formulated a code of traffic principles which, bearing the indorsement of the association, can be used by companies to secure the co-operation of the public and municipal authorities, in the adoption and enforcement of such equitable rates and regulations governing vehicular traffic and the operation of street cars as will best serve the public interest. The attention of the committee was also directed by the executive committee to the study of traffic regulations presented in 1916.

In its report the committee stated that, having no precedents to follow, it had carefully studied the various traffic ordinances, and rules and regulations in effect in various cities and states. The result was the discovery of a lack of uniformity and of intelligent effort in most cases to draw up ordinances that were of real benefit to the traction companies. The rights of the street railways were not recognized, and the importance of regulations on streets on which there are car tracks has not as yet been shown. However, there has been some effort in some communities to improve conditions by enacting traffic ordinances which in a measure do recognize these rights.

The committee prefaced its report with a general historical statement and outline of fundamental principles, leading up to a tabular statement of these, preceding the announcement of the proposed code itself. The principal points made were the following:

Community growth and prosperity depend so largely upon transportation that regulation of street traffic has long been one of the most important governmental functions. At the same time traffic congestion and other conditions have made street railway transportation the slowest of all paid means of travel.

Misdirection of public opinion, which has proved so costly to the street railway company generally, has nowhere been felt more severely than in traffic regulation. Speed limitations, frequency of stops, promiscuous parking of vehicles, lack of standardized signals or rules of the road, are daily creating in every community where street railways run a congestion of traffic, costing the electric railways untold sums. The people who must meet this cost through their carfares should be brought to realize that it is a needless and wasteful cost.

Many of the larger cities in framing their traffic codes or regulations are now expediting the operation of street cars in many ways. A study of these codes shows a uniform attempt to keep the car tracks open for street cars; to insure safety of passengers while boarding or alighting, and to facilitate in many small ways the safe and regular operation of cars. It ought not to be difficult for the industry to show officials charged with the making of traffic regulations that further regulations equally favorable to the operation of street cars would work further benefits to the public at large.

Cities which have recognized the necessity of keeping vehicles off the car tracks, and of providing for safety of car riders should be asked to recognize still further the dominant right of the street car in the streets and the necessity of providing for the public convenience as well as for the public safety. No one class is entitled to the exclusive use of any streets, nor should there be discrimination against any user of any street, save as the needs of other users make such discrimination in the public interest. Street cars carry the bulk of passenger traffic. That fact should be recognized in all regulations affecting traffic in which street cars are a part.

Analyzing the traffic situation of communities generally, the committee sifted out what it considered the fundamentals for a successful code of traffic principles, and developing and applying these proposed a code as follows:

1. The growth and prosperity of any community is dependent on its means of transportation and communication with other communities.

2. From an economic standpoint, the greatest utilization of highways as a means of intercommunication is essential.

3. Highways are primarily for the use of the public; first for vehicles of all classes, moving and standing; second, for pedestrians.

The rights of each must be clearly defined, and must be respected by the other and to obtain the fullest use of the highway, the closest co-operation between the general public, the electric railways and the civic authorities is absolutely necessary. Municipal or state governments, automobile associations, civic or trade bodies and cartage companies are equally interested with electric railways in promoting safe and quick passage through city streets, and a successful traffic ordinance can be efficacious only as it has the co-operation of all.

4. To obtain the greatest utilization, regulation of traffic thereon is necessary so as to insure safety and quick dispatch and to avoid congestion.

5. Regulations must be founded on the basis of the greatest good to the greatest number. No one class is entitled to the exclusive use of any street nor should there be discrimination against any user of any street, save as needs of

---

* An earlier issue of the Daily announced Mr. Flowers' appointment to the general managership of the United Railways & Electric Company, Baltimore, Md.

the user make such discrimination a matter of public interest.

6. The need for standardized regulations and their enforcement, especially on city streets, should be realized by all, as the present variations in regulations or lack of them, with the resultant confusion and congestion is daily costing large sums of money, which is felt first by the electric railways, but which is ultimately paid by the general public through increased cost of car fares and through slower transportation.

7. The need for established and well-defined routes for parades, and the hours when parades shall be permitted, which will least interfere with the operation of street cars is apparent, so as to eliminate disarranged schedules with the attendant inconvenience to the traveling public.

8. The need of an enforceable ordinance eliminating causes for delays at steam railroad crossings, and at other points by the loading and unloading of heavy machinery, etc., so as to reduce delays, and the further disarrangement of schedules must be met.

9. Courtesy of the road should be recognized as the foundation of traffic safety and regulations.

WHAT THE REGULATIONS SHOULD COVER

1. Streets should be classified according to importance and physical characteristics: (a) Congested districts; (b) one-way-travel streets; (c) restricted traffic streets; (d) parking and non-parking streets; (e) other restrictions (residential districts, important intersections, public buildings, locations, fire, police houses, schools, hospitals, etc.).

2. Use of streets should be clearly divided and defined, both as to character of traffic and the rights of each user: (a) Pedestrian and vehicular; (b) weights—capacities—speed of vehicles; (c) right of way—superiority of street users; (d) obstructions in streets; (e) established safety zones.

3. Regulation of traffic, moving and suspended: (a) Pedestrian travel should be defined for safety from and non-interference with vehicular traffic. At intersections, pedestrians, should move with, not against vehicular traffic. (b) Vehicles: (a) In motion. Procedure when meeting, passing, intersecting, stopping, following, turning out. Rights of different classes of vehicular traffic. (b) Motion suspended: (1) Street car stops should be fixed in number and so located as to facilitate—not impede—traffic. (2) Vehicles standing should be limited in time and location. (3) Vehicles parking should be limited as to time and place, and rules for limitations should be explicit. (4) Vehicles stopping, should signal, stop on right side, close to curb in such a position as not to impede traffic; at street intersections, should stand at building line, not at curb. At street car intersections, should not stand within — ft. of intersection; should not stand in front of entrance to any public building, or within — ft. of any fire plug.

4. Signals and Signs: (a) Drivers should use standard signaling system proposed by Automobile Association of America. (b) Signs should be conspicuous, fixed and concise. (c) Lights to be carried by all vehicles, and headlights dimmed.

5. Enforcement (a) By authorities. (b) Penalties—(1) for violation of specific provisions; (2) for carelessness.

The committee calls attention to the fact that the above is a skeletonized code, submitted in this form so that its essential members could be considered and the effect of their functions estimated. To draw a model ordinance following the proposed code it is necessary to write into the text a description of the detailed conditions of the municipality adopting it. In preparing an ideal traffic ordinance the municipalities, railway companies, automobile clubs, and various mercantile industries must co-operate. An ordinance to be efficacious should be designed to correct two obvious weaknesses in traffic laws existing in the various cities at the present time. These are lack of reasonableness in the provisions of the ordinance and the great difficulty which is experienced in enforcing even the reasonable portions of the automobile law concerning parking.

The committee report concluded with some typical rules and regulation governing street traffic, as formulated in Chicago, Philadelphia and Baltimore. An appendix also included the following table of vehicles in the United States, based on the report of the National Automobile Chamber of Commerce for 1919, the data being derived from the licenses issued by the several states.

TOTAL NUMBER OF MOTOR VEHICLES IN THE UNITED STATES

	Passenger cars	Commercial cars	Total motor vehicles	Population	Number of persons per pleasure car	Number of families per pleasure car
Dec. 31, 1914	1,574,431	136,907	1,711,338	98,781,324	62	16
Dec. 31, 1915	2,240,229	205,435	2,445,664	100,399,318	44	11
Dec. 31, 1916	3,243,631	301,321	3,544,952	102,017,312	31	8
Dec. 31, 1917	4,643,481	442,478	5,085,959	103,635,306	22	6
Dec. 1, 1918	5,352,350	593,092	5,945,442	105,253,300	19	5

Dec. 31, 1918, total motor vehicles 6,146,617.

REMARKS.—Figures are based on separate registrations of commercial cars in sixteen State and estimates of number of commercial cars by secretaries of State in five States.

Source of information: "Facts and Figures by and for the Automobile Industry," published by National Automobile Chamber of Commerce, April, 1919.

This report was signed by H. B. Flowers, chairman, A. Gaboury, Paul E. Wilson and J. H. Stephens.

DISCUSSION ON TRAFFIC CODE

In speaking of Chicago's traffic problem, J. V. Sullivan, Chicago Surface Lines, pointed out that the anti-parking ordinance has been in effect about two and one-half years and has improved the traffic conditions in the central business district. The section pertaining to parking of vehicles provides that no vehicle shall be permitted to stand on any public street where cars are operated, in the central part of the downtown district, between the hours of 7 and 10 a. m. and 4 and 7 p. m., for a longer period than necessary to load or unload its occupants, baggage or merchandise. Another ordinance, applying to the central or "Loop" district, provides a penalty for persons who permit a vehicle to stop within loading zones, 100 ft. long, established at eighteen important intersections, provision being made, however, that one vehicle at a time may stand within these areas while actually loading or unloading. The city code also prohibits the standing of any vehicle in the Loop district continuously in one place for more than thirty minutes during the day—the anti-parking ordinance, however, superseding this along car line streets during the rush hours.

To understand the necessity for drastic traffic regulations in Chicago, Mr. Sullivan said that it would be worth while to picture the conditions affecting the movement of the cars, particularly in the congested district. The congested district is limited to an area of about 1 mile radius, in each direction, and it has been estimated that more than 1,000,000 persons use these downtown streets every day. About one-fourth of the entire surface lines traffic is carried into or out of this district. A traffic census taken by the city authorities in 1915 showed that street cars constituted less than 15 per cent of the Loop district traffic movement during the day, and inasmuch as the number of motor vehicles has practically doubled since that time it is very likely that the cars are responsible for an even smaller proportion of the congestion.

The street railway system spreads out like a fan from this district with eleven bridges, three tunnels and three streets as railway exits. Two other exits are used exclusively by other vehicles. All exits excepting the tunnels are seriously congested by vehicular traffic, most of the bridges having narrow roadways, on which only one row of vehicles can pass in each direction. There are also steep grades at the approaches. The use of other streets as exits is prevented by railroad occupancy or the absence of bridges. Some 600 surface cars leave this district during the maximum half-hour of the evening rush.

The evening peak load of commercial vehicles begins to recede about the time the heaviest car service is entering the central district, and if it was not for this, a hopeless jam of vehicular traffic would tie up these exits. However, these conditions are responsible for an unusual difference in speed of cars as between the congested area and the free-running territory outside. A summary of traffic delays over the entire system in March, 1919 (consisting only of those interruptions which called for emergency wagons), showed time lost amounted to more than 305 hours.

A typical narrow street used by important lines in the Loop district is 38 ft. wide from curb to curb. The space taken by cars passing on two tracks is 19 ft. 2 in. When automobiles are standing at each curb, the clearance on each side is only 3 ft. 5 in., which means that all other vehicles must use the car tracks. A study of this situation revealed a proportion of twelve vehicles to one street car. Efforts were made to reserve the car tracks in the central district for the exclusive use of cars, but this attempt was defeated by a showing that vehicles had no other roadway because the space alongside the tracks was usually occupied by parked automobiles. This led to prohibiting parking on car line streets during the rush hours.

In answer as to whether this relief was effective the city's Department of Public Service conducted a traffic study of the time used by approximately 85 per cent of the street cars in passing through the Loop district both before and after the adoption of the "anti-parking" ordinance. It was found that the aggregate time saving between the hours of 4 and 7 p. m. amounted to about eighty-three and one-half hours daily.

The average time saving per car during each half-hour period between 4 and 7 p. m. varied from 3.7 minutes between 5 and 5.30 p. m. when the greatest number of cars were entering the Loop, to 0.3 minute from 6.30 to 7 p. m.

In general, the "anti-parking" arrangement made for a much better movement of pedestrians, vehicular and street car traffic. Congestion along streets between intersections was greatly reduced and this had a marked effect in facilitating the traffic movement at street intersections.

The enforcement of this law did not proceed without opposition. Men working in the big office buildings had their chauffeurs call for them, and when they got down to the street, a traffic officer was likely to greet them with a notice to appear in court the next day. This ordinarily meant a fine of $5, and while there were few second offenders, the number of those who were forgetful even once was sufficient to crowd the court calendar for many months. There have been repeated efforts to change the law but so far it has withstood all attacks. The results shown from its operations have been such as to make for better transportation facilities if street cars actually had exclusive use of the tracks built and maintained for their movement.

W. C. Culkins, director of street railways in Cincinnati, said that traffic ordinances should be considered from the viewpoint of the car rider and that such ordinances affected the entire community. Delays to cars by vehicular traffic cause loss of patience and time to car riders as well as increasing the cost of operation due to motormen running on resistance.

In speaking of existing traffic rules Mr. Culkins stated that most of these had been worked out by auto clubs and merchants' associations which did not consider the public that had to be hauled through such districts. Heretofore the street railways have not taken a very active hand in traffic regulations. He believed that the committee had launched something that will result in much good, for city councils usually visualize only the outside of a car and do not see the passengers. Another evil that requires attention is the enmity existing between truck drivers and motormen, with the result that neither will give way to the other. In speaking of parking automobiles on sides of car track streets so that moving vehicles must run on the railway strip Mr. Culkins stated that it is necessary to educate the car rider to understand it is for his benefit that the street railway is working in trying to get a clear right-of-way. In conclusion Mr. Culkins expressed the belief that the committee had not gone far enough but should draft a model ordinance.

N. H. Brown, New Orleans Railway & Light Company, said that a traffic ordinance had been placed in effect in his city a few months ago which materially improved the freedom of passage of the cars, through the creation of one-way streets, elimination of parking during certain hours, etc.

Richard Meriwether, Dallas (Tex.) Railway, said that while his city was much smaller than those previously mentioned in the discussion, the traffic conditions were nevertheless acute and chaotic. He said that Texas has one automobile for every five people and described the manner in which the cars passed through the central business district. No traffic ordinance has been passed in Dallas, but one has been prepared which is now before the commission for its first examination. This prohibits parking on the three main streets during the entire day, it having been the thought that it was not practical to exclude parking during certain hours only, for this practice required so many policemen to enforce it. He said that a skip-stop system had formerly been in operation there but had been removed for political reasons and that the speed was reduced 10 per cent by the change back to the old system. Mr. Meriwether also called attention to the great value of through-routing cars as a means of eliminating congestion and avoiding duplication of service on the central business streets. A recent rerouting plan in Dallas had brought about through-routing of every line.

C. L. S. Tingley, American Railways Company, emphasized the thought that traffic regulations should be introduced from the point of view of doing the greatest good for the greatest number of people. He referred to the intense hatred existing between truckmen and motormen and said that the truckmen often deliberately delay the street cars because of this personal feeling. He believed that if these men were brought to an understanding of the fact that it is not the company nor the motormen that they are causing to suffer, but the great public, that this might serve to bring about a relief from this kind of traffic obstruction. Mr. Tingley also expressed the view that there was no more reason why the principal streets of a city should be used for a garage than for a carhouse.

Arthur Gaboury, Montreal Tramways, said that at present there is no traffic ordinance in Montreal, but one is now being worked out. He mentioned the problem which the city has had in the past of handling 125 to 130 in. of snow, and how the street car track has been the thoroughfare for all classes of vehicles under such weather conditions. This difficulty had been eliminated by an arrangement whereby the city and company co-operate to clean not only the right-of-way but the entire street, the city sending out its snow-removing equipment immediately after the sweepers, so that vehicular traffic is enabled to drive elsewhere than in the track. In order to make sure of this, the company undertakes to clean the snow off for a distance of 8 ft. outside of the track on either side.

R. T. Sullivan, Mahoning & Shenango Railway, Youngstown, pointed out that as the street congestion increases, this not only delays the movement of street cars but also delays the automobiles. He said that conditions were coming to the point that the streets were too small to carry all of the traffic, and that this must lead to the use of the most efficient means of transportation. The street car might be looked upon as the means which would best serve this situation. He thought that the code as drawn up by the committee should be wonderfully helpful.

H. B. Potter, Boston Elevated Railway, told how traffic congestion had been alleviated in the shopping district in Boston where the streets are practically filled with pedestrians, by eliminating automobiles from these streets between the hours of 9 a. m. and 5 p. m.

At this point, Mr. Gaboury read a resolution which was seconded and carried, to the effect that the committee should be continued and instructed to draft a model traffic ordinance and mail it to all member companies for comment.

The meeting was then adjourned.

Tuesday's Session

President Bradley, on calling the association to order on Tuesday afternoon, explained the way in which the safety car film prepared under the auspices of the T. & T. Association had been produced through the kindness of the General Electric Company, Westinghouse Electric & Manufacturing Company, J. G. Brill Company, and Safety Car Devices Company, and said that public appreciation ought to be expressed for that work. He then introduced C. W. Kellogg, chairman of the safety car committee.

One-Man Car Operation

Mr. Kellogg presented an abstract of the report in part as follows:

Your committee feels, after its study of the subject, that the topic assigned to it represents the most important improvement in street railway operation that has been brought out in the last decade.

Our investigation indicates that the subject of one-man car operation naturally divides itself into two fundamentally different cases:

1. The mere rearrangement of existing two-man cars so that they can be operated by one man, thus saving platform expense, and, if equipped with safety devices, making an improvement in accident cost.

2. The creation of an entirely new type of car of low weight, greatly improved safety, and more rapid acceleration and deceleration. This car of the light-weight safety type not only saves platform and accident expense, but permits an improvement in service, such as well nigh to revolutionize the street railway business.

The operation of street cars by one trainman in small communities where small gross per car-mile demanded the utmost economy in operating expenses, is not a new idea in the street railway business, the practice having been followed for years by many of the smaller companies; but the modern light safety car represents a radical improvement in the whole art of urban transportation and, therefore, will be the principal topic discussed in our report.

The jitney was what produced the light safety car. The popularity of the jitney proved beyond a possibility of doubt that frequent, quick service would get passenger business away from the slow and infrequent street car, and it was up to the street railway industry to develop light cars that would simulate jitney service. Following this idea, Charles O. Birney designed the car that now bears his name. It was realized that the car must be light in order to accelerate quickly and that it must be operated by one man in order to compete with the jitney which was similarly manned. The safety devices followed from the realization that the public would not patronize the car unless it was convinced that it took no more chances in doing so than with the two-man car.

The new car, weighing only 13,000 lb. and seating thirty-two people, had to be designed from the bottom up—wheels, axles, truck, body and motors were all radical departures from previous practice and the automatic safety features alone were a triumph of adaptation to the compelling forces which led to the development of the new car. In general, these safety devices consisted of ways to make the operation safe in case the operator dropped dead, or slackened in attention. The "dead-man's handle" required that the operator have his hand constantly on the controller or it would throw off the power. Similarly, if the power were so thrown off, the brakes would be automatically applied and sand fed to the track, and, when the car came to a stop, the doors, previously held securely closed by air pressure, are made available for manual operation to form emergency exits if desired. All of these points will be clearly shown in the moving pictures that have been taken in connection with the committee's report.

The committee desires to emphasize the importance of the safety devices in one-man operation. We are advised that practically all of the cases of unfavorable action by the public or public bodies against one-man car operation have been where no safety devices were installed on the cars.

In order to support our own opinions with the largest possible reinforcement of opinions of those engaged in the business, questionnaires were sent out to all member companies. These questionnaires were prepared after a full committee meeting and cover all phases of the subject. The companies replying numbered ninety-three, representing 1,123 one-man cars. It was found, in general, that more than half of the companies reporting were 100 per cent one-man operated, and that 41 per cent of all cars of the reporting companies were one-man operated.

The total number of light safety cars in operation in the United States at the present time, allowing for deliveries which will be made up to the time this report is presented, is 1,100. The number under order and in process of manufacture is 600—among the latter an order for 200 for the Brooklyn Rapid Transit Company. The total number of one-man cars, including safety cars, in use in the United States is somewhat more than 2,000.

REPLIES TO QUESTIONNAIRES

Power Consumption.—Companies using the safety car report an average reduction in energy consumption per car-mile of 51.2 per cent. Taking 3 kw.-hr. per car-mile as a fair average for most city systems, this means a saving of about 1.5 kw.-hr. per car-mile. Actual figures from forty-five companies show energy consumption of safety cars ranging from 0.8 to 1.75 kw.-hr. per car-mile as a fair average for most city systems, and this means a saving of about 1.5 kw.-hr. per car-mile.

Trainmen.—Replies showed that the operator of a one-man car was paid more than either trainman in two-man car operation by 62.5 per cent of the companies answering the question, the range being as follows:

Number of companies	Cents per hour additional
1	1
10	2
5	3
13	4
1	4½
10	5
1	7
1	8
1	7½
1	10
Average	4

As to the feeling of the trainmen toward one-man cars the replies showed:

Favorable	83
Unfavorable	10
Per cent favorable	89.2

The same ratio was reported as to opposition by trainmen to the inauguration of one-man car operation, the opposition being classified as seven, due to labor union feeling, and three due to apprehensions of the men as to the difficulty of accounting. Only two companies out of forty-five report the trainmen disliking the safety cars.

In answer to the question as to whether or not trainmen had been assured they would not lose their jobs due to the starting of one-man operation, thirty-nine companies reported that they had made this promise, forty-two that they had not.

The Public.—The attitude of the public toward one-man cars when started was reported as friendly by eighty-four and unfriendly by fifteen. This latter number was changed to four after a trial of the cars themselves, thus resulting in a final public verdict of 96 per cent in favor of the one-man cars.

The action reported by public bodies toward one-man cars was as follows:

Cases of favorable action by city commissions	10
Cases of favorable action by state utility commissions	11
Instances of defeat of proposed unfavorable state laws	3
Refusal of city council to pass prohibitory bill introduced by labor	1

Only two unfavorable acts by public bodies were reported, one by a district court and one by a city commission, but in these cases, the safety car was not at issue.

Regarding the question of fare collection with one-man cars replies showed no difficulty or not any change from conditions with two men in eighty-eight cases, and the three companies reporting difficulty said it was only to a limited degree.

Schedules.—The replies to the questions under this heading had to be clearly distinguished as between light-weight safety cars and converted one-man cars, because the latter could not, of course, expect to effect any change from their former schedule.

Regarding headway, the average increase in number of cars operated on lines using safety cars was 43.7 per cent.

Similarly, with schedule speed this was increased an average of 14.76 per cent with the safety cars, thus making an average increase in car frequency of 58.46 per cent.

As to lay-over time, more was found needed by twelve companies, but no additional needed by seventy-five companies.

As indicating the wide range of adaptability of safety cars, headways from one minute to thirty minutes were reported.

Earnings.—The wonderful success of the safety car in building up traffic was indicated by the answers to these questions. Of course, with converted former two-man cars, no effect in increased earnings was observable. The average for the six companies using safety cars which were the most successful shows the following:

Gross per car-mile before one-man car operation, cents	21.11
Gross per car-mile after one-man car operation, cents	20.65
Decrease in car-mile gross, per cent	2.3
Increase in car-miles operated, per cent	53.4
Increase in total gross earnings, per cent	51.1

In one city of 125,000 population, an increase of 79 per cent in car mileage on lines where the safety cars were operated produced an increase of 71.2 per cent in total gross earnings from the lines in question.

The replies as to the effect of light safety cars in eliminating jitney competition do not make a very impressive showing statistically, partly however, because in a large proportion of the companies reporting no such competition existed, but nine companies report complete and two companies partial elimination of this competition through the use of safety cars.

Operating Features.—Various degrees of accident reduction were reported by forty-seven companies and no such effect noticed by twenty-two. It is significant to observe in this connection, that the number of companies operating one-man cars without any safety devices is twenty-four.

On car maintenance, the replies were necessarily inconclusive, due to the comparatively brief time the safety cars have been in operation, but six companies report a reduction of 50 per cent in car-mile maintenance cost with safety cars and others predict various savings in the future. Naturally no saving in car maintenance can be secured where the former two-man car was simply rearranged for one-man operation.

A saving in the cost of track maintenance was predicted by fifty-two companies. Two large systems advise that they propose a reduction of 20 per cent to 30 per cent in rail weight if safety cars are standardized on in the future.

The acceleration of safety cars in miles per hour per second as compared to the average car on the system showed:

Average car	1.67
Safety car	2.53

Regarding flagging railroad crossings, the consensus of opinion appears to be that greater safety is obtained where the responsibility rests on one operator than where, as is the usual practice, it is in effect divided between two trainmen, with the proviso, however, that where the view from the car is obstructed, a flagman is desirable.

Distribution.—That the application of safety cars is not to be restricted to unimportant operation—light traffic lines, etc.—is shown by the following table indicating the use of such cars based upon the population of respective cities.

Population	One-Man Cars	Safety Cars
25,000	272	27
25,000 to 75,000	422	178
75,000 to 150,000	367	167
Over 150,000	96	59

Conclusions.—The answers to the general question of whether the experience with one-man car operation would lead the company to favor the extension of its use, show the following striking results:

Extension favored by	76
Extension not favored by	2

WHAT SAFETY CARS CAN SHOW

In order to indicate clearly the effect to be expected from the results already actually obtained by street railway companies, from the use of safety cars, the following typical example has been worked out.

PRESENT CONDITIONS

Length of route, miles	4
Average speed, miles per hour	8
Cars operated	6
Headway, minutes	10
Gross per car-mile (5-cent fare), cents	25

CONDITIONS WITH SAFETY CARS

Average speed, miles per hour	9
Cars operated	9
Headway, minutes	6
Increase in car-miles, per cent	66⅔
Gross per car-mile, cents	24

The safety cars can be purchased on the basis of 20 per cent cash and the balance in equal monthly instalments with interest at 7 per cent on deferred payments covering a period of five years. The average annual charge then becomes:

One-fifth of purchase price of $6,000	$1,200
Interest (average per year)	170
Average per year for five years	$1,370

The showing then becomes as follows:

Earnings:	
Present 315,210 car-miles per year at 25 cents	$78,802.50
Future 525,350 car-miles per year at 24 cents	126,084.00
Increase in gross earnings	47,281.50
Expenses affected by changes:	
Annual cost of cars—nine at $1,370	$12,330

Power:
Present: 315,210 x 3 = 945,630 kw.-hr.
Future: 525,350 x 1.5 = 788,025 kw.-hr.
Saving: 157,605 kw.-hr.
At 0.8 cent for fuel = $1,260.84

Trainmen's wages:	
Present: Twelve — eighteen hour men at 45 cents	$97.20
Future: Nine — eighteen hour men at 50 cents	81.00
Daily saving	$16.20
Per year, 365 x $16.20=$5,913	
Accidents:	
Present: 5 per cent of $78,792.50	$3,939.63
Future: 2½ per cent of $126,084.00	3,152.10
Saving	$787.53
Car maintenance:	
Present: 3 cents x 315,210 car-miles	$ 9,456.30
Future: 2.1 x 525,350 car-miles	11,032.35
Increase	$1,576.05
Total increase in operating expenses	$5,944.68

RESULTS

Increase in annual net earnings from the use of safety cars on the line. $41,336.82

This result is secured:

1. While paying out of operating expense the investment in new cars to do the work.
2. While giving the patrons of the line 66⅔ per cent increased car frequency and 12½ per cent increased speed.
3. Without any allowance for the savings in track maintenance from operating a 13,000-lb. car as against a 35,000-lb. car.
4. While *increasing* the *net* earnings per mile of track per year for the line (estimated as double tracked) by $4,580 or 6 per cent on a track valuation of $76,500 per mile of single track.

CONCLUSIONS AND RECOMMENDATIONS

1. The safety car is one of the most important improvements in street railway service that has appeared for many years. Its valuable features in the order of their importance are:

(a) Greatly improved service to the public, both as to frequency and safety.

(b) Increased earnings for the company.

(c) Decreased operating expenses.

2. One-man operation alone, while useful in saving platform expense in the smaller communities is not comparable with the improved service that can be obtained with the light-weight safety car with its more frequent headway and greater average speed.

3. The savings obtainable from one-man cars should be shared with the trainmen in the form of a higher hourly rate for the operators of such cars than is paid to the trainmen on two-man cars.

4. When inaugurating one-man car service, it is good policy to assure the trainmen that no one will lose his job due to putting in the new cars. They are installed, as a rule, a line at a time, and experience has proved that the company is not burdened with extra men through this policy.

5. From the nature of the traffic available, the safety cars can accomplish more in a large city than in a small one, for the reason that the possibilities of increasing riding in the small community are limited. This statement is made to correct the erroneous impression existing in some minds that the safety car is useful only for saving expense in the smaller cities.

6. Where traffic is believed to be too heavy on peak to be successfully handled by safety cars, the larger, heavy cars may be used for tripper service on peak, thus making the light cars handle the long hour runs.

7. Similarly, where snow storms require the use of the heavier equipment at rare intervals, the safety cars can still be used to advantage during other times.

8. The safety car, though light, is just as substantial and with the same care in maintenance should last just as long as the former types of car. It has a steel frame and thoroughly modern, ventilated, interpole motors.

9. Regarding the matter of standardization, your committee was not unanimous, but the majority opinion favored adhering to the present standard design of the safety car in the interest of cheaper costs through quantity production.

10. Experience has shown that the overwhelming majority of both riding public and trainmen favor the one-man safety car; that it can, at one and the same time, improve the public's service, increase the trainman's wages and raise the company's profits; that it can be purchased without financing and operated for about half the cost of an ordinary car; and that most of the companies that have tried it want more. We predict an increasingly rapid extension of the use of a device that can make a showing like the above.

The report was signed by C. W. Kellogg, chairman; S. W. Greenland, J. K. Punderford, J. M. Bosenbury, J. C. Thirlwall, C. H. Beck and Clarence Renshaw.

DISCUSSION ON THE SAFETY CAR

Following the presentation of this report, the safety car film was shown on the screen. Interesting features of the film were explained by Carl H. Beck, Westinghouse Traction Brake Company, who said that the film had been prepared to demonstrate that the cars were suitable for operation in large cities under heavy traffic conditions, that they were entirely safe, and the method of entrance and exit appealed to the general public. Special written contributions on the subject were then presented by J. C. Thirlwall, General Electric Company; G. H. Clifford, Fort Worth; P. J. Kealy, Kansas City, and Gardner F. Wells. These are grouped together elsewhere in this issue as a symposium on the safety car.

G. A. Richardson, now of the Philadelphia Rapid Transit Company but formerly of Seattle, then gave some interesting figures of the Seattle operation, with safety cars. Accidents have been greatly reduced, and he was impressed with the difference in viewpoint on this question taken by managers now and at the last (1916) convention. Now, the reduction of accidents from the car is taken as a matter of course. In Seattle some of the lines had severe competition from jitneys, but as a result of safety car operation, jitneys were completely put out of business on one or two lines and on the other lines they doubled their fares and gave a *de luxe* class of service. The same was true of Pacific Coast cities where the safety cars had been installed.

E. M. Walker, Terre Haute, Ind., was then asked to speak on the cost of maintenance. He said that as a result of eleven months of operation with an average of twenty-four cars out of thirty owned, during which the cars had carried 5,000,000 passengers, fear of excessive maintenance had disappeared. The company had separated its cost of maintenance for safety cars and for two-man cars, and had found that for the period mentioned the total maintenance cost had been only 13 mills per car-mile, or somewhat more than one-third of that for the two-man cars for the same period. On the safety car the cost of maintenance of equipment was only from 9 to 11 mills, so that if it should double it would not be large.

F. D. Norviel, Anderson, Ind., asked as to the adaptability of the car for single-track lines in small cities, where the turnouts were located 1½ miles apart, and where there was a great difference in travel between the rush hours and the off-peak hours.

J. M. Bosenbury, Peoria, Ill., said that the conditions in Quincy, Ill., were similar to those mentioned, yet all the equipment used was of the safety car type, and T. B. Walker, of Philadelphia, said that cars were operated on the Folsom division of that company which is equipped with single track. There during the morning and evening peaks, amounting to about four hours a day, cars are double-headed, giving an increase of 100 per cent in seats. He mentioned another line near Philadelphia which has two zones, with pay-enter in the first first zone and pay-leave in the second, also operated with one-man cars. On one single-track line the turnouts originally were such as to permit a ten-minute service, and when safety cars were introduced there was an increase of 10 per cent in traffic. Then the turnouts were increased so as to permit of a six-minute service and the traffic increased about 40 per cent. In speaking of the one-man car for all kinds of service, he said that on one of these cars on one of the lines the company had carried as many as 107 passengers.

In answer to a question as to the suitability of the cars for cities having severe weather conditions, C. C. Curtis, Sydney, N. S., said that his company had had no trouble after Root scrapers had been installed. He did not think heavy snow in winter should deter a company from using safety cars, if otherwise they were desirable. It was foolish to drag heavy double cars around for twelve months in the year because two or three heavy snowstorms were expected during the winter. The proper remedy was to put on proper snow-fighting equipment. J. C. Thirlwall said that at Bangor, Me., some heaters had been added, but no other changes had been made in the safety cars, and the satisfaction given was indicated by the fact that the company had ordered fifteen more cars.

In answer to a question by a delegate as to whether the older platform men could learn to operate the cars as easily as the young men, considerable testimony was adduced that the cars were very popular with the older men. Mr. Beck cited one case in Bridgeport of a man who had been a motorman for fifteen or sixteen years and had never been able to qualify as a conductor on a two-man car but now was giving good service as an operator on a safety car. C. D. Smith, Youngstown, said that on that road the older men were choosing safety car runs. Another delegate said he had found the older men better operators because they were more careful. Walter Jackson then gave some recent figures on Terre Haute operation from testimony which he had presented before the Federal Electric Railways Commission at Washington. These figures will be found in the report of these hearings in this number.

In answer to another question as to whether the same additional number of old cars were not put in service the same increase in traffic would result, Mr. Kealy said that would undoubtedly be the case, but the expense of their operation would terminate the industry. Mr. Kealy then moved that as safety car operation was no longer an experiment, the report of the committee should be accepted with thanks and the work of the committee terminated. This motion carried and the meeting then adjourned.

Wednesday's Session

The session on Wednesday afternoon of the Transportation & Traffic Association and of the Accountants' Association was held jointly at the Greek Temple and was devoted to the subject of the registration and collection of fares. President Bradley presided.

Collection and Registration of Fares

The session opened with the report of the committee on the collection and registration of fares which was read by W. J. Harvie, chairman.

This committee prepared a progress report on what it considered as fundamentals in the matter of fare collections for various rate systems proposed for electric railways.

The executive committee instructions were to prepare a report on collection and registration of fares, giving consideration to the difficulties presented in the collecting and registering of two or more coins for one fare. The subject comprehends not only the collection and registration of 6- and 7-cent fares, for flat-rate systems, but the handling of zone fares and also the consideration of the use of metal or paper tickets.

No attempt was made by the committee to discuss the collection and handling of transfers, this subject having been exhaustively treated by previous committees of this association.

The subject was divided into two major parts, the flat-rate system and the zone system, and two combinations.

The report is predicated with an outline as follows:

1. Flat rate covering entire system, usually urban, using: (a) Single coins; (b) multiple coins; (c) coins and paper tickets; (d) coins and metal tickets.

2. Zone system, where fares are based on length of haul.

3. Central area having flat rate with distance or zone basis beyond.

4. Collection of fares in prepayment or post-payment areas.

For the purpose of properly understanding the terms used by the committee, definitions for "flat-rate system" and "zone system" are given:

1. A flat-rate system is based on a uniform charge within an established area regardless of length of ride.

2. A zone system is a system in which the fare varies with the distance traveled and might be properly called a "distance system."

(NOTE) To accomplish this the unit of distance must be short and the unit of fare low, but neither should be so small as to involve excessive difficulties in fare collection or registration.

The committee gives, as shown, a comprehensive summary of the existing methods of fare collection, which should be of much interest to those at present considering the many phases of fares and fare collection.

EXISTING METHODS OF FARE COLLECTION—FLAT-RATE SYSTEM

(A) *Using single coins.*

The plans for collecting fares of this character naturally divide into two classes, namely:

1. Mechanical collection. (a) Registering fare box (stationary); (b) non-registering locked fare box (stationary); (c) portable registering fare collector; (d) portable non-registering, locked fare collector.

2. Hand collection with registration.

(B) *Using multiple coins* (same methods as under A).

Substitutes: (a) Metal tickets alone; (b) paper tickets alone; (c) combinations of multiple coins and either metal or paper tickets.

(C) *Using paper tickets covering full fare.*

1. Mechanical devices used: (a) Locked box; (b) cancelling machine.

2. Hand collection and registration.

(D) *Using tickets for reduced rate of fare* (same method as under C).

EXISTING METHODS OF FARE COLLECTION—ZONE SYSTEM

Through Collection.

Duplex methods in use being hand punching and tear check.

Ticket systems in use being through tickets locked fare box with punched ticket, registering fare box with identification check and registration devices.

Multiple Collection.

I. FLAT-RATE SYSTEM

The committee believed that hand collection on closed cars with registration, which is subject to so many discrepancies, should be eliminated entirely and that all collections should be by mechanical registering devices, except where paper tickets are exclusively used, so that the proper fare may be collected and accounted for prior to the time it passes into the hands of the conductor.

Mechanical Collection—Single coins (See A in outline).

Multiple Coins (See B in outline).

There are several methods of making collection by mechanical means, and irrespective of the method followed it is believed:

(a) That all fares should be registered.

(b) That all fares should be collected at a given point in the car, whether pay-enter or pay-leave, with a registering collection device at that point, such device to be either portable or stationary. (Note exception.) This recommendation cannot be applied to certain types of present-day equipment, such as cross-bench open cars.

Multiple Coins versus Metal Tickets or Paper Tickets.

The committee did not believe the time opportune to make a final recommendation covering the use of either metal or paper tickets as a substitute for multiple coins. It recognized the value under many conditions, however, of the use of metal or paper tickets to facilitate the collection of fares, and for the convenience of passengers, and where used believed that metal tickets would be found to be more preferable to paper tickets for the following reasons:

First. The life of metal tickets approximate that of coins, whereas paper tickets are not legitimately usable in payment of fare after once collected, making the ultimate cost of the former less than the paper tickets.

Second. They are as flexible in use as a coin.

Third. Metal tickets can be sold practically as easily as paper tickets if bound together or if sold from a suitable coin change maker.

Fourth. Registration is easier to accomplish as metal tickets are adaptable to fare boxes of all types.

Fifth. The handling and accounting is less expensive and simpler for the reason that they can be handled as money.

Tickets, irrespective of the type used, should be sold from or at company offices and stations and at outside agencies, so that sales by conductors on cars can be reduced to a minimum. Under such conditions, one hundred per cent use of tickets is most desirable, but multiple coins should be accepted when the passenger presents the exact fare.

In making change for a passenger, if metal tickets are in use, one ticket for each fare to be paid should be included in the change given to the passenger.

The committee, however, feels that where coins are used, the locked box is less desirable than a registering device, due to the fact that the locked box requires that change must be furnished conductors and also that the cost of accounting is more expensive and requires a larger clerical force.

Paper Tickets—either for full fare or reduced fare (See C and D in outline).

Where paper tickets are extensively used, whether it be for full or for reduced fare, it is desirable to use a locked box to safeguard the tickets collected.

If collection is made by hand, it should be with registration, but as stated the committee believed that this method should not be used on closed cars.

Reduced Tickets (See D in outline).

In cases where reduced fares carrying a fraction of 1 cent are effective the committee recommends that metal tickets be used in preference to paper tickets.

Open Cars.

The collection of fares on this type of car needs special treatment, depending on the type of car, rate of fare and on other operating conditions.

II. ZONE SYSTEM

Under a zone system of fare collection, the present methods which are applicable to interurban roads, such as those based on mileage, have not been studied by this committee, inasmuch as these systems have been in use for a long time and they seem to be adequate for that class of service.

By "zone system," as referred to in this report, it is intended to refer to collection of fare where the service embraces more than one so-called fare zone, the total collection as made, being proportionate, in a greater or lesser degree to the distance traveled.

The committee believed that the duplex methods generally employed are not entirely satisfactory for a zone system in urban districts or those having heavy suburban traffic, where the entire fare collection is handled manually by the conductors.

The registration devices of various types in use at present for zone systems do not provide an adequate check on the collection of fares, because of the possibility of passengers over-riding.

Devices are now being developed, contemplating the issuance of an identification check when the passenger boards the car, settlement to be made when he leaves the car. These plans appear to us to be an improvement over the above systems, and also over the English practice. The latter provides for the passenger paying full fare to the conductor after boarding the car and receiving an identification check showing the fare paid. The success of this system depends on occasional open inspection by men boarding the cars for that purpose.

It is possible that the new devices referred to previously in this report under zone systems, may be worked out to take care of the problems under this heading.

In addition to recent articles that have appeared in the technical press, attention is called to the recent excellent reports of the Public Service Railway Company on a proposed zone system for that property.

Multiple Collection.

This plan of collection can be applied to suburban or interurban systems as well as to urban systems. Fares in this case are collected either by a portable collector or by hand. The committee did not recommend this character of fare collection except in cases where the trip originated in an urban zone of heavy travel and passed into an outlying district.

III. FARE COLLECTION IN CENTRAL FLAT FARE AREA WITH ZONE BASIS BEYOND

The methods listed under A1 and A2 are applicable under this heading, used either along or in combination as circumstances dictate.

The recommendations of the committee as to mechanical methods would apply to the central area.

As to the zones beyond the central area, a portable collector should be used except where operating conditions preclude.

It is also practicable to use a combination of the pay-enter and pay-leave fare collection systems to meet the conditions coming under this head.

The committee could not recommend a definite zone system which would be applicable to all places under the conditions herein considered.

IV. COLLECTION OF FARE IN PREPAYMENT OF POSTPAYMENT AREAS BEFORE BOARDING OR AFTER LEAVING CARS

There are three methods in use for this type of fare collection, namely: (1) Chopping box. (2) Motor-driven registering fare box. (3) Turnstile.

The committee recommended that for all classes of traffic of this character, the turnstile, as the most efficient and accurate method.

The first four conclusions reached by the committee are equally applicable for use on the "safety car."

Where the transfers are sold for cash and collected as a "fare," the simplest and most satisfactory way is to account for them on the basis of the number sold, *i. e.*, charge the issuing conductor with the number taken out when he begins his work, and credit the number he turns back when he finishes. For turnstile operation, if cash passengers were also handled at the same location, a separate turnstile could be used for transfer passengers.

CONCLUSIONS

By way of summary the committee stated:

First. That hand collection in general be eliminated.

Second. That all fares be registered.

Third. That all fares be collected at a given point in the car with a registering collection device.

Fourth. That where tickets are used, metal tickets are preferable to paper tickets.

Fifth. That for prepayment or postpayment areas, turnstiles be used.

The committee suggests that in view of the systems now being developed, that this work should be carried on further in connection with a committee of the Accountant's Association.

The report was signed by W. J. Harvie, chairman, T. C. Cherry, C. W. Stocks, L. D. Pellissier, E. C. Spring, R. R. Anderson.

At the conclusion of the report, a discussion of the use of metal tickets by J. F. McLaughlin, Houston Electric Company, was read. This is abstracted elsewhere.

George Kuemmerlein, Milwaukee Electric Railway & Light Company, also read a paper on the subject. It will be found elsewhere in this issue.

DISCUSSION ON FARE COLLECTION—VIEWS OF MANUFACTURERS

Following the presentation of these addresses, Mr. Bradley said that he would be glad to hear from manufacturers on the subject and called upon John F. Ohmer, Ohmer Fare Register Company, as the first speaker.

Mr. Ohmer commented first upon the recommendation of the committee for the use of turnstiles in prepayment and postpayment areas and recalled that his company had exhibited a turnstile for cars at two previous conventions many years ago. Five or six years ago twenty-one cars had been equipped with this device at Dayton, and had operated for ninety days. Mechanically, the device was all right and on July 4 the conductors had collected from an average of 2000 passengers per car. Finally, some people protested to the city authorities but they declined to order a change. Another protest was made to the railroad commission, which finally asked the company to remove the device. The speaker thought that there might be a possibility for the device on cars at present, and that in view of the present financial situation of the companies the authorities would be more considerate. Plans are under way to try the turnstile in a city in Indiana. Speaking of devices for zone fares, Mr. Ohmer said that his company had designed a zone register, which seemed to meet the approval of a number of the officers of the Public Service Railway, but as he was not able to turn out a large quantity inside of five or six months, nothing further was done in that case. The Ohmer Fare Register Company had also developed a ticket-printing machine.

W. P. Butler, Johnson Fare Box Company, the next speaker, commented on the desirability of having the railway men outline their needs so that the manufacturers would not be obliged to develop the machines for which there would be no call. He suggested that a committee of the association might be appointed to discuss with the manufacturers what was wanted. He expressed himself as an advocate of instantaneous registration and spoke of a machine which his company was developing to register three kinds of tickets as well as coins. It was also giving its attention to the zone system. The cost of some of the modern registering devices might seem large when compared with the earlier and simpler forms, but if they were accurate they would soon pay for themselves.

W. P. Shaw, Cleveland Fare Box Company, was opposed to the separate registration if fares were deposited in a locked box and delivered to the counting room, as experience has shown that a conductor should have but two things to do—avoid accidents and see that a passenger deposits his proper fare in the fare box. Metal tickets, he said, were objectionable and easily counterfeited and their intrinsic value should be greater than their fare value to prevent counterfeiting. He also explained the system of fare collection worked out by his company on various suburban lines having multiple fare collections.

John Benham, International Register Company, said that metal tickets should be substituted for multiple coins in flat-fare systems and that registering fare boxes should be used in preference to locked boxes without a check registration.

C. D. Trubenbach, Percy Manufacturing Company, believed that turnstiles should be used on the cars and stated that his company had developed an automatic machine operated by the passenger.

R. R. Anderson, Rhode Island Company, advised that the Rooke register was used in Providence to good advantage.

George F. Rooke, Rooke Automatic Register Company, said it was his aim to have the passenger become a part of the fare transaction with the conductor before the coin leaves his hand, and that in keeping the conductor busy it keeps him alert. He claimed that the Rooke register turnstiled the money and not the passenger, thereby accomplishing the same result, an accurate check of the fares paid.

W. F. Kaynor, Waterbury Button Company, said metal tickets could be made to outlast the coin of the realm and to prevent counterfeiting they should bear a facsimile signature.

OTHER VIEWS ON FARE COLLECTION

W. A. Doty, Denver Tramway, said that metal tickets in connection with multiple coin fares are essential to the work of the conductor in that they eliminate making so much change. He disagreed with the committee in not providing for sale of tickets by conductors in lots of five, even when cars are equipped with registering fare boxes.

W. C. Sparks, Rockford & Interurban Traction Company, which uses registering fare boxes, said that metal tickets were sold at the company's offices and on the cars in lots of nine for 50 cents, whereas the cash fare was 6 cents. The Illinois Commission estimated that their use would amount to 75 per cent of all revenue fares. Actual experience shows less than 40 per cent.

A. Swartz, of the Toledo & Western, believed that 6-cent fares when paid with two coins slows up the loading of prepayment cars and that metal tickets covering the full fare should be sold. Registering fare boxes are being installed and their use is producing an increase in revenue.

J. W. Glendenning, Michigan Railway, stated that under the 5-cent fare with six tickets for a quarter, 56 per cent of the fares was paid with tickets. With 6-cent cash fares and full fare tickets but 30 per cent use was obtained, whereas with 6-cent cash fares and five tickets for 27 cents, 56 per cent of passengers used them.

L. H. Palmer, United Railways & Electric Company, said that where fares were increased from 5 to 6 cents an agitation arose for a metal ticket. Such tickets were placed on sale at 140 different places but not on the cars. At first from 7 to 10 per cent of fares were in tickets, but later this dropped very materially. With the 7-cent fares and four tickets for 26 cents or two for 13 cents, about 65 per cent use is obtained. Relative to zone fares he believed that passengers should pay for the ride received and that he had been advised the zone system in New Jersey was fast improving as the the people became familiar with its workings.

M. W. Glover, West Penn Railways, commented on the use of registers with fares boxes, especially with locked boxes, on multiple fare lines.

P. L. King, San Antonio, stated that on his property it was found to be impossible for the conductor to ring up all fares as deposited in the fare box and as a result the separate registration of cash fares was eliminated. Conductors, however, were given to understand that passengers must deposit their fares in the box.

L. R. Nash, Stone & Webster, expressed the belief that passengers not presenting the correct fare should pay more than the regular fare so as to offer an inducement to have their fare ready when boarding cars.

Walter Jackson, Brooklyn, said that the real reason why zone fares based on British practice would not work in this country was on account of the heavy loading of cars. He suggested that zone fares could be collected on the prepayment plan if a machine was used to issue a destination check, leaving a duplicate locked up for the company. This would give the conductor an incentive to collect the fares.

Thursday's Session

President Bradley called the final meeting of the Transportation & Traffic Association to order at 3 o'clock Thursday afternoon.

Joint Use of Tracks and Terminals

The report of the committee on joint use of tracks and terminal facilities was presented by the chairman, R. T. Sullivan. An abstract of the report follows:

The committee on this subject reported that it had divided its assignment: "The proper basis of compensation to city companies by interurban companies for the use of city tracks and terminal facilities, and proper traffic regulations relating thereto," into two phases: (1) The proper basis of compensation to city companies by interurban companies for the use of city tracks and terminals, and, therefore, the proper basis of compensation of interurban companies by city companies for the use of interurban tracks. (2) The proper traffic regulations, and contract obligations of each company to the other relating to such joint use of tracks.

The committee endeavored to determine the factors which go to make up an equitable arrangement—not only to the communities served, but also to the companies directly involved in the contractual relation. In such arrangements public benefit must be duly considered, as the development of a community through proper transportation facilities is closely interwoven with the development of the city and as well as, but to a lesser degree, its suburbs and the neighboring towns. In some states, this has resulted in statutes regulating the conditions upon which cars of one company may be operated over the tracks of another, while in others such regulation is vested in the utility commission or municipal authorities.

Whether or not the negotiation of such agreement lies solely within the jurisdiction of the contracting companies or is subject to established law or regulatory supervision, a multitude of considerations are involved bearing on what constitutes an equitable agreement. In no two cases are these considerations identical, with the result that it might be deemed impractical to attempt to define terms of a standard contract, or a group of standardized contracts cover varying conditions on various properties.

The majority of contracts involving the joint use of facilities provide for the use of city tracks, by interurban lines as comparatively few interurban lines have sole access to the centers of population and business activity. Interurban lines being of much more recent development reach the heart of things over the tracks of the city companies. Yet with the growth and spreading out of our cities, what were formerly rural districts served only by interurban lines, are taken within the cities or become so populous as to justify transportation service on a city basis. Hence, there are cases in which city companies desire to operate over lines owned by interurban companies and it becomes evident that contracts for joint use of tracks are not merely one-sided agreements for the rental of city facilities to interurban companies, but rather are of the nature of a mutual co-operation.

THE PROPER BASIS OF COMPENSATION

Again the necessity of a rearrangement of the basis of fare, which has become acute in the last two years, has turned attention in many communities to the question of the desirability of a partnership between the city and the city street railway lines on a "service-at-cost" or some similar basis. In some instances this has necessitated the consideration of the segregation of city lines from interurban lines hitherto owned and opened as a common system. This factor in the situation accents the mutuality of trackage agreements.

The basis of compensation being the prime essential of any agreement, the company owning the facilities must be safeguarded against loss due to wear and tear on those facilities and properly might expect a fair profit on their use. In the same way the "renter" of the facilities must be accorded such terms as will not be onerous and result in an undue burden on his earning power.

Aside from the actual payments made for the use of the track and other facilities, there is another consideration and that is the stimulation or loss of traffic on one or the other or on both lines, due to the joint use of facilities. The possible interference with car movements with their resultant higher operating costs must be also considered. There arise then in this connection these considerations:

1. Does the interurban line act a feeder to the city lines and does it produce a considerable amount of traffic for them? Is this gain greater for the city lines than for the interurban lines?

2. Is the joint use of track and other facilities mutually beneficial in stimulating traffic for both interurban lines and city lines?

3. Does the interurban line gain in traffic without materially increasing the traffic for the city lines?

4. Does the interurban line deprive the city company of any traffic which would go to the city cars operating over the joint trackage?

Where the city lines are municipally owned or controlled it might be proper to consider the operation of interurban cars over city tracks and to city terminals in the light of advantage to the people in general and to the tradesmen and industries in particular. The stimulation of trade to a retail center by bringing in customers from outlying sections and a similar broadening of the labor market might, could also well be considered in fixing the compensation for use of the city facilities.

Existing contracts determine the amount of compensation, except in minor instances where an agreed rental is paid, on four general bases, as follows: (1) On the number of passengers carried; (2) on car-miles operated; (3) on ton-miles operated; (4) on the actual revenue (particularly with regard to freight and terminal stations where through tickets are sold).

COMPENSATION FOR PASSENGER CARS

Many of the existing agreements were entered into at the time that the 5-cent flat fare was the general rule, the division of fares being computed on that rate with the assumption that the ratio is still maintained where increased fares have been put into effect. (A number of these cases are cited from an article published in the STREET RAILWAY JOURNAL in December, 1906.)

Class I. The interurban company furnishes crew, car and also pays crew. City company supplies track and power. Payment made on basis of fares.

Case 1. City company receives 5 cents per passenger carried on interurban cars; does not honor transfers.

Case 2. City company receives 5 cents per passenger carried on interurban cars; honors transfers without charge.

Case 3. City company receives full fare (5 cents cash and tickets and identification checks valued at 4⅙ cents) with provision for a sliding scale. In addition to the full fare the interurban company will pay to the city company ¾ cent per passenger carried until the annual receipts amount to a fixed sum ($50,000) after which the ¾ cent per passenger will not be paid. After the amount received by the city company reaches the second fixed sum ($70,000) per annum, the amount paid by the interurban company to the city company will be reduced to 4 cents per passenger carried. Transfer privileges are included.

Case 4. The city company receives 4 cents per passenger carried on interurban cars. No transfer privileges.

Case 5. The city company receives 3½ cents per passenger carried on interurban cars.

Case 6. The city company receives 3 cents per passenger carried on interurban cars. No transfer privileges.

Case 7. The city company receives 2½ cents per passenger carried on interurban cars. No transfer privileges.

Case 8. The city company receives 3 cents for each local passenger carried on interurban cars and 1 cent for each through passenger.

Case 9. The city company receives 2½ cents for each local passenger carried on interurban cars and 1 cent for each through passenger. The city company also receives 4 cents per car-mile for power and use of track.

In practically all instances coming within the above cases, unless otherwise noted, the interurban cars either carry no local passengers or else pay the city company the full fare for such passengers.

Class II. City company furnishes crew, track, power and also pays crew. Interurban company furnishes car. Payment made on the basis of fares.

Case 1. The city company keeps the entire fare and gives transfers.

Case 2. The interurban company receives 1 cent per passenger. The city company gives transfer.

Class III. The interurban company furnishes crew and car and also pays crew. The city company supplies track and power. Payment is made on a car-mile basis.

Case 1. The interurban company keeps the entire fare, but pays the city company for each car-mile, the average gross receipts per car-mile earned by the local cars of the city company on the same route, the figure being determined monthly. Through passengers receive free transfers, but transfers to local passengers are redeemed by the interurban company at 2½ cents each.

Case 2. The interurban company keeps the entire fare but pays the city company for each car-mile the actual cost for power and maintenance. The cost of repairs and renewals of tracks used by the city cars operating over the same tracks is determined monthly, to which is added interest on the investment at 7 per cent per annum and taxes thereon. City passengers are not carried on interurban cars and there are no transfer privileges. (This arrangement is under a "service-at-cost" franchise which necessitated the segregation of city property from interurban property formerly owned and operated by the same company. The agreement embodies the reciprocal right of the city company, within the discretion of the city's railway commissioner to operate city service over interurban lines lying within the city limits.)

Case 3. The interurban company pays the city company at a flat rate (25 per cent) per car-mile for the use of track and power.

Class IV. The city company furnishes crew, track and power and also pays crew. The interurban company furnishes cars. Payment is made on a car-mile basis.

Case 1. The interurban company receives 2 cents per car-mile for the use of its car and maintenance. The city company keeps entire fare.

Case 2. The interurban company receives 1 cent per car-mile for the use of its car and maintenance. The city company keeps the entire fare.

Class V. The interurban company furnishes track and the city company furnishes power and operates its cars over a portion of the interurban line within the city. Payments for use of track are made on a ton-mile basis; and for power on a kilowatt-hour basis.

Case 1. The city company pays to the interurban company such proportion of the monthly cost of maintenance (including pavement) and renewals of track, roadway and overhead line, including a return on the investment at 8 per cent per annum, as the ratio of the ton-miles of the city cars operated bear to the total ton-miles of all cars operated over the tracks, the ton-miles to be computed on the basis of the cars operated unloaded. The interurban company to pay the city company for energy at the rate of 1 cent per kilowatt-hour, the total power consumption for the section to be divided in the same ratio as the ton-miles of the interurban cars operated over the section bear to the total ton-miles of all cars operated over the section. (Agreement under order of Wisconsin Railroad Commission in cases of Milwaukee Electric Railway & Light Company (city lines) and the Chicago & Milwaukee Railway and the Milwaukee Northern Railway (interurban lines) within the city of Milwaukee.)

The above cases include the most general forms of agreement on the bases for compensation, but there are many variations of the same general principles, as illustrated by the following miscellaneous cases. Unless otherwise, indicated the interurban company furnishes and pays the crew.

Case 1. It is optional with the city company whether it supplies crew or allows the crew of the interurban company to operate car. The city company receives full fare and 3 cents per car-mile in addition.

Case 2. The city company receives 3½ cents per passenger carried on the interurban car and a stated sum of $500 per month in addition.

Case 3. Crews are supplied by the city company but the interurban company pays half of the platform expense. The city company gets the entire fare.

Case 4. The city company gets a fixed sum of 12 cents per car-mile for the use of track and power. Transfers are redeemed by the interurban company at 3 cents each and by the city company at 1 cent each.

Case 5. The city company receives 3 cents per passenger carried on the interurban cars and the interurban company pays part of the maintenance costs prorated on a car-mile basis.

Case 6. A flat rate $1 per car is paid by the interurban company. A flat rate of 50 cents per trail-car in addition.

Case 7. The interurban company pays a fixed sum per car-mile and 1⅙ cents per passenger carried on the interurban cars.

In some cases the charge includes use of tracks, power and terminal facilities, if any, while in others there is a fixed rate based on either the passengers carried on the interurban cars or rate per car-mile and an additional charge of 1 cent per passenger boarding interurban cars at the terminal station.

The compensation agreed upon does not necessarily reflect the mileage of city track used by the interurban company, as in some instances more is paid per passenger carried on interurban cars for the use of 1 mile of city track than is paid in other cases for the use of 2 or 3 miles of city track.

COMPENSATION FOR FREIGHT CARS

Much divergence appears in regard to the compensation paid for the right to operate freight and express cars over city lines. Some of the cases cited are taken from contracts which also cover the use of facilities by passenger cars and some from contracts in which only freight and express cars are considered.

In most contracts the cost of handling freight at the city terminal is not mentioned, it appearing that this is done by the interurban company's own employees and at its expense unless otherwise noted.

Class I. The interurban or express company furnishes cars and crews and pays the city company a percentage of its freight or express earnings.

Case 1. The city company receives 17.5 per cent of the gross freight revenue from a station specified as the maximum limit and from intermediate stations. The city company furnishes the freight terminal.

Case 2. The city company receives from 5 to 10 per cent of the freight revenue depending upon the distance the shipment is hauled. The basis for terminal arrangements is not available.

Case 3. The interurban company pays the city company on the basis of net revenue received for each shipment in the ratio of the number of miles of city track used to the total miles the shipment is hauled. The arrangement for terminal facilities is not available.

Class II. The interurban or express company furnishes cars and crews and pays the city company on a tonnage basis.

Case 1. The interurban company pays the city company at a flat rate per ton of freight handled.

Case 2. Terminal charges are prorated among several companies using the terminal on a tonnage basis of freight handled inbound and outbound.

Class III. The interurban or express company furnishes the car; the city company furnishes the crew. Settlements are made on a tonnage basis.

Case 1. The city company takes over handling of the car and freight at the point of junction and establishes its own tariff as part of the joint through rate.

Case 2. Division of revenues is made on a tonnage basis. The city company supplies the terminal and pays the handling costs at the terminal.

Class IV. The interurban or express company furnishes cars and crews and pays the city company on a car-mile basis

Case 1. The interurban company pays the city company at the rate of 40 cents per car-mile. The basis for terminal arrangements is not available.

Case 2. The interurban company pays the city company at the rate of 31.16 cents per car-mile, this charge including terminal facilities, but not handling.

Case 3. The interurban company pays the city company 25 cents per car-mile and pays an additional flat rate of $1.06 per car for terminal facilities.

Case 4. The interurban company pays the city company at the rate of 25 cents per car-mile and a proportion of terminal expenses on a tonnage basis.

Case 5. The interurban company pays the city company at the rate of 25 cents per car-mile, this charge including terminal facilities.

Case 6. The interurban company pays the city company 15 cents per car-mile and 75 cents per car for terminal facilities. The interurban company pays its own handling expenses.

Case 7. The interurban company pays the city company a percentage of revenues on a basis of the ratio of miles of city track used to the miles traversed by the freight car. No terminal facilities.

Class V. Miscellaneous.

Case 1. The interurban company furnishes cars and crews and pays the city company a proportion of interest, depreciation and maintenance on track and roadway and a flat rate for power.

Case 2. The interurban company furnishes cars and crews and pays the city company $1 for each trip of each motor car and 50 cents for each trip of each trail car.

Case 3. The interurban company furnishes the car; the city company furnishes the crew and handles freight from the city line. The interurban company pays the city company $2 for each inbound or outbound trip; also a tax levied by the city and reimburses the city company for wages paid crews. Terminal facilities and handling are provided by the city company.

TRAFFIC REGULATIONS AND CONTRACT OBLIGATIONS

The "proper traffic regulations" and the "contract obligations of each company" are matters that should be carefully considered and explicitly set forth in an agreement covering the joint use of tracks and terminals.

Traffic regulations are partly within the discretion of the "owning" company, but are largely prescribed by franchise conditions, local ordinance and state law, so that a general stipulation that the "renting" company shall abide by these restrictions, or similar restrictions hereafter enacted are generally made a part of the agreement.

Other obligations of the contracting companies are wholly within their discretion, but the careful analysis of all matters affecting each of the companies and specific agreements covering them frequently avert future misunderstandings, while some provision for arbitration, or other means of settling misunderstandings, will tend to avert difficulties during the life of a contract.

The chief factors aside from the compensation to be considered in making a joint use of tracks agrement may be classified as follows:

1. Preamble—Setting forth the purpose of the agreement, the territory and lines affected, etc.
2. The connection—Setting forth engineering requirements, first cost, maintenance and the like.
3. The route—Lines covered by agreement, emergency rerouting, future permanent rerouting and the like.
4. Schedule and headway—Maximum and minimum number of cars to be operated, precedence, revision of schedule, etc.
5. Character of equipment to be furnished by the "owning" company—Track, overhead equipment generating facilities, voltage, interruptions, sidings and crossovers.
6. Character of equipment used by the "renting" company.
7. Valuation—Including depreciation, renewals, deferred maintenance and the like.
8. Repair and maintenance of cars.
9. Terminal stations—Location, cost of construction maintenance, restrictions on use, operating costs, etc.
10. Crews on cars—Responsibility, supervision, conditions of employment, duties, etc.
11. Fare collections—Methods of collections, registration, checking and the like.
12. Damages to the public—Division and determination of responsibility.
13. Damage between respective companies.
14. Free transportation—Regulation of issuance of passes, rights of employees on cars of other companies, etc.

15. Settlements—Time allowed for settlements, auditing of accounts, penalties for non-payment.
16. Competition—Restrictions against future competition, direct or indirect.
17. Freight and express cars—Any special provisions regarding use of such cars.
18. Length of agreement—Renewal of agreement.
19. Arbitration—Settlement of disputes, forfeiture, etc.
20. Miscellaneous clauses.

The relative importance of these clauses is largely dependent upon the nature of the agreement as to the method of computing compensation for the use of the tracks and terminals—whether it be on the basis of the number of passengers, or tons of freight carried, on car-miles or ton-miles operated, on the revenue received, or on a "cost-of-service" basis.

Depending upon this factor of the method of compensation, phases of the agreement which might require elaborate and detailed treatment in one contract might be amply covered with a simple clause in another.

For instance, if the agreement provides that the fares collected on the "renting" company's cars are to be divided between the two companies, the question of valuation, depreciation and deferred maintenance are of little or no importance; but if the agreement is that the "renting" company shall pay its share of the maintenance, renewal and return on investment on a given section in the ratio of the car-miles or ton-miles operated by it over that section to the total car-miles or ton-miles operated over that section, the matters of the investment on which a return shall be paid and the condition of the facilities at the time of making the agreement are of vital importance.

The committee concluded its report by stating that after a study of the various contracts available, it is of the opinion that it is not feasible to draft a standard form, or forms of contract which would fit the many and variable conditions of the industry. It is of the opinion that certain prime factors in all cases enter into such contracts whether the payment by one company for the use of facilities of another company are based upon a division of the revenue, the number of passengers carried, the number of car-miles or the number of ton-miles operated and that these factors, which must be considered in arriving at a fair and equitable rental, are: (1) Maintenance and repair of the facilities jointly used. (2) Incidental expenses of operation such as snow-cleaning, greasing of switches and curves, sprinkling, etc. (3) Depreciation. (4) Taxes. (5) Fixed charges. (6) Fair return on the fair value of the property and privileges.

The committee was also of the opinion that the best interest of both parties to a contract for the joint use of facilities are most readily served by the following methods:

I. When the renting company supplies cars and crews and pays the crews, but carries no local passengers:

(a) By the renting company paying the owning company such part of the charges as its use of the facilities bear to the total use of such facilities, either

1. On the basis of the ton-miles (not including loads), where there is considerable difference in the equipment used by the two companies, or
2. On the basis of the car-miles operated, where there is no such considerable difference in equipment.

(b) By the payment for power used on a basis similar to (a), or upon a flat rate per kilowatt-hour with provision for the readjustment of the rate each year or at similarly convenient intervals.

(c) By the payment for terminal facilities on a basis similar to (a), or upon a basis of the number of passengers or, tons of freight handled.

II. When the renting company supplies cars and crews and pays the crews and hauls local passengers.

By the renting company paying to the owning company a part of the charges as outlined in Sec. I, and in addition all, or a stated part, of each local fare collected, due regard being had for the saving in the number of cars thus effected by the company owning the facilities jointly used.

III. When the outside company turns its cars over to the owning company which supplies and pays the crews.

By the payment to the company owning the cars by the company owning the jointly used facilities a stated amount for each car-mile operated by the foreign cars while in its possession.

This report was signed by R. T. Sullivan, chairman; H. W. Clapp, J. F. Collins, and A. Swartz.

DISCUSSION ON JOINT USE OF TRACKS

In discussing the report, G. T. Seely, Chicago Elevated Railways, said that many of the interurban companies entering cities do not carry any local business and charge their passengers over the city lines the same rate per mile as they receive on their own properties. He thought this was desirable because the terminal facilities are likely to eat up such a large portion of the revenue per passenger. Mr. Seely also remarked about the undesirable practice of forcing interurban cars to trail along behind a city car on its way to the central terminal. He thought that arrangements should be made for the city car to take a siding to permit the interurban to pass and thus cut down the running time. He said the interurbans lost a large amount of business on account of this slow service through the city.

Frank R. Coates, Toledo Railway & Light Company, said that he believed the committee should recommend the formulation of a joint contract which would serve as a starting point for drawing up new contracts. He thought this would simplify the making of contracts. He made a motion that the committee should be continued if this conformed to the wisdom of the executive committee. This motion was later approved by the convention.

J. N. Shannahan agreed with Mr. Coates and thought that there should be a basic contract on file with the association as a guide to the making of new contracts, and in order that there might be some uniformity about them.

R. P. Stevens, Mahoning & Shenango Railway & Light Company, said that new contracts of this character would have to be made in connection with the installation of service-at-cost franchises. In anticipation of this the committee had compiled all information necessary and thought that the actual work of drawing up the contracts could be left to the legal department.

President Pardee of the American Association entered the meeting at this point and was received by President Bradley, who requested him to make a few remarks, the latter leading up to this by some very complimentary comment upon the manner in which Mr. Pardee has served the association.

President Pardee responded by saying that whatever success had been attained during his administration was due to the able assistance which had been given him by the committee members and by the secretary's office. He thought that the man who conceived the idea of affiliated associations and completed the arrangements whereby all branches of the industry meet simultaneously, did a magnificent service. He attributed the great progress which the association has made to this affiliation of the various branches of the industry.

The report of the committee on resolutions was then read by the chairman, R. T. Sullivan. The report embodied two resolutions, the first one expressing the thanks of the association to President L. C. Bradley and the other officers and committee men because of their long and efficient service in office and because of the splendid efforts they have put forth in making the convention of unusual interest and value. The other resolution expressed the appreciation of the association to the manufacturers for their live interest and their application of new methods and the creation of new appliances in solving the problems of the industry, and thanked the committees in charge of the exhibits at the convention.

At this point L. H. Palmer, chairman, read the report of the nominations committee, as follows: President, W. H. Collins, Fonda, Johnstown & Gloversville Railway; first vice-president, R. P. Stevens, Mahoning & Shenango Railway & Light Company, Youngstown; second vice-president, L. H. Palmer, United Railways & Electric Company, Baltimore; third vice-president, G. T. Seely, assistant general manager, Chicago Elevated Railways; secretary, E. B. Burritt.

The members of the executive committee chosen were J. K. Punderford, the Connecticut Company, New Haven; George H. Clifford, Northern Texas Traction Company, Fort Worth, Tex.; A. Gaboury, Montreal Tramways, and T. C. Cherry, Maryland Electric Railways, Annapolis. The convention then authorized the secretary to cast a unanimous ballot electing these officers.

Looking over the list of names, Past-President Bradley predicted that next year would be the greatest in the history of the association. He commented upon the splendid support which had been given him during his term of office by all members of the association and said that the past three years had been one of the greatest delights of his life.

Mr. Collins, president-elect, made a brief talk expressing appreciation of the very great honor which had been bestowed upon him and pledging his best service to the progress of the association.

Collection of Zone Fares*

A Distance Fare System Is Desirable and Expeditious Collection Will Be Developed with Experience During the Next Few Years

BY GEORGE KUEMMERLEIN, JR.
Milwaukee Electric Railway & Light Company

THE experience of electric railways during the last two or three years with increases in unit fares above 5 cents has not been as satisfactory as the operators and regulating commissions had hoped for. Splitting the nickel is bound to cause some reaction and reduce travel. Probably the ideal scheme of fares for inducing short-haul travel where the service is sufficiently frequent would be to have a fare sufficiently below 5 cents so that the saving would be appreciable. Had the 1914 costs of operation continued during the last five years, there is no doubt but that a number of electric railways would have undertaken this step.

I anticipate that during the next few years there will be substantial advances in practical methods of collecting distance fares in congested areas in American cities. The European experience affords little guide because of the fact that the scheme of fare collection there used requires that the conductor go through the car and collect a fare from each passenger after he has taken a seat, and under conditions much more favorable to the conductor than obtain here in America. The standing loads on European tramways are limited to a very small number, whereas in America the standing loads are controlled partly by the patience of the passengers and partly by the floor area of the car. Moreover, our American roads operate largely upon the pay-as-you-enter or pay-as-you-leave system.

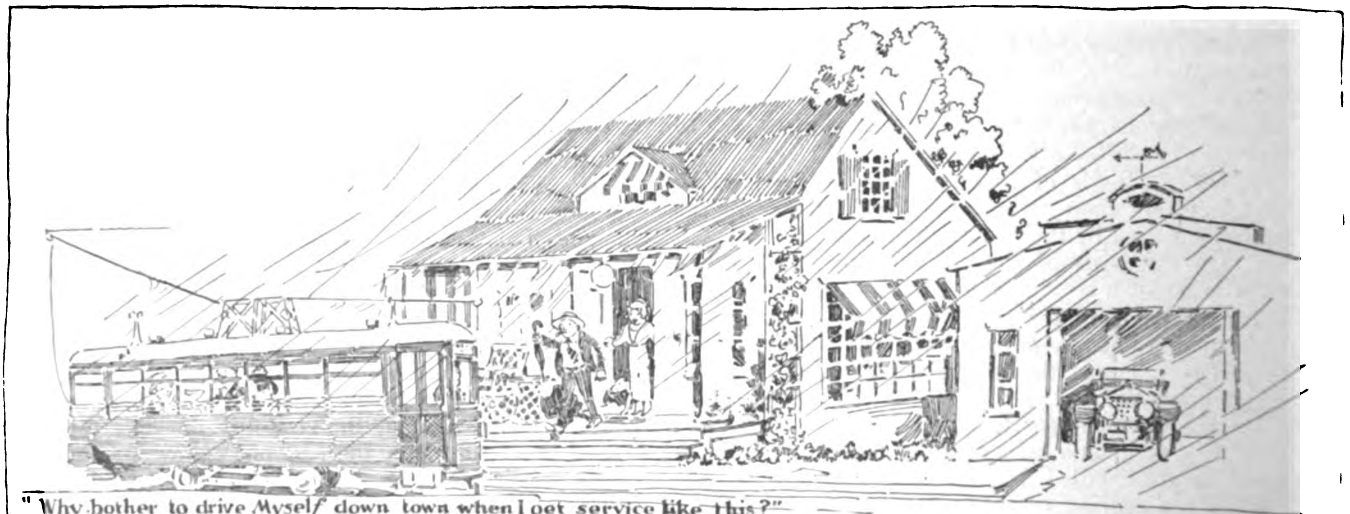
The type of fare collection system needed to meet our American conditions depends somewhat upon the density of traffic and somewhat upon the existence of definite zones. It is conceivable that in a system of distance-tariff where the passenger paid by the mile of ride as in a taxi and without respect to his point of origin or point of discharge, except as such determined distance, will require a different system of fare collection than one where zone points have definite geographical locations. All systems so far tried or in operation in this country involve definite geographical zones. The most conspicuous example of the zone or distance-tariff fare collection is that in operation on the lines of the Public Service Railway in New Jersey.

In planning for the Milwaukee system we saw the necessity of providing for the prepayment of fares to points where the number of passengers discharged was large; we feared the delays which might result from the application of a pay-as-you-leave principle. The troubles to which the Public Service Railway has been subjected in the operation of its zone fare plan have largely come from the delays involved in requiring passengers to pay their fares when getting off cars. Probably a different type of car might have made the problem somewhat easier, but points of heavy discharge were bound to cause disturbances.

Every system of zone-fare collection on through cars will require the use of some form of identification check, showing the origin of the passenger and requiring the surrender of such check upon leaving the car. Fare registration is not essential in any system where there is the proper degree of co-operation between the trainmen, the public and the utility.

---

* Abstract of paper presented at meeting of Transportation & Traffic Association, Oct. 8, 1919.



"Why bother to drive Myself down town when I get service like this?"

F. R. PHILLIPS
President

Engineering Association Proceedings

Among New Subjects the Engineers Considered Particularly Helical Gearing and Automatic Substations—They Launched a Campaign to Promote Greater Use of the Association Standards and Showed an Exhibit of Standard Sample Products in Connection Therewith—Excepting for Addresses on Construction Work in France and Gasoline Drive for Railway Cars, the Program Consisted of Reports and Discussion Thereon—E. R. Hill was Elected President

E. R. HILL
President-Elect

THE American Electric Railway Engineering Association held its opening session of the convention in Engineers' Hall on Monday afternoon. The session was opened by President F. R. Phillips, Pittsburgh Railways, with the annual presidential address. This appears in abstract below.

President Phillips' Address

Certain changes which have been made in the plan of committee work of the Engineering Association were the opening theme of Mr. Phillips' address. The modification of methods in vogue and new features were these: (a) Prompt organization of incoming administration to the end that more time would be available to committees for the prosecution of their work. (b) Organization of the committee on standards upon such a basis that a higher degree of refinement might be obtained in the standards and recommended practices. (c) Promulgation of a more universal use of association standards. (d) A convention program that would hold the interest of the members in attendance at conventions.

In line with this program a rule was adopted providing that members of standing or special committees automatically became ineligible for membership on the committee on standards. Moreover, it is held that since the measure of usefulness that this association is to the industry lies in the character and quality of recommendations for standards and recommended practices, the committee on standards becomes the most responsible and important body within the association. Its function may well be likened to that of the Supreme Court of the United States; while the executive committee forms the administrative and the working or technical committees, the legislative branch of association government.

The most frequently repeated criticism of the Engineering Association is the allegation of non-use of association standards, arising from a lack of substantial interest upon the part of the membership at large. In Mr. Phillips' opinion the criticism has obtained principally for the following reasons:

1. We have been delinquent to the extent that the membership at large has not been properly and thoroughly informed as to the existence of association standards and practices and the benefits accruing from their use.
2. Certain of our standards and recommended practices lack form or need revision in response to later development in the art.
3. Many of the manufacturers of materials and supplies until recently have not contributed that support which at least the merit of the case warranted.

Happily, recent developments resulting from a campaign of publicity launched by the standards committee, together with vigorous effort by technical committees to revise present standards and recommendations as well as a new relationship with manufacturers, bid fair in the near future to remove the cause for criticism.

Mr. Phillips then made a résumé of the work of the technical committees and explained how the program for the convention had been planned to provide material of interest for all engineers. He explained also the plan of the American Engineering Standards Committee and said there is without doubt a wide field for real constructive work for such an organization. However, it could be made much more effective were it to include in full membership on the main committee representatives from all branches of engineering. The American Electric Railway Engineering Association is the recognized representative in engineering work of the third largest industry in this country and it would seem essential that it be admitted to full membership.

It is recommended that after a prompt study of all features of the situation and, if it is deemed wise under the circumstances, proper representations be made to the end that this association be accorded the consideration to which its importance in the field of engineering entitles it.

Among other matters taken up by the speaker were the statistical bureau and the appointment of J. W. Welsh as special engineer, and the relations of the association with the claim agents and storekeepers. On this last point he said that for several years past the association has been searching for means through which the needs and desires of our purchasing agents and storekeepers could be properly met. Numerous plans have been proposed. About the time of the suspension of association work in 1917, it had been planned to provide such means through the Engineering Association, and provision for setting aside a portion of the program to be devoted to matters of particular interest to them was contemplated. Upon further consideration of the matter, it was decided to provide self-determination for them and, this year, they have meetings planned for, and will no doubt for themselves adopt measures which are suitable.

It would seem proper that the Engineering Association should afford such co-operation as may be helpful to them and should be prepared to meet their desires in an acceptable manner.

In conclusion Mr. Phillips urged the need of a vigorous campaign to arouse a more active interest in the affairs of the association upon the part of the membership at large, with particular reference to the use of association standards. He suggested that a close, harmonious working arrangement with the manufacturers be maintained wherein the manufacturers in some measure become sponsors for association standards.

The members should inform themselves thoroughly in all of the various aspects of the case of the industry now pending before the court of the people, and put before their friends and acquaintances at home the real truth of the matter. Thus they will not only support their company officers in the great struggle now going on but will perform a real service to the community.

A crisis in the electric railway industry impends. As an association and as individuals the members should be prepared to perform, with vigor and enthusiasm, whatever duty they may be called upon to perform.

It should be borne in mind that the time and effort expended by officers and committee members necessary to produce results is a gratuitous contribution to the welfare of all members as well as to the industry. The membership of the committees is made up of men who, because of their knowledge and achievements in electric railway work, are entitled to the confidence and respect of all. The members should study their work and give heed to their advice.

Though threadbare from frequent repetition it is still axiomatic that "without faith no cause is secure." Enthusiasm is the outward expression of faith. The officers and leaders in the association should therefore be accorded the enthusiastic support which is rightfully theirs.

Report of Executive Committee

The report of the executive committee was next read.

In filing its report with the association, the executive committee reviewed its activities since the 1916 convention, the report consisting of the minutes of the meeting held on the last day of that convention and since.

One of the most important features covered by the report was the discussion of a revision of the method of adopting association standards. The subject was broached originally by G. W. Palmer, Jr., first vice-president, at the meeting held on Oct. 13, 1916. Mr. Palmer frankly criticised some of the procedure in the adoption of standards in the past, and illustrated his contention by referring to specific incidents of what he considered unfortunate procedure. His address to the committee was considered so important that it was voted to include it in full in the minutes and to bring the matter up for discussion later. At the following meeting it was decided to adopt Mr. Palmer's recommendations and to change the composition of the standards committee so that it would consist of nine members, no one of whom should be a member of any other committee charged with the preparation of standards. The committee is so constituted at present, with the addition of six members appointed to represent manufacturers in accordance with a plan adopted in 1917.

The work of the standards committee was brought up again at the meeting of Feb. 9, 1917, when, after discussion, the report of the sub-committee, consisting of Messrs. E. R. Hill, G. W. Palmer, Jr., and Martin Schreiber, covering the procedure in the handling of standards and recommendations was adopted. This procedure is as follows:

1. **Standing committees to make their reports as formerly in time for consideration by the standards committee by July 15.**

2. **The standards committee will consider such recommendations and if the subject matter be deemed of sufficient merit, it will be sent to member companies as provided in Par. 3 below; if deemed not of sufficient merit it will be sent back to the standing committee. If it seems especially desirable to the standards committee certain proposed recommendations or standards may be presented by it to the convention for discussion, but not adoption.**

3. **The proposed standards or recommendations will then be forwarded to the secretary to be sent out to member companies for their comments and recommendations; if the discussion is considered sufficiently adverse it will be sent back to the standing committee.**

4. **After receiving comments and recommendations of member companies the same will be forwarded to the standing committee who in turn will report the matter a second time to the standards committee on July 13 of the following year.**

5. **The standards committee will then take final action and report to the convention. If favorable it will recommend final adoption, otherwise it will give reasons for disapproval.**

6. **In handling the reports on the convention floor only matters pertaining to standards and recommendations will be submitted and discussed, and such matters will be presented by the standards committee. (The purpose of this is to give ample time for discussion of important matters and to leave time for the introduction of other interesting features.)**

7. **In the revision of existing standards and recommendations, the standards committee may, in its discretion, either pursue the course as outlined above or report the matter direct to the convention for final action.**

The above is suggested as the normal procedure, it being thought that in cases of special urgency or necessity these rules may be suspended by the convention upon recommendation of the standards committee and ratification by the executive committee, and final action taken at the first presentation at the convention.

Another important action taken at the Feb. 9, 1917, meeting was the decision to augment the technical committees by the addition of representatives of manufacturers to the following extent: Six members on the equipment committee, three members on the power distribution committee, three members on the committee on way matters, and two members on the power generation committee.

At the same meeting a resolution was adopted to the effect that the president of the American Electric Railway Association be requested to designate the chairmen and vice-chairmen of all joint committees from among the members of such committees, and where the chairman is selected from one association that the vice-chairman be selected from the other association represented.

Without going into further details of important actions, it will suffice to say that during the war interim the committee discussed propositions for holding a meeting of purchasing agents at the convention, for encouraging apprentice plans in electric railway shops, for possible changes in the form of the Engineering Manual, and other topics which will presumably now be revived.

The presentation of the above abstract brought out the question from H. H. Adams, Chicago Surface Lines, as to whether an approval of the report carried with it an approval of the recommendations concerning the adoption of standards. R. C. Cram, Brooklyn Rapid Transit Company, expressed the opinion that it did not seem wise to delay the adoption of standards pending the approval by member companies, as few answers are obtained to such questionnaires. Upon decision that acceptance of the report did not approve the recommendations the report was accepted.

The report of the secretary-treasurer explained that as a result of a decision of the executive committee of the American Association it became necessary to discontinue the practice of paying the expenses of committee members. The expense of the association has therefore been confined to that connected with the publication of the proceedings and other incidental expenses. Committees on power distribution, power generation, equipment, way matters and buildings and structures have been actively engaged in the preparation of reports during the past year and a number of special committees have had their work incorporated in that of the standing committees.

A drive has been started in the promotion of the use of the standards and an exhibit of the approved standards appeared in the association booth. Fifteen new individual members and 155 company section members have been accepted. This report was accepted.

The committee on resolutions appointed by the president included H. H. Norris, ELECTRIC RAILWAY JOURNAL, C. Rufus Harte, Connecticut Company, and C. S. Kimball, Washington Railway & Electric Company. A committee on reception to those who were to deliver addresses before the convention was also appointed and included Martin Schreiber, Public Service Railway; J. H. Hanna, Capital Traction Company, and C. L. Cadle, New York Railways.

Power Distribution

C. L. Cadle, chairman of the committee on power distribution presented its report. He stated that the subjects assigned to this committee for this year were: (1) Revision of the joint specifications for overhead and underground wire and cable crossings over railroad companies' right-of-way. (2) Revision of specifications on wires and cables with special reference to stranding of cables and thickness of 600-volt insulation. (3) Standard thread for pins and insulators.

With reference to the first subject the committee found that the present specification for overhead crossings of electric light and power transmission lines which was adopted by the convention in 1913 as a "recommended specification" has become somewhat obsolete, due to the promulgation by the Bureau of Standards of the National Electrical Safety Code. An attempt was made to revise this work and joint sessions were held with the American Railway Association and the American Railway Engineering Association. After many conferences a tentative specification was agreed upon which was presented to the association for consideration.

This report is divided into four parts and contains four appendices. Part 1 gives specifications for use with overhead crossings of electric light and power supply lines irrespective of voltage. The items taken up are clearances, loading conditions, working stresses, foundations, location of supports, steel poles and towers, wood poles, crossarms, pins, insulators, tie wires and clamps, spans, guy anchorages, guys and grounding. Part 2 gives requirements for trolley line crossings and deals with clearances, trolley wire construction, trolley guards, span construction and high-potential trolleys. Part 3 takes up underbridge crossings and Part 4 underground crossings.

The four appendices give tables and curves of conductor sags, tables of wind and ice loads and properties of wire, specifications for wood poles and specifications for galvanizing and sherardizing. The report is very complete and contains much valuable information.

The subject of the revision of specification for wire cables with special reference to stranding of cables and thickness of 600-volt insulation was considered at the request of the American Institute of Electrical Engineers and the War Department of the United States government, as it was desirable to use wires of standard size in the make-up of large stranded cables. The committee submitted a suggested revision in the form of a table but recommended that this be not adopted until the joint committee of the several associations considering this subject has definitely settled the new table of stranding.

On the subject of a standard thread for pins and insulators, the statement was made that this matter was taken up actively during the early part of this year, but, owing to lack of time no definite action was taken. The committee therefore "reported progress" and suggested the reference of this subject to the next committee.

The revision of the specification for overhead line material was considered at considerable length. Certain minor changes in the wording of the existing standards were recommended to the association. The entire specification was reprinted with words in brackets to indicate omissions and words in italics to indicate additions. Corrections were also made to drawings illustrating the specification.

The committee stated also that the association has had in the Manual, among "Miscellaneous Methods and Practices" a specification for electric conduit construction. This report was presented to the association and approved at the convention in the fall of 1909. The committee felt that a number of companies were in need of a more detailed specification and therefore proceeded to draft one which was recommended for adoption as a standard. Recommendations in connection with the use of ducts, the covering of all cables passing through steel pipes with a weatherproof braid and the use of a fiber duct for conduit construction were recommended. Recommendations were also made regarding the construction and use of manholes.

DISCUSSION ON POWER DISTRIBUTION

In connection with the above report C. Rufus Harte moved that A. L. Clarke and William Sellner, of his staff, be extended the thanks of the association for assistance in the preparation of drawings accompanying the specifications on overhead line materials. In this the association unanimously concurred.

The discussion of the report was opened by M. B. Rosevear, Public Service Railway. Mr. Rosevear suggested several changes in wording and certain specifications of equipment. He suggested the specification of welded eyes on anchor bolts, the use of 3/32 in. rather than 3/16 in. lock washers on tap bolts, the approval of one-part as well as two-part pole bands, the use of 1¼-in. rather than 1½-in. diameter boss face on mechanical ears and a specification of six rather than four pull-off eyes on frogs and uninsulated crossings. A few changes in the drawings were also suggested, and the query was raised as to what is an equivalent to porcelain for insulators. To this W. D. A. Peaslee, Jeffery Dewitt Insulator Company, replied that no such equivalent had been found and urged that the best materials be used for this purpose. In connection with tests on porcelain insulators, Mr. Peaslee urged that what is known as the "Fuschine" dye test be included as a part of the specifications. He exhibited several porcelain insulators that had been submitted to this test after having passed the water immersion and absorption test as given in the specifications. The discoloration of the insulators to a considerable depth was very marked. In answer to a question Mr. Peaslee said this porosity test should be applied to low-voltage as well as high-voltage insulators, as such a test gives an indication of the mechanical strength of the insulators, and this is just as essential for low voltages as for high. When an insulator has once started to crack, it is worthless.

Norman Litchfield, American Car & Foundry Company, suggested that it would be of benefit to the association to know the extent to which association specifications and standards were being used, and he asked for a statement from the various representatives of the railways present. Representatives of the Connecticut Company, the Public Service Railway of New Jersey, the New York State Railways, and the Schenectady Railways all said they were using A. E. R. A. standard material or some that conformed very closely to the association standard. Mr. Harte said that it would be of great benefit to all concerned if the various manufacturers would catalog their various parts as A. E. R. A. standard and follow with the manufacturer's catalog number. Mr. Phillips said that recommendation for such a method had already been included as a part of the drive to promote the use of association standards.

James H. Drew, Drew Electric & Manufacturing Company, said he thought that the Engineering Association should provide some means for putting its "O. K." on any satisfactory standard submitted. He said it was an easy matter for any manufacturer to say that his product was an A. E. R. A. standard but a certain definite procedure would prevent misunderstandings and safeguard the customer, the association and the manufacturer as well. He felt that all manufacturers would welcome some standard way of labeling their products as complying with the association requirements and they would like some authority to say that their parts were A. E. R. A. standards.

Mr. Cadle closed the discussion on overhead material and conduit construction and recommended that the suggestions which had been made during the discussion be referred to their proper committees for consideration next year.

A motion was adopted approving the revision of the specifications for overhead line material as included in the committee's report and the recommendations of the committee on power distribution regarding the revision of the specifications for electrical conduit construction as recommended for approval as "standard practice" by the standards committee.

Mr. Rosevear also opened the discussion on railway crossings and pointed out a number of things which were contrary to the practice of his company and which appeared objectionable to him. He said that his company is using wire as small as No. 10 A. W. G. in some cases over railroad crossings and that he thought that sizes between No. 6 and No. 10 should be included in the specifications. He pointed out that the specification states that insulators shall be made of porcelain. His company uses glass in a good many cases and this material has proved entirely satisfactory. He also called attention to several paragraphs in the specifications which were not entirely clear to him and asked that the obscure points be cleared up. Mr. Cram called the attention of the association to the style of the headings and numbering in the report which were not of the form required by the association and suggested that in reprinting these for the Manual this be given attention. Mr. Peaslee said he thought that the porosity test for insulators previously referred to should be incorporated in these specifications also.

Mr. Cadle closed the discussion and said that he knew that steam roads would not agree to having wires smaller than No. 6 A. w. g. stretched across their lines, so that there was no use trying to include these in the specifications as they would not be accepted by the steam roads.

The association approved the report of the committee on crossings and referred it to the committee on standards for action as a recommended specification.

After several announcements relating to papers and reports to be presented the second day, the association adjourned its first session.

Tuesday's Session

The second day's session of the Engineering Association proved to be a long one but was largely attended. It opened at 2.30 p. m. with the report of the committee on power generation.

Power Generation

A. B. Stitzer, chief engineer Republic Engineers, Inc., abstracted the report.

This committee reported on three topics, namely, (1) the development of automatic substations, (2) a suggested standard form of power contract for the purchase of railway power, and (3) the operating performances of railway power stations.

The first of these topics was covered in a paper prepared originally by W. C. Slade and revised under the direction of the committee. It was based partly upon the results of a questionnaire covering the following points: (1) Description of the installation, operating or proposed; (2) operating conditions of the system; (3) reasons for adopting automatic control; (4) advantages and disadvantages of automatically-controlled substations; (5) kind and extent of the inspection of equipment found necessary or contemplated, and cost of this inspection or wages to be paid the inspector; (6) troubles experienced in operating automatic control and equipment and how overcome; (7) expression of personal opinion relative to the largest capacity unit and the largest number of units in a single substation considered practicable for automatic operation.

Attention was directed to the fact that the first automatic substation control was put into operation in 1914 in the Union Substation of the Elgin & Belvidere Electric Railway. On May 1, 1919, there were thirty-five full automatic and two semi-automatic or remote-control substations in actual operation and thirty-one other automatic and four semi-automatic equipments stood on order with manufacturers. These equipments controlled several types of synchronous converters and motor-generator sets, of capacity from 200 kw. to 2000 kw., operating under many kinds of service conditions.

On the date mentioned a number of control equipments sufficient to control 37,500 kw. of rated machine capacity had been purchased. Thus far the tendency has been to apply automatic control more generally to machines having rated capacity of 500 kw. and under, the total number coming within this range being fifty-eight. This number includes twenty 300-kw. and twenty-nine 500-kw. units. A good inroad is however, being made with machines of larger capacity, as one 1000-kw. converter is now operating automatically and there are on order six 1000-kw. synchronous converters, one 1000-kw. motor-generator set, two 1500-kw. synchronous converters, and one 2000-kw. synchronous converter.

The tendency of railway companies to equip existing substation apparatus with automatic control is shown by the fact that thirty-one control equipments have been purchased as compared with forty-one complete automatic substation equipments.

A rather interesting fact is brought out in connection with the characteristics of the supply lines that are to serve the automatic installations thus far contemplated. Not only is the tendency for railways to take 60-cycle energy from central stations indicated, but also there are many reminders of the days of unstandardized frequencies. While forty-four stations are to receive 25-cycle energy, eighteen are to receive 60-cycle energy and eight will receive energy with odd frequencies including 30, 35, 40 and 50 cycles. The high-tension line voltage varies from 2200 to 66,000, the trolley voltage being generally 600, direct current, except one 1200-volt and one 1500-volt system.

While the largest synchronous yet to be automatically controlled is a 1500-kw. machine, and the largest motor-generator set is a 2000-kw. machine, there is at present in operation on a system of the Interstate Light & Power Company a 3000-kva. synchronous condenser. In Cedar Rapids, the Iowa Railway & Light Company put into operation in 1918 the first automatically-controlled water-wheel generating station, which contains three 500-kw. generators. These are arranged to operate in parallel, either under the influence of full automatic control at the generating plant or controlled, if desired, by an operator in the main steam generating station at a distant point.

WHY HAS AUTOMATIC CONTROL BEEN INSTALLED?

The majority of purchasers of automatic control were influenced solely by the saving in labor offered. On the first road equipped the labor saving during the first year was sufficient to pay for the cost of the control equipment installed in the three stations. From replies received from a half-dozen companies in 1917 it appears that their average inspection expense was $328 per station per annum, the highest figure reported being $650.

Several companies have chosen automatic equipment in consideration of the saving possible from the elimination of light load. The highest saving estimated was $400 per annum on a 300-kw. station and $700 on a 500-kw. station. One company installed a station in a new location where the operation of a manual station or the installation of sufficient feeder copper would have been too expensive for the results desired. Another company installed a 250-kw. station to replace a floating battery in preference to spending $5,000 for necessary repairs to the battery.

In some cases where complete new automatic substations were built in new locations it was possible to remove feeder copper, which possessed a value sufficient to offset in part the cost of construction of the substation building with its equipment. In an exceptional case the cost of construction of a new two-unit substation containing two 300-kw. converters was more than offset by the value of the feeder copper removed, and a more satisfactory line voltage was obtained at the same time. The most notable saving in copper was made in Des Moines.

Another exceptional case is that of an important interurban line in central New York where, on account of the existing surplus feeder capacity, it would be possible to make an annual saving of $34,000 with approximately no investment by adopting automatic substations.

A few companies have considered automatic control even more satisfactory and reliable than manual control, on account of the elimination of the human element.

Considerations of different factors aside from those already mentioned have influenced in varying degree the selection of automatic equipment. In one case an influential item was the saving possible in the coal bill for heating, in addition to the protection against overload and arc-overs furnished by automatic control. Another company took advantage of the saving which is sometimes possible in transformer capacity due to the intermittent use of the substation.

THE FUTURE OF AUTOMATIC CONTROL

Automatic control for railway substations may now be purchased for any commercial alternating current voltage or frequency, with a maximum of 1500 volts on the direct-current side with either a single machine or with two machines operating in series. For changes in capacities of machines it is only necessary to obtain contactors and resistance grids of suitable capacity, the type of control equipment and the scheme of operation remaining the same. The application of automatic control is not limited to self-starting synchronous converters, as motor-started converters may be started automatically by reactance synchronizing. The adaptation of automatic control to motor-started converters will permit many railway companies to equip old-style machines and effect economies otherwise probably impossible unless the transformers and possibly the machines themselves were rebuilt to make self-starting possible. Automatic control is applicable to all rotating equipment, except possibly steam-driven units. With such a broad field for growth, the success of the installations made thus far, both from a financial and operating viewpoint, indicates an extremely rapid development in the immediate future.

The automatic railway substation possesses many more advantages than disadvantages. Of course, all the advantages cannot be realized in any single installation. The few disadvantages are largely common to all installations. The principal advantages are as follows: Under the head of "reduction in operating expense" these may be listed; (1) labor charges are reduced; (2) energy losses are reduced; (3) distribution losses may be reduced, and (4) line voltage may be improved.

Another advantage is in the reduction in capital investment through the possible removal of feeder copper. There are also such miscellaneous advantages as these: (1) damage from electrolysis may be reduced; (2) labor difficulties are reduced; (3) reliability of service is unimpaired; (4) portable automatic substation is adaptable to give standby capacity that minimum capital outlay may be utilized, and (5) wireless communication may be utilized for automatic substation control.

The principal disadvantages are the possible increased maintenance expense, the necessary rearrangement of the high-tension circuit that might have to be made where attendants are necessary at switching centers to handle high-tension circuits, and the danger of annealing of trolley wire.

SOME FIGURES AS TO AUTOMATIC SUBSTATION COSTS

Estimates have been prepared to show the comparative cost of automatic substations complete with building and equipment, the data being developed upon the assumption that the building would be large enough to house two machines of equal capacity. The results are shown in Tables I, II, and III.

TABLE I—COMPARATIVE COSTS OF FIREPROOF BUILDINGS FOR TWO-UNIT AUTOMATIC SUBSTATIONS

Capacity Each Unit in Kilowatts	Floor Area in Square Feet		Cubical Contents in Cubic Feet		Cost at 20 cents per Cubic Foot	Cost at 25 cents per Cubic Foot
	A	B	A	B	A	B
300	468	620	9,594	16,120	$1,920	$4,030
500	522	714	11,745	19,278	2,350	4,820
750	735	960	16,538	26,889	3,310	6,720
1000	1,107	1,288	26,015	37,352	5,200	9,340

In Tables I and III, A refers to building with minimum clearance around machines, of fireproof construction, but with roof trusses designed to carry roof load only, and without appliances for handling apparatus. B is a larger building, with ample facilities for handling equipment and with a reasonable degree of ornamentation.

TABLE II—ESTIMATED COSTS OF AUTOMATIC SUBSTATION EQUIPMENT INSTALLED—ONE UNIT

Capacity in Kilowatts	60 Cycles	25 Cycles
300	$13,810	$15,410
500	17,060	19,210
750	20,385	*24,400
1000	24,535	27,285

* Not standard equipment.

This table gives the comparative costs of automatic substation equipment installed applying to the single-unit station only. The figures cover the converter and three-phase transformer, a. c. and d. c. electrolytic lightning arresters, oil circuit-breaker, switchboard and all necessary automatic control equipment. A reasonable sum for erection and starting of the apparatus is included, but freight and haulage expense is not included, as such expense is variable and indeterminate.

TABLE III—ESTIMATED COSTS OF BUILDING AND AUTOMATIC SUBSTATION EQUIPMENT INSTALLED—TWO UNITS

Capacity in Kilowatts	60 Cycles		25 Cycles	
	A	B	A	B
300	$15,730	$17,840	$17,330	$19,440
500	19,410	21,880	21,560	24,030
750	23,690	27,110	27,710	31,120
1000	29,740	33,870	32,490	36,620

WHAT INSPECTION SERVICE IS NECESSARY FOR SUCCESSFUL SUBSTATION MAINTENANCE

The amount of inspection that was reported by purchasers of automatic control in 1917 varies from "twice daily" to "twice a week, preferably three times." It is probable that most of the installations are receiving more attention than they will require later. Stations containing electrolytic arresters on the alternating-current lines are doubtless visited daily or at least once in every two days for the purpose of charging the arresters. A distinction must be made between brief visits not made primarily for purposes of inspection and more lengthy visits that should be made at regular intervals for thorough inspection of all the equipment.

Automatic substations should be provided with the best possible protection against lightning. Except for very low voltage, electrolytic arresters are probably most generally in use. Oxide-film arresters, which have been recently developed may, however, be used as a substitute, and for one line of automatic control the oxide-film arrester has been made standard. For those companies which have electrolytic arresters, or which prefer to use them in future, a provision may be made so that a man other than the regular substation inspector can take care of the daily charging of the arresters. In such case the arrester equipment could be located out of doors, where it would be much more conveniently accessible.

A thorough inspection of all the equipment should be made not less than once a week, unless experience has demonstrated in a particular case that a thorough inspection only once every two weeks is sufficient. Between inspections, visits would simply be in the way of a general survey, whereas the thorough inspection would require two or three hours at least and the filling out of a suitable inspection report.

On the system of the Des Moines City Railway a form is used which requires answers to some 192 questions, most of which can be quickly answered by the word, "Yes." It is strongly urged that every owner of automatic substation equipment should make use of some form of inspection report, however simple it may be.

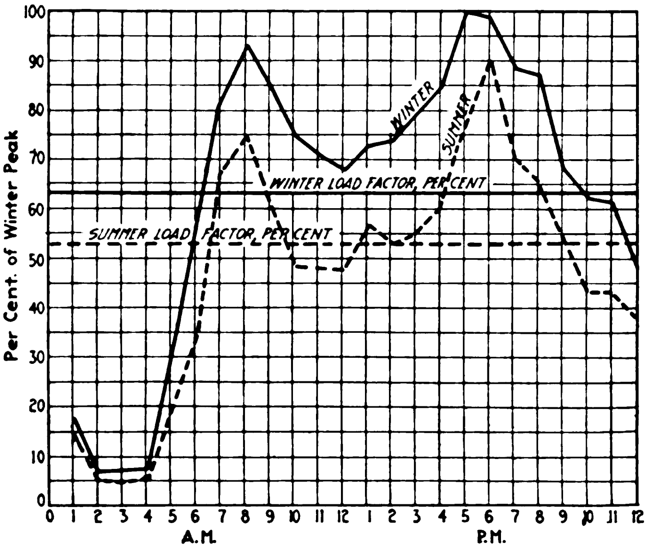


FIG. 1—TYPICAL LOAD CURVES BASED ON SIX POWER PLANTS HANDLING RAILWAY LOADS ONLY

There are two types of control applicable to automatic substations available at present. One makes use of a motor-driven controller and exciter employed for determining the sequence of operations and at the proper time fixing the polarity of the field of the machine to be started. The other system employs a switching equipment, each step in the operation of which is a direct function of the electrical condition of the converting apparatus at that particular moment. The sequence of operations is determined by a suitable combination of inter-connected relays. In starting, if the polarity fails to remain established in the proper direction from the previous operation of the machine, a pole is automatically "slipped" through the action of a specially-constructed relay.

In both systems, relays of both the instantaneous and time-element type are employed, as well as thermostats for protection against overheating of bearing and resistor grids. These grids furnish a load-limiting or cushioning resistance through which the machine is thrown on the line and which limits the load under extreme overload or short circuit. Suitable relays are used to protect the station, preventing it from operating on low alternating-current voltage, reverse phase, single phase or reverse current. They will shut the station down on alternating-current or direct-current short circuit, failure of alternating-current voltage, overspeeding or underspeeding of the machine, or the failure of any device properly to function. The value of several of these protective devices is sufficient to warrant their use in manually-operated stations.

CONTRACT FOR PURCHASE OF RAILWAY POWER

In accordance with its assignment a sub-committee instructed to recommend a standard form of power contract for the purchase of railway power endeavored to do this, but when its preliminary work was submitted to the committee as a whole, it did not prove satisfactory. It seemed impossible with the knowledge at hand to frame up clauses which would be applicable for the purchase of power on a large as well as a small scale, except for specific cases.

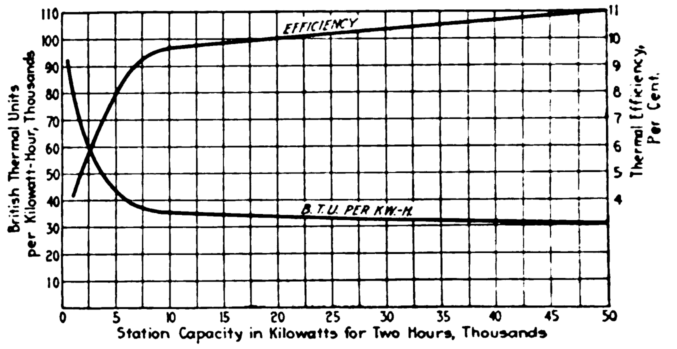


FIG. 2—RELATION OF PLANT CAPACITY TO EFFICIENCY

The committee therefore decided to study existing power contracts and select from these such clauses or phrases as seemed best suited to the purpose, presenting these as a suggested form of power contract. Accordingly, copies of contracts were obtained from twenty member companies and excerpts from these were combined under certain headings and sub-headings which together form a topical index. The committee expressed the belief that the compilation includes all of the salient points that, under the usual conditions, it will be necessary to cover in a power contract. Although it is possible from these data to select clauses with which, with certain modifications, particular cases can be met, the committee did not suggest any series of clauses, but set them forth exactly as given.

OPERATING PERFORMANCE OF RAILWAY POWER STATIONS

The sub-committee on this subject received a total of 117 reply data sheets from member companies regarding power station operation, of which fifty-six gave no data because the companies are purchasing power. Of the remaining data sheets thirty-seven were analyzed and composite railway load curves were made up from six reports based upon strictly railway load. The composite result is shown in Fig. 1, the data from which it was plotted being weighted by increasing the actual hourly peak of each plant by the ratio between such plant's maximum peak and that of the plant having the greatest peak.

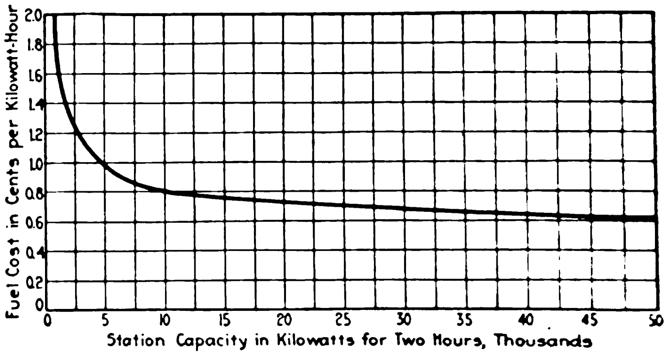


FIG. 3—FUEL COST PER KILOWATT HOUR, ALL PLANTS CORRECTED TO COAL AT $5 PER NET TON AND 12,500-B. T. U. PER POUND

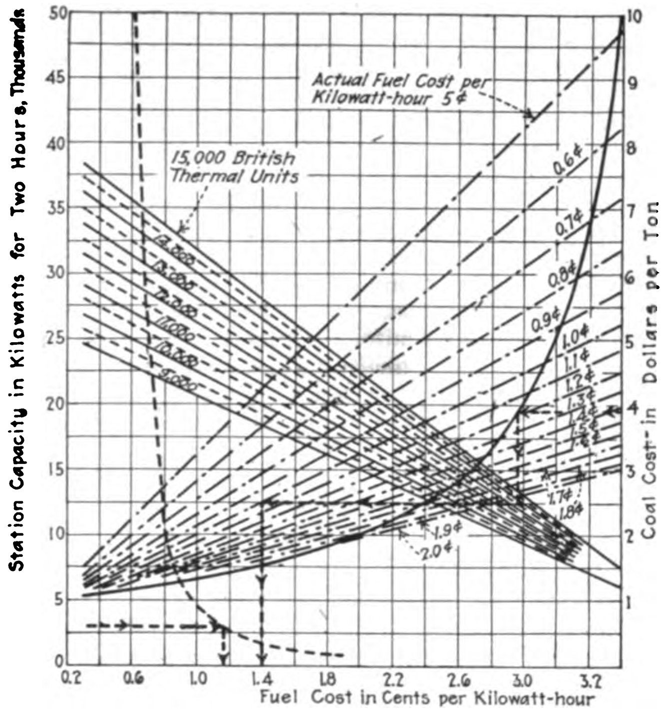


FIG. 4—CHART SHOWING FUEL COST PERFORMANCE OF PLANTS OF VARIOUS SIZES

Explanation to Fig. 4. Left-hand curve in the diagram shows relation of fuel cost (correcting to 12,500-B. t. u. coal at $5 per short ton) to two-hour plant capacity. Other lines permit graphic calculation and comparison of any plant performances, given coal cost per short ton, B. t. u. value of coal and actual fuel cost per kilowatt-hour.

Example: Assume 3000-kw. plant, $3.90 coal cost per short ton and 13,500-B. t. u. coal. Follow arrows, starting at 3000 kw. on station capacity scale, intersect plant performance curve, then downward to 1.16 cent per kilowatt-hour, giving fuel cost per kilowatt-hour for a 3000-kw. plant as per analyzed result of twenty-five plants.

Comparison: Follow arrows, starting at $3.90, horizontally to curve, then downward to fuel value (13,500-B. t. u.), horizontally to actual fuel cost per kilowatt-hour (1 cent) and downward to corrected fuel cost per kilowatt-hour (1.39 cent).

Assumed plant's performance is not as good as average of twenty-five analyzed plants.

As to operating cost, as the capacities of the plants analyzed ranged all the way from 800 kw. to 50,000 kw., naturally the generating cost per kilowatt-hour shows a wide variation. Fuel cost varies between 75 per cent and 80 per cent on practically all plants, regardless of size. Labor cost, however, shows a wide variation, plants larger than 5000-kw. averaging 17 per cent, decreasing to 11 per cent for very large plants.

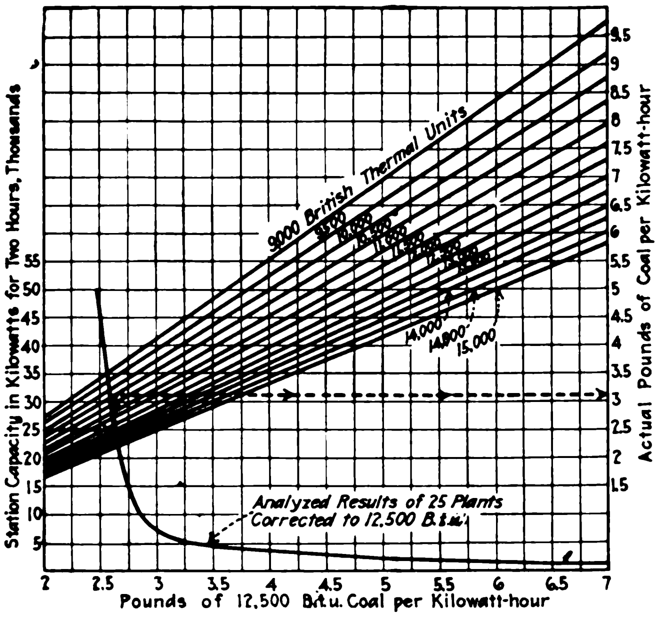


FIG. 5—CHART SHOWING COAL CONSUMPTION OF PLANTS OF VARIOUS SIZES

Example: How many pounds of coal should a 25,000-kw. plant burn per kilowatt-hour, assuming fuel value of 10,500 B. t. u.? Follow arrows starting at 25,000 kw., on station capacity scale, intersect analyzed result curve, thence upward to intersect 10,500-B. t. u. line, thence horizontally to the right and obtain 3.12 lb. of 10,500 B. t. u. coal required.

The accompanying tables give many data, and are significant in connection with the power-plant efficiency curves shown in Fig. 2. These are based on coal-burning plants only, and these show efficiencies as in Table IV.

TABLE IV—POWER PLANT EFFICIENCIES

Two-Hour Plant Capacity	B.t. u. per Kw.-hr. Generated	Thermal Efficiency, per cent
Below 1,000, kw.	90,000 to 80,000	About 4%
1,000 to 3,000	80,000 to 56,000	4.0 to 6.1
3,000 to 5,000	56,000 to 43,000	6.1 to 8.0
5,000 to 10,000	43,000 to 35,000	8.0 to 9.6
10,000 to 20,000	35,000 to 33,500	9.6 to 10.0
20,000 to 50,000	33,500 to 31,000	10.0 to 11.0

TABLE V—COSTS OF GENERATING POWER

Two-Hour Plant Capacity	Average Fuel Cost per Kw.-hr. Cents	Average Labor Cost per Kw.-hr. Cent	Average Mainte-nance Cost per Kw.-hr. Cent	Average Miscel-laneous Cost per Kw.-hr. Cent	Average total Cost per Kw.-hr. Cents
Account number	(53)	(52)	(46 & 47)	(45, 54, 55 and 56)	(45, 50, 56 inclusive)
3,000 kw. and less (six plants)	1.85	0.43	0.13	0.15	2.56
Over 3,000 kw. to 5,000 kw. (five plants)	0.96	0.25	0.09	0.15	1.45
Over 5,000 kw. to 10,000 kw. (four plants)	0.77	0.15	0.08	0.05	1.05
Over 10,000 kw. to 20,000 kw. (nine plants)	0.76	0.14	0.10	0.05	1.05
Over 20,000 kw. to 50,000 kw. (ten plants)	0.75	0.11	0.07	0.05	0.98

TABLE VI—COMPARATIVE POWER PLANT DATA

	1918	1916
Net output from bus, kw.-hr.	21,317,432	11,819,040
Maximum one-hour peak, kw.	8,025	4,100
Load factor: av. kw.-hr. to one-hour load	30.3	32.8
Capacity for 2-hr. peak, kw.	9,300	9,300
Plant factor: av. kw.-hr. to two-hour (capacity) load	26.1	14.5
Pounds of coal	96,850,380	66,588,000
Pounds of coal per kw.-hr.	4.54	5.63
B.t.u. as received	11,500	11,500
B.t.-u. per kw.-hr.	52,100	64,700
OPERATING EXPENSES		
Power plant labor (including superintendence)	$52,371	$22,093
Maintenance	11,185	4,973
Fuel	114,788	26,262
Water, lubricants, etc.	9,641	6,936
Total	$187,985	$60,264
Fuel cost per kw.-hr., cent	0.539	0.222
Labor cost per kw.-hr., cent	0.239	0.186
Maintenance per kw.-hr., cent	0.053	0.042
Water, lubricants, etc., per kw.-hr., cent	0.045	0.058
Total cost per kw.-hr.	0.876	0.508

Fuel Cost Analysis

As the fuel cost is by far the greatest item of production expense, a special study was made with the idea of getting the approximate relation between fuel cost and station capacity. Fuel cost and B. t. u. values vary greatly at the different plants. It was found, however, that the average cost of coal per short ton, for twenty-five plants, was $4.50. The average B. t. u. value was 11,000 per lb. of coal. This is practically equivalent to coal of 12,500 B. t. u. value at $5 per ton, or 10,000 B. t. u. for 0.2 cent.

The curve shown in Fig. 3 was produced by correcting the actual fuel cost per kilowatt-hour at each plant, and the B. t. u. value of the coal to a coal costing 0.2 cent per 10,000 B. t. u. Thus one plant purchasing 8,202-B. t. u. coal at $3.38 per ton had a coal cost of one cent per kilowatt-hour. In this case the corrected coal cost on the curve would be 0.97 cent.

To enable any plant performance to be compared with the curve, the chart shown in Fig. 4 was prepared. By means of this the actual fuel cost of any plant can be rapidly corrected for various fuel values and costs, and the latter result compared with the cost as found for any particular size plant in the analysis. The example given shows a 3000-kw. plant, burning 13,500-B. t. u. coal which cost $3.90 per short ton, for which the fuel cost is 1.39 cents. This performance is not quite as good as that shown from the analyzed returns for a plant of 3000 kw., the figure for this plant being 1.16 cents.

Another chart, Fig. 5, was prepared to permit the making of a comparison between the consumption of a plant, corrected to 12,500-B. t. u. coal and that of a plant of similar size. The example given on the chart shows that a 25,000-kw. plant, burning 10,500-B. t. u. coal, should burn 3.12 lb. per kilowatt-hour. Actual performance of a given plant can be compared with this.

This report on power generation matters was signed by A. B. Stitzer, chairman, and Howell Van Blarcom, C. R. Greenidge, E. H. Scofield, R. W. Eaton, C. W. DeForest, W. C. Slade, E. Gould, E. P. Waller, and A. B. Kelsey.

DISCUSSION ON POWER GENERATION

In the discussion which followed, L. P. Crecelius, Cleveland Railway, spoke of the advantages of automatic substations and said that his experience showed that these advantages are more pronounced than those given in the report of the committee. For automatic substations of 6000 kw. and larger the labor item is such a small per cent of the power cost that the initial cost proves to be a disadvantage. C. M. Davis, General Electric Company, outlined the progress that had been made in the design of automatic substations and stated that this progress made in the design of automatic substations had been very rapid since 1915. Eighty equipments have been sold by the two manufacturers of this type of equipment and there are fifty to fifty-five equipments in operation. The largest capacity so far for converters is 1500 kw., and 2000 kw. is the largest for motor-generators. C. F. Lloyd, Westinghouse Electric & Manufacturing Company, spoke of the reliability which had been manifest in the operation of automatic substations and considered that their development had come at a very opportune time, as the labor situation at present is in its worst stages and also the financial condition of electric railway properties is very bad. Mr. Davis said that operating men in considering the use of automatic substations first thought only of the savings in wages which would result from having no operator. There are other savings and advantages, however, which appear of even greater importance when considered as a whole. Some of these are the continual availability of the system for the delivery of power in night or day and the facility for relocating substations without regard to the desirability of their location as concerned the operator. There is also a shut-down saving which comes from the elimination of light-load losses. Substations can be built for either remote control, time-clock control, or a combination of several other conditions, as encountered.

L. D. Bale, Cleveland Railway Company, spoke of heavy and light current-limiting resistances and asked some of the manufacturing engineers to explain how the question of the type of resistance was determined. In answer to this question, Mr. Davis said that where light resistance was used in the feeder, the resistance would heat up rapidly and the circuit in trouble would be disconnected quickly. For operating conditions, where it may be desirable to furnish power to a feeder in trouble as long as possible, a heavy resistance is the proper type to use, as this affords a means for keeping cars moving at reduced speed, so as to get them out of the zone of trouble, before the circuit was interrupted. The choice of which type of resistance to use is more a question of how the operator wishes to run his cars than a question of the equipment to be furnished by the manufacturer.

In discussing the form of power contract for the purchase of railway power as given in the report, Mr. Crecelius thought it highly desirable that this subject be referred to the power generation committee for the ensuing year. R. W. Eaton, public service engineer, stated that the committee did not have this work assigned until the middle of March and the time was insufficient properly to analyze the work which has already been done, or to select material for a suggested form. The committee felt, however, that the subject is of sufficient importance to warrant it in recommending to the association that the subject be reassigned to the power generation committee for the ensuing year with a suggestion that additional power contracts be analyzed and that if possible a suggested form of power contract be deduced from the material thus obtained, together with the data submitted at this time and such further additions as may be thought advisable. Mr. Stitzer closed the discussion with the statement that the committee thought that the various railway companies would be able to use the forms as submitted to draft power contracts that would suit their individual conditions and thus the work which the committee had done this year would be of service to many railways. The report of the committee on power generation was adopted by the association.

Equipment

The association then took up the consideration of the report of the committee on equipment, which was abstracted by Daniel Durie, chairman.

The subjects which were assigned to the committee on equipment for consideration and report, comprised (1) the formulation of a new code for 1200-volt car wiring, (2) the development of check gages and templates for wheel and truck parts, and (3) the standardization of motor parts. The sub-committee to which the second of these subjects was assigned, included in its report recommendations covering the dimensions of steel wheels and the tread and flange contours for cast wheels.

On the formulation of a new code for 1200-volt car wiring, or a revision of the 600-volt code for this purpose, the committee made no report.

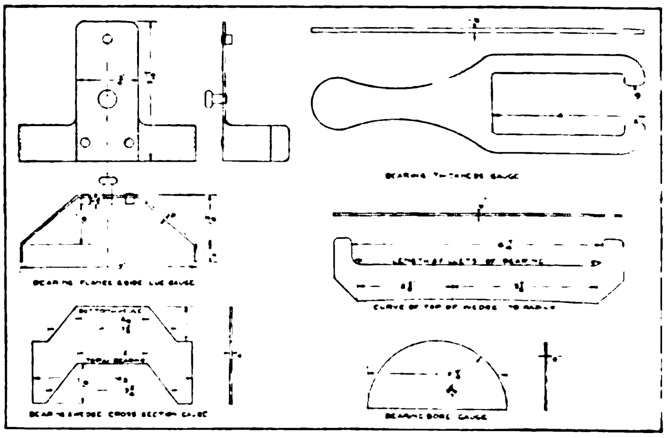
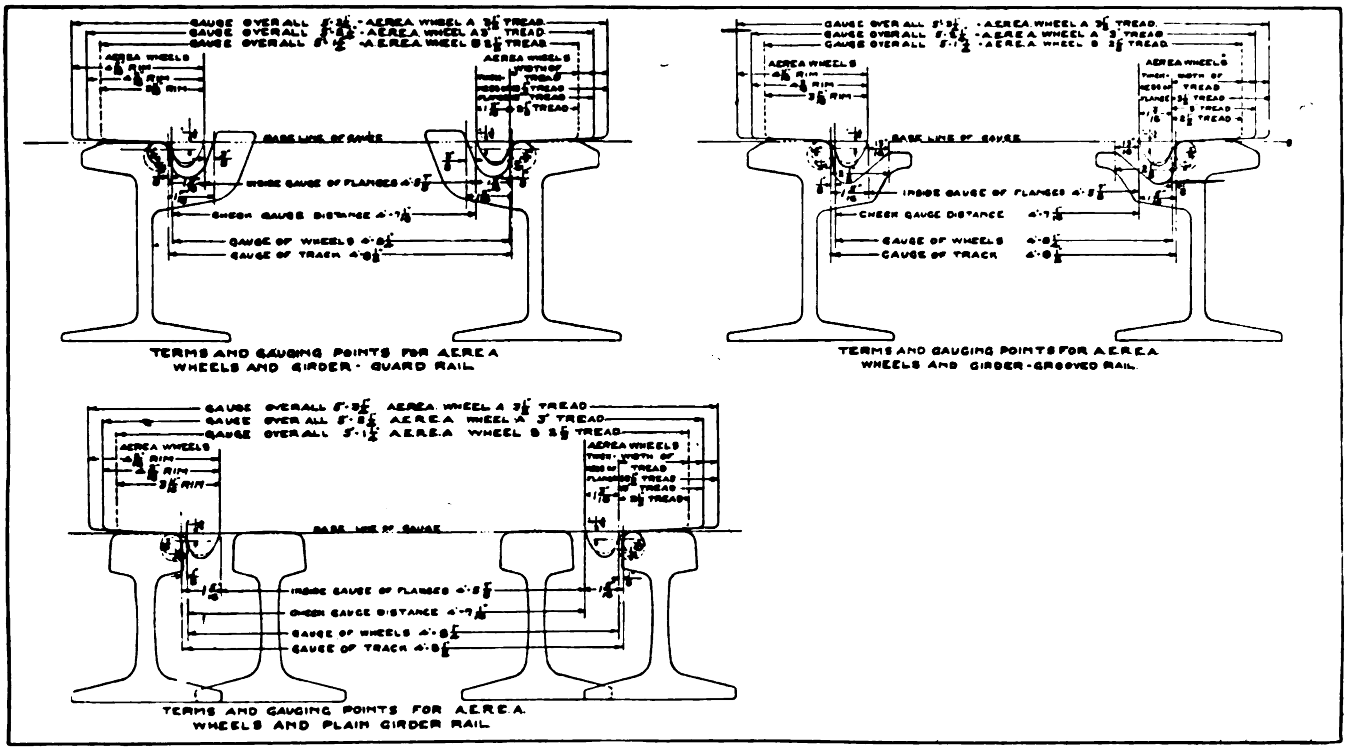


FIG. 1—PROPOSED STANDARD BEARING AND WEDGE GAGES

On the subject of check gages and templates for wheels and truck parts, the committee prepared the drawings of Fig. 2 showing the terms and gaging points for A. E. R. E. A. wheels and rails. It was pointed out that these drawings had been prepared along the general lines followed by the Master Car Builders' Association. Fig. 3 shows the committee's recommendation for the standard wheel mounting and check gage. No recommendations were made for brake-beam gages, wheel flange and tread contour gage, or standard wheel tape. The committee also recommended a standard plane gage for rolled steel wheels, which is intended for use in checking warping of wheels, the tolerances allowed being governed by the wheel specifications, as well as a recommended standard rotundity gage for steel wheels. This gage is intended to become tight on the wheels at the center of the tread, all standard wheels having a taper of 1 in. in 25 in. The tolerances governing here are included in the wheel specifications. Fig. 1 shows the



BASE LINE OF GAUGE
INSIDE GAUGE OF FLANGES 4'-5⅝"
CHECK GAUGE DISTANCE 4'-7⅛"
GAUGE OF WHEELS 4'-8½"
GAUGE OF TRACK 4'-8½"
AERA WHEELS
TERMS AND GAUGING POINTS FOR AERA WHEELS AND GIRDER-GUARD RAIL
TERMS AND GAUGING POINTS FOR AERA WHEELS AND GIRDER-GROOVED RAIL
TERMS AND GAUGING POINTS FOR AERA WHEELS AND PLAIN GIRDER RAIL

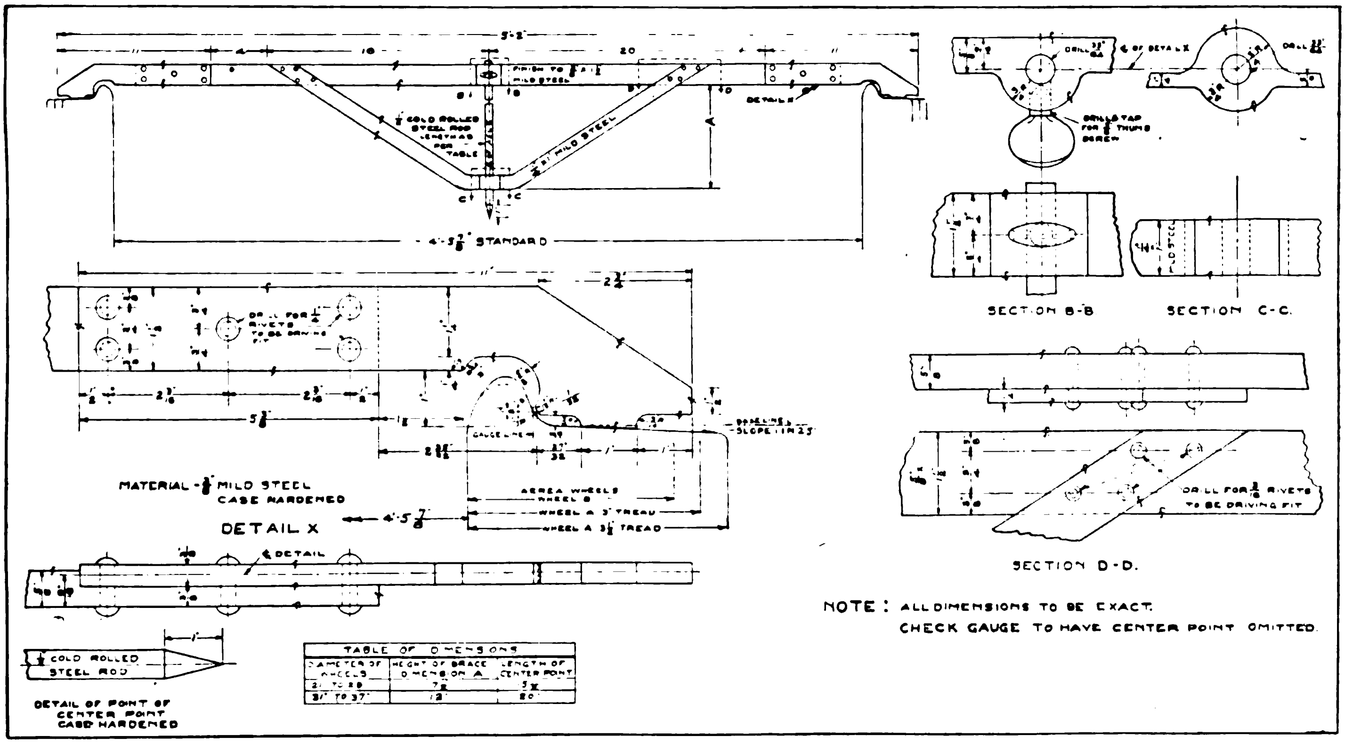
FIG. 2—TERMS AND GAGING POINTS FOR A. E. R. E. A. WHEELS AND RAILS

different proposed standard gages for use in gaging journal bearings and wedges for 3¾-in. x 7-in. journals.

The table on page 78 of proposed specified dimensions for A. E. R. E. A. steel wheel designs was submitted by the committee with the suggestion that it be adopted as standard.

The committee's second recommendation in regard to wheels was that the designs for contours of the cast wheels proposed by the committee of 1916 and then withdrawn, be adopted as standard. The tread and flange contours referred to are shown on page 491 of the 1916 Proceedings of the A. E. R. E. A. They include three standard wheels as follows: Wheel A, having a 3-in. tread and a flange ⅞ in. high and 1$\frac{3}{16}$ in. thick at the throat; wheel B, having a tread 2½ in. wide and a flange ¾ in. high and 1 in. thick; and wheel C, having a 2½-in. tread and flange ⅝ in. high and 1 in. thick.

On the subject of standardization of motor parts, the committee pointed out that this question should be given very careful consideration before standards are adopted in order that such standards may not be of a character to retard development or would not be adhered to, and then recommended that the following items be considered by the succeeding committee: (1) Box-frame motors. (2) Nose suspension. (3) Drilling motor frame both sides for motor leads. (4) Eliminate provisions for grounding on motors.



5'-2"
4'-5⅝" STANDARD
DETAIL X
MATERIAL-⅜" MILD STEEL CASE HARDENED
AERA WHEELS
WHEEL A 3" TREAD
WHEEL A 3½" TREAD
SECTION B-B
SECTION C-C
SECTION D-D
DRILL FOR ½ RIVETS TO BE DRIVING FIT
NOTE: ALL DIMENSIONS TO BE EXACT.
CHECK GAUGE TO HAVE CENTER POINT OMITTED.
COLD ROLLED STEEL ROD
DETAIL OF POINT OF CENTER POINT CASE HARDENED
TABLE OF DIMENSIONS
DIAMETER OF WHEELS
HEIGHT OF BRACE DIMENSION A
LENGTH OF CENTER POINT
31" TO 37"
12"
20"

FIG. 3 -WHEEL MOUNTING AND CHECK GAGE

(5) Lengths of motor leads. (6) Marking of motor leads. (7) Connectors for motor leads. (8) Continuous locking device. (9) Motor winding diagram. (10) Machining tolerance on axles for motor axle bearings.

PROPOSED SPECIFIED DIMENSIONS FOR A. E. R. E. A. STEEL WHEEL DESIGNS

TABLE I—FLANGE WIDTH [illegible] IN.

No. of wheel	Diameter Inches D	Flange height Inches a	Flange width Inches b	Throat radius Inches c	Rim width Inches e	Tire thickness Inches d	Hub diameter Inches t	Hub length Inches n	Track-gages	
									Hub projection, 4' 8½" Inches	Hub projection, 5' 2½" Inches
1 ..	21	[illegible]	[illegible]	[illegible]	3[illegible]	2	7	5	3[illegible]	4[illegible]
2 ..	22	[illegible]	[illegible]	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
3 ..	24	[illegible]	[illegible]	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
4 ..	26	[illegible]	[illegible]	[illegible]	3[illegible]	2	8[illegible]	5	3[illegible]	4[illegible]
5 ..	28	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
6 ..	31	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
7 ..	33	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]
8 ..	34	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]

TABLE II

1 ..	21	[illegible]	[illegible]	[illegible]	3[illegible]	2	7	5	3[illegible]	4[illegible]
2 ..	22	[illegible]	[illegible]	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
3 ..	24	[illegible]	[illegible]	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
4 ..	26	[illegible]	[illegible]	[illegible]	3[illegible]	2	8[illegible]	5	3[illegible]	4[illegible]
5 ..	28	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
6 ..	31	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
7 ..	33	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]
8 ..	34	[illegible]	[illegible]	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]

TABLE III—FLANGE WIDTH 1 IN.

1 ..	21	[illegible]	1	[illegible]	3[illegible]	2	7	5	3[illegible]	4[illegible]
2 ..	22	[illegible]	1	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
3 ..	24	[illegible]	1	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
4 ..	26	[illegible]	1	[illegible]	3[illegible]	2	8[illegible]	5	3[illegible]	4[illegible]
5 ..	28	[illegible]	1	[illegible]	2[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
6 ..	31	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
7 ..	33	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]
8 ..	34	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]

TABLE IV

1 ..	21	[illegible]	1	[illegible]	3[illegible]	2	7	5	3[illegible]	4[illegible]
2 ..	22	[illegible]	1	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
3 ..	24	[illegible]	1	[illegible]	3[illegible]	2	7[illegible]	5	3[illegible]	4[illegible]
4 ..	26	[illegible]	1	[illegible]	3[illegible]	2	8[illegible]	5	3[illegible]	4[illegible]
5 ..	28	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
6 ..	31	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5	3[illegible]	4[illegible]
7 ..	33	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]
8 ..	34	[illegible]	1	[illegible]	3[illegible]	2[illegible]	8[illegible]	5[illegible]	3[illegible]	4[illegible]

TABLE V—RIM WIDTH 4 IN., FLANGE WIDTH 1 IN.

1 ..	24	[illegible]	1	[illegible]	4	2	7[illegible]	5	3[illegible]	4[illegible]
2 ..	26	[illegible]	1	[illegible]	4	2	8[illegible]	5	3[illegible]	4[illegible]
3 ..	28	[illegible]	1	[illegible]	4	2	8[illegible]	5	3[illegible]	4[illegible]
4 ..	31	[illegible]	1	[illegible]	4	2	8[illegible]	5	3[illegible]	4[illegible]
5 ..	33	[illegible]	1	[illegible]	4	2	8[illegible]	5[illegible]	3[illegible]	4[illegible]
6 ..	34	[illegible]	1	[illegible]	4	2	8[illegible]	5[illegible]	3[illegible]	4[illegible]

TABLE VI—RIM WIDTH 4 3/16 IN., FLANGE WIDTH 1 3/16 IN.

No. of wheel	Diameter Inches D	Flange height Inches a	Flange width Inches b	Throat radius Inches c	Rim width Inches e	Tire thickness Inches d	Hub diameter Inches t	Hub length Inches n	Hub projection Inches O
1	33	7/8	1 3/16	1/2	4 3/16	2 1/2	9 1/4	6	(2 15/16 or 1 15/16)
2	34	7/8	1 3/16	1/2	4 3/16	2 1/2	9 1/4	6	(2 15/16 or 1 15/16)
3	36	7/8	1 3/16	1/2	4 3/16	2 1/2	9 1/4	6	(2 15/16 or 1 15/16)

TABLE VII—RIM WIDTH 4 11/16 IN., FLANGE WIDTH 1 3/16 IN.

1	34	7/8	1 3/16	1/2	4 11/16	2 1/2	9 1/4	6	(2 15/16 or 1 15/16)
2	36	7/8	1 3/16	1/2	4 11/16	2 1/2	9 1/4	6	(2 15/16 or 1 15/16)

NOTE. Minimum rough bore 3[illegible]", Tables I, II, III, IV and V.
NOTE. Minimum rough bore 4[illegible]", Tables VI and VII.

The report of the committee was signed by Daniel Durie, chairman, and W. G. Gove, vice-chairman, and the following members: H. A. Johnson, R. H. Dalgleish, N. B. Trist, K. A. Simmon, E. D. Priest, W. S. Adams, G. W. Lyndon and J. M. Bosenbury.

Discussion on Equipment

Norman Litchfield, American Car & Foundry Company, said that from his consideration of the drawing showing the proposed gages to be used as standard in gaging A. E. R. A. journal bearings and wedges, he believed these were the same as those which had been adopted by the Master Car Builders. He thought that there would be an advantage if this was so stated in adopting the specifications, as frequently manufacturers had to supply material to a specification which they believed was similar to some other on which they were already supplying material, and in order to make certain of this, the various specifications had to be checked over carefully. If a statement was included at the beginning of the specification, when they were identical with another, it would save all this extra work. C. R. Harte, Connecticut Company, objected to labeling A. E. R. A. standards as coming from any other association. He said that as far as their use for electric railways was concerned they should be called A. E. R. A. standards, but he agreed with Mr. Litchfield that full credit should be given as to any part taken from other associations, and any explanation should be included which would save work on the part of those who had to go over these specifications in supplying material.

In answer to a question regarding the tread and flange contours for wheels which were included as a part of the recommendations of the committee, R. H. Dalgleish, Capital Traction Company, said that these contours could be used for both steel and chilled wheels, as far as the base line. H. H. Adams, Chicago Surface Lines, said that from his experience he thought that if a ⅞-in. flange was used with chilled wheels there would be excessive chipping. Mr. Dalgleish said that this was undoubtedly true and that the ⅞-in. flange had only been included for roads which were forced to use this through necessity and that other roads should use the thicker flange if their conditions permitted. Mr. Dalgleish also said that he thought chilled iron wheel manufacturers should be given an opportunity to criticize the proposed standards, but so far the committee was unable to get a man from the manufacturers of chilled iron wheels to serve on the committee.

The association approved the tread and flange contours as recommended and referred these to the standards committee for action.

Standardization of Motor Parts

In regard to the committee's work on standardization of motor parts, Karl A. Simmon, Westinghouse Electric & Manufacturing Company, said that the time in which the committee had to go over these was so short that it was impossible to make definite recommendations, but there were undoubtedly at the present time quite a number of parts which would permit of standardization. E. D. Priest, General Electric Company, also spoke of the advisability of standardizing motor parts, but said that the age of development had not yet passed and that any attempt at standardization should be given very careful consideration, and he thought that it would be a mistake to adopt any part as standard until the committee was given more time to go into the various considerations very carefully. Mr. Adams said that he felt that there was certainly a great field for standardization of motor parts and that many roads were already effecting such standardization on their particular properties. This related particularly to the use of one type of gear case on several types of motors, and also some roads have found that they could use the same bearings on different types of motors with slight changes.

The association then adopted the recommendations of the committee on equipment as included on pages 11 and 12 of its report and referred the parts which had not already been acted on by the standards committee to this committee for action.

BRAKESHOE STANDARDIZATION

F. W. Sargent, American Brake Shoe & Foundry Company, gave considerable information regarding the number of different parts of brakeshoes other than association standards which are now in use. He said that considering only the live patterns from which his company had made shipments of brakeshoes since Jan. 1, 1918, the total number of such patterns for electric railway brakeshoes was 646, of these 438 are from non-standard patterns; 208 of these take A. E. R. A. standard brake head and key, and of these 208, 183 have been replaced by the American Brake Shoe & Foundry Company's standard patterns, which take the A. E. R. A. standard brake head, ninety-eight patterns being for narrow tread wheels and eighty-three for broad tread wheels. Two patterns have been replaced by the M. C. B. standard flanged brakeshoe, broad tread. There are still twenty-five patterns which take the A. E. R. A. standard brake head, which have not been replaced by the American Brake Shoe & Foundry Company's standard patterns.

Mr. Sargent said that while a great many of the railroads, particularly the larger systems, have adopted the A. E. R. A. brake heads there still remains quite a difference in the wheel contour, so that his company has not been able to standardize on the A. E. R. A. tread outline for brakeshoes. The American Brake Shoe & Foundry Company's standard patterns differ from the A. E. R. A. standard patterns in having the end guides omitted from the brakeshoes. This enables the railroads to use a solid-end-plate brake head which is an improvement over the present association standard and is more economical than the brake head with the open toes which wear out rapidly. The American Brake Shoe & Foundry Company's standard patterns were exhibited in the A. E. R. A. standards booth and also in the company's booth, and Mr. Sargent said he would be very glad to have all interested railway men make a careful examination of these and give him their comments and suggestions.

Mr. Adams said that he thought the subject of standardization of brakeshoes was a very important one and afforded a large field for economy, and he moved that the subject of the revision of brakeshoe and brake head standards be referred to next year's committee on equipment for consideration. This motion was adopted by the association.

Construction Work in France

The latter part of the Tuesday afternoon session was taken up with an address of information and inspiration by Col. Henry Hodge, consulting engineer, New York City. His topic was "Construction Work in France," and he outlined the work that had been done by the American engineers from the time they first landed in France up to the signing of the armistice.

Wednesday's Session

In opening the third session of the Engineering Association, President Phillips dwelt at considerable length on the standardization drive that has been started by the association. He requested all members present to give the subject careful attention and asked that they spread the information brought out in this connection among others so as to try to create the interest that the subject really deserved.

Buildings and Structures

The first report of the afternoon was that of the committee on buildings and structures. This report was presented in abstract by C. S. Kimball, chairman, who said in part relative to the three subjects assigned for investigation and report by the executive committee as follows:

As to the subject of fences using concrete posts and methods of their casting, the committee stated that, based on tests and investigations it would seem that in the manufacture and use of concrete posts the following conditions should be considered: It cannot be expected that concrete posts can be made and transported to the point of use at a first cost which will compare favorably with wooden posts, but if a concrete post is properly built and has a sufficient amount of reinforcement its life should entirely justify the cost. Mortar used in this class of work should never exceed the proportion of two parts of sand to one part of cement, the aggregate not to exceed four parts, preferably 2.5 parts of small broken stone or ½-in. pebbles. Posts should have a diameter of not less than 5 in. at the ground line and four ¼-in. steel reinforcing rods so placed as to be approximately ½-inch. from the outer surface of the post. At least sixty days should be given the raw posts to cure before they are placed in the ground. Posts should be set with 14 ft. centers as a maximum.

The committee upon investigation found that in open storage carhouses at least 20 per cent of the carhouse trackage should be equipped with pits and that this percentage of space was sufficient only under the most favorable conditions of track layout for shifting cars. Where all cars are stored under cover and with no easy facilities for car shifting, the pit capacity should be increased to 30 or 40 per cent.

In a model house of 100 to 130 cars capacity, which includes accommodations only for the inspection and repair men, a pit capacity for thirty-two cars should be provided. The pit room should have suitable arrangements for changing motors and wheels, lifting car bodies and other facilities for making minor repairs, including a blacksmith shop, power drill and grindstones. There should be one body hoist to about every forty cars stored and this should be located where a car can be kept on the hoist for several days without blocking storage berths. At larger stations where a number of body hoists would be required, an overhead crane spanning two or three tracks, capable of lifting at least one end of a car, will often be found more convenient. Where body hoists are used, a jib crane should be located at each end of the car to facilitate handling of heavy truck parts, and an overhead telpher is likewise desirable for handling wheels and other heavy parts that are stored outside of the building proper. The blacksmith shop and stockroom should also be conviently located.

Pits should be from 4 to 5 ft. in depth, averaging 4 ft. 6 in. Track centers depend on the method of handling car repair work and for ordinary repairs and inspection should never be less than 11 ft. and preferably 12 ft., where there are no aisle posts. Where there are posts the standard allowed by the Underwriters is the width of the car plus 4 ft. This is also the maximum distance between cars allowed by the Underwriters for one row of aisle sprinklers. The space between a side wall and the nearest rail should not be less than 5 ft. 6 in.

In repair shops where extensive work is done in addition to inspection, a track spacing of 13 ft. is recommended, where there are no aisle posts and where posts come between tracks it should be on 14 or 15 ft. centers. Tracks should be 6 ft. 6 in. from side walls. This spacing is necessary to allow plenty of room around the car for working, placing material, installing body hoist and jit cranes, fire apparatus, etc.

The four distinct designs of pits can be classified as follows: (a) Pits with main floor level with top of rail and extending from rail to rail; (b) pits with main floor level with top of rail with an open space left between rail and walk designated as "flush skeleton" type; (c) pits with main floor dropped below level of rail and extending from rail to rail, designated as "dropped floor" type; (d) pits with main floor dropped below level of rail with open space between walk and rail, designated as "dropped skeleton" type.

Type (a) is the original and most commonly used type in all carhouses. The other types have developed from necessity due to locating many parts of the air-brake equipment, etc., on the under side of the car in such a position where it can only be reached readily by means of a dropped floor and, with comfort to the workman, by providing leg holes at the side of the walk. The extent to which the several types of pits should be used must largely depend on local conditions, but it is recommended that at least one pit shaft be of the skeleton type, either flush or dropped type. Some roads find that a drop skeleton type of floor throughout works out very satisfactorily, except around body hoists and cranes where a flush floor proves more satisfactory. The extent of the drop to the floor and the open space to allow must also meet with the local conditions.

RULES FOR CARHOUSE WIRING

This subject was jointly considered with the electrical committee of the National Fire Protection Association and a set of ten rules were formulated for adoption as recommended practice. These rules, which cover in detail location and suspension of trolley wires, cutouts, line breakers, third-rails, motive-power equipment in shops, etc., have been considered by the committee on standards and their adoption as submitted was approved.

The report was signed by C. S. Kimball, chairman, and F. F. Low, vice-chairman, and the following as members: H. G. Throop, James Link, R. C. Bird, H. R. Whitney and H. E. Funk.

DISCUSSION ON BUILDINGS AND STRUCTURES

C. R. Harte, Connecticut Company, asked the chairman if the statement of the committee that reinforcements for concrete posts should consist of at least four $\frac{1}{4}$-in. diameter steel rods should not have "or their equivalent" added. This was answered in the affirmative. R. B. Fisher, Buda Company, said that concrete poles and posts will undoubtedly be less used by steam roads in the future than they are at present as steel posts are rapidly coming into favor.

M. Schreiber, Public Service Railway of New Jersey, referred to the rules for carhouse wiring as given in the committee's report and said that the old rules of the National Fire Protection Association are obsolete while the rules now submitted by the committee as a result of its co-operation with the electrical committee of the National Fire Protection Association are a decided advance. If these are adopted they will be printed as the rules of the National Fire Protection Association and their universal distribution will be assured.

H. H. Adams, Chicago Surface Lines, said that it was his understanding that the recommendation of the standards committee for increasing the voltage limit from 700 to 750 had been accepted by the National Fire Protection Association. This was confirmed by the chairman.

The report of the committee on buildings and structures was then approved by the association with the substitution of 750 volts for 700 volts in all places where this occurred in the rules for carhouse wiring.

Way Matters

The report of the committee on way matters was presented by Chairman C. H. Clark. The first question assigned to the committee—that on bolted frogs and steam railroad crossings—received considerable attention and definite specifications were made.

Mr. Clark said that the subjects assigned by the executive committee had been fully considered. A new specification for bolted frogs and steam railroad crossings had been prepared, which had already been approved by the committee on standards as a recommendation. These specifications are intended to cover the manufacture of special track work, wherein frogs, crossings, curves, guard rails and connecting rails are made principally of rolled steel rails properly shaped by machinery or grinding and secured together by means of cast iron, cast, forged or rolled steel fillers, bolts, rivets and plates, conforming in every respect to the association's specifications for materials for use in the manufacture of special track work. (Engr. Man. Ws 4b.)

Grooves, flangeways and gage must conform also to the association's recommendations (Engr. Man. Ws 2a.) with the following allowable tolerances:

	Under	Over
Width of flangeway	None	3/32 in.
Depth of flangeway	1/16 in.	3/16 in.

If M. C. B. wheels are used the flangeways should be $1\frac{3}{4}$-in. in width and depth. Flange bearings wherever possible should be carried to a point where the wheel will not have less than a 2-in. tread bearing, the effective slope of the risers being $\frac{1}{32}$ in. in 1 in. and not steeper than $\frac{1}{16}$ in. in 1 in.

A tread clearance of 4 in. for A. E. R. E. A. wheels and $4\frac{1}{2}$ in. for M. C. B. wheels is provided. Compromise rails instead of compromise joints are recommended for use wherever possible. If the joints are used they must conform to the association's practice (Engr. Man. Ws 3a). The specifications also cover details for frog and crossing arms, frog points, body fillers, wing rails, springs and spring housings, bearing plates, stops and hold downs for spring rails, and different types of composite and insert crossings.

With regard to the development of a spiral for use in the design of switches, mates and frogs, the designs proposed, although simplifying the manufacture of special work, failed to meet the objections offered by some members of the committee. A sub-committee was appointed to meet with the manufacturers to decide on a spiral that could be universally adopted. [This matter is referred to further in the discussion.]

The development of hand and power tools for track construction was covered by previous committees in some detail. It was the opinion of the committee that to make a report of material value, it would be necessary thoroughly to describe each of the many kinds of hand and power tools which are on the market; then to compare the efficiencies of those used for the same purpose, taking into consideration the different conditions that arise on account of the geographical location of the properties and the varying municipal ordinances and traffic conditions restricting the space in which the work has to be performed. To make such a study would require more time than has been allotted. It would also be necessary to collect extensive data on each type of tool in order to warrant drawing conclusions that would withstand the controversy and criticism naturally brought forth by competitors.

The committee also stated that rapid advances in the cost of labor during the last few years made it more than ever necessary to use labor-saving devices and it was important to select the proper tools with which to do a particular piece of work. As a rule, way department engineers are thoroughly alive to the necessity of using all available kinds of labor-saving machinery and tools which can be applied to railway working conditions, in order to keep maintenance costs within reason. The use of these devices, however, cannot be exactly the same on any two properties and their selection should be controlled very largely by local conditions. The committee called the attention of engineers to the following tools to reduce labor costs, as well as to expedite their work: (1) crane cars, dump cars, flat cars, pavement plows and steam and electric shovels. (2) Yard equipment, including derricks, yard cranes, locomotive cranes, buckets, rock crushers and creosoting plants. (3) Rail grinders, bonding machinery, tools for bolting and riveting rail joints and power drills. (4) Concreting and paving machinery and power tie tampers. (5) Welding and cutting tools. (6) All hand tools not included in the above list.

The fourth subject considered related to the use of a curved head for girder rails, with special reference to wheel and track wear. The committee stated that some of the obtainable advantages are: The wear on the head of the rail is considerably reduced per car-mile, it eliminates the tangs of the gage line, it increases tractive effort and it causes less flange wear. The report gives a list of companies using curved-head rails and also states that one company tilts T-rails in a ratio of 1 to 25 to obtain the same result.

The report was signed by H. C. Clark, chairman; A. E. Harvey, vice-chairman, E. M. T. Ryder, William R. Dunham, Jr., H. Fort Flowers, W. F. Graves, C. G. Keen and N. B. Trist.

DISCUSSION ON WAY MATTERS

The discussion was opened by Victor Angerer, William Wharton, Jr., & Company, who suggested a few typographical changes and said that the specifications seemed very satisfactory. R. B. Fisher, the Buda Company, suggested that with spring frogs the spring should be as close to the frog point as possible and that the distance should be less than the 12 in. specified.

R. C. Cram, Brooklyn Rapid Transit Company, said that most of the specifications with the exception of the section on composite and insert crossings were already in the Manual and that to adopt the complete report would mean the addition of much reading matter already included. To this Chairman Clark replied that the committee had worked only on specifications assigned to them. The specifications were referred back to the committee on way matters for revision.

The second question referred to the committee covered the development of a system of standard spirals. This was handled by a sub-committee and reported by E. M. T. Ryder, Third Avenue Railway, with the assistance of several blueprints and drawings. Mr. Ryder said that nearly all existing systems are based on Searles spirals and that with the system proposed by the committee all angular functions remain constant and that only the arc length varies. The question is whether the members and manufacturers want a uniform system; whether if adopted the system will be used and whether the particular system suggested is desirable.

L. C. Datz, American Cities Company, stated that he believed standards along this line should be adopted and expressed a desire to hear from the manufacturers. R. B. Fisher said that the manufacturers would be glad to make a spiral adopted by the association. Mr. Angerer said that standard spirals would be very desirable. Even if the manufacturers' various standards could be eliminated and some recommended spirals of the association used when not otherwise specified by the railway, it would be an excellent thing. The question as to whether the spiral should be figured from the inside rail may still deserve some consideration. The present proposed spirals are very good, said Mr. Angerer, and are better than those formerly proposed. This system does not involve the use of any more materials than those spirals now in use.

There is no question, said Charles R. Harte, but that if all manufacturers made only one system of spirals, everyone would be better off. If the railways will buy the adopted standard, the manufacturers can soon amortize their old equipment. The practical application of the proposed spirals is the question. Is the spiral one with which the field engineer can easily figure out the clearance points? There will be no more trouble with these than with those now in use, said Mr. Clark. The proposed spirals, said C. S. Kimball, are very simple as compared with those now in use.

In reply to a question from William R. Dunham, Jr., New York & Stamford Railway, as to how the proposed spirals would fit in with old work, Mr. Ryder said that the switch cannot be renewed without renewing the mate. It is, however, possible to make partial renewals without difficulty. F. R. Phillips, Pittsburgh Railways Company, president of the association, expressed gratification at the success of the work of the committee and it was moved that he subject be continued and the thanks of the association extended to Mr. Ryder, the manufacturers and other members of the committee.

It was then suggested that the topic of the use of a curved head for girder rails be reassigned to the committee. The general report of the committee was accepted.

It had been expected that Maj.-Gen. William J. Snow would address the convention on the subject of "Field Artillery," but he sent his sincere regrets at being unable to be present through no fault of his own.

Thursday's Session

The Thursday session of the Engineering Association opened with the report of the committee on standards. This was presented by H. H. Adams, chairman, superintendent of shops and equipment, Chicago Surface Lines, and will be found in abstract below.

Engineering Standards

In concluding his report on the standards work Mr. Adams said that some of the reports received for consideration by the standards committee were referred back to the originating committees for changes. These changes have been made and acted upon by the association at its convention meetings and the standards committee will act on these reports at its next regular meeting, which will be held some time after the convention closes.

The work done during the past year by the committee on standards as it refers to the standards and recommendations submitted by the various standing committees is contained in the abstracts of the specific reports. With reference to other matters in its report it says in part, in reference to furthering the use of association standards and recommendation, that a concerted effort should be made by all parties interested to make greater use of the valuable standards and recommendations that have been passed by the association. The committee on standards takes this opportunity to point out to the manufacturers the fact that they can be of great assistance in advocating with customers the use of the standards wherever they can be introduced. They could also greatly assist in this problem if in their catalogs they would show the associations standards and recommendations.

An exhibit showing many of the association standards and recommendations was made at the convention, the manufacturers having offered to furnish exhibits for this purpose. In addition there were on exhibition various pamphlets covering the specifications which have been passed by the association, either as standards or as recommended specifications.

The committee urged that a strong propaganda be carried on by the members of the association in an endeavor to "sell" the results of the association's work along the lines of its standards and recommendations, and expressed the conviction that if the standards and recommendations are put into general use, both the member companies and the manufacturers will benefit by working to a more uniform practice.

The report is signed by H. H. Adams, chairman, and Martin Schreiber, vice-chairman; John Lindall, E. R. Hill, C. G. Keen, A. B. Stitzer, E. J. Blair, John Leisenring, H. H. Norris, N. W. Storer, Norman Litchfield, E. D. Priest, W. C. Starkey, N. B. Trist and R. C. Taylor.

DISCUSSION ON HELICAL GEARING

Mr. Adams said that there was another subject which he wished to bring to the attention of the association, which was in connection with the new development and use of helical gearings. He referred to several exhibits of this gearing, which were made at the convention, and said that each type of gearing differed from the other in certain respects. He believed that this should prove a very fruitful field for investigation and perhaps standardization, and he recommended that the committee on equipment follow the development of helical gearing and report at the next convention. This recommendation was adopted.

E. D. Priest, General Electric Company, said that the subject of helical gearing was a very interesting and important one. There appeared to be no helical angle that is the best for all purposes, but it may be that future investigations will show that it may be possible to utilize some common helical angles that will serve all purposes, or perhaps several may be necessary. He considered that standardization was very important, and as the cost of tools for manufacturing helical gearing is somewhat in excess of that for the usual type of spur gearing, any developments that are sure to take place would cause an investment that would shortly become obsolete. He said that the question of standardization required careful consideration and should be studied from both theoretical and practical standpoints.

Mr. Adams again referred to the interest in the results which were being obtained through helical gearing, and he said he believed if more railway companies could put this type of gearing into test service, it would help to get practical results sooner and aid considerably in the development.

E. S. Sawtelle, Tool Steel Gear & Pinion Company, said that several months ago his company had suggested to the American Gear Manufacturers' Association that a tentative standard for helical gearing might be adopted. He believed that the general considerations were the same for this association and he thought that action along a similar line would be advisable.

The report of the committee on standards was then accepted by the association.

Resolutions and New Officers

The report of the committee on resolutions to the American Electric Railway Engineering Association for 1919 was presented by H. H. Norris, chairman. Appreciation was expressed of the efforts of President F. R. Phillips, Secretary-Treasurer E. B. Burritt, and special mention was made of the services of J. W. Welsh, recently appointed as special engineer of the association.

It was resolved to express the thanks of the association to the manufacturers who spared no pains in demonstrating their latest technical developments, to Col. Henry Hodge and Nelson W. Storer for their instructive addresses and to the various technical committees of the association for the excellent character of the reports which were submitted for consideration.

As the members of the Engineering Association in attendance at this convention reported for registration with commendable promptness and thereby made possible the satisfactory and expeditious procedure of this convention, it was resolved that a record of appreciation should be made and a continuation of the same practice urged. Resolutions of appreciation were also adopted regarding the entertainment features which had been provided and thanks were extended to the citizens of Atlantic City who had contributed to the pleasure of the members of the association. A resolution of regrets was introduced into the record regarding the loss by death of esteemed and valued members whose names are recorded in the association's office, and it was resolved that the association extend to the families and friends of such deceased members the sincere and heartfelt sympathy of all.

The committee on nominations then made its report and the following officers were elected for the ensuing year: President, E. R. Hill, Gibbs & Hill, New York City; first vice-president, W. G. Gove, superintendent of equipment Brooklyn Rapid Transit Company; second vice-president, C. L. Cadle, chief engineer New York State Railways, Rochester; third vice-president, C. S. Kimball, engineer way and structures, Washington Railway & Electric Company; members of executive committee, C. F. Bedwell, assistant engineer Public Service Railway; H. A. Johnson, superintendent shops and equipment Metropolitan West Side Elevated Railway, Chicago; L. C. Datz, engineer American Cities Company, Birmingham; E. H. Scofield, engineering of power and equipment Twin City Rapid Transit Company Minneapolis.

John H. Pardee, president of the American Association, made a few remarks in appreciation of the work which had been produced by the Engineering Association during the past year. He referred particularly to the work done by the various committees in regard to standardization and said that this would give the industry real results and aid in substantial progress. He considered the work of the Engineering Association as forming a very important part and he commended the spirit of co-operation which has been shown.

N. W. Storer, general engineer Westinghouse Electric & Manufacturing Company, then read a very interesting paper entitled "Electric Motor vs. Gasoline Motor in Street Railway Service." An abstract of this paper appears on another page in this issue.

The installation of the officers then took place. In taking the chair, the newly-elected president, E. R. Hill, thanked the members of the association for the honor which had been conferred upon him, and he said that he realized the seriousness of the responsibility and that he would do his best to get under these and take the load. He felt that the success of the association depended principally on the individual effort that is given to association duties by its various members, and he urged that more members take active part on committees and the work of the association.

The meeting then adjourned.

R. E. McDOUGALL
President

Claims Association Proceedings

At Four Well-Attended Sessions the Discussion Centered Largely on Accident Reduction, Both From the Standpoints of Public Safety and Operating Requirements—Mr. McDougall Set in Motion a Plan for Promoting Co-operation Along This Line Between Municipalities and Electric Railways—A Reclassification of Accidents and Their Causes Was Also Agreed Upon—S. B. Hare Was Elected President

S. B. HARE
President-Elect

THE minutes of the sessions of the American Electric Railway Claims Association convention will be given in more detail in a later issue, together with abstracts of the papers presented. There follows, however, a résumé which will indicate to those not in attendance at Atlantic City that a highly successful meeting was held.

R. E. McDougall, claim agent New York State Railways, Rochester, N. Y., president of the association, presided at all four sessions, held on the afternoons of Monday to Thursday, inclusive. The sessions were held in Claims Hall in the Annex, on the Pier, a room seating 125 persons. While not crowded, the room was comfortably filled at all sessions.

Monday's Session

In opening the convention on Monday, President McDougall paid a tribute to the memory of B. B. Davis, who was secretary of the association from its formation until his death in November, 1917. He explained that thereafter until Jan. 1, 1919, the work was continued by Miss Carrie M. Swartz. J. S. Kubu has acted as secretary since the latter date.

Mr. McDougall pointed out that the last three years have been sore ones for claim agents. The prevailing rate of wages, together with the high cost of living, makes the cost of settlements high today as compared with five years ago. If there ever was a time when claims men could demonstrate that they are a necessary and useful part of their company organization it is the present. Claims men do not have to be told that electric railways are encountering the hardest times of their existence, and it is a question as to how many can continue to operate until the people realize their condition and the necessity for their continued operation so that fair play will be allowed them.

In the past it has been the duty of the claim agent to act for the company on questions of injury and damages, to pass on claims, to protect the interest of the company and at the same time to treat the public fairly. Now he has the added duty of assisting in the prevention of accidents.

For years the number of accidents has been on the increase, and, while there has been considerable work done in the line of accident prevention, so far only the surface has been scratched. Heretofore the work has been carried on by individual companies. While this has been of benefit, none of the men doing the work feel satisfied with what the Claims Association has done along this line. Machinery should be set in motion to carry out accident prevention work so as to produce lasting results.

An organization for this purpose need not interfere with the safety work now being carried on by individual companies. On the other hand, by distribution of printed matter, and at times by suggestions and advice, it can assist the local safety man and his company. It is a question whether this association should "go it alone" or join hands with some organization already studying safety work and devising means for putting these plans into practice.

Mr. McDougall concluded his address by suggesting that a special committee be appointed to work out a plan or plans that can be acted upon at the next convention.

Following Mr. McDougall, E. G. Carpenter read the paper prepared by M. Alves Dixon on "Claim Agents' Experience with One-Man Cars" and L. S. Hoffman read a communication from H. G. Winsor on the same subject.

An important change in the present standard classification of accidents was proposed by William Tichenor and received such favorable consideration that it was accepted and referred back, under the rules, to the joint committee of the Accountants' and Claims Associations on standard classification of accidents and accident accounts. This is covered in this motion made by Mr. Tichenor:

"I move to modify the standardized classification of accidents by striking out Class No. 2 and substituting therefor collisions with foreign cars and trains. To strike out items 4, 6 and 8 of the general classes and raise the sub-classes under them to general classes, giving them consecutive numbers. To raise sub-classes under each of the three general classes so stricken out to co-ordinate classes. Strike out the sub-class I from general class No. 6 as it now stands. Strike out No. E, sub-class under general class No. 4, and substitute therefor man-drawn vehicles. Strike out general class No. 12 and substitute therefor doors, windows, ventilators, gates and guard rails. Add to the list of general classes, runaways, car barns, power houses and substations, stations and freight houses, on the line (overhead construction), on the section, fires, wire accidents, numbering all these classes consecutively so that the standardized classification of accidents will read as follows:

"1. Collisions with pedestrians.
"2. Collisions with foreign trains and cars.
"3. Collisions of cars of company.
"4. Collisions with motor vehicles.
"5. Collisions with horse-drawn vehicles.
"6. Collisions with man-drawn vehicles.
"7. Collisions with animals.
"8. Derailments.
"9. Spread rail.
"10. Broken rail.
"11. Broken brake-beam.
"12. Broken axle.
"13. Broken journal.
"14. Gear-pan dropped.
"15. Flashing controller.
"16. Fuse blown out.
"17. Car barns, power houses and substations.
"18. Stations and freight houses.
"19. On the line (overhead construction).
"20. On the section.
"21. Fires.
"22. Wire accidents.
"23. Boarding cars.
"24. Sudden start.
"25. Sudden stop.
"26. Going around curves.
"27. Fall in car.
"28. Hit by missile.
"29. Hit by passing object.
"30. Hit by passing car.
"31. Hit by falling car parts.
"32. Doors, windows, gates and guard rails.
"33. Alighting from cars.
"34. Falling from cars.
"35. Ejectments and disturbances.
"36. Stealing rides.
"37. Miscellaneous."

After Mr. Tichenor had concluded his remarks, President McDougall announced the appointment as a committee on nominations of H. V. Drown, William Tichenor and W. F. Weh, and one on resolutions of C. G. Rice, E. G. Carpenter and L. S. Hoffman.

Tuesday's Session

The feature of the Tuesday session was a paper by L. J. Tynan, Public Service Railway, Newark, N. J., on "The Advisability of Fixed Schedules for Injuries to Persons Other Than Employees," which was read by the author. His conclusion was that fixed schedules for settling damage cases with the public would result in injustice, and would be contrary to the provisions of the federal constitution. The discussion was scheduled to be opened by E. P. Walsh, United Railways of St. Louis, but he was unavoidably detained. He wrote, however, saying that he indorsed the stand taken by Mr. Tynan.

A snappy discussion was launched immediately after the reading of the paper, showing that the speaker had opened up a fertile field. C. G. Rice, Pittsburgh Railways, took up the topic of the possibility of establishing compensation for passengers at a fixed rate as is done with workmen's compensation. He was followed by John J. Reynolds, Boston Elevated Railway, T. C. Neilson, East St. Louis & Suburban Railway, Ralph Stickle, Cleveland Railway, and William Tichenor, Terre Haute, Indianapolis & Eastern Traction Company.

A resolution of tribute to the memory of B. B. Davis, formerly secretary of the association, was passed. It was expected that a film prepared by the Public Service Corporation for educational purposes would be shown at this session, but due to some mechanical difficulties with the projection apparatus the showing was postponed to Wednesday. This film is entitled "Comrades of Success," and it was produced, first for the benefit of the company's employees, and second for the purpose of exhibition generally throughout the territory served by the company. The picture portrays the desirability of considering safety, courtesy and loyalty, both to the company and its patrons, and points out that several of the officials of the corporation, by careful attention to these three fundamental ideas have reached executive positions.

Wednesday's Session

At the third session of the Claims Association convention President McDougall read a paper on "Organization for Public Accident Campaigns." His purpose was not to favor any particular plan for an organized campaign, but merely to tell the story of what has been done along this line in Rochester, N. Y., during the past two years particularly.

As a result of a campaign in that city, which enlisted the co-operation of all interests, the number of street accidents was materially reduced. In 1912 the Chamber of Commerce appointed a safety committee to endeavor to reduce the numbers of accidents, particularly in industrial plants. The work was fruitful. In 1914 the committee joined with the National Safety Council, and the Rochester Safety Council was formed. The result was a much greater enthusiasm, and finally the present effective campaign for accident reduction was inaugurated in 1918 with a comprehensive organization.

At present the Rochester Safety Council has a membership of 120 firms and corporations, employing nearly 50,000 persons. The results of its efforts are seen in the fact that in 1918 the coroner investigated 140 death cases due to accident as against 166 in 1917, a reduction of 16 per cent. The corresponding figures for the first six months of 1918 and 1919 are fifty-three and sixty-five cases, a reduction of 18½ per cent for 1919.

A comparison of the number of street railway accidents for the years 1917 and 1918 is as follows:

	1917	1918
Collisions with vehicles	2249	1639
Collisions with pedestrians	210	155
Collisions with cars	530	294
Derailments	583	344
Employees injured	291	316
Alighting from car	698	521
Boarding car	719	502
Falling from car	13	9
Injured on car	435	394
Controller trouble	265	153
Electric shock	11	6
Miscellaneous accidents	404	379
Incidents and other	1634	2283
Total	8042	6985

For the first seven-months record for 1918 compared with same period for 1919 shows these results:

	1918	1919
Collisions with vehicles	948	811
Collisions with pedestrians	97	62
Collisions with cars	192	68
Derailments	182	174
Employees injured	189	125
Alighting from car	302	306
Boarding car	265	301
Falling from car	7	4
Injured on car	240	276
Controller trouble	98	46
Electric shock	1	4
Miscellaneous accidents	174	268
Incidents and other	455	741
Total	3150	3183

The discussion on Mr. McDougall's paper was opened up by C. B. Proctor and continued by C. G. Rice, A. G. Jack, S. B. Hare and E. G. Carpenter.

The meeting adjourned early to permit the members to witness a showing of the film "Comrades of Success," already referred to. It was presented by A. J. Van Brunt, Public Service Railway.

Thursday's Session

At the concluding session held on Thursday the Claims Association devoted its attention to an important factor in public safety, the relation of car speed and accidents. E. G. Carpenter read a paper on this subject, the title being "Speed and its Relation to Accidents." His general conclusion was that accidents will increase or decrease largely in accordance with the speed, particularly on city surface lines. Officials were urged to consider this factor in connection with the excessive speeding up of schedules.

The discussion on this paper was opened with a written statement read by the author, H. K. Bennett. E. G. Carpenter and George Carson followed Mr. Bennett, the subject proving to be one which provoked great interest.

President Pardee came into the meeting for a while and complimented the association on the work that it had done.

A committee was then appointed to take up the suggestions as to public safety made by President McDougall, with the idea that a plan for public accident prevention should be produced. The committee consists of Mr. McDougall, chairman, H. V. Brown, H. K. Bennett, W. F. Weh and C. G. Rice.

A resolution was also passed thanking the retiring officers for their efficient work during the war period.

Results of the Election

The result of the annual election which followed was this: President, S. B. Hare, Altoona & Logan Valley Electric Railway; first vice-president, J. J. Reynolds, Boston Elevated Railway; second vice-president, C. G. Rice, Pittsburgh Railways; third vice-president, Wallace Muir, Kentucky Traction & Terminal Company; secretary-treasurer, J. S. Kubu, New York State Railways; executive committee: Howard D. Briggs, Public Service Railway; E. L. Lindermuth, Scranton Railway; C. B. Proctor, Memphis Street Railway; H. G. Winsor, Tacoma Railway & Power Company.

M. R. BOYLAN
President

Accountants' Association Meetings

Interest Centered in the Problem of Using Metal or Paper Tickets with a Frequently Fluctuating Rate of Fare, Such as Is Encountered in Connection with Service-at-Cost Franchises Having Automatic Fare Adjustment Features—Accumulation of Wealth in a Property Through Adequate Depreciation Allowances from the Beginning Is Necessary as Fortification Against Periods of Business Depression—I. A. May Was Elected President

I. A. MAY
President-Elect

THE opening session of the Accountants' Association convention was held on Tuesday, Oct. 7, 1919, in Accountants' Hall with Second Vice-President I. A. May in the chair.

Mr. Boylan's Address

The annual address of M. R. Boylan, president American Electric Railway Accountants' Association, was then read in his absence. He had hoped to be able to be present, but important business connected with the Public Service Railway, of which he is general auditor, prevented his attendance. In his presidential address he said that none regretted more than he, his inability to be at the convention and any disappointment was assuaged only by the feeling that his co-workers would readily understand that his apparent delinquency is due to conditions which were beyond his control.

Continuing, he commented on the fact that the present was the first formal convention in three years; and what a period, he said, the last three years have been—unprecedented in the history of all time. With the whole civilized world turned topsy-turvy, with economic laws set at naught and with a spirit of unrest and uncertainty rampant, the street railway industry has been shaken to its foundations. Unlike other industries, however, the electric railways have not been free to work out their own salvation by passing increased costs on to the consumer. They have had to bear burdens imposed upon them without choice and take the chances of going to state regulatory bodies or other competent authorities to authorize higher rates of fare to augment company revenues.

But railway operators are not so much concerned with the past as with the future—the playing of a part in restoring the industry to its pre-war standing or better, if possible. How that is to be accomplished is a problem that will take the best thought of the ablest minds to solve, and President Boylan expressed the hope that the deliberations of the accountants during this convention would result in helpful suggestions that will enable individual members or individual companies at least to lighten their burdens and minimize some of their troubles.

Commenting on the internal affairs of the association, he said that in June, 1918, he appointed Frank J. Davis acting secretary, to fill the unexpired term of S. C. Rogers, resigned. John J. Landers tendered his resignation as chairman of the committee on accounting definitions, and this committee has since been discontinued. W. C. Ingle resigned as chairman of the joint committee on transportation accounting and A. E. Dedrick also resigned as a member of the committee on accounting definitions.

In conclusion Mr. Boylan expressed his appreciation of the honor of his election as president of the association and hoped that the term of his successor would prove to be a happier and more successful period for both the organization and the industry.

The report of the executive committee was presented by Secretary Frank J. Davis. This report covered in detail the work of the association for the past three years and also included the personnel of the committees for the ensuing year. Secretary-Treasurer Davis next read his report for the period Nov. 1, 1918, to Sept. 1, 1919, covering such expenses as were incurred as well as additions to membership.

The membership of the two convention committees were announced by Acting President May as follows: As members of the committee on resolutions, E. M. White, Binghamton Railway, chairman; W. J. Hughes, Public Service Railway, and H. E. Vordermark, Fort Wayne & Northern Indiana Traction Company; as members of the committee on nominations, T. P. Kilfoyle, Cleveland Railway, chairman; O. H. Bernd, Des Moines City Railway; Arthur M. Curtiss, the Connecticut Company; J. Scott Pardoe, Schuylkill Railway, and F. E. Wilkins, Mahoning & Shenango Railway & Light Company.

Standard Classification of Accounts

The report of the committee on a standard classification of accounts was read in the absence of the chairman by Secretary Davis. The committee stated that since the last report of the committee, the Interstate Commerce Commission under date of May 1, 1917, issued Accounting Bulletin No. 14, which included all of the interpretations of the classifications embodied in the Uniform System of Accounts for Electric Railways.

Since this bulletin was published, there have been submitted a number of additional questions, although during the war they were few in number. From the fact that so few questions have lately been asked it is evident that the standard system of accounts is now pretty well understood and has proved to be satisfactory to the several federal and state commissions and to the accounting companies. The committee plans at some later date to make arrangements to revise the text of the standard system of accounts so as to include all the decisions.

The report was signed by H. L. Wilson, chairman, and P. S. Young, W. F. Ham, W. H. Forse, Jr., and R. H. Wallis.

Acting President May next introduced Earl A. Saliers, professor at Yale University, who presented a paper on "Accounting Measures to Meet Business Depressions." An abstract of this paper is published elsewhere in this issue.

On being questioned by P. L. King of St. Louis as to his opinion of treating interest on unused amounts in depreciation funds he replied that this depended entirely on how the fund was set up. If by the straight-line method, any accruing interest would revert to the company, while if the fund was based on the sinking fund plan, all interest would be put in the fund. On being questioned by another delegate if any objections had been made to carrying a surplus, he stated that reserves for renewals must be built-up to their proper amounts before any company has the right to carry a surplus.

The meeting then adjourned to the Hippodrome where Clarence R. Bitting, a certified public accountant of Philadelphia, delivered an address illustrated with diagrams and charts on " The Preparation of Accounting and Statistical Data in Connection with Rate Cases." This address is published in abstract elsewhere in this issue. The meeting then adjourned.

Wednesday's Session

The session of the Accountants' Association on Wednesday was held jointly with the T. & T. Association, and a report of this meeting will be found in this issue under the report of the T. & T. Association.

Thursday's Session

The closing session of the Accountants' Association was held in Accountants' Hall with Second Vice-President I. A. May presiding.

The first order of business was a paper by W. A. Doty, Denver Tramway Company, on " Methods of Fare Collection When Frequent Changes in Rates Are Anticipated Under the Cost-of-Service Plan." An abstract of this will be found on another page.

The next paper was by Carl Nau, former city treasurer of Cleveland and at present a certified public accountant, who addressed the meeting on " Accounting as Applied to Municipally-Owned Public Utilities." He referred particularly to a plan of accounting that he had developed to compare municipally-owned and privately-owned lighting plants.

Among other things he said that at one time he strongly urged municipal ownership and operation but that now he had changed his mind and believed that municipal ownership was wrong, the reason being that municipal ownership does not satisfy the prime idea that underlies any industry, that is, selfishness, which is the supreme virtue of mankind and makes for business, in that it creates an incentive to strive to improve and obtain a reward, which is not obtainable in municipal ownership and operation.

He believed that the best plan of operation was the cost-of-service plan having some fixed return. This would work most satisfactorily in gas or electric light work where the service rendered was controlled by the recipient of the service, which is impossible in street railway operation. While the Tayler plan lacks the feature of the recipient controlling the service he nevertheless believed it to be the best plant for railway operation yet devised in the country. In speaking of the return guaranteed under the Tayler plan he stated that if 6 per cent was fair when the plan was adopted then 8 per cent would not be any better today.

The report of the committee on resolutions was not read before the meeting, but will be included in the proceedings. The report of the committee on nominations was presented by T. P. Kilfoyle. The men nominated by the committee were elected as follows:

President, I. A. May, the Connecticut Company; first vice-president, J. J. Landers, York Railways; second vice-president, F. E. Webster, Massachusetts Northeastern Street Railway; third vice-president, W. G. Nicholson, Omaha & Council Bluffs Street Railway; secretary-treasurer, Frank A. Davis, Public Service Railway; members of executive committee, the officers and W. A. Doty, Denver Tramway; P. L. King, San Antonio Public Service Company; F. E. Wilkin, Mahoning & Shenango Railway & Light Company, and O. H. Bernd, Des Moines City Railway. President May then took the chair and called upon each of the newly-elected officers for remarks, which were made briefly.

Manufacturers Take Important Step

Manufacturers' Association Votes to Disband as Soon as American Association Approves President Pardee's Plan

A meeting of the manufacturer members of the American Electric Railway Association was held in the Park Avenue Room of the Marlborough-Blenheim on the afternoon of Oct. 7 for the purpose of determining their attitude toward the promotion of closer relations between the manufacturer and railway members of the association. President J. H. Pardee addressed the meeting explaining that the executive committee proposed a plan whereby the committee will be enlarged by five members selected from among the manufacturers. It was proposed further that nominations for all officers in the association should be made by a nominating committee of seven, composed of four railway and three manufacturer members. Mr. Pardee stated that the American Association would take action relative to the necessary changes in the constitution and by-laws to make this arrangement possible.

President Pardee paid a glowing tribute to the spirit with which the manufacturers had co-operated with the railway members in the work of the association and implied that the present changes simply carry out the spirit which is manifest throughout the association. He said that the matter would have been taken up before but for the cessation of normal association activities during the war period.

Thomas Finigan who presided at the meeting, in introducing Mr. Pardee, traced the development of the past few years in relation to this matter. In response to a question he said that the arrangement proposed by Mr. Pardee would take the place of an affiliated association which had been proposed, for which a suggested constitution had been distributed among the manufacturer members of the American Association.

The members present approved by vote the plan outlined by Mr. Pardee.

After the adjournment of the meeting of manufacturer members of the American Electric Railway Association, Mr. Finigan, as president of the American Electric Railway Manufacturers' Association, called a meeting of that association, for the purpose of taking action regarding the plan outlined by Mr. Pardee in case the American Association should take the action which Mr. Pardee had proposed and which had had the approval of the American Association executive committee. Mr. Finigan explained that the plan had the approval of the executive committee of the Manufacturers' Association which had appointed a committee to draw up suitable resolutions for discussion. This committee consisted of B. A. Hegeman, Jr., chairman, Charles R. Ellicott and D. B. Dean.

The committee then presented its resolutions, which were as follows:

> Agreeable to the action taken by the executive committee of the American Electric Railway Manufacturers' Association at its meeting held on October 6, 1919, we beg to submit herewith the resolutions which we were instructed to draw relative to the action which the executive committee of our association

would take provided a certain plan was adopted by the American Electric Railway Association:

President Pardee, of the American Electric Railway Association, in conference with President Finigan, of the American Electric Railway Manufacturers' Association, and James H. McGraw, president the McGraw-Hill Company; S. M. Curwen, president the J. G. Brill Company; J. G. Barry, manager railway department, General Electric Company, and W. S. Rugg, Westinghouse Electric & Manufacturing Company, brought out the fact that it was thought inadvisable at this time to form an affiliated association of manufacturers as outlined in a proposed constitution and by-laws for a suggested association of manufacturers, which proposed constitution and by-laws had been printed and mailed to all of the manufacturer member companies of the American Electric Railway Association, President Pardee giving as the reason for such thought that an association such as proposed was deemed to be unnecessary, and,

Whereas, President Pardee had proposed a plan whereby a nominating committee which would consist of four representatives of railway member companies and three representatives of manufacturer member companies, who would be empowered to select a regular ticket to consist of five representatives of manufacturer member companies, so elected, who would become members of the executive committee of the American Electric Railway Association, every company member, both railway and manufacturer, to cast one vote each for the ticket so nominated, and, such five representatives of manufacturer member companies to have full power on the executive committee of the American Association, be it

Resolved, That it is the sense of the executive committee of the American Electric Railway Manufacturers' Association that that committee take favorable action on the proposition of the president of the American Electric Railway Association to give the manufacturer members of that association representation of five members on its executive committee with equal power with railway members as outlined above, and be it further

Resolved, That the executive committee of the American Electric Railway Manufacturers' Association recommended to its members that the association dissolve, provided that the plan of the executive committee of the American Electric Railway Association as hereinbefore described is ratified by the American Electric Railway Association at large, and be it further

Resolved, That the funds in the treasury of the American Electric Railway Manufacturers' Association be turned over to the American Electric Railway Association for the use of the Committee of One Hundred, after all expenses incident to the winding up of the affairs of the American Railway Manufacturers' Association have been liquidated.

A motion was made by James H. McGraw that the above resolution be approved and this was seconded by M. B. Lambert. It was passed unanimously. The secretary of the association, Fred C. J. Dell, read a statement of the finances of the association which showed that slightly more than $1,000 still remains in the treasury which is subject to a small expense for items incident to settling up the affairs of the association.

After the passing of the motion tentatively terminating the Manufacturers' Association an informal discussion was participated in by a number of those present. All agreed that the solution of the difficult problem which had confronted both the Manufacturers' and American Associations for many years which was proposed by Mr. Pardee was a happy one. Those who voiced the sentiment of the other members to this effect were Mr. Hegeman, Mr. Lambert, S. M. Curwen, C. C. Peirce, C. R. Ellicott and James H. McGraw.

JITNEY
"No Thank You; The Trolley Car for Mine, It Serves Me Rain or Shine"

When the meeting broke up it did so with the members in a happy frame of mind due to the fact that they saw wonderful prospects for the future work of the association with the railway and manufacturer members really united to this end.

Some details of future plans were touched also upon.

Purchasing Agents and Storekeepers to Organize

Resolution to Form Standing Committee or Section of the Engineering Association Adopted in Conferences Held at Atlantic City

THE purchasing agents and storekeepers met on Wednesday afternoon at 2 o'clock, presided over by E. E. Stigall, purchasing agent Kansas City Railways. The matter of a permanent organization to affiliate with the parent association was discussed at length. The chairman appointed a committee consisting of H. C. Young, H. J. Vance and William H. Staub to prepare an appropriate resolution. They presented the following:

"It is the sense of those present that a purchasing agents' and storekeepers' association should be formed as a part of the American Electric Railway Association because it is realized that such an organization will be of great benefit to the individual companies on account of the multiplying problems arising in this branch of the service."

This resolution was voted on and carried at a short meeting held on Thursday and it was decided that the purchasing agents' and storekeepers' association should be attached to the Engineering Association of the A. E. R. A.

A committee will attempt to reach all purchasing agents and storekeepers in the electric railway industry to urge attendance at conventions and to make the new purchasing agents' and storekeepers' organization a success. It is well known among purchasing agents that three or four years ago the electric railway man usually looked at two sets of figures, his gross revenue and his net revenue, without being much concerned with the figures in between. But now that the figures representing net revenue have disappeared, he is watching the cost of operation. This has consequently added to the importance of the work of the purchasing and stores departments. The need for a national organization therefore seems more pressing.

A paper on "Modern Problems Before the Purchasing Agent," by William Whiteford, purchasing agent Twin City Rapid Transit Company, was received too late to be read but appears in abstract elsewhere in this issue.

On Wednesday H. H. Adams, Chicago Surface Lines, made a short address at the suggestion of F. R. Phillips, president of the Engineering Association, who advised the meeting that the Engineering Association would extend its full co-operation in connection with the movement the purchasing agents were promulgating.

E. A. Barnitz on Wednesday presented a paper on the "Organization for Purchasing and Stores for Purchasing Agents and Executive Officers," which was published in the *Railway Age* for Sept. 26, 1919. P. F. McCall then delivered an address on the general store system for the proper housing of materials, etc.

The following were in attendance: A. E. Venner, Fonda, Johnstown & Gloversville Railroad; H. H. Adams, Chicago Surface Lines; W. H. Smaw, Georgia Railway & Power Company; P. F. McCall, Metropolitan West Side Elevated

Railway; H. J. Vance, Illinois Traction Company; William H. Staub, United Railways & Electric Company; E. A. Barnitz, York Railways; J. Fleming, Capital Traction Company; H. C. Young, International Railway; B. J. Yungbluth, Pittsburgh Railways; John F. McCabe, Springfield Street Railway; C. W. Mullaney, Albany Southern Railroad; W. S. Stackpole, Public Service Railway, and W. G. Thomas, Southern Public Utilities Company.

Problems of the Purchasing Agents*

Producer and User Must Assist Each Other in Bringing Prices Down by Eliminating All Unnecessary Elements of Cost

BY WILLIAM WHITEFORD

Purchasing Agent Twin City Rapid Transit Company, Minneapolis, Minn.

THE conditions now confronting each individual who purchases supplies must be met with modern methods if the purchaser is to conduct his business profitably for himself or his employer. It is not my intention to enumerate the problems or their solutions, but merely to suggest a few points that may be of interest. Among the items for consideration are these: The rapidly changing market conditions; combinations of sellers or associations to maintain the prices at high levels regardless of actual costs; excessive selling costs, which must include advertising; the tendency of buyers to throw up their hands and pay excessive prices, with the explanation that it is inevitable.

A purchasing agent can be more useful to his company by watching the market than he can by dickering for an extra per cent off the list. Not that discounts are not important—they should be carefully watched—but list prices should also be watched, as they tend to change without notice, sometimes at the expense of the buyer entitled to a big discount.

Careful examination of trade papers showing market conditions and quotations, constant study of prices, and persistent inquiry from individuals in each line in which the purchasing agent may be interested, will indicate when a price warrants a purchase.

The so-called association price, a unit established arbitrarily by a combinaton of manufacturers or sellers covering certain commodities, has become a very important factor in purchasing. Since the war it has entered nearly every line of business, and there is scarcely an item that is not price-governed by some combination or association. If a buyer cannot locate a manufacturer or jobber who is willing to sell his supplies for a legitimate profit, he must surrender to the association and be automatically reduced in rank from purchasing agent to order clerk. If the association is a local one and strong, it can best be handled by passing the business to one house entirely. This will reduce the purchasing expense and, sooner or later, compel the other houses to forget a customer or forget the association.

The cost of goods today is determined by the three items, raw materials, labor and overhead, the last-named including selling and advertising. If the first two cannot be governed, the third surely can.

Overhead is the bugaboo of the manufacturer and the problem to him is how he can get rid of part of it. I have one example in mind where the overhead of an implement manufacturing company is five times the cost of raw material and labor on a finished unit. It was divided as follows: Shop superintendence, etc., cost an amount equal to the cost of labor and material. Selling expense and advertising each cost twice as much as labor and material. It is therefore possible to have reduced prices without injuring the worker or the producer of raw material, in some lines at least.

Consumption of materials cannot keep pace with production unless costs are lowered, and unless producers adopt different methods of disposing of their wares.

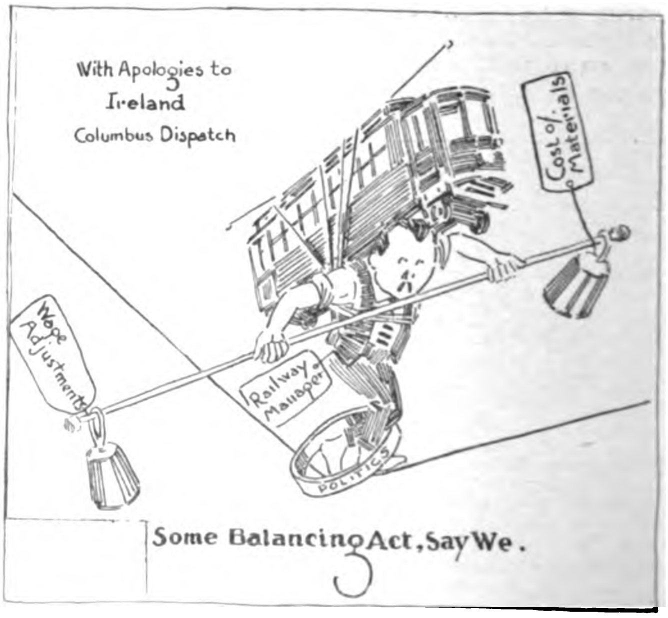
The war has brought out new manufacturers and new producers of raw materials, but the ultimate consumer remains the same, and uses the same quantities of supplies. In the case of most traction companies, less material than usual is now being used, of necessity rather than desire. Sooner or later over-production will lower prices, but this will not give the relief necessary at present. If the manufacturers will discontinue the expensive sales propaganda now being used all over the country, and turn their disbursers into producers, costs will rapidly lower themselves without injury to anyone.

When the purchasing agent reviews his day's work it is quite possible that he may recall that, say, six representatives from business houses have called upon him for conference regarding the same commodity. If the price is governed by an association and the goods have equal merit, quite evidently a great deal of time has been wasted by buyer and seller.

Again a great deal of expensive advertising matter is being sent through the mail. In most cases this is very elaborate and causes a conscientious purchasing agent to shudder when he compares it with the stationery he buys for his own company. Obviously the customer pays for this luxury in the price he pays for his goods.

I believe that the seller would prefer to stop excessive selling costs, and if he really wishes to do what is best for his customers and realizes how they feel, he will discontinue the present practice.

If the purchasing agent will decline to be a party to the excessive costs of today and work with the manufacturer, he will benefit both the producer and the consumer. Certainly the producer realizes that high costs do not assist sales, but rather hinder them. If sales do not come regularly his business begins to decline. High prices surely do not help the consumer. There is then but one thing to do, buyer and seller must co-operate to bring down costs for the benefit of each other.



---

* Abstract of paper presented by title at meeting of Purchasing Agents at Atlantic City, N. J., Oct. 7, 1919.

Publicity Men Meet to Organize

A Committee Attached to the American Association Favored as the Best Form of Organization—Officers Chosen Tentatively and the Plan Placed before the Executive Committee of American Association

ABOUT twenty-five publicity men gathered in an informal meeting in Publicity Men's Hall on Tuesday afternoon for the object of discussing ways and means for creating a permanent organization of the electric railway publicity representatives. Leake Carraway, Virginia Railway & Power Company, acted as temporary chairman and was chosen as permanent chairman to act during the preliminary discussions.

After Mr. Carraway had informed the meeting of the status of the work done to date toward effecting an organization of publicity men, he called upon D. W. Burroughs, United Railways & Electric Company of Baltimore, who presented a paper on the value and necessity of publicity, an abstract of which appears elsewhere.

Secretary Burritt then addressed the meeting, stating that he had been authorized by President Pardee to say that the American Association stood ready to give material support to any concrete plan which the publicity men were agreed upon as being a workable arrangement for amplifying and intensifying the publicity work in the industry. He also expressed the opinion that the interests of the publicity men would be served to much greater advantage if they were organized as a committee of the American Association than they would were they to organize as a separate affiliated association. The direct connection with the executive association would serve to bring the publicity men in very close contact with the railway executives, with whom the publicity work is so intimately connected.

B. J. Mullaney, director, Public Utilities Publicity Bureau, Chicago, then addressed the meeting, calling attention to the organization of a publicity section which had been effected in the national gas association. He considered that the function of such an organization was to gather and disseminate publicity matter, serving as a clearing house for the best publicity ideas developed in the industry. He thought that such a bureau could also be of great service to the smaller companies, which are not able to hire a publicity man, as the work of the bureau would serve to teach the managers who usually handle this work how best to use publicity and what character of matter to bring to the attention of the public.

Mr. Mullaney then outlined the work which had been done by his publicity bureau in Illinois for the telephone, electric light and electric railway interests. He said that the bureau had been putting out matter for the newspapers in an effort to give the public a better understanding of the fundamentals of the utility business. In this publicity matter, it had been endeavored to keep away from politics and make it informative rather than argumentative in character. He said there were 900 papers in Illinois, of which the bureau had subscribed to something less than 300 as a means of checking up on what results were secured. In the period from April to September of this year, these 300 papers had printed more than 7000 in., or more than 400 newspaper columns, of the matter prepared by the bureau. He said the most gratifying part of it was that the papers were using this matter in increasing amounts. He also gave some evidence of the results which had been obtained in bringing the public into a better frame of mind toward the utilities. He said further that even if the papers did not print any of the matter which was being put out, if the bureau succeeded only in getting the editors to read what was sent to them, something would be accomplished and would be reflected in editorials. He declared that the value of utility publicity was not in any single piece of fine copy, or in any one smashing editorial, but that it was derived from a constant supply of information to the public, coming along in such a natural manner that the reader does not know that his mind is being formulated at all.

Harlow C. Clark, editor of *Aera*, then addressed the meeting briefly. He said that as long as the public thinks that the corporations are working to put money into their own pockets, it will be impossible to do away with public antagonism. He thought that one of the problems for the publicity men was to teach the public that the corporation was working in the interest of the community primarily. He pointed out that a national organization of publicity men could serve to supply the individuals with the national side of the electric railway problems, which the publicity men could then formulate into matter suitable for local consumption.

The meeting was then turned into a round-table discussion and each man was called upon to rise, state his name and official position and express what ideas he had on the manner in which the publicity men should organize. While a few expressed a preference for a separate affiliated association, which they felt was warranted by the importance of the work, the consensus of opinion seemed to favor a committee or bureau directly attached to the American Association. This discussion finally culminated in the appointment of a committee of five to formulate a definite plan of organization and activities, based on the discussion heard, and report at the meeting to be held the following day. The men appointed to this committee were Leake Carraway, E. R. Kelsey, Luke Grant, W. P. Strandborg, and A. D. B. Van Zandt.

Near the close of the meeting President Pardee paid a brief visit to the meeting and made a few remarks. He called attention to the great mass of testimony which has been presented before the Federal Electric Railways Commission as being a source of a large amount of publicity material. He said this would be made available to the members since the association planned to have the record printed. The president also referred to one of the recommendations made in his presidential address in which he advocated the organization of forums in each community, where the street railway problems might be thoroughly discussed. He said that this was a thought which the publicity men might well foster. He also said that he would be very glad to receive from the publicity men a plan for securing a large amount of publicity on the coming report of the Federal Commission, believing that the full and free presentation of all sides of the traction situation before this commission would result in expressions by the commission which would have great weight with the public.

Wednesday's Meeting

The publicity men reconvened on Wednesday afternoon for the purpose of taking up the definite recommendations of the committee which had been appointed the day before to draw up a plan of organization. The committee had decided to prepare the skeleton of an organization plan for presentation to the executive committee of the American Association, leaving the details to be worked out by the executive board of the publicity committee.

The plan of organization which the committee had agreed upon was that of a standing committee of the American Association, which would have a chairman and vice-chairman and an executive committee composed of five members elected from the committee-at-large and the two officers.

Chairman Leake Carraway then appointed a nominating committee composed of E. R. Kelsey, W. P. Strandborg and W. T. Waters to bring in nominations for the officers and members of the executive committee. This committee retired for a few moments for consultation and then recommended to the convention that it make Leake Carraway chairman and Luke Grant vice-chairman, and that the chairman select the members of the executive committee subject to the approval of the convention.

The chairman appointed and the convention approved the following members of the executive board in addition to the two officers: A. D. B. Van Zandt, John W. Colton, W. D. Burroughs, E. R. Kelsey and W. P. Strandborg. Secretary Burritt came into the meeting at this point and after some discussion with the delegates, it was decided that the exact plan of organization should be redrafted before presentation to the executive committee of the American Association at its meeting Thursday afternoon. A meeting of the executive board of the publicity committee was set for 10 o'clock on Thursday morning in the ELECTRIC RAILWAY JOURNAL booth for the purpose of drawing up the plan for presentation to the parent association executive committee.

Secretary Burritt asked the publicity men to give their careful thought and energetic attention to the formation of local forums as suggested by President Pardee and to the organization of a company section in their company if one did not already exist.

Before adjourning the publicity men adopted the following resolution for presentation to the American Association at its session the following morning:

"Your publicity men in convention assembled hereby express their appreciation of the support and assistance given them by the officers of the American Electric Railway Association, and hereby tender their services in any capacity in which they may be helpful in furthering the work of the association."

At its meeting on Thursday morning the executive board drew up a letter for presentation to the executive committee of the American Association, containing certain recommendations. The letter follows in part:

"That a regular standing committee on publicity, composed of the two officers and five other members of our committee, which now constitute our executive board, be created and appointed by the American Association, as the body through which we may work with the executive committee of the parent association.

"After much careful consideration, we have decided upon a plan for the exchange of ideas and experiences of publicity men through the office of the association. A detail of this plan calls for regular and full reports to this office of all the doings of the publicity men of the industry. We recommend the assignment of a man in the secretary's office to the handling of our work, the preparation of a news letter to all member companies, regardless of whether or not they are using publicity systematically, and the summarizing of the successful and unsuccessful experiences of all member companies on matters of general interest.

"We have, by resolution, put ourselves at the disposal of the American Association for any general service which may be required. This means that through the regular standing committee we recommend, the parent association may promptly and effectually put into operation throughout the entire industry any plan which may from time to time be developed for reaching the general public.

"It is our plan to meet in the middle of the year, and at a round table discuss the problems which have arisen in our work, and to keep in immediate touch with each other through the committee and through the New York headquarters of the association.

"It should be borne in mind that except when so directed our 'committee of the whole' will not touch policies of the association, but will deal with each other in the exchange of ideas and experiences for our mutual benefit.

"We believe that in the ways suggested we can be of service to the industry as a whole, and that is our prime object.

"Should you desire our presence, the members of our executive committee, which we recommend shall become your regular standing committee, are ready at any and all times to meet with you."

The American Association executive committee received the communication at its meeting on Thursday afternoon and decided to refer it to its successor.

The Value and Necessity of Publicity*

Ways Are Suggested of Gaining Public Confidence—Employees Are an Excellent Medium for Circulating Effective Publicity—Permanent Organization Suggested

BY W. DWIGHT BURROUGHS

Publicity Manager United Railways & Electric Company, Baltimore, Md.

PERHAPS there was a time when the value or necessity of publicity for a street railway was questioned, but that time has passed. We are now breathing an atmosphere which inspires the belief that publicity is valuable and necessary for about everything on the face of the earth except moonshine distilleries.

Probably there are some individuals who still hem and haw a bit about this or that feature of publicity, and there are probably some who still object more or less to specific publicity on the ground of "policy." There are occasions, it is quite true, when a great deal of care must be observed that facts and figures are not misinterpreted or misapplied, but much more often the fear of publication is unjustified, and the very best results may be secured and the most satisfactory returns insured by laying all the cards on the table.

Some genius has prefaced his presentation of railway publicity with the admirable admonition "Learn the Truth," and the best practice that can be observed by our companies is to teach the public truths about the business in the communities which we service.

Never has street railway publicity thrived so wonderfully as since high prices of labor and materials forced hundreds of companies to make application to regulatory bodies for the right to increase fares. To prove their point they have had to bare the innermost secrets of their hearts. We have seen presented to utilities commissions, and to city, state, and federal boards the most intimate minutiæ of every detail of railway organization and practice, with volumes of figures and facts concerning operating and financial phases of the business, much of which material had been guarded before, in many instances, as jealously as the favorite wife in the Sultan's harem.

The newspapers have printed more, and the people, through the newspapers and our own publicity campaigns, have learned more about schedules, and time cards, and salaries and wages, and costs, and bond issues, and stock values, and per mile expense, and per passenger revenue, and peradventure receiverships, than they ever knew or dreamed of before.

---

*Abstract of paper read at meeting of publicity agents, American Electric Railway Association, Atlantic City, N. J., Oct. 7, 1919.

In the recent car fare hearing in my own city absolutely nothing was held back. The company presented such a complete record of its business and its methods to the public through the utilities commission that there is not an individual in the community who can say he has not had an opportunity to learn the whole truth. With this open presentation of every detail of Baltimore's street railway business I do not know of a single instance in which any of this information thus fearlessly laid bare caused one iota of injury to the United Railways.

Therefore, fare hearings have not been without their blessings, for, even if we did not in every case achieve relief to the full extent that our conditions demanded, there was undeniably created in the public mind a clearer understanding of the real seriousness of our situation, and a more wholesome regard for the spirit of fairness and frankness with which we endeavor to conduct the business.

In the meantime, however, there has been constant increase in the number of companies which have come to recognize the value and necessity of publicity methods and have added to their staffs men trained in this work.

This growing appreciation by railway managements of the value of public limelight is due to two things:

First: a realization that the people are entitled to *know.*

Second: that it is not going to hurt, but is going to aid the company, *to help the people to know.*

There is nothing to fear from information that we give the public. Our great danger lies in the misinformation that some persons are all too eager to circulate. The antidote for this is to fill the minds of the public with the truth backed by honest practice and service.

It is so very easy to understand that the best interests of a street railway is to properly serve the people, that there can be but one answer to the question: why does any part of the public assume, that the company is antagonistic to the people, arbitrarily set against them, contrary-minded and obdurate? And that answer is, the people do not know. They have not been taught to think kindly of corporations generally, and they have had many opportunities to be misinformed concerning street railways in particular.

No public service corporation will ever be free from unjust attacks. There is no earthly possibility of the extinction of the fanatics, grouches and unreasoning people who constitute an ever-present thorn in the side of everything good. But the vast majority of the people are reasonable, if one can reach them and direct their reasoning into correctly charted channels, and this directing must be done by service and publicity.

Once we gain public confidence, we have the greatest lever on earth for successful business. Then we must be fair and square in our publicity or we will damage the cause, just as any business man who fools or trifles with the public, loses its confidence, esteem and support.

One of the best forms of publicity for an electric railway is that done by individual employees and they must be taken into account in our publicity plans. The newspapers may devote columns of space to articles saying that the street railway company treats its men with fairness, but the man who reads those columns will not be half so much impressed as he will be by the answer of an employee in such a conversation as this:

"Where are you working?"

"On the cars."

"How do they treat you?"

"Fine!"

Here is the ideal situation. The company has won the loyalty and confidence of the employee, and he has become a preacher to the people. Railways need thousands of such preachers, and frequently they will be far more eloquent than a whole lot of words in the newspapers.

To the extent that a company is able to instill in the heart and daily practice of each individual employee a spirit of care, courtesy, capability and co-operation, to that extent will it progress toward the solution of its problems. If a railway is diligent, constant and conscientious in its devotion to service, it is going a long way in helping publicity to infuse some of this spirit into the public mind.

In accomplishing these results we find that the interests of the publicity department extend to every phase of the employees' lives, from receiving fair wages and having proper working conditions to the enjoyment of baseball and annual excursions. And I might add that it has been our practice for some time to send a baby rattle to the home of every employee in which there is a little newcomer.

The inestimable value of personal contact should not be overlooked, the representatives of publicity departments should maintain cordial and frank relations with their town newspapers, newspaper men, newspaper men's club, advertising men's club and other civic bodies and representative men.

At the 1916 convention it was suggested that the association should establish a sort of clearing house for street railway publicity which would make suggestions and prepare special articles and general matter that would be available for use by all member companies. This excellent idea is, I believe, the inspiration of our gathering here today. There was also the suggestion that company publications, both those for the public and those for employees, should be standardized. This plan has its virtues and drawbacks, and the obstacles may be found to be particularly difficult to overcome in the case of employees' magazines. They would be difficult, too, with good-will pamphlets when local conditions in a community demanded special rather than general attention.

The publicity clearing house should perform two functions. One of these is to provide a flow of general matter—not voluminous, but pointed—that would be adaptable to general use. The other is to afford a supply of data concerning present practice that may be drawn upon by those interested.

Far too often it has been the case that railway companies have not seen the necessity nor appreciated the value of publicity until the sky darkened, clouds lowered, thunder rolled, and sometimes lightning actually hit them. A national organization of publicity men would tend to emphasize, in the minds of all executives, the great importance of a sound publicity program.

Back in our native town, wherever that may be, we can all recall a dear old lady who would call over the fence to her neighbor:

"'Tain't going to rain today; John took his umbrella."

And John himself was almost convinced that, no matter how threatening the weather, if he carried his umbrella he was certainly not going to have any occasion to use it.

We really don't believe this had anything at all to do with the weather, for some times it did rain, and the umbrella was then really appreciated. Publicity umbrellas will not always keep the weather clear, and they will not always keep us from being drenched when the floods descend, but it is mighty soothing and consoling to have them around and in good working order under fair skies as well as when the storms break.

If there is any street railway in the land that has not been caught in a storm of trials and tribulations in the last two or three years we have failed to see its picture in the very thorough magazines of Brother Blake, or Brother Clark, or Brother Van Auken.

Publicity, coupled with conscientious service to the extent that a company's resources will permit, is necessary and valuable at all times, and any plan that may be developed at this convention for more extensive, more efficient, and more result-getting publicity will certainly redound immeasurably to the good of the electric railway business.

Entertainment Features of the Convention

This year, as in previous conventions, all of the entertainments were held in the ballroom at the front end of the Pier. This hall was tastefully decorated with flags, bunting and green plants. Music for the daily morning and afternoon concerts as well as for dancing in the evenings was furnished by Strickland's orchestra, which was located in a latticed booth just opposite the entrance.

On Monday evening there was the annual reception to the officers of the American and affiliated associations and their wives; after which general dancing was enjoyed. Eight hundred persons attended. The arrangements were in charge of E. F. Wickwire.

On Tuesday afternoon a ladies' bridge tournament was held in the ballroom, in charge of H. N. Ransom who has had charge of such entertainments for many years. Prizes of eight-ounce bottles of Houbigant's Parfum were won by the ladies of Table 6, namely Mrs. W. F. Weh, Mrs. P. E. Wilson, Mrs. W. P. Hurst and Mrs. Ralph Stickle, all of Cleveland.

On Tuesday evening 1200 people enjoyed informal dancing. Special dance features were given by the Gills, Mlle. Marguerite and her brother Frank, continental dancers. Credit for the entertainment is due W. G. Kaylor.

Wednesday evening was "carnival night" and, as usual this entertainment drew the largest attendance. William V. Dee, in charge of arrangements, provided paper hats, balloons and serpentines for all guests. Special features were furnished by a group of eight girls from the Vestoff-Serova Russian School of Dancing.

An exhibition waltz also was given by S. S. Crane and Mrs. Crane of Altoona, who were the winners in the prize dance given at the 1916 convention.

A word must be said in closing of the Curtiss seaplane flights taken by the ladies. On Tuesday morning Mrs. J. H. Pardee, Mrs. F. R. Phillips, Mrs. R. E. McDougall and Mrs. J. P. Barnes made the first flight. They circled the Boardwalk and the Convention Pier, following for a time the NC-4 on its way to Philadelphia.

On Thursday afternoon through the courtesy of President Pardee the six ladies in charge of the convention registration also made flights. These were the Misses Leonard, McGath, Arnesen, Clark and Kelley, and Mrs. Siebreck, all of the association's New York office.

Biographical Notes Regarding the New Presidents

JOHN H. PARDEE, re-elected president of the American Association, is president of the J. G. White Management Corporation. He was formerly a lawyer, having been atmitted to the New York bar in 1891, two years after graduation from Hamilton College. His entry into the utility field was made in the capacity of general manager of the Ontario Light & Traction Company, and the Canandaigua (N. Y.) Gas Light Company.

In 1902 Mr. Pardee was appointed general manager of the Rochester & Eastern Rapid Railway, and at this time discontinued the practice of law to give his entire time to utility management. In 1907 he joined the organization of J. G. White Company, Inc., as operating manager of the public utility properties managed by that company. When in 1913 the White Company organization was rearranged to segregate its different interests into three groups he became president of the appropriate company in the group.

W. H. COLLINS, president of the Transportation & Traffic Association, is general manager of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y. He rose to this position from the mechanical department of the same company, through the general superintendency in which he succeeded J. N. Shannahan in 1907.

Mr. Collins entered railway service in the steam field. In 1881 he became timekeeper on the extension of the D., L. & W. Railroad between Binghamton and Buffalo, N. Y. From 1883 to 1888 he was successively in the employ of the Geneva, Ithaca & Sayre; the Elmira, Cortland & Northern; the Southern Central, and the West Shore Railroads, as agent and operator. On Jan. 1, 1888, he entered the motive power department of the West Shore Railroad, later becoming assistant to a division master mechanic. On Jan. 1, 1898, he entered the employ of the F., G. & G., and five years later was appointed master mechanic.

ERNEST ROWLAND HILL, president of the Engineering Association, is a member of the firm of Gibbs & Hill, consulting engineers, New York City.

Mr. Hill received his preparatory educational training at the Pratt Institute in Brooklyn, N. Y., following this with a course in mechanical and electrical engineering at Cornell University. He graduated in this course in 1893, at the age of twenty-one and immediately thereafter spent two years in a shop course at the Westinghouse Works. The six years following were spent with the Westinghouse Electric & Manufacturing Company as special engineer.

In 1901 Mr. Hill went to England as chief engineer of the British Westinghouse Company, with headquarters at London. He returned to the United States in 1906 to become associated with George Gibbs assistant chief engineer of electric traction and station construction for the Pennsylvania Railroad and was actively connected with the electrification of the New York terminal. In 1912 he became a member of the firm of Gibbs & Hill.

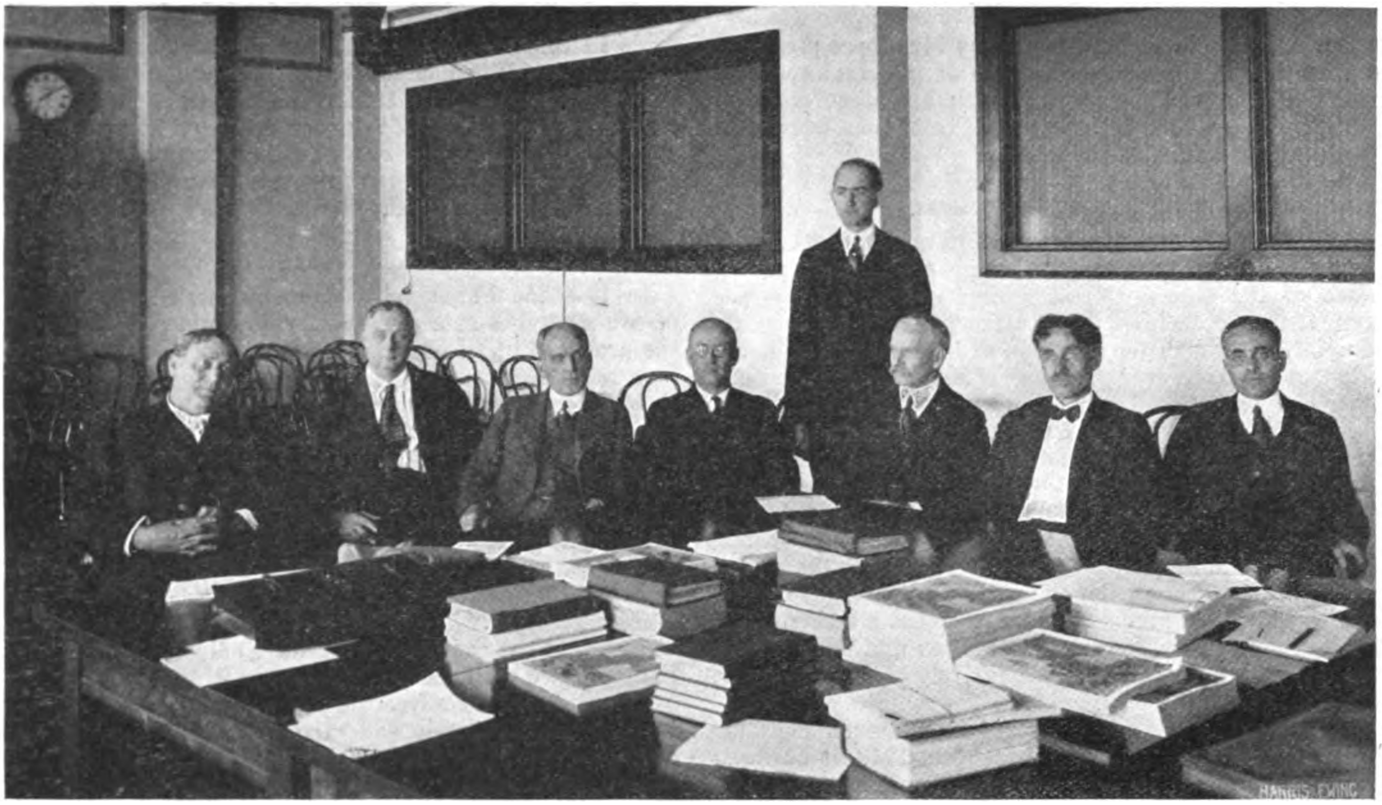
SAMUEL B. HARE, president of the Claims Association, is a native of Altoona, Pa. After preliminary education in the schools of that city he attended Susquehanna University and has the honor of having been the first valedictarian of that young institution, from which he graduated as A. B. in 1896. After reading law in a local office in Altoona he entered the law course of Dickinson College and graduated in 1898. After continuing the reading of law during the summer, he returned to Dickinson for a post-graduate course, receiving the LL. B. degree in 1899.

Mr. Hare was admitted to the Pennsylvania State bar in 1899, and has since been in active practice of his profession. In 1903 he was admitted to practice in the Supreme Court and in 1905 was admitted as a member of this court. He is a member of the State Bar and American Bar Associations. In 1904 he was appointed claim agent for the Altoona & Logan Valley Electric Railway, a subsidiary of the American Railways, and assistant to its chief counsel.

I. A. MAY, president of the Accountants' Association, is comptroller of the Connecticut Company, which controls and operates electric railway lines in central and western Connecticut, reaching over into adjoining states.

Mr. May has had a varied and interesting accounting experience. He entered the electric railway business in 1902 with the building of the Berkshire Street railway in Massachusetts, as clerk and paymaster. In 1904 he joined the staff of the Consolidated Railway in New Haven, and handled the railway, electric light, gas and water accounts as head bookkeeper and chief clerk to the auditor. When the Connecticut Company was formed in February, 1910, the Consolidated was absorbed, and he continued with the new company. He was appointed auditor in July, 1911, became comptroller in January, 1913.

Mr. May passed the certified public accountancy examination in June, 1915. He is author of a standard work on accounts in the electric railway field, namely, "Street Railway Accounting." He is also vice-president of the Connecticut Society of Certified Public Accountants, and is vice-president for Connecticut of the New England Street Railway Club.



Federal Electric Railways Commission

From left to right, W. D. Mahon, C. W. Beall, Philip H. Gadsden, Charles E. Elmquist (chairman), Charlton Ogburn (standing), Edwin F. Sweet, Dr. Royal Meeker, Louis B. Wehle

Federal Commission Holds Final Hearings

The Federal Electric Railways Commission Held Hearings All Last Week at Washington—The Views of Labor Leaders and of Railway Operators and Consulting Engineers Were Presented

WITH Commissioners Elmquist, Sweet, Meeker, Gadsden, Wehle and Mahon and about fifteen others present, the Federal Electric Railways Commission resumed hearings in Washington on the morning of Sept. 29. As Chairman Elmquist called the meeting to order, he gave warning that the usual modest working hours of from 10 a. m. to 10 p. m. would be adhered to during this final week.

The first witness to be heard was C. J. Joyce, who appeared in behalf of T. E. Mitten, president Philadelphia Rapid Transit Company. Mr. Joyce began his testimony by reading a statement prepared by Mr. Mitten, which appears elsewhere in this issue.

Mr. Joyce then gave a great deal of matter which was intended as evidence of the success and the value of the employees' co-operative plan as a means of bringing about increased revenue with decreased operating expense. The theme of the testimony was the confidence which had been evoked between the men and the company and also between the public and the company. This continued confidence and support was considered by Mr. Mitten to be one of the most essential conditions to successful street railway operation. Mr. Joyce said that it was Mr. Mitten's aim to instill into the public mind the conviction that the street railways are their property in the true sense of the word, since they are supported solely by the people, and that, therefore, whatever burden is placed upon the street railway by the municipality or by any group of citizens is a burden placed upon the whole people of the city. In any appeal to a municipality for relief from burdensome fees or for permission to make any change in service as a means of effecting economies, the efforts of the company are likely to fail unless they have that public support which follows the feeling on the part of the public that the interests of the traction company in such matters are identical with the interests of the car riders.

LABOR TURNOVER

As a means of indicating the success of the co-operative plan in gaining the confidence of the trainmen and of retaining them on the payroll as satisfied employees, Mr. Joyce presented the following data covering dismissals and resignations, etc., of trainmen:

	Appointments	Resignations	Discharges	Aver. No. of employees	Per cent turnover
1911	2,453	1,106	1,131	6,980	35.14
1912	1,256	988	566	6,980	18.18
1913	794	547	365	6,552	12.
1914	229	232	203	6,169	3.
1915	83	177	110	5,929	0.1
1916	1,339	509	564	5,962	22.
1917	1,994	1,574	285	6,131	32.
1918	4,817	3,551	1,014	6,114	78.
1919 (8 mo.)	1,139	774	450	6,143	18.

It will be noted that an exceedingly low number of men were hired in 1915. This is accounted for by the fact that the company inaugurated extensive rerouting of cars which materially decreased the number of trainmen required. While no men were discharged, fewer appointments than usual were made so that the over-manning of the cars was taken up in this manner. The large increase in the percentage of turnover in 1916, 1917, and particularly in 1918, was due to the war conditions, the full effect of the draft and the movement of men to more highly-paid employment being felt in 1918. The figures given for the eight months of 1919 indicate that conditions are again returning to normal.

During the course of his testimony Mr. Joyce presented at some length the various features of the employees' co-operative plan and the results which have been obtained from it. These have been presented from time to time in the ELECTRIC RAILWAY JOURNAL.

Operating Economies

Aside from the advantages gained through the good relations which have existed between company, men and public, much of the success of the Philadelphia company was attributed to economies in operation which have been accomplished through the adoption of better equipment, the skip-stop system, energy-saving campaigns, and various other engineering and traffic improvements. In this connection, the work of the time-table department in conducting careful traffic checks as a means of closely adapting the service to the needs of the public and of revising the service as frequently as traffic conditions changed were referred to as contributing much to the reduction in operating costs and in keeping the public satisfied with the service rendered. A paper on the methods of making these traffic studies which was presented before a recent meeting of the Pennsylvania Street Railway Association and published in the ELECTRIC RAILWAY JOURNAL for July 12, 1919, page 75, was also entered in the record.

By increasing the average speed in miles per hour for the system from 8.08 in 1910 to 9.06 in 1918, it has been possible to increase the passenger receipts per car-hour from $2.19 in 1910 to $3.48 in 1918. Likewise, the passenger receipts per car-mile have increased from 27.2 cents in 1910 to 38.4 cents in 1918. This increase in speed was accomplished through improvement in various factors; as for example, the reduction in the number of stops and the cutting down of the time consumed at each stop through the introduction of the near-side and center-exit doors and the equipping of all of the company's cars with door-operating devices.

The application of the skip-stop plan had resulted, Mr. Joyce testified, in reducing the number of stops in the city by more than 1700 out of a total of something less than 6000. While it was difficult, he said, to estimate the total saving resulting from this plan, it was definitely known that a saving of $100,000 in payroll had been realized due to the conservation of the time of the operating crews, and a saving of $300,000 per annum in electrical energy. By comparison of the per car-mile cost of operation for a calendar month before the skip stop was installed, with the same cost for a like period after the installation, the company's engineers estimated a saving of 1.07 cents per car-mile or a total saving of $1,318,000 per annum. They further estimated an ultimate saving of approximately $100,000 per annum additional, as the result of releasing equipment from service.

Accident Prevention

The witness then presented as evidence the information that for the eight years ending in 1910, 6.08 per cent of the gross earnings of the company had been spent for accident claims and that in addition there was an unpaid liability of an amount not estimated involved in a total of 4953 unsettled suits on Dec. 31, 1910. With the introduction of modern equipment, which included every known safety device for the cars, a crusade was undertaken among the school children under the direction of a capable young woman who soon became known throughout the city as "Miss Safety First." Through cheerful co-operation of the school authorities the campaign of educating the children against danger bore fruit by reducing the accident cost during the eight-year period since 1910 to 3.47 per cent of the gross earnings, and with the number of pending suits decreased to 2521 on Dec. 31, 1918. This reduction in accident cost represents a saving of $5,292,054, and it was made in contrast to the condition pictured by the police reports for 1918, which showed an increase of 1980 street accidents over the year 1911, while the traction company showed a decrease of 752 in car accidents for the same period. In 1911 there was one accident to 18,640 passengers carried while in 1918 the ratio was one accident to 41,622 passengers carried.

Fire Insurance

In 1910 the Philadelphia company carried $18,500,000 of fire insurance at a premium of 50 cents per $100. By the provision of adequate and effective inspection this has been reduced to 25 cents per $100 per annum, and besides there have resulted many collateral benefits due to the regular careful inspection of the property. From 1911 to 1918 over $600,000 was paid in premiums to insurance companies and the company received in return less than $60,000 for fire losses. On Dec. 31, 1918, therefore, the company assumed 33 per cent of its own risk. A careful survey of the property demonstrated that the greatest possible loss that could be sustained in any one fire would not exceed $250,000. The insurance fund, discontinued in 1910 to aid the company in meeting obligations, has been re-established with assets of more than $1,000,000.

Car and station advertising as a source of legitimate revenue has been developed by the company from producing an annual net income of $160,732 in 1910 to an annual net income of $205,677 in 1918, and Mr. Joyce said that a further increase in 1919 to $300,000 is expected.

Another source of revenue which had been developed by the Mitten-Stotesbury management was the Willow Grove amusement park. This, it was stated, had been originally designed by the former management, was badly located at the extreme end of a long ride and had always resulted in a loss of not less than $50,000 per year on operating costs, without any return on the $1,000,000 investment in it. By revising the rental rate for concessions and bringing to the park many very high-grade musical attractions, the former deficits were turned last year into a profit of $132,000. This year, after $75,000 for music is paid, the company expects to clear $150,000. This, it was claimed, had been done largely by making the most of what the park afforded.

Mr. Joyce presented a review of the operating conditions for the eight years from 1911 to 1919, making frequent reference to the tables published in a pamphlet entitled "The Three-Cent Exchange Case," which was recently heard by the Public Service Commission of Pennsylvania. A summary of one of the tables from this book shows that for the period from Jan. 1, 1911, to June 30, 1919, there had been a total capital outlay of $26,231,411; that the Philadelphia Rapid Transit Company capital stock paid in was $14,540; that the securities issued by the P. R. T. and underlying companies was $17,066,000; that loans from the United States government to provide additional facilities for war industries, was $3,913,152; that the net income appropriated for capital expenditures was $3,551,246; and that the expenditures from the renewal fund for new cars amounted to $1,686,472.

Operating Reports for Eight Months of 1919

To give the commission an idea of the operating conditions in Philadelphia as nearly up to the minute as possible, the witness introduced the following data, the 1919 figures being estimated on the basis of the actual figures for the first eight months:

	For 1919	For 1918
Operating revenue	$22,964,499	[illegible]
Operating expenses and taxes	15,833,330	[illegible]
Operating income	7,131,169	[illegible]
Non-operating income	354,089	[illegible]
Gross income	7,485,258	[illegible]
Fixed charges	6,483,664	[illegible]
Net income	1,001,594	[illegible]

At the afternoon session Monday, Mr. Joyce concluded his direct testimony by outlining the development of the present transportation system in Philadelphia from its beginning in 1831 through the consolidation of some fifty odd companies into the present Philadelphia Rapid Transit Company. In the cross-examination which followed, Chairman Elmquist asked about the workings of the co-operative committees. The witness replied that nearly all questions of difference had been settled in the division or department committees, these being the first two bodies to consider any controversy. Very few questions had been brought before the general committee, and as yet resort to arbitration had not been necessary in the settlement of any dispute. It was explained in connection with this statement that the men still had the right to strike if they chose.

Questioned whether the Philadelphia plan would be applicable to and would bring similarly good results in other cities, the witness was reticent to state an opinion, although he did say that it would not be possible to make as good a showing in Pittsburgh on account of the topographical difficulties and the long hauls necessitated by the peculiar distribution of the population.

In answer to questions concerning the degree of water in the stocks of the subsidiary companies, Mr. Joyce said that these properties had not been valued at the time they were taken over by the P. R. T. Co., but that the public seemed to feel that there was an inflation in the capital of these twenty-two companies for which rentals varying from 8 to 28 per cent are paid. These leases are either for 99 or 999 years, it was pointed out, and there was no prospect of breaking away from them.

Commissioner Sweet sought information as to the jitney competition and the effect of the privately-owned automobile. The witness stated that there was no jitney competition and that there were no statistics available to show the exact effect of the private automobile, but that the riding habit of the population had increased from 1910 to 1919 more rapidly than the increase in population. He believed that this was due to public popularity of the system and the frequency of the service supplied.

As to whether lower fares during off-peak hours would tend to increase the riding during those hours and reduce the rush-hour traffic the witness was of the opinion that the number of people that could be induced to ride was too limited to be an important consideration and also that the people who rode at these hours were of a class to whom a saving of a cent was no particular inducement. Questioned as to the possibility of income from the hauling of freight, Mr. Joyce said that the cost of handling was so great, particularly on subway and rapid transit lines, as compared to the cost of transportation over the short distances involved, that it limited the volume of business that could be attracted, although the company was now deriving a certain amount of revenue from this source.

In his testimony, the witness emphasized the idea that the inference should not be drawn that the measures and practices adopted and followed in Philadelphia would have worked equally favorable results elsewhere. It was also pointed out that the results of the work done in Philadelphia had been available to members of the American Electric Railway Association and that the industry had made use of the ideas as far as they were applicable to the local conditions of each company.

In reply to questions Mr. Joyce said that the company was not contemplating any increase in fares and that it had studied the zone system, but there was no movement to install such a system in Philadelphia. At present the company is centering its attention on the problems of producing greater economies and improving its service to increase the riding habit, and is using dash and inside car advertising as one means of inducing further patronage.

In reply to a question as to the value of the service-at-cost franchise, Mr. Joyce said the primary object of a company should be to gain the good-will of the community, and with this done the kind of franchise would not make much difference.

Secretary Ogburn then read a statement sent to the commission by Thomas L. Sidlo, formerly a law partner of Newton D. Baker in the working out of the transportation problem in Cleveland. An abstract of this statement appears elsewhere in this issue.

On Monday evening Walter Jackson, Brooklyn, N. Y., formerly business manager ELECTRIC RAILWAY JOURNAL and now consulting expert on railway matters, emphasized the possibilities of further operating economies.

Questioned by Commissioner Wehle as to the effect of the zone system on the possible congestion as affecting housing, health and welfare of communities, Mr. Jackson felt that zone fares might temporarily disturb property values and housing conditions. In cities developed along zone-fare principles, as in Glasgow, rents are less for houses on the outskirts than elsewhere. The witness also brought out that character of housing was largely a local condition. In England everyone wanted a single-family house, while in Glasgow the people lived in tenements. In the United States, New York City's apartment habit contrasted with the one-family houses of Philadelphia and Baltimore. In New York, apartment houses actually followed the coming of rapid transit routes. Mr. Wehle asked if this was not because real estate values increased with the building of rapid transit lines so that the land values were so high that the man with only a small capital could not afford to build a house for himself along these lines, but that it was necessary for syndicates to build large apartment houses and rent them to men of small means. Mr. Jackson agreed that this was an important factor.

When questioned regarding zone fares, the witness said that in fairly compact cities routes 2½ or more miles in length should be divided into zones. By so doing it would be possible to obtain two classes of riders, namely, short riders of one zone or a fraction of a zone and riders up to the whole length of the route. However, it was wrong to encourage people to ride long distances on slow street railway lines when in many instances the payment of a few cents higher fare made available a train which would enable the passenger to reach his destination in much less time. Mr. Jackson felt that the surface lines of New York City would be ideal for a zone system of fares if they charged a lower minimum fare than did the subways. The latter would then be used more largely for the long-haul traffic. Each mode of transportation ought to be sold according to its character.

Questioned as to the operation of buses, he said that in England a private owner could enter the bus business without special parliamentary sanction such as is needed by a municipal or other tramway. In London the fares on buses competing with tramways are the same, but the non-competitive bus fares are about 30 per cent higher. As a rule bus fares are cumulative, while the tramways charge only a maximum of 8 cents for a ride of eight stages or more.

In the United States the municipal railways of San Francisco have used buses to develop the Golden Gate Park territory. Buses have also been used to some extent by the Stone & Webster companies in the State of Washington as feeders to the interurban lines.

Asked as to whether buses could fully take the place of street railways, Mr. Jackson felt that they could not because the trolley car still offered the cheapest and most practical way to handle "large crowds." As to profitable operation of buses, the witness stated that prior to the last two years, the London General Omnibus Company had paid modest dividends little above bank interest, while the first quarter of 1919 actually showed a deficit. As a rule, the stages are longer where traffic is thin. This is based on the theory that it is better to run a bus three-quarters full with low fares than only one-quarter full with a higher fare.

Asked as to the operation of the Chicago Bus Company, the witness stated that the figures given out showing large profits were greatly exaggerated, for last year little more than $18,000 was set aside for depreciation on the fifty buses owned. After allowing the proper amount of depreciation there would be little or no profit, even with 10-cent fares. With regard to the Fifth Avenue Coach Company in New York, where fares are also 10 cents, it was stated that in the early years of operation it had made no money, but in the past few years it was able to show some profit. However, if all riders took the long hauls for pleasure, the company would be bankrupt, and it was only the short riders along the Fifth Avenue shopping district that made it possible for the company to show a profit.

Questioned by Commissioner Wehle regarding the operation of buses in the lower East Side district of New York, the witness said that a lot of people would ride on the buses who did not patronize the slow storage-battery cars. But he did not think the service would pay with the 5-cent fare now being charged. The fare should be about 5 cents per mile on cross-town buses, he said.

Tuesday's Session

Ralph S. Bauer, who is a large dealer in office supplies and furniture in Lynn, Mass., was the first witness to appear before the commission at its sitting of Tuesday morning. Mr. Bauer said that he considered the street railway problem as purely a social one rather than one of transportation. The solution of the problem could be brought about from no other viewpoint. He thought it was entirely wrong to try to finance a street railway by collecting fares from the car riders and that for this reason the industry from its very beginning has been on a fundamentally wrong basis. He considered that every time a car rider came to the business section of a city, he did so as a messenger of prosperity and for the purpose of doing something by which the community as a whole was benefited, and for this reason he should not be taxed at all for the ride.

He declared that people who had derived the greatest benefits from the street railway—such as the merchant, real estate owner, office building and apartment owner and manufacturer—had never contributed anything to its support. The large department store would be nothing more than a country store without transportation, and the manufacturer could not exist on the same scale or make the same profits that he does today were it not for the service performed by the street railways in transporting the men to and from the factory.

The witness continued this argument at some length and drew the conclusion that because of the enormous investments necessary in street railway properties, any rate of fare which would return a profit to its owners would be so high as to discourage riding. The proper solution, then, is one which will permit of absolutely unrestricted intra-community travel. Later Mr. Bauer declared that next to the public school system the street cars were the greatest factor in the development of any community.

Referring to the service-at-cost type of franchise, Mr. Bauer said that this did not offer a solution since there was no standard by which the people might judge whether or not they were securing a proper service at the cost they were paying. The trustee plan of Massachusetts, he considered "a colossal blunder." The trustees appointed were all lawyers, and none of them was experienced in railway operation. He said that the people in Boston were "riding in the street cars about as they do in ambulances—only when they have to," with the present 10-cent fare, and for this reason the transportation system there was performing its proper public function only two hours out of twenty-four during the day.

The witness considered that if it had been good business for the public to build bridges and roads, it would be even better business for it to take over the street railways as an economic, progressive and rational step. He compared free transportation on the streets to free elevator service in office buildings, stating that those who availed themselves of the latter came to the building to leave something of value, for which the tenants gladly paid.

Mr. Bauer was opposed to the zone system because he thought it tended materially to increase the congestion about important centers of employment. As proof of this, he told of having had occasion to make a check of the number of vacant tenements in the neighborhood of the industrial center of a certain town and to compare this with the number of vacancies in the outlying districts. With a 5-cent flat fare in force, he had found that there were nineteen vacancies in the outlying districts as against 217 in the industrial district. With the adoption of a zone system which had created a 15-cent fare to this outlying district, a second check had shown that there were 109 vacancies in the outlying section and only twenty-seven in the factory district, indicating that the higher fare had forced people back within walking distance of their work.

The witness predicted the passing of the trolley from existence because it was no longer an economic means of transportation in view of the enormous investment involved. While the present buses are very crude and are probably not economic at a fare equal with the street car fare, they would provide an economical means of transportation at a fare of 5 cents. The only way the street railways could be made profitable as a private enterprise, he believed, would be to have the community served pay part of the cost, but he would consider this as only a temporary expedient, pending absolute ownership by the public. Replying to questions about possible abuses of the use of free transportation, he expressed the opinion that such abuses could be regulated in the same manner as we now endeavor to regulate the abuses of our streets and sidewalks.

MASSACHUSETTS TRUSTEE POLICIES STATED

Homer Loring, chairman of the Board of Trustees, Eastern Massachusetts Street Railway, the next witness, outlined the provisions of the Massachusetts act under which the Board of Trustees was operating the old Bay State Street Railway system. He told how the trustees had abandoned operation on considerable mileage of non-paying line and said that there were 150 to 200 miles of additional line on which abandonment of service was being considered, but it was hoped the cities and communities concerned would come forward and help support this mileage. The trustees, he said, were experimenting with various rates of fare and fare systems, and in this the trustees were considering each city as a unit. He referred to the severe jitney competition in New Bedford where the best street car service of any place in the State was being given, and this at a fare of 5 cents, to show that the presence of jitneys was not always due to poor service. He also said most people do not realize the extent to which the automobile manufacturers are exploiting the transportation field. He knew of one department store which had loaned $29,000 to a jitney company to operate bus lines from outlying districts to terminate at that store.

The position of the Board of Trustees on the matter of jitney competition has been that jitneys and street railways cannot both exist in the same city and that the people must choose between them. In this connection he cited a postal-card vote taken on this question in Quincy after the Mayor had flatly refused to do anything toward eliminating the jitneys. To the Mayor's surprise and to everyone's, the vote cast was 700 to 17 in favor of retaining the street railways. He said that the jitney drivers do not make any money and that the ownership of the buses is constantly changing. But the work was pleasant and a man could be his own boss and this induced many to be satisfied with the smaller earnings.

One of the experiments which the trustees have been trying is the use of monthly tickets providing in Fall River fifty rides for $3 within any calendar month, and other tickets giving sixteen rides for $1 in the inner zone of Lowell. These experiments are being conducted in cities where there is no jitney competition.

Asked about the zone system, Mr. Loring said that the trustees were going to try this as soon as they could find a satisfactory way to collect fares, and for that reason they were watching the New Jersey system with a great deal of interest. He believed that it was absolutely necessary, in working out the solution to the situation for the companies to do a great deal of experimenting. For this reason the state commissions must be liberal in permitting the trial of various systems and in looking upon them as experiments. He did not see how the industry could work out its salvation by any other means.

CREDIT THE MOST IMPORTANT CONSIDERATION

Mr. Loring considered the matter of the credit of the street railways as the crux of the present situation. He said that the railways have lost their credit, that credit once lost is very difficult to re-establish and that he is doubtful if the street railways will ever be able to regain their credit under private management. This fact becomes the greatest argument for municipal ownership. He thought that the public was in a state of mind such that it would grant the companies few if any favors and that this was known by investors who were also confronted with much more attractive opportunities for investment in other fields. He thought that the public trustee plan offered a possible avenue through which the State might be justified in assisting in the financial necessity. The only alternative was State or public purchase. He thought that the present trustee plan had practically all of the advantages of public ownership, except possibly for the rate of interest necessary in financing. He thought the plan insured a practically non-partisan management.

Referring to the sentiment in Massachusetts, particularly in Boston, for the return to lower fares, he said that it was so strong that if the Governor had not interfered, the legislature would have undoubtedly passed a 5-cent law at its last session, applicable to the Boston system and probably to the Bay State system.

In connection with operation under the trustee plan, he called attention to the fact that both in Boston and on the Bay State system a large part of the deficit was due to the setting aside of a liberal depreciation reserve. On the latter system, the sum of $1,041,000 is being charged off to the depreciation account, whereas the largest sum heretofore set aside in any one year was $150,000. This fact has a distinct bearing upon the final showing.

Questioned about the good-will element in the prosperity of a company, Mr. Loring said that this was a very vital factor and that the prejudices which the public hold have been a growth of many years. It would take a similarly long time to break them down, so that any relief from this source would be too slow to take care of the present emergency. He said that the introduction of the 10-cent fare in Massachusetts had resulted in a virtual boycott in some cities and that factory employees had jeered their fellow workers who rode the cars. He did feel, however, that when the people of any community were brought face to face with the possibility of losing their street car service, it had a tendency to bring about a very sudden change of public attitude. He felt that the public does not realize how seriously in trouble the electric railways are and that the federal commission could, therefore, do a great service by bringing out in its report a plain statement of the facts.

John A. Beeler, consulting engineer, New York, appeared at the Tuesday afternoon sitting and presented a statement which appears in abstract elsewhere in this issue.

Upon being questioned by Chairman Elmquist as to what was the trouble with the electric railway industry, Mr. Beeler stated that the earnings in recent years had not been sufficient to allow the companies to set aside proper funds for plant replacement. The electric railways have dodged this issue, hoping that something would turn up to solve the problem, and as a result in many cases they are still operating cars that have long outlived their usefulness. Current maintenance will in general take care of the condition of the track, and knowing its life, it is possible to determine just how much ought to be reconstructed each year. Other equipment must be taken care of by a depreciation fund.

Street cars, he thought, should be of a standard type and built as light as possible. After a short period of intensive operation of five to ten years they could be replaced with a later model having improvements. This plan follows the same procedure used by owners of automobiles who after several years of operation sell their machines and purchase others which can be operated more efficiently. If of standard design, street cars can be purchased on an installment basis and payments made entirely out of earnings.

Mr. Beeler said that the minimum fares should be kept at 5 cents and the length of haul shortened to offset any need to increase the minimum unit fare. He also believed that the companies had not taken the proper steps fully to develop short-haul traffic. This, however, cannot be done simply by having a low minimum fare. It is necessary to operate attractive cars, on frequent headways and in charge of properly trained men. In the past he had found that too much attention had usually been paid to seeing that the cars left their terminals on time instead of seeing that they were properly spaced along the main arteries to give a uniform headway. Questioned further as to the various economies of operation suggested in his paper he replied that if the companies would follow these recommendations, their operating expenses would be decreased and the riding habit increased.

Asked as to whether extensions should be financed from increased property value due to the building of extensions, Mr. Beeler stated that in the past some extensions had been subsidized, but as a rule the property owners had put such a high value on their property that the development was necessarily slow and so far as the electric railways were concerned, it would have been better if the extensions had not been built. On being questioned if the service-at-cost plans would be a solution, he answered that the whole question was largely one of financing and management and that as yet the plans had not been tried long enough to warrant an opinion.

With regard to questions concerning municipal and state ownership, especially as to whether such a plan would give better service with more stability, he said that this was a matter of personal opinion but that some advantage might be possible in obtaining credit at a lower rate, but he believed that good management was the most important factor. Under poor management all that was gained by lower money costs would be wasted. Asked by Commissioner Sweet about the social features of the zone plan, Mr. Beeler stated that there were many, but that the principle of paying for the length of ride taken was the ultimate solution and any fare system which took this into account was a step in the right direction.

Asked by Counselor Warren if one-man cars could be operated in cities of 150,000 population, Mr. Beeler felt that such a type of car could be used exclusively, and even in the larger cities could be operated on certain routes without any difficulty. He spoke of an instance where he had observed as many as eighty passengers on a one-man car during rush hours and compared this to what was considered a big load on a bus, namely, twenty passengers. The one-man car could handle as many passengers as three ordinary buses, he said. In Seattle, it was stated, the traffic was well handled on the one-man cars and in some instances the speed had been increased 20 per cent, the average being from 10 to 15 per cent.

The next witness was Morris L. Cooke, consulting engineer, Philadelphia, and formerly director of public works for that city. He read a prepared statement which is given in abstract elsewhere in this issue.

When questioned by Commissioner Elmquist as to what elements are included in the renewable contract especially as to franchise requirements, fares, rights of purchase, operation and as to return on capital, starting in with good management, he stated that nine out of ten men in this industry are firmly convinced that they now have good management and unless that point of view is changed the problem is hopeless. The idea of management is something that is not static but one that is all the time looking forward to future economies. As to franchises, that matter should be left to the franchise experts. If a company expressed a desire to accept the best advice that could be obtained in the matter of management and then was willing to have a valuation for a showdown, it seems to me a lot would have been accomplished. He called Mr. Mitten's plan in Philadelphia a demonstration of efficient management, which postponed the time when it was necessary to make a valuation, which was he considered good policy.

With regard to municipal ownership, he was opposed to widening at the present time the activities of a municipality, and would be glad to see the present form of operation go forward indefinitely. State regulatory commissions perform two functions, namely, to be the supervisors of electric railways for most of the cities and states and for matters in which more than one city is concerned. He believed that the larger cities should have a street railway commissioner for supervision of what could be done the best locally. The second function would be to standardize accounting practise.

He believed that the service-at-cost plan was a step in the wrong direction and that the promotors of this plan did not realize the temper of the public or the trouble such a plan would get them into. The primary difficulty is that the plan is based on the theory that matters of this kind can be settled by fixing the rate of return but the plan did not take care of the efficiency of management, cultivation of public favor and the solution of the labor problem.

The electric railway, he considered was one of the essential industries and he believed it possible for a regulatory commission to fix a fare for a short period, say three to five years, which would give the company a chance to obtain extra revenue through efficient management and further improvements.

Answering Commissioner Meeker as to why definite standards of work were not utilized in the street railway business, the witness stated that the plan generally followed for training motormen and conductors to a fixed standard was wrong, as it simply made men more or less intelligent automatons. He believed that, having so many employees all doing the same kind of work, the company could benefit by information which the men could furnish from their daily observations and thus, instead of working at all times to a fixed standard, work to a standard that would be constantly changed by improvements due to the elimination of past mistakes. He suggested also the organization of employees in order to obtain greater initiative and believed that the men should call on the manager for such reports, as for instance, the labor turn-over, etc., that they thought would help them in their work. The leaders of the men should demand these figures, for they are entitled to know the reasons for intermittency of employment due to sickness, etc., so that they might be able to offer constructive suggestions to the management.

At the evening sitting of Tuesday, Charles Lomax Delbridge, who claimed to be an auditor by profession and the author of more than 100 publications on accounting matters, appeared as the representative of the Citizens' Referendum League of St. Louis. His object in requesting a hearing was to present to the commission what he declared was absolutely the only solution to the street railway problem, namely, free rides. As a sample of the arguments which he presented to substantiate his contention, the following is quoted:

"The average sum received by steam railroads for all classes of freight is 9 mills per ton per mile. It takes sixteen average people to weigh a ton. Freight has to be loaded and unloaded. People load and unload themselves without expense to the company on street car lines. Yet at a 5-cent fare they pay 80 cents per ton per mile. If they were only charged the freight rate, they would pay only 1 cent for every sixteen passengers. At 5 cents per passenger, people who load and unload themselves pay more than eighty times as much as freight that has to be loaded and unloaded at the expense of the company."

After occupying the time of the commission for an hour and a half the testimony became of such a character that Chairman Elmquist was forced to summarily dismiss the witness.

Wednesday's Session—Labor's Case

In accord with the prearranged schedule to devote the sessions on Wednesday and Thursday to the labor side of the question, Chairman Elmquist called upon W. Jett Lauck at the beginning of the Wednesday morning sitting to proceed with the presentation of testimony. Mr. Lauck acted as counsel for the Amalgamated Association of Street & Electric Railway Employees of America in this matter. He was formerly connected with the War Labor Board as its secretary, and is actively associated with the Bureau of Applied Economics, Inc., Washington, which is making extended studies of costs of living, standards of living, etc.

As an introduction to the testimony to be presented on the labor side, Mr. Lauck outlined the points that he would endeavor to substantiate in the following formal statement.

MR. LAUCK'S STATEMENT

The data and exhibits which we shall submit will cover five main points:

"1. We shall show by an analysis of the operating statistics and performance of the street railways that the present deplorable condition in which they find themselves has not been due to an advance in operating costs arising from increased wage outlays to labor. On the contrary, we shall prove that the productive efficiency of motormen and conductors has steadily increased, and that labor costs of operation have not advanced proportionately with other costs of operation, the increase in the cost of trainmen for each revenue passenger carried ranging only from one-fourth to one-third of a cent during the past eighteen years. Payments to employees in the industry, it will be shown, have had no real effect upon the present finances of the companies.

"2. We shall show that the present financial condition of the street railway industry has arisen primarily from the past financial mismanagement of these public utilities. We shall submit a brief review of the past financial history of representative street railway corporations, which will disclose the fact that the extraordinary gains in revenue which have arisen from the growth in the population of cities, the granting of special franchises, the development of trade and industry in and around urban centers, the adoption of mechanical devices and improved operating methods, have to a large extent been absorbed by fictitious capitalization, or dissipated by improper or misguided financial management. As a result of these practices, we shall show further that the past productive efficiency of employees has been absorbed by fictitious capitalization, and that, if existing methods and security issues are allowed to be continued into the future, the fruits of the labor of employees as yet unborn will be absorbed by fictitious securities already outstanding. Our conclusion on this point will be that unless the past basis of financial management and control of the industry be changed, the future is without hope to the employees of the street railway companies, or to the general public. We do not charge the present managements with these malpractices, but they are the victims of the acts of their predecessors.

"3. We shall show that financial mismanagement of the street railway companies has invariably been followed by a lack of the proper development of operating efficiency and service to the public, and also by the failure to adopt operating policies which would bring out the maximum of productive effort of the employees.

"4. As to the actual rates of pay received by labor in the industry, we shall show that the earnings of motormen and conductors before the war were actually below a subsistence level and were entirely inadequate to maintain a proper standard of living; that wage increases received during the war by awards of the National War Labor Board and by other agencies and methods were very moderate and that, in general, the cost of living has increased much more since 1914 than the rates of pay of trainmen; that, as a consequence, the earnings of trainmen are even more inadequate now than they were before the war and not sufficient to maintain a standard of living based on health and reasonable comfort; and, finally, that the wage increases received in other industries during the past five years have been greater than those secured by motormen and conductors, and that, out of approximately 100 leading industrial occupations, conductors and motormen have the smallest rates of pay of any other group of workers.

"5. Finally, we shall submit evidence to show that our own government, by official proclamation of the President during the war, and the leading industrial and commercial nations of the world, by their sanction of the labor clauses in the peace treaty since the armistice, have accepted as fundamental rights of labor the principles of an eight-hour day, a living wage, and union recognition; and we shall contend that these principles are no longer debatable and that this commission should accept these principles as an essential condition to any recommendations which it may make for the rehabilitation of the street railway industry.

"When this testimony has been completed we shall ask Mr. Mahon to set forth his own reconstruction ideas."

CONDUCTOR TESTIFIES ON ATTITUDE TOWARD CONTRACTS

Counsellor Lauck then called upon Cary Ferguson to take the stand. Mr. Ferguson testified that he had been a conductor on the Detroit United Railway for fifteen years prior to the last two years, during which he has been business agent of the local union. He presented a formal statement as follows:

"We appear before you for the purpose of presenting information upon two subjects; first, as to the policy of the Amalgamated Association in making and living up to written contracts with the employing companies; and, second, to inform you as to the conditions under which the street and electric men of America are compelled to work. We have evidence to show that our work is arduous and our hours are long, and for that purpose we have brought with us schedules which will show the working conditions in Cleveland and Detroit, which, in our opinion, are typical of the working conditions prevailing throughout the United States.

"We desire first to call your attention to the policy of the Amalgamated Association in making and adhering to its written contracts for the reason that we have noted in reports on the evidence submitted to your commission that there has been some criticism and the claim has been made that our association did not adhere to its contracts. The following extract from the report of our international president to the Chicago convention, which was held during September, 1919, best explains our policy on contracts and the number of them which are in existence.

"The policy of our association to secure written contracts covering wages and working conditions for a given period with the employing companies has been followed during this term as it has in the past with good and satisfactory results. * * * The reports at the Providence convention two years ago showed that we had at that time 250 written contracts with the different employing companies. During the past two years seventy-six other divisions have secured written contracts with their respective companies, which brings the present total of written contracts between our local divisions and employing companies to 326.

"Now my advice is that the policy of securing written contracts be continued. * * * It is the rudder by which we steer this organization successfully, and therefore its continuance in my opinion is necessary to the success of the organization.

"Now as to the policy of our organization to live up to its contracts, we would inform you that the great majority of our locals have adhered to and strictly carried out their contracts. There have been three or four cases where our local divisions have acted contrary to this principle. It might also be pointed out that several street railway companies have refused to adhere to their written contracts and have violated them, not only with our association but in some cases with the municipalities in refusing to further continue under the terms of their franchises.

"The policy of our association is clearly shown in the case of the Bay State Street Railway where several of our divisions in violation of their contracts suspended work in the month of June of this year. The records show that both our international president and the general executive board of the association compelled these organizations to return to work and adhere to their contracts. Another case is that of Pittsburgh, where only a few weeks ago the local division refused to comply with its contract arrangements and went on strike, but due to the position taken by our international president and the general executive board, they were also compelled to return to work and adhere to their contract. At our September convention, this matter was brought up in the report of the international president as follows:

"I would remind you that the integrity of this organization is at stake. In the past we have borne the reputation of living up to our contracts. If contracts are to be disregarded and our laws cast aside we cannot ask anyone to have confidence in us and by such actions we will be destroying what we have struggled for for years, namely, the right of collective bargaining. It is a serious matter and one that calls for consideration and action at your hands.

"In considering this subject the convention fully indorsed the position taken by the international president and the general executive board, and laid down the policy that in the future our locals must strictly live up to their contracts if they were to remain a part of the Amalgamated Association of Street & Electric Railway Employees of America."

In discussing the schedules of Detroit which he considered typical of the industry, Mr. Ferguson pointed out that many of the men are required to put in a greater number of hours than they are paid for, due to the fact that but 37 per cent of the runs are continuous, the majority being two-piece or three-piece runs, so that they are required to be on duty more hours than they work. The average pay-time for the schedule of runs submitted, which was the one used in the 1917 Grinnell arbitration proceedings, was nine hours and twenty-eight minutes. Conditions have changed, he stated, to some extent up to the present time, for all runs having an outside time of twelve hours or more pay for nine hours and twelve minutes.

Comment was also made on the fact that men who had completed their regular runs were called upon to work trippers and this was disagreeable to the men even though they received a higher rate of pay for such work.

Criticism of the time of day they are released for midday meals was also made. The witness stated that this period ought to be in the middle of the day or as near noon as possible, instead of early in the forenoon as was now the case on many runs. He suggested that a large percentage of the runs should be continuous inasmuch as runs having a large spread of hours do not allow the men to perform properly their work. Long hours cause too great a strain especially on motormen operating cars through crowded streets.

Asked if the work was so arduous that the health of the trainmen broke down under the strain, the witness spoke of the fact that some men in his own local had to seek other employment on account of the nervous strain. Questioned as to whether motormen and conductors should be considered as performing a skilled trade, the witness believed so, for the highest rate of pay was not received until after one year of service, and especially on interurban lines where the men had to have some mechanical knowledge regarding car equipment.

CLEVELAND CONDUCTOR DISLIKES NUMEROUS TRIPPER RUNS

The second labor witness was William M. Rea of Cleveland who for the past seven years has been financial secretary of the Cleveland local. Previous to that time he had been a conductor for eight years. Mr. Rea presented information to show that in Cleveland the men also had to work long hours to complete the runs as laid out by the company, and that a great many of the runs required a man to do the first swing in the morning rush hour and the last swing in the evening rush hour, for which he was only paid a minimum guarantee of five hours.

Under the service-at-cost plan, effective in Cleveland, the headways on various routes for different periods of the day are mapped out by the street railway commissioner, and the company must operate cars according to these headways. This has required a large number of trippers which are operated by the extra men, and which pay only the five-hour guarantee. On being questioned, Mr. Rea stated that the average number of days work per year by trainmen was about 325 and that they operated under an agreement or contract which was similar to those entered into by the association in other cities.

Questioned as to why men stick to street railroading, the witness stated that after a man has been on the cars for any considerable length of time he is not in proper condition to take up any other work that requires physical strength, and that in Cleveland about 80 per cent of the men have been in service eight years or more. Questioned by Commissioner Gadsden regarding the attitude of the public on fare increases, he stated that the laboring classes objected more to the increases than the business men, because they had to pay a higher rate of fare, due to the fact that most of them had to transfer to reach their work and this meant an extra charge of 1 cent for the transfer. No violence has resulted at any time due to increase in fares. This the witness believed was due to the educational work carried on through the newspapers which explained fully how the service-at-cost plan worked.

When questioned as to whether all the savings in Cleveland were at the expense of the men, the witness explained how the schedules were fixed by the street railway commissioner and that the company in complying with them had speeded up the cars to such an extent that men who formerly made but eight trips for ten hours pay, now had to make nine trips and were paid less per trip.

Asked as to the effect of the Tayler ordinance on the wage increases, Mr. Rea explained that the men conferred with the company as is usual at other places, and that the street railway commissioner took no part in any such conferences. However, he pointed out that wage increases could only be granted by the company subject to the approval of an increased operating allowance by the City Council. When questioned further as to whether it was easier to get wage increases under the service-at-cost plan, he said that it was to the company's interest to try to keep the wages down as much as possible. Asked especially if there was a feeling on the part of the men that any increase would be passed on to the public through increase in fares, so that they might as well get all they could, he answered in the negative. He said the relations between the company, the men and the City Council were most cordial.

STATISTICAL EVIDENCE

Arthur Sturgess, consulting engineer of Boston, and formerly administrative examiner in charge of the administration of street railway awards of the National War Labor Board, then took the stand to present an extended statistical study of the labor aspects of the street railway business. An abstract of his testimony and some of the charts which he presented will be published in a later issue of ELECTRIC RAILWAY JOURNAL. In general his aim was to show the greatly increased efficiency of labor, and that the increases in wages have been much smaller in proportion than the increases of other costs and therefore are not responsible for present conditions. Upon the conclusion of his testimony, the commission remarked that his study was so complete and comprehensive that it had no particular cross-examination to make.

In explanation of some of the statistical matters which Mr. Sturgess had presented, Mr. Lauck gave an indication of what the aims of the Amalgamated Association are with respect to wages. He said that it was the intention to ask for wages even higher than an amount sufficient to offset the increase in cost of living since 1914, for the 1914 scale was less than the cost of living, so that an increase in wages simply large enough to take care of the increase in living expense would only perpetuate the inadequacy of the 1914 scale. Mr. Sturgess had previously made the statement that the wages prevailing in December, 1918, would have had to be increased more than 16 per cent to bring them up to the then living costs.

PLACING WAGES ON A BUDGET BASIS

Prof. W. F. Ogburn of Columbia University, formerly special agent in the United States Bureau of Labor Statistics and later connected with the War Labor Board, was the next witness. He first endeavored to show the extent of the increase in the costs of living since 1914, arriving at the conclusion that for the country as a whole this increase had been between 75 and 80 per cent from June, 1914, to September, 1919. He then turned to the question of standards of living and said it would be unfair to adjust wages on the basis of the increased cost of living alone. He presented a very able discussion on what constituted a "minimum subsistence standard" of living and defined this standard as one based on a scale of wages such that, any industry paying a less scale was parasitic. He said that the minimum wage considerations were based on this standard, and then endeavored to explain how this level of living was scientifically determined. In this explanation he referred to infant mortality, nutrition, housing conditions, etc., as indices used in establishing the standard.

In connection with the cost of foods, he brought out that to supply a proper diet per adult for the average family of man and wife and three children, required an annual expenditure of $575 in 1914 and $700 to $750 at the present time. This represented the necessary expenditure for proper living for food alone, which was usually considered to consume 45 per cent of the laboring man's total budget. Analyzing very carefully various factors entering into the average budget, he reached the conclusion that for the minimum subsistence standard of living, it was necessary for a man to earn between $1,500 and $1,700 a year under present conditions. From this he proceeded to the discussion of better standards of living, the next step being termed the "minimum comfort standard" of living.

The budgets used in his discussion for these two standards of living are as given in the accompanying table, as they were prepared to cover the conditions of 1918.

MINIMUM SUBSISTENCE BUDGET

Food	$615.00
Clothing—Man	76.00
Clothing—Woman	55.00
Clothing—Eleven to fourteen years	40.00
Clothing—Seven to ten years	33.00
Clothing—Four to six years	30.00
Rent	180.00
Fuel and light	62.00
Insurance	40.00
Organizations	12.00
Religion	7.00
Street-car fare	40.00
Paper, books, etc.	9.00
Amusements, drinks, and tobacco	50.00
Sickness	60.00
Dentist, oculist, glasses, etc.	3.00
Furnishings	35.00
Laundry	4.00
Cleaning supplies	15.00
Miscellaneous	20 00
	$1,386.00

MINIMUM COMFORT BUDGET

Groceries	$533.40
Fuel	60.00
Clothing—Man	90.50
Clothing—Woman	87.00
Clothing—Girl of eight or nine	32.50
Clothing—Boy of fourteen	48.50
Clothing—Boy of five or six	33.00
Maintenance of household equipment	40.00
Education	11.00
Church—Fraternal dues	20.00
Medicine—Doctor, dentist	60.00
Insurance	30.00
Reading matter, music	*
Savings	100.00
Gas	20.00
Electric light	15.00
Rent and water	184.00
Street-car fare	35.70
Tobacco, ice cream	30.00
Recreation—Movies, etc.	30.00
Incidentals—Stamps, barber, etc.	25.00
Miscellaneous	20.00
* See Education.	$1,505.60

Much of the information used by the witness in his testimony was taken from two pamphlets called the "Changes in Cost of Living, 1914-1918," and "Standards of Living," prepared by the Bureau of Applied Economics, Inc., Washington, D. C., both of which were offered in evidence to the commission. These two pamphlets constitute a compilation or summary of the existing data on the two subjects.

Professor Ogburn continued his testimony at the evening session on Wednesday, regarding the standards of living and the minimum comfort budget. The latter, he stated, was as much a reality as any other budget and that compared to the bare subsistence level it merely provided slightly more for comforts such as insurance, clothing and sundries. He brought out that in the preparation of all budgets, families are considered as consisting of a man and his wife and three children for the reason that upon death of the parents, two children would be left to maintain the present population and that the third child was considered only as a factor of safety to insure of maintaining this rate. Another point covered was that all families were considered as renters, and it had been found that the workers who owned their own homes were put to a somewhat greater expense than when they rented their living quarters. Mr. Meeker confirmed this fact and stated that it was true even though interest on their house mortgages were not included in such figures.

After explaining in detail how many calories of food for an adult male are usually purchased at various incomes, the witness stated that street car employees need at least 3500 calories of food daily to properly sustain them in their work, which he considered as being "rather hard." Sacrifices, he said, which must follow extraordinary demands on a household due to sickness, etc., are usually first made by the mother who then does not have the proper nourishment or clothing. The children are usually the last members of a family to feel any affects of pinched living.

Mention was made by Professor Ogburn of the use of budgets in determining proper wages, as was done in Seattle and Oakland, Cal., in two arbitration cases concerning wages of street car employees. He believed that wages to be adequate should be based on a minimum comfort budget. This would call for a present-day income of approximately $2,000 per year, and if applied to an eight-hour day and 325 working days per year, would make an average hourly rate of 80 cents for motormen and conductors.

On being questioned by Mr. Gadsden, he stated that the War Labor Board in its awards had based the wages of the lowest paid labor on a minimum subsistence budget of $1,300. This was based on an eight-hour day with one or two hours of overtime, giving an hourly rate of approximately 42 cents. Mr. Gadsden pointed out that this was the minimum rate granted street railway employees by the War Labor Board.

THAT TRAINMEN ARE POORLY PAID, IS CLAIMED

Leifur Magnusson, an economist interested in labor matters and employed for the past nine years in the government service, was the next witness. He presented as evidence a bulletin entitled "Wages in Various Industries," prepared under his direction for the Bureau of Applied Economics. In this bulletin he attempted to bring together all the available information regarding rates of wages paid in as many industries as possible during the course of the war, that is between 1914 and 1919. He referred particularly to a table contained therein showing the maximum rate paid motormen and conductors, which he stated had been compiled from various trade and labor publications. The table was arranged by cities and it gave a comparison of the wages paid in 1911, 1914 and 1919. The 1919 wages given were intended to be the latest so far as ascertainment was possible, but Mr. Warren brought out that many of his figures, especially for New England companies, had been changed and also stated that this might be true of any tabulation due to the fact that at the present time rates were changing so rapidly.

Taking all the scales of wages shown and striking an arithmetical average, which came out 42.5 cents per hour, Mr. Magnusson drew the conclusion that this average rate when applied to an eight-hour day would show that the 1919 daily earnings of trainmen were less than in any other class of unregulated employment except that of the trapper boys in the coal mines of the Hocking Valley district. The manner in which this average hourly rate of pay was arrived at was challenged, since the table included many cities as separate companies which were really part of a large system, thus making a high divisor and producing a correspondingly lower average. When asked concerning rates in other forms of regulated industries, he advised that he could not furnish any comparative figures.

By further deductions from this same table, he testified that the percentage increase in trainmen's wages during the past five years was only 48 per cent and that this was lower even than the increases granted to compositors in the printing trades or bricklayers in the building trades, both of which were only slightly affected by the war.

Thursday's Sessions

Stiles P. Jones, a newspaper editor of Minneapolis and formerly an administrator of awards for the War Labor Board, took the stand Thursday morning for the purpose of testifying on the over-capitalization phase of the street railway situation. Mr. Jones began his testimony by reading a prepared statement as follows:

"The present unfortunate predicament of the street railway industry in the United States is one in large part of its own making, created primarily by past financial mismanagement over which the public had no control and for which in this issue it cannot justly be held responsible.

"A study of the financial history of many representative companies discloses an amazing story of financial manipulation clear through the life of the properties, the results of which have been to load them down with a staggering burden of over-capitalization to constitute a permanent charge against operating revenue. The ingenuity of the financial management in creating new sources of capitalization has been without limit. Nothing has been overlooked upon which to hang new issues of securities.

"The inevitable result is seen in the present undermining of the financial structure of street railway investments in this country. The credit of the industry is so impaired that it can no longer finance its enterprises on possible terms. It is facing collapse through its own devices.

"The methods and agencies by which this unfortunate situation has been brought about frame a sordid background of ruthless exploitation of a great public-serving industry to make financial killings for manipulating insiders. Unwarranted promoters' rewards, excess construction costs, consolidations, mergers, reorganjzations, leases, stock bonuses, have all been made the medium for capital inflation. Franchise values, excess earnings, prospective future earning capacity, discounts on securities, even operating deficits, have been capitalized to further add to the burden. Every operating improvement, the increased efficiency of employees, the growth and development of the community and of industry have been to a large extent used as a means to absorb fictitious issues.

"The effort to protect the integrity of these false values has absorbed the efforts and resources of the companies in such measure as to make it impossible for them to fulfill their primary function as public-serving institutions. Indeed, the operation of the properties—the vital point of the public interest in the street railway question—has been seriously affected by the financial mismanagement. Excess operating costs and bad service have gone along hand in hand through the years with bad financial management, while just wage increases have been held up because of the prior claim of the investor, irrespective of the character of such claim.

"At the door of financial mismanagement lies the responsibility for the present status of the street railway industry in this country. It cannot rightly be charged to increase in labor costs. The effort to unload the burden on to labor and the public has no justice in fact."

Mr. Jones supplemented this formal statement by further direct testimony to the effect that the general over-capitalization of the industry resulted in (1) impaired service to the public, (2) impaired operating efficiency, (3) in the robbing of maintenance to meet fixed charges and operating expenses, and (4) in so affecting the attitude of the public that any amicable settlement was exceedingly difficult. He stated that this attitude of the public was due to (a) the belief that the street railways were generally grossly over-capitalized, (b) to the refusal of the railways to lower fares in other better days, (c) to the attitude of the companies in this crisis toward their public contracts, (d) to the arbitrary attitude of the companies toward the public, and (e) to the political activities of the companies.

Mr. Jones then submitted in exidence an exhibit entitled "Financial Mismanagement of Street Railways," which comprised an extended compilation of literature from various publications bearing upon this subject. In addition to the evidence formed by this literature, the exhibit included summaries showing the over-capitalization of about twenty specific properties, for which the figures used were claimed to have been taken almost entirely from official sources. The properties which Mr. Jones included in citing specific cases of over-capitalization were the Public Service Railway of New Jersey, Chicago Surface Lines, Pittsburgh Railways, United Railways of St. Louis, Bay State Street Railway, the Baltimore Company, Indianapolis Street Railway, United Railways of San Francisco, the Rhode Island Company, Los Angeles Railway Corporation, Denver Tramway, Philadelphia Rapid Transit, Cleveland Railways, San Francisco-Oakland Terminal Railways, New Orleans Railway, the two companies in Washington, D. C., the Lincoln Traction Company, Milwaukee Electric Railway & Light Company, and the Scranton Railway.

Explaining that the capitalization per mile of track was not an entirely fair basis of comparison, owing to the many variables entering into that figure, Mr. Jones included in this exhibit a chart showing this comparison in twenty-seven states. With the properties in Massachusetts as a base of comparison, the witness stated that the excess capitalization for the country as a whole per mile of track in 1912 was 82 per cent. In 1902 he stated that the excess capitalization per mile of track was 146 per cent.

Mr. Jones then endeavored to explain the various methods which have been employed for inflating the capitalization of street railways. Referring to the Public Service Railway, he declared there was 53 per cent inflation of securities. Commissioner Gadsden interposed a question as to whether the Public Service Commission of New Jersey did not have all of these facts before it when it handed down its recent decision for zone fares. To this the witness replied that it did have. Mr. Lauck, counsel for the labor side, explained that they considered the matter of over-capitalization very largely a past episode and were only interested in pressing that phase of their case because they wanted to show that if it were continued it would so absorb the proceeds of operation as to affect the income of labor.

Commissioner Gadsden then asked the witness if the generally accepted sound capitalization of the Massachusetts companies had resulted in any better wages for the trainmen, to which the reply was in the negative. Commissioner Beale asked the witness if it were not true that a large part of the capitalization of the San Francisco company was due to the necessity to almost completely rebuild the system after the earthquake. Mr. Jones admitted that this undoubtedly was a factor.

In answer to questions by Chairman Elmquist, the witness stated that he believed over-capitalization was practically a universal condition with all companies, varying only in degree. He said that he knew of no company that was not over-capitalized. The chairman then questioned him as to the manner in which he arrived at this conclusion and it was brought out that his study had covered only twenty companies, the witness explaining that he had taken only those companies where it was possible to draw fair conclusions. The chairman asked him if it were fair to draw such general conclusions from so limited a number of cases and the witness replied that he thought these were representative. He was then asked if he had found any valuation which was equal to or in excess of the capitalization, to which he replied in the negative.

Asked if he thought that over-capitalization had resulted in any extra burden upon the public, the witness replied that it had resulted in enormous profits to promoters and that the industry has been dominated not by the motive of public service but by large profits for the insiders. He was then asked if the promoters held the stock of the companies to any extent and he said that he could not answer but that it was his impression that they got the profits and then unloaded the burden on innocent investors.

In answer to further questioning by the chairman, the witness brought out that the public does not know the companies are largely over-capitalized but that it instincts it and that the affect is distrust and antagonism. He pointed out that the co-operation of both public and employees is necessary to successful management and that with the prevalance of distrust it was impossible to obtain the best treatment from either.

VALUATION AND CAPITALIZATION DIFFERENCE NOT FAIR EVIDENCE

Commissioner Sweet then questioned the witness, bringing out his acquiescence to the thought that there might be a large difference between the actual value today of a property and the capitalization, where there has been no reprehensible conduct involved. This was due to the factor of obsolescence which has absorbed great sums of capital. From this admission, it was brought out that the evidence of the witness did not take into account what was legitimate over-capitalization and what was not, and that unless the basis of valuation were known the bare differences between present capitalization and present actual value was not a fair basis on which to charge dishonesty or the presence of watered stock. The witness, however, contended that the factors of obsolescence and other intangibles had usually received important consideration in arriving at valuations, so that he thought such valuations gave one the right to the opinion that unfair methods of capitalization had been pursued when there was any marked difference between value and capitalization.

Commissioner Gadsden referred to the similar evidence of over-capitalization presented by Mr. Welsh of the American Electric Railway Association, which showed the existence of an average of 10 per cent of water in the capital of twenty-six companies. He also pointed out that this earlier exhibit showed that the companies operating in Atlanta and Denver, and the Chicago, North Shore & Milwaukee Railway, had been officially valued at a figure higher than their capitalization. The commissioner said that the same criticism applied to the evidence submitted by both the railways and labor, the former having picked out the low spots and good ones, while the latter had pictured the high spots and bad ones.

Commissioner Meeker asked the witness, in view of the enormous discrepancies in the valuations arrived at by various experts, if he still had faith in using this as a basis for determining the amount of water. The witness replied that if the valuation was official he believed it to be approximately just, as far as physical value was concerned, assuming that the valuation was made by engineers of good reputation who had a reasonable interest in the public service and had given reasonable recognition to the intangibles.

The question was then raised as to labor's direct interest in the matter of over-capitalization and the witness explained that public and labor were both concerned, for if a company was hard up someone was going to be squeezed, and this usually meant a reduction in wages or a reduction in service, or both. Counsellor Lauck further explained that the interest of labor and the public was subordinated to the prior interest of capital, and that labor was not getting an adequate participation in the earnings because its part was being absorbed through the interest charges resulting from the capitalization of earning power, or the hypothecation of future earnings.

Counsellor Warren then asked the witness if it were not true that a large part of the mileage of the Massachusetts railways, which had been used as a base in the comparison of over-capitalization, was built on public highways so that the roads involved a much less cost for rights-of-way than was involved in other states, where the roads are built more generally on private rights-of-way. The witness replied that this might be true.

BRIEF OF LABOR CASE

W. Jett Lauck, counsel for the Amalgamated Association, took the stand at the opening of the Thursday afternoon session.

In summing up the testimony of the witnesses who testified in behalf of the Amalgamated Association, Mr. Lauck very carefully reiterated all of the conclusions which they made, and in some cases drew further conclusions to show the tendency of the demands of the organization for a wage high enough to afford the minimum of comfort and an eight-hour day and one day's rest in seven, preferably and whenever possible on Sunday. To meet these conditions, it was brought out, would give as a minimum wage, about $6 per day. An abstract of his brief follows:

With regard to labor and the present financial plight of the street railways, a review of the past history of street railway companies disclosed the fact that gains in revenue due to growth in the population of the cities, the adoption of improved operating methods and the increasing work and efficiency of employees, have been largely absorbed by fictitious capitalization of improper or misguided financial mismanagement. Had these companies been properly managed and the earnings conserved, they would now be in a very prosperous condition and the operating revenues would be sufficient even on a basis of a 5-cent fare, not only to pay attractive returns on the capital actually invested, but to provide for new financing and a living wage to employees. The wages paid employees have had no affect upon the present finances of the companies. The employees have not received the fruits of their labor, in that they have not had a fair participation in the revenues, and unless the present basis of financial management and control is changed, the future is without hope to the employees of the street railway companies. The commission should in any recommendation take judicial notice of these conditions.

Advances in the rate of pay to employees has not brought about the present condition of the street railways, for even prior to the war the wages paid the motormen and conductors were inadequate. During the past five years they have not received an increase to correspond with the increased cost of living. Even if they had received this increase, it would still mean that an entirely new plan would have to be evolved, for the wages paid would fall far below the minimum comfort level. If wages are to follow cost of living, it is necessary to take into consideration any future increase and also the minimum living wage. The conclusion reached by Mr. Sturgess in his testimony, that wages of motormen and conductors had only increased 48 per cent, while the cost of living had gone up 72 per cent, refuted the statement made by the railways that the War Labor Board had put the street railways "on the rocks." It is maintained that the awards which were made by the War Labor Board were only moderate, and barely covered the then increased cost of living.

In taking what was construed to be a living wage, the old theory that wages should be based on supply and demand of labor was wrong, for labor should no longer be viewed as a commodity, whose value is determined in the same way as is the value of wheat, coal, iron and steel. If the old plan was still followed the only way that labor could find any relief was to shut off the supply, as occurred during the war when so many men were called into service, or to cause the collapse of industry. So far as workmen were concerned, the law of supply and demand is a dismal theory, for it does not enable them to advance their own welfare or that of their dependents.

Every wage earner is entitled to a living wage, which should not be merely a subsistence rate of wage but a wage sufficient, after meeting the minimum physical needs of food, clothing and shelter, to leave a balance sufficient for a small degree of comfort and to enable a wage earner to secure some reasonable measure of health, recreation and education. The demand for a living wage is a fundamental, economic right and a sound principle accepted by all the leading civilized and industrial countries, as embodied in the League of Nations. It is the principle accepted by our own government as the one which should govern the relations of labor, and it should be considered by the Federal Commission in any report that it makes. The average rate of pay and earnings of conductors and motormen are inadequate at a bare subsistence level, and are not sufficient to support an average family in health with any degree of comfort. Even as far back as 1907 families with incomes ranging from $800 to $900 were able to maintain a normal standard of living only in so far as the physical needs of food and fuel were concerned. The wages of street railway employees, considering the increases granted during the period of the war compared to the increased cost of living are, therefore, at the present time even more inadequate than before the war. An advance in wages equaling the entire increase in the cost of living since 1914 would only put the present wages on a pre-war basis and simply perpetuate pre-war inequalities. A living wage is now needed and the rates of pay should be established on a scale which will guarantee all employees the fundamental right to health and reasonable comfort. We have no idea that the commission will recommend any definite wage scale but our purpose is to call these matters to the attention of the commission and show that the necessary income for the maintenance of an average family should be approximately $2,000, such an income would simply provide for a healthy existence, a little comfort and a small saving.

Mr. Lauck then presented the following:

CONSTRUCTIVE RECOMMENDATIONS OF LABOR

The constructive problem before the Federal Electric Railways Commission has three main features:

1. The electric railways of the country claim they are being operated at a loss and the insolvency and collapse of the whole industry is impending. They estimate their deficit for the year 1918 at $24,000,000. They claim that they have not a sufficient margin of net returns as a basis for securing much-needed new capital or for tiding themselves over their present difficulties. They state that they have exhausted every plan and device for protecting themselves against a financial catastrophe. Outside assistance and fundamental methods they assert are now necessary. Governmental or, in other words, public aid alone, they believe, can save them. They have stated, in the language of the president of the American Electric Railway Association, that "it is no longer a question as to what return shall be allowed to the owners of the street railways; it is a question of what service, if any, shall be rendered to the public." Under the stress of this emergency the commission is, therefore, faced with the duty of devising measures to put the electric railway transportation industry upon a sound financial basis. This means that the industry must be put on a basis of honest capitalization, the key to which is really fair valuation.

2. In the second place, the financial reorganization of the industry involves a readjustment of the relations between the public and the electric railways, and,

3. A readjustment of relations as between the public and the companies and the employees. The attitude of the organized employees is that in reorganizing and rehabilitating the industry financially, and in working out new relations with the public, the commission must also accept and recommend as essential preliminary conditions certain standards of work and compensation, and certain modifications in relations between the industry and its employees, which are justified by the fundamental economic rights of the employees.

MEASURES FOR IMMEDIATE RELIEF

From what has already been stated as well as from the detailed testimony placed before the commission, it is clear that some fundamental change in the permanent control and operation of street railways is necessary, involving perhaps a reorganization of the owning or operating corporations and a departure from the present relations between the industry and the public. It is claimed, however, owing to the necessary delays in securing legislation or the official sanction of the proper public bodies before a fundamental change in policy may be put into effect that some immediate measures must be adopted, such as a flat increase in fares, or a campaign of education of the public to a more intelligent conception of the street-railway problem, so that a greater spirit of co-operation may be secured.

The wisdom of such a program is extremely doubtful. If it should seem necessary it should be conditioned on the preparation and announcement of a permanent, fundamental policy, and should be undertaken with great caution. It should really be done only in connection with the advocacy of a comprehensive program. Otherwise, an advance in fares may become merely the means of perpetuating for a time old inequalities and injustices, or temporarily postponing the final day of reckoning, and an educational campaign of the public may degenerate into partisan propaganda for an unrestricted increase in fares.

A temporary agreement and contract between the street railways and the municipalities with the constructive plan recommended by the commission as a basis might be made pending final determination of value as a basis for a permanent agreement and permanent policy of operation. Such a procedure would afford immediate financial relief where needed without prejudicing the rights of the public, the employees, or the companies.

THE FUNDAMENTAL PRINCIPLE INVOLVED

The paramount interest in the entire situation is the public interest. It is dependent on the street railways. The public cannot permit them to cease operation. The transportation facilities are too vitally bound up in their daily lives and activities. The public, therefore, is forced to act.

The present emergency has only stimulated and brought into the foreground the significant relation between the street railways and the general public. The realization of this truth has been steadily developing. In former years, electric railways were looked upon as purely private enterprises. They were regulated only on the ground that they were monopolies. Their securities were, to a large extent, speculative, and offered, because of the monopoly control of the companies and the extraordinary growth of towns and urban centers, unusual opportunities for speculation, manipulation, and large returns. Street car passengers were looked to by the companies as a source of revenue and profit.

With the growth in urban life, however, this original conception gradually changed. The trend of opinion came more and more to the conviction that the street railways were social institutions. The modern view, entirely aside from the present plight of the railways, has come to be that the street transportation industry is a public institution serving as highways or common carriers for the people. If this is the generally accepted view at the present time, and the testimony before the commission clearly shows that it is, the practical question is: What measures shall the commission recommend not only to rehabilitate the industry financially and conserve the properties, but also, what constructive policies, permanently to develop and maintain the most economical and efficient facilities for the use and convenience of the public. The fundamental point, in other words, how can the street railways be best rehabilitated, operated, and developed for the benefit of the people, due regard being had for the fundamental and proper interests of capital invested in the properties and of labor employed by the street railway companies. The public is undoubtedly willing to pay for the efficient operation of street railways on the basis of just guarantees to capital and labor The problem of the commission is to consider all facts and constructive proposals and to recommend, with these just guarantees to labor and capital in mind, a practical scheme of reorganization and operation of the industry.

THE FUNDAMENTAL RIGHTS OF CAPITAL

Capital has the right to demand that its investment, in so far as it has been actually and prudently made and honestly administered, should be not only conserved but, if the public should acquire any or all of the properties, that it should re-

imburse the owners for the actual values, or, on the other hand, if the public should only operate and not acquire the properties outright, that capital should receive a reasonable and proper rate of return.

The value of the actual investment and proprietary rights of capital or of the owners or investors in the street railway properties can be readily ascertained. Furthermore, the actual rate of return which may be guaranteed on these values by the public can be readily determined. There is no practical obstacle in the way, in short, to the public satisfying all the just claims of capital, or the owners or investors in the street-railway industry, should the commission recommend that the public acquire or operate the properties.

THE RIGHTS OF LABOR

The employees have as direct and more vital interest in the prosperity of the industry than even the investors of capital. Should street railways become insolvent, the owners of capital might suffer a heavy pecuniary loss. The employees on the other hand would lose their immediate means of livelihood. Furthermore, many of the employees have spent a number of years or a lifetime in the service of the industry. They have devoted their working years to the acquisition of training and experience which they could not sell as advantageously in other lines of industrial employment. They may be said, therefore, to have a vested interest in their positions on the street railways which is even more valuable and vital to them than the vested interest which capital has is to the owners of street railway securities.

The employees are, therefore, anxious to have the industry rehabilitated and made prosperous. They are desirous of having the public protected because the public interest is paramount. They insist, however, and too great an emphasis cannot be put upon their contention, that the reconstructive policy undertaken must be based upon and accept as a fundamental preliminary, the rights of labor, as accepted by all civilized and leading industrial nations in the treaty of peace with Germany, and the principles which have been accepted and proclaimed by our own government as those which should govern the relations between employers and employees.

The principles relative to labor, or the charter of industrial democracy, which have been embodied in the Peace Treaty, are as follows:

"1. The guiding principle above enunciated that labor should not be regarded merely as a commodity or article of commerce.

"2. The right of association for all lawful purposes by the employed as well as by the employers.

"3. The payment to the employed of a wage adequate to maintain a reasonable standard of life as this is understood in their time and country.

"4. The adoption of an eight-hour day or a forty-eight-hour week as the standard to be aimed at where it has not already been attained.

"5. The adoption of a weekly rest of at least twenty-four hours, which should include Sunday wherever practicable.

"6. The abolition of child labor and the imposition of such limitations on the labor of young persons as shall permit the continuation of their education and assure their proper physical development.

"7. The principle that men and women should receive equal remuneration for work of equal value.

"8. The standard set by law in each country with respect to the conditions of labor should have due regard to the equitable economic treatment of all workers lawfully resident therein.

"9. Each state should make provision for a system of inspection in which women should take part, in order to ensure the enforcement of the laws and regulations for the protection of the employed."

FUNDAMENTAL GUARANTEES REQUIRED BY EMPLOYEES

In order that there may be no misunderstanding as to the attitude of the employees of the street railways, the principles which the employees insist shall be embodied in any recommendations by the commission as to a constructive program for the street railway industry may be briefly summarized and further explained. They are as follows:

1. The Right to Organize, or Union Recognition.

The time has passed when collective bargaining can or should be interpreted in any other way than as to mean the recognition of trade unions or labor organizations. As urged by employees, it means union recognition. They do not contemplate, neither will they accept committee systems promoted and installed on the initiative of street railway officials for the reason that they know that any such systems of collective bargaining do not really safeguard the interests of labor, and cannot, therefore, permanently endure or be permanently effective. They demand the recognition of the rights of the employees to organize into labor unions, and to deal with the companies with accredited representatives. This does not necessarily mean the adoption of the closed shop principle, but does mean that the street railway managements shall conduct all negotiations as to wages, working conditions, and relations with a recognized labor organization. In localities where the employees of the companies are not already organized into unions, it shall be the duty of railway managers not to discourage the employees to form labor as a means of dealing with the management.

This principle as to union recognition is no longer a debatable issue. It has been sanctioned by the society of civilized nations. Furthermore, it is absolutely essential to that form of co-operation between street railroad managements and employees which will lead to efficient, economical, and stable operation, and, as a consequence, is to the highest degree of real service to the public.

2. The Establishment, on the Basis of a National Standard, of a Living Wage for the Employees in the Industry.

This is also no longer a controversial issue. As in the case of union recognition, it has been accepted by the enlightened opinion of the civilized world. It is not only essential to the general well-being of the employees, but it is equally essential to the rehabilitation of the industry, for it is one of the necessary conditions to the enlightened co-operation and participation of the employees in making the industry a success from every standpoint. It also means a great advantage to the localities in which street railways are located, for it would lead to an elevation of the standards of civic life and public conduct among street railway employees.

Testimony has been submitted during the course of the proceedings of the commission to show that in order to maintain a minimum standard of health and a reasonable degree of comfort the earnings of street railway employees should amount to an average of at least $2,000 annually. This amount may vary from locality to locality and be changed by further investigation. The figures submitted, however, are designed to be merely illustrative of a minimum standard. The employees do not especially desire the commission to recommend any definite amount. The principle of a living wage is what we are contending for and which we wish to be accepted and sanctioned by the commission. The amount may be adjusted later between the companies and the unions. We insist that it is a fundamental right of the employees which the commission should sanction and recommend as a necessary condition to the general rehabilitation of the street railway industry.

3. The Eight-Hour Workday.

The establishment of an eight-hour day is also an essential preliminary, from the standpoint of the employees, to any reconstruction of street railway properties. This standard has also been accepted by representatives of the leading nations in the labor provisions of the peace treaty. President Wilson in several speeches has set forth his reasons in general as to the justification of an eight-hour day for workers on public utilities, as follows:

1. Because it is right.
2. Because it has the sanction of organized society as shown by the history of labor legislation and the judgment of the courts, and,
3. Because of enlightened self-interest—the employer would find that it would pay because it would bring about greater co-operation and greater production from his working forces.

His remarks in urging the Adamson law bear out these assertions. Several pertinent quotations from his remarks may be submitted in this connection:

"You know that we have been a legalistic people. I say with all due respect to some men for whom I have a high esteem that we have been too much under the guidance of the lawyers, and that the lawyer has always regarded the relations between the employer and the employee as merely a contractual relationship, whereas it is, while based upon a contract, very much more than contractual relationship. It is a relationship between one set of men and another set of men with hearts under their jackets, and with interests that they ought to serve in common and with persons whom they love and must support on the one side and on the other. Labor is not a commodity. It is a form of co-operation, and if I can make a man believe in me, know that I am just, know that I want to share the profits of success with him, I can get ten times as much out of him as if he thought I were his antagonist. And his labor is cheap at any price. That is the human side of it, and the human side extends to this conception, that that laboring man is a part of his employer. If he is a mere tool of his employer, he is only as serviceable as the tool. His enthusiasm does not go into it. He does not plan how the work shall be better done. He does not look upon the aspect of the business or enterprise as a whole and wish to co-operate the advantage of his brains and his invention to the success of it as a whole. Human relationships, my fellow citizens, are governed by the heart, and if the heart is not in it nothing is in it.

"Because a man does better work within eight hours than he does within a more extended day, and that the whole theory of it, a theory which is sustained now by abundant experience, is that his efficiency is increased, his spirit in his work is improved, and the whole moral and physical vigor of the man is added to. This is no longer conjectural. Where it has been tried, it has been demonstrated. The judgment of society, the vote of every legislature in America that has voted upon it is a verdict in favor of the eight-hour day.

"The reasonable thing to do is to grant the eight-hour day, not because the men demand it, but because it is right, and let me get authority from Congress to appoint a commission of as impartial a nature as I can choose to observe the results and report upon the results in order that justice may in the event be done the railroads in respect of the cost of the experiment."

Along with the eight-hour workday should obviously go the further recommendation of the commission that employees should also have "a weekly rest of at least twenty-four hours, which should include Sunday whenever practicable."

These in general are the fundamental rights and standards which the employees insist should be an indispensable part of any recommendations of the commission. They are essential to any plan of rehabilitation or successful operation of the street railways.

PITTSBURGH MAYOR GIVES VIEWS

The cross examination of Mr. Lauck was postponed in order to hear Mayor E. V. Babcock of Pittsburgh, who presented a statement, an abstract of which appears elsewhere in this issue. The Mayor was accompanied by Mr. Robinson, Corporation Counsel of Pittsburgh who joined in the testimony of Mr. Babcock.

Mayor Babcock, upon completing his address, was questioned by the commission concerning the recent strike of the trainmen and he explained very fully the various stages of the troubles which commenced last May when the men asked for an increase in wages. The public and the men were both much incensed over the use of strike breakers, and while there was no material disorder the men soon realized what they had done and went back to work. During the strike, he said, it was necessary to use all sorts of vehicles as a means of transportation and it was very clearly demonstrated that the street cars were necessary to the social life and welfare of any community and that the city would not be worth a nickel without them.

When questioned regarding the valuations recently made by the company and the Public Service Commission, he stated that the actual capital claimed to be invested in the street railway companies was in the neighborhood of $160,000,000, although this included some duplication in the underlying companies, and that the actual investment was approximately $110,000,000.

With reference to paving requirements and other indirect charges of similar character, the Mayor stated that the United States District Court had already relieved the receivers from paying these costs and he believed that the city should not place a great deal of significance either way on this matter. He had no personal opinion as to which was the better way for such things to be taken care of, for in the last analysis they must be paid by the public. He believed, however, that the public would be better served if the cities or communities had some authority in fixing fares and suggested a plan whereby it might be advisable for the cities and companies themselves to determine the proper rate of fare. In case this was not possible, recourse could be had to some regulatory body such as the present Public Service Commission. He believed that the cities knew their transportation conditions and needs better than the Public Service Commission. He took this same stand in connection with the building of extensions.

On being questioned further, he claimed that the service-at-cost plan provided no incentive for the railway managers to operate the property at the lowest possible cost, and while he was familiar with the plans proposed for Montreal and Cincinnati, he really believed that the proper plan had not yet been evolved. All of these plans fail if the basis on which they are built changes, and the whole arrangement is likely to be discarded and the management punished for something over which it has no control.

In speaking of the rates of fares charged by the Pittsburgh Railway, especially with regard to the so-called territorial preference plan, he said that the public objected to it because people in certain sections of the city were allowed to ride a greater distance than in others, even at a lesser rate of fare. The system, however, did produce a 15 per cent increase in passenger revenue.

The territorial preference system was changed last August to a flat fare with free transfers within what had been previously the inner area. Reduced-rate tickets are also sold in lots of four for 30 cents, giving a ride for 7½ cents without transfer privilege. This fare, which was a 50 per cent increase, was estimated to produce an increase in the passenger revenue of 35 to 40 per cent over the revenue received under the 5-cent fare. This increase it will be noted, is considerably nearer the theoretical increase than was received from the previous fare, although only 5 to 6 per cent of the passengers carried pay the 10-cent cash fare. The company estimates that the cost of operation even with an allowance of $1,000,000 for depreciation, will be met with only a small deficit if its estimates hold true. These were based on the earnings from Aug. 1 to Sept. 22, taking out the twelve-day strike and allowing for a subnormal riding habit immediately following the strike. The witness stated that he believed the riding habit would be further increased when a settlement has been reached regarding the true valuation, as this will create a better public feeling.

When questioned concerning zone fares, the Mayor stated that he was very much opposed to this system of basing rates, as he believed that it would build up one part of the city at the expense of another while a flat fare with transfer privileges would affect the whole city equally. He thought an 8-mile haul would be proper for a flat fare as this would be likely to take in the major portion of the district served by the company. However, he stated that a bill had been introduced in the Legislature to make Allegheny County a metropolitan district, in order to have the question of transportation in the district treated as a unit, instead of as so many municipalities, each trying to follow its own ideals. This bill, however, was defeated.

INCENTIVE IS LACKING FOR EFFICIENT MANAGEMENT AND INVESTMENT OF CAPITAL

At the evening sitting Mr. Robinson took the stand, directing his thoughts to the cost-of-service idea in which Pittsburgh is now particularly interested. He explained that he believed there ought to be an incentive to the management for efficient operation as well as an inducement to capital to invest in plant which would bring about better operating economies. He said it was this incentive which was lacking in the Cleveland plan and that he did not think the Cincinnati plan would work out to provide an incentive in actual practise, although it sounded well on paper. He thought the latter plan was largely a loser, whatever the operating conditions, and said that he had never been able to put down on paper how the various factors of this plan would actually work out, applying the principles stated in the franchise. There seemed to be two opposing principles.

He thought that it was desirable to have a fixed rate of return on old capital but that the return for new capital should be left open in order to meet the varying conditions of the money market and to provide the necessary inducement to attract capital for special economy-producing expenditures, which must usually be of a junior security character. He thought that the necessary incentive to capital might be provided by the simple arrangement of setting up a certain rate of return for a fare of, say, 8 cents, then adding 1 mill-to the rate of return per dollar for each 1 cent reduction in fare. This plan would probably include a limit upon the rate of return, both upper and lower.

CROSS-EXAMINATION OF LABOR'S COUNSEL

W. Jett Lauck was then called back to the stand. Commissioner Elmquist pointed out that great stress had been laid upon financial mismanagement and asked Mr. Lauck to explain labor's interest in this side of the question. The witness said that past financial mismanagement has been largely responsible for the present situation, and that there must be brought about a complete readjustment in order to protect the employees as well as the public. In answer to further questioning the witness admitted that the introduction of the minimum comfort standard of living, calling for an annual wage of $2,000 and resulting in a scale of 80 cents per hour for platform labor, would very materially add to the cost of production. This would necessitate either an increase in rates or a subsidy from the public. Mr. Lauck reiterated what he had said several times before that the labor side was not asking for an increase of wages to 80 cents an hour or any specific increase, but was simply asking for recognition of the principle. Chairman Elmquist interposed that to accept the principle would be the same as acknowledging that this additional cost would be added, to which the witness agreed. Mr. Lauck said that the principle ought to be adopted irrespective of the cost, even if it meant that the railways would thereby be placed in the hands of receivers, for this matter, as held by the War Board and upheld by the courts, had no bearing on equitable wages.

Asked if the Amalgamated Association would consent to a reduction of wages, if the cost of living went down and thereby lowered the minimum comfort budget, the witness replied he thought it would if that was a condition upon which the budget wage was granted.

Commissioner Meeker then asked the witness if it were not true that in considering the service-at-cost plan there was a tendency to over-emphasize the matter of automatic adjustment of rates and obscure the more important managerial problems and relations with labor. He stated that well-fed, healthy, happy employees would bring greater efficiency, greater co-operation and desire to serve, which would absorb some of the increased labor cost. The witness confirmed this and made considerable point of the great opportunity there was for managerial savings, saying that more contented employees would take a keener interest in saving of fuel and making other economies which the manager might introduce. He then cited an example of two companies operating in the same city, one of which was unionized and the other not, and said that the unionized company was very prosperous and the men were courteous to the public and the company's relations with the public were amicable; whereas the other company was in financial straits, and the employees were most discourteous and did not seem to care when or how they got their cars over the line, and that the company was most unpopular.

Commissioner Mahon interrupted to say that there was proof from every industry that the eight-hour day and better wages do improve the efficiency of labor.

Commissioner Sweet then asked the witness if the acceptance of the labor recommendation that all companies should be unionized, would not upset the Philadelphia plan where there was every indication that the men were satisfied, were receiving good wages and that the company was in a healthy condition. The witness answered that the Philadelphia plan could not result in permanent good to the employees; that it had been his experience that such organizations promoted by the company, always broke down when the organization attemped to get something from the company, for it had no bargaining strength.

The witness was then asked how the adoption by the commission of the three recommendations presented by labor would relieve the street railway situation. He replied that this would not help at all unless the recommendations were accompanied by other aid, including reorganizations and complete change of the attitude of the public to the industry and of the industry to the public and labor. He considered that these recommendations should be included as an essential part of the financial rehabilitation, since they would have a good effect in securing the necessary co-operation and eliminating the constant friction, which will be present without the execution of these recommendations. He said that these recommendations would, of course, add further to the burdens of the companies unless a long time financial rehabilitation was brought about, and that labor's recommendations had been made contingent upon such rehabilitation and assuming that it was needed.

Commissioner Sweet questioned further about the effect of the recommendations upon the Philadelphia plan, and the witness reiterated that such company organizations without affiliation with the national union were fundamentally unsound both from the interest of the public and of the employees, since the latter were not able to protect their own interests. The paternalism of the company involved in such cases was offensive to self-reliance and men did not like it and only wanted a proper opportunity to work out their own welfare. He said that companies which endeavored to evade unionism, by "beating the union to it," only fooled themselves. He attributed the successful operation of the company in Philadelphia very largely to the extra traffic brought by war industries, and to the ideal conditions existing for low operating costs, including the heavy density of traffic, rather than to the working of the men hand in hand with the company. He thought that the Philadelphia success with labor had been exaggerated.

WHY NATIONAL UNION IS NECESSARY

Mr. Sweet then asked if it was the witness' idea that the great advantage of affiliation with the national union was that it provided the fighting power of the Amalgamated Association with which to combat the greed and antagonism of the company. The witness replied that this was not his idea, but stated that the employees had not had their proper share and that if the principles enunciated in the recommendations were adopted, this would eliminate friction and antagonism between the company and men and secure co-operation. Commissioner Sweet pressed his question further by asking if the fighting power of the union was not superfluous, provided there was good co-operation and fellowship on both sides, and where a company had accepted the enlightened principles embodied in the peace treaty for the purpose of bringing industrial peace. The witness reiterated his previous reply that a local collective bargaining plan could not be permanently successful.

Mr. Sweet then stated his personal opinion that if the recommendation of the union meant the undoing of the plan in operation in Philadelphia, which represented the best example in the street railway field at present, and in comparison with which the witness was unable to cite any unionized company which was enjoying equal success, then he could not see how the recommendation of labor could be adopted.

This inadvertent expression of opinion on the part of the commissioner called forth a rebuke from Commissioner Mahon, and precipitated the beginning of a speech in behalf of labor. But Chairman Elmquist was firm in restoring order and directing that the cross-examination of the commissioners among themselves would be reserved for executive session.

Mr. Lauck confirmed an interrogatory statement that the rehabilitation of the companies was as important to the general public and to the employees as it was to the management, and emphasized this by saying that the employees have a vital concern and do not want to obstruct but rather facilitate the solution of the problem. He said the success of any solution depends upon the public.

Commissioner Sweet then asked if it would be wise for the commission to load its report with anything that would tend to antagonize the public or prevent or militate against the financial rehabiliation of the industry. The witness replied "No," but said that if the inference was that the inclusion of the labor principles in the commission's recommendation would antagonize the public, then it was his opinion that the commission would be a derelict in performing its public duty if it did not recognize these principles.

Friday's Session

Mr. Lauck was recalled to the stand for further cross-examination in which most of the commissioners participated, and it was brought out that street railway labor, including clerks, stenographers and trainmen, were contending for an eight-hour day with a wage of $6.40 per day or $166.40 per month, whether organized or not.

Relative to the wages for the lowest class of labor in the street railway industry, the witness stated that the War Labor Board had placed the rate at 40 to 42 cents per hour and for motormen and conductors had added 3, 4 or 5 cents depending on the locality, although no rates less than 42 cents had been granted. Questioned as to differentials for skilled labor, including trainmen, Mr. Lauck could not express an opinion as to what they should actually be, but stated that those at present in effect should be maintained, based on the 100 per cent increase to common labor.

As to the effect on other industries of an 80 cents an hour rate in the street railway industry, Mr. Lauck believed that such a rate should apply to all industries, and that it was a fallacy to say it would increase the cost of living, for the public agreed that labor was entitled to a living wage. As to the effect on street railway fares, he contended that capital was entitled to a fair return, and that the public would pay the necessary increased fares or would cover any decrease in revenue by the remission of taxes and assessments.

Questioned with regard to the Philadelphia plan, he called it "a form of corporation feudalism," for the employees only obtained what the company believed was good for them. He also stated in this regard that the policy of labor was not only national but international and that trade unionism was more favored than any local form of organization and that unions gave protection to their members in that they had benefits covering sickness and death.

In answering Commissioner Wehle, the witness stated there was at present no movement in the Amalgamated to increase the effectiveness of union labor, but he believed that if the demands for a living wage and an eight-hour day were in effect, it would be an incentive for the fullest co-operation with capital, provided the management also used every effort to decrease the costs of operation. As to how this was to be obtained, he stated that the management should lay down qualifications for the holders of all jobs and it would be the duty of the labor leaders to see that union members met these qualifications otherwise they would be dismissed. Commissioner Mahon pointed out that this plan was written into a number of contracts between the railway companies and the Amalgamated and that if, after a probation period, the prospective trainmen did not measure up to that standard they were discharged.

The witness was asked whether labor would co-operate, if the American Electric Railway Association were to recognize the claims of labor and offer a constructive plan to care for the future, including effectualization of management. He stated that it is the right of the public to expect the fullest production, for their interest was paramount.

In speaking of whether an increase in compensation dependent on gross earnings would act as an incentive for increasing production, Mr. Lauck thought this might be practical, although he questioned whether a profit-sharing scheme with participation by the management might not be held in distrust. He called attention, however, to the plan in effect in England during the war where managers and employees, through joint adjustment boards, co-operated and materially reduced the costs and at the same time increased the piece-work rates paid shipyard employees.

In conclusion, he stated that the success of any plan must be predicated on the demands of labor for a living wage. In advocating these principles as a part of the bill of rights for democracy in industry, he conceded that the rights of the public were paramount, but that labor should not be treated as a commodity. The Amalgamated Association, he stated, had refrained from establishing any specific rate of pay, but did ask the commission to recognize these principles so that the various street railway managements could work out the details.

After the cross-examination of Mr. Lauck had been completed, Commissioner Mahon stated that he did not believe it was incumbent upon him to take the stand, inasmuch as he was a member of the commission. However, statements showing the benefits of the association would be prepared by Mr. Lauck and filed for the information of the commission.

MR. MORTIMER COMPARES THREE 5-CENT CITIES

J. D. Mortimer, president North American Company, then took the stand at the request of Mr. Warren for the purpose of submitting further data and information to clarify certain references which had been made to Cleveland and other cities.

Mr. Mortimer said that the testimony during the earlier part of the week suggested that the cost of service plan under the Cleveland franchise was not tending to produce as good results as the reputed methods of co-operative management in Philadelphia. He called attention to the fact that the Philadelphia management had at no time said that it did not need more revenues than could be produced by the 5-cent fare. What the Philadelphia management said was that the company wished more passengers at 5 cents rather than fewer passengers at a higher fare. There are few electric railway operators in the country who feel otherwise about the matter. We all want more traffic rather than less. We would all like to carry sufficient traffic at 5 cents to make the business remunerative. Mr. Mortimer said:

"It is impossible for the Federal Electric Railways Commission to draw any accurate conclusions from the testimony so far presented concerning the Philadelphia situation, or the general railway problem. It has been suggested that the 5-cent fare in Philadelphia with 3-cent transfer charge at some points is producing satisfactory results. The 5-cent fare is no doubt quite satisfactory to the people of Philadelphia when contrasted with the higher fares which are being paid in many other cities. The opportunity has been left with the commission to infer that this fare is satisfactory to the Philadelphia Rapid Transit Company, and that the reason that the company during the year 1918 and during 1919 to date has gotten along without any increase in fares is because of the type of management, involving a high degree of co-operation between management and employees.

"In my opinion the reason that the 5-cent fare has apparently given satisfaction is based upon entirely different grounds. Whether or not it is remunerative will be disclosed by the figures which I will submit later. There is no more justification for attaching what are reported to be satisfactory results from a 5-cent fare to the co-operative management than there is to say that Cleveland is successful because the motormen and conductors belong to the Amalgamated Association. It would be just as proper to say that the low rate of return in Milwaukee results from large production of beer, or that the 5-cent fare in Philadelphia is satisfactory because there formerly was a large proportion of Quakers in that city.

"It might also be alleged that the 5-cent fare in Philadelphia is more satisfactory to the management of the Philadelphia Rapid Transit Company than it is to the management of the Cleveland and Milwaukee companies, because the municipality is constructing a rapid transit system and has not yet made arrangements for its operation, while there are no such rapid transit systems under construction in Cleveland and Milwaukee. The question of adequacy or inadequacy is far more fundamental than the form of collective bargaining used in dealing with employee."

Mr. Mortimer referred briefly to the principal features of the so-called Tayler ordinance, under which the Cleveland railway system is operated, and said: "While it has been designated as a service-at-cost plan, it is my opinion that it is a service-at-less-than-cost plan, because:

"1. The ordinance does not permit the setting up of any depreciation reserve, and future car riders will accordingly be required to pay for service which is being given to present riders.

"2. Due to replacements of physical property and inability to take care of them through current operating expenses without very largely increasing fares, the company is required to suspend the amounts and thereby show continuously a condition of insolvency.

"3. The 6 per cent interest provided for in the ordinance is inflexible and does not today cover the costs of capital for investment in street railway utilities.

"4. In the event that the municipality does not buy the property or indicate its intention of so doing, or extend the franchise beyond 1935, then the security holders are subject to a large hazard involving readjustment at the end of 1935, and they may be subjected to the same proportionate reduction in the value of their assets, as was the physical property of the company at the time of the Johnson-Goff appraisal in 1909, where about $7,500,000 was written off the value of the property.

"5. The plan under which the number of cars for service is determined does not lead to satisfactory conditions of car loading, nor of frequency. The standards of car loading applied in Cleveland call for a larger proportion of standing passengers than is permitted by any standards ordered or recommended by any regulating authority. The question of standards of service has a very important bearing upon the rate of fare.

"6. The conditions under which trainmen are required to operate involve short runs as low as five hours in duration with spreads of duty up to fifteen hours which are not favorable and in turn have an important bearing upon the cost of service."

ANALYSIS OF PHILADELPHIA OPERATION

Touching on the Philadelphia situation, Mr. Mortimer said:

"The reasonableness of the present revenues of the company at a 5-cent fare with 3-cent transfer could only be determined by making an analysis of the cost of service. An analysis of the cost of service requires information respecting the fair value of the property. There is no information before the commission pertaining to such value, but for the purpose of my testimony such value could be assumed to lie within certain limitations.

"Assuming that the value was as low as $120,000,000, an amount equivalent to about four times the gross earnings, it will be necessary to add to the operating expenses, as shown by the company's income account, an amount equivalent to about $3,000,000 for additional allowance for replacements. If this sum is deducted from the amount reported to be available for the payment of interest, rentals, dividends, etc., then the company failed to earn its interest charges, rentals, etc., by $1,385,000. Instead of having earned something more than 5 per cent on the capital stock of $30,000,000, par value, it incurred a deficit of about 4 per cent. If the expenditures for maintenance in per cent of operating revenue were brought to the approximate figure of the Cleveland company, there would have to be deducted another $1,500,000. If, on the other hand, the value is placed at four and three-quarter times the gross earnings, or $152,000,000 a figure somewhat in excess of the net outstanding capitalization of the Philadelphia Company and all leased companies, an allowance of 2½ per cent would require a further deduction from income of $3,800,000 per year.

"If this deduction is made, the net operating revenues would be $7,515,000, equivalent to about 5 per cent on the assumed property value of $152,000,000, or short $2,165,000 of paying interest and rentals. Under this later computation, if we add to the deficit of interest and rentals the amount required to pay the dividend upon the stock of the operating company, revenues would have to be increased $3,665,000 on the basis of the 1918 results, an amount equivalent to about 12 per cent of the 1918 revenues, or about 6¼ per cent.

"I have no sympathy with some of the testimony introduced on Thursday, charging that the rentals paid by the Philadelphia Company for leased lines were excessive. It is impossible for any person not intimately conversant with the fundamental facts of value to say whether or not such rentals are excessive. The people of Philadelphia have benefited largely through the unification of the system, and the rentals which are now being paid are a part of the cost of unification.

"Philadelphia is an attractive street railway city because of its distribution of population and industries, tending to reduce the average length of haul of passengers and resulting in a larger use of equipment, through rush-hour cars carrying loads both ways."

Mr. Mortimer felt confident that any competent management in Philadelphia would find further opportunities of improving service and saving expense through rerouting and elimination of parallel lines, but also expressed the opinion that none of these economies would permit the company to earn a fair return upon a fair value at the present rates of fare.

The witness pointed out that the schedule speed was 8.95 in Philadelphia, 8.98 in Milwaukee and 10.43 in Cleveland. The higher schedule speed in Cleveland has been one of the most important contributing factors to the results which are being achieved there. The high schedule speed and large proportion of standing passengers, the absence of any depreciation reserve and the low rate of return were the distinguishing features of the operation of the Cleveland Railway. High schedule speed and large proportion of standing passengers were brought about initially at the instance of the city through its street railway commissioner and have been substantially maintained by the city's co-operation. The return earned on the utility capital in Cleveland during the year 1918 was estimated by Mr. Mortimer at 5.2 per cent, a sum which in his opinion is materially less than that required to attract capital into the business.

At the afternoon hearing on Friday, Mr. Mortimer continued his direct testimony by introducing a rather complete comparison of the various factors in the operation of the companies in Philadelphia, Cleveland and Milwaukee. In making this comparison he commented that it was unfortunate that there was no measure of the service rendered in various cities, so that to say the service in one city was more satisfactory than that in another was a very meaningless statement. The comparative operating statistics which he introduced are given on page 110.

OPERATING STATISTICS FOR THE YEAR ENDED DECEMBER 31, 1918

POPULATION

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Population served	1,735,000	810,000	425,000
Population served per mile of single track operated—revenue track only	2,808	2,360	2,356
Average riders per capita of population served per annum	316	337	268
Average passenger revenue per capita of population served, per annum	$17.94	$14.90	$12.63

GENERAL

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Investment in property and plant per dollar of annual operating revenue	?	$3.30*	$2.98
Per cent operating payrolls to operating revenues	42.06	?	43.87
Per cent current ordinary maintenance charges to operating revenues	14.25	19.15	16.89

* Includes $8,278,909 depreciation on investment excluded in ordinance settlement.

REVENUE

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Operating revenues per mile of single track operated—revenue track only	$50,369	$36,043	$29,753
Operating revenues per revenue car-hour	$3.27	*$3.49	$2.90
Operating revenue per revenue car-mile, cents	36.51	35.17	32.34
Passenger revenues per revenue passenger, cents	5.61	4.42	4.66
Passenger revenue per revenue and transfer passenger, cents	3.97	3.23	3.33

PASSENGER

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Total passengers	767,758,406	375,570,360	160,369,803
Revenue passengers	543,984,458	273,944,346	114,149,000
Transfer passengers (3 cents)	88,681,603	......	......
Transfer passengers (free)	130,472,269	100,022,519	45,709,197
Free passengers	4,620,076	1,603,495	511,606
Per cent of free transfer passengers to revenue passengers	24	37	40
Per cent of free transfer passengers to total passengers	17	27	28

TRAFFIC

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Total miles single track owned and leased	669.38	385.30	195.67
Miles single track operated, owned or leased—revenue track only	617.78	342.33	180.34
Miles single track other than revenue track	51.60	42.97	15.33
Revenue passenger cars owned	2,862	1,469	576
Revenue car-hours	9,518,735	3,536,016*	1,847,403
Revenue car-miles	85,226,151	36,875,603	16,591,121
Revenue car-miles per revenue car-hour	8.95	10.43	8.98
Revenue car-miles per mile of single track operated—revenue track only	137,950	107,719	91,999
Revenue car-hours per revenue car	3,326	2,407	3,207
Revenue car-miles per revenue car	29,778	25,102	28,804
Revenue car-miles per annum per capita of population served	49.12	45.42	39.02
Revenue passengers per revenue car-mile	6.38	7.47	6.88

* Estimated from reported speed.

INCOME

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Operating revenues	$31,117,477	$12,338,906	$5,365,806
Operating expenses	20,369,571	10,216,228	4,940,364
Way and structures	1,738,740	1,117,293	390,192
Equipment	2,287,207	1,184,516	524,341
Power	3,128,814	1,199,905	898,669
Conducting transportation	8,951,880	3,877,569	1,960,835
Traffic	111,117*	......	......
General and miscellaneous	2,182,861	1,372,530	446,114
Depreciation	319,998	744,000	404,810
Taxes	1,871,175	720,413	315,401
Net operating revenues	10,747,906	2,122,677	425,440
Investment	?	40,613,320	15,991,395
Per cent return on investment	?	5.20	2.66

* Credit.

EXPENSE

	Philadelphia Rapid Transit Company	Cleveland Railway Company	The Milwaukee Electric Ry. & Lt. Company
Total operating expenses (including taxes)	$20,369,571	$10,216,228	$4,940,364
Per mile of single track operated—revenue track only	$32,972	$29,843	$27,394
Per revenue car-hour	$2.14	$2.88	$2.67
Per revenue car-mile, cents	23.90	27.73	29.77
Per 1000 revenue passengers	$37.40	$37.38	$43.26
Per 1000 revenue and transfer passengers	$26.50	$27.20	$30.81
Per capita population	$11.74	$12.61	$11.62
Way and structures	$1,738,740	$1,117,294	$390,192
Per revenue car-hour, cents	18.27	31.57	21.12
Per revenue car-miles, cents	2.02	3.03	2.35
Per 1000 revenue passengers	$3.20	$4.08	$3.42
Per mile single track operated, revenue only	$2,814.49	$3,263.79	$2,163.65
Equipment	$2,287,207	$1,184,517	$524,342
Per revenue car-hour, cents	24.03	33.50	28.38
Per revenue car-mile, cents	2.68	3.21	3.16
Per 1000 revenue passengers	$4.20	$4.34	$4.58
Per revenue passenger car owned	$799.16	$863.42	$910.32
Power	$3,128,814	$1,199,905	$898,669
Per revenue car-hour, cents	32.87	33.93	48.65
Per revenue car-mile, cents	3.67	3.25	5.42
Per 1000 revenue passengers	$5.75	$4.39	$7.85
Conducting Transportation	$8,951,880	$3,777,569	$1,960,835
Per revenue car-hour, cents	94.04	109.66	106.14
Per revenue car-mile, cents	10.50	10.52	11.82
Per 1000 revenue passengers	$16.46	$14.16	$17.18
Wages of Trainmen	$7,094,518	$3,243,346	$1,540,892
Per revenue car-hour, cents	74.54	91.72	83.41
Traffic	$111,117*	......	......
General and Miscellaneous	$2,182,862	$1,372,530	$446,114
Per 1000 revenue passengers	$4.01	$5.04	$3.90
Per cent of operating revenues	7.01	11.13	8.33
Depreciation	$319,998	$744,000	$404,810
Per 1000 revenue passengers	$0.59	$2.72	$3.54
Per cent of operating revenues	1.03	6.03	7.55
Taxes	$1,871,175	$720,413	$315,401
Per 1000 revenue passengers	$3.44	$2.64	$2.76
Per cent of operating revenues	6.01	5.84	5.88

* Credit.

Having concluded his direct statement Mr. Mortimer was asked a number of questions by the commissioners which served to bring out more fully his ideas in regard to the proper provision for maintenance and depreciation under the service-at-cost plan and to the difficulty involved in bringing about a public appreciation of its railway system. In this latter respect, he compared Cleveland, where all of the municipal officials are constantly boosting the service in the public eye and leading people to think they are receiving the best service in the world, with Milwaukee, where the Mayor, Common Council and city attorneys' office are not only not co-operating with the company but are constantly attacking it and making accusations of bad service, enormous earnings, etc., regardless of the facts.

Mr. Mortimer also explained in answer to further questioning that there was no local of the Amalgamated Association in Milwaukee and that the Employees Mutual Benefit Association had all the power of collective bargaining. He said that this organization had been organized to prevent strikes but that it had not been effective, for the employees of the company struck in January of this year. As an outcome of this strike, the State Legislature enacted a law providing a permanent arbitration board, to which all matters of dispute of this character are to be referred. It is intended that this board shall, after investigating any dispute, transmit its finding to the State Railroad Commission. If the commission finds that the utility can earn the increased wages, if the board approves an increase, the commission has power to order the company to grant the increase. If the commission finds that the utility cannot earn the increase, the law provides that it shall establish rates which will enable the company to pay the increased wages and make a reasonable return on the investment.

PHILADELPHIA TAKES THE STAND AGAIN

Mr. Joyce of the Philadelphia Rapid Transit Company was then called to the stand again to present certain data which the commission had requested when he testified earlier in the week. The witness first presented a letter from T. E. Mitten, president of the company, as shown on page 111.

Mr. Joyce also presented a table showing the comparative earnings and wage scale for the years 1910 and 1919 for the companies in Philadelphia, Detroit and Cleveland.

EARNINGS AND WAGE SCALE, 1910—1919

	Philadelphia			Detroit			Cleveland		
	1910	1919	Increase Decrease*	1910	1919	Increase	1910	1919	Increase
Trainmen	7,424	6,264	*15.6%	1883	2,900	54%	2,083	2,745	31.7%
Average rate per hour paid trainmen.	0.23c.	57,65c.	151%	27c.	57.51c.	118%	0.28c.	.59c.	110.71%
Gross earnings of Co. per trainman.	$2,590	$5,508	112.6%	$3,311	$5,345	61.4%	$2,867	$5,442	90%
Average pay per day	......	$5,51	......	......	$5.10	......	......	$5.00	......
Average rate of fare	4.13c.	3.98c.	*3.6%	4.09c.	5c.	22.8%	2.63c.	3.91c.	48.7%
Passengers carried per trainman	62,711	138,383	120.7%	82,114	106,896	30.1%	109,020	137,197	27.0%

NOTE: Philadelphia figures are actual. Detroit and Cleveland figures are derived from the best available information.

PHILADELPHIA RAPID TRANSIT COMPANY
EXECUTIVE OFFICES
1035 LAND TITLE BUILDING
T. E. MITTEN,
Chairman, Executive Committee

PHILADELPHIA, October 2, 1919.

HON. CHARLES E. ELMQUIST, *Chairman*,
Federal Electric Railways Commission.
Washington, D. C.

Agreeable to Mr. Joyce's promise to supply additional information relative to working hours of motormen and conductors, and also our ability to continue the 5-cent fare, the following data is submitted:

Working Hours of Motormen and Conductors

Philadelphia's surface lines have no three-piece runs.

The system comprises 2473 regular runs, of which 1323, equalling 53.5 per cent are straight runs and 1150, equalling 46.5 per cent, are two-piece runs.

The average over-all time per run is 11 hours, 33 minutes.

The average pay-time is 9 hours, 30 minutes.

The average lost time is 2 hours, 3 minutes.

The pay-time is divided as follows:

Hours per Day	No. of Runs	Percentage
8- 9	611	24.7
9-10	1285	51.9
10-11	530	21.4
11-12	47	2.0
Avg. 9.5 hrs.	2473	100.0

Ninety-seven per cent of all car operating time is worked as a part of regular runs, leaving only 3 per cent to be assigned as trippers. The average pay-time on regular runs is 9.5 hours, requiring 307 days' work per annum to earn the system average for motormen and conductors of $1690 per year.

According to the figures taken from Wednesday's testimony for Detroit in 1917, therein stated to be slightly improved for 1919, the comparison of over-all time at Detroit and Philadelphia is as follows, the average pay-time of both cities being 9.5 hours:

Completed within	Detroit		Philadelphia	
	No. Runs	%	No. Runs	%
13 hours	865	62.5	1808	73.1
14 "	195	14.2	513	20.7
15 "	147	10.6	135	5.5
16 "	77	5.7	17	0.7
17 "	51	3.7	....	....
18 "	46	3.3	....	....
19 "	1	....	....	....
	1382	100.0	2473	100.0

Continuance of the 5-Cent Fare

The wage increase of August 7, approximating $2,500,000 per annum, was in full effect during the entire month of September. Operating results for September are significant, showing as they do that the proportionate amount of all yearly charges and 5 per cent dividend has been earned, with a continued 5-cent fare—operating ratio (excluding taxes) 61.55 per cent.

Co-operative effort, with a force of well-trained employees, of which 85 per cent receive the maximum rate and 55 per cent are more than five years in service, is here found adequate to overcome obstacles seemingly insurmountable elsewhere.

T. E. MITTEN, President.

In answer to questioning by the commissioners, Mr. Joyce testified that the longest ride for 5 cents in Philadelphia is 14.2 miles. The average earnings of the men on the extra list per week during the month of August, 1919, had been $26.30. The gross earnings of the company for September, 1919, were $3,070,000 as compared with $2,728,000 in 1918. The surplus for the month this year was $185,000, as compared with $237,621 for the year before, this surplus still showing an amount above that required to pay the 5 per cent dividend of the company which calls for $125,000 per month. These figures were given to show that the company was absorbing the full operating expenses in spite of the recent wage increases.

PHILADELPHIA BUSINESS MEN MAKE PLEA ON HIGH RENTALS

At this point Charlton Ogburn, executive secretary of the commission, read a letter from the United Business Men's Association of Philadelphia which claimed to have 25,000 members, in which an appeal was made to the commission to seriously consider means of dispensing with the enormous rentals, which many companies are being forced to pay to underlying companies. The letter stated that these rentals were far in excess of any contributions by the properties of the underlying companies to the present earnings of the operating company. Of the $12,000,000 of profit earned last year, the operating company responsible for the showing received only one-sixth while the underlying companies which supplied no new rails, cars or no increased wages, received five-sixths or $10,000,000. This letter claimed that the average receipts per passenger for the last ten years had been 4.25 cents while the average operating cost had been 2.4 cents. In other words, the earnings had been enough to pay 6 per cent on the entire investment and return the entire capitalization to the owners.

It was stated that one of the underlying companies was receiving a rental equivalent to 22.9 per cent and that the original capital was repaid every two years. Another company was receiving 21.9 per cent and the original capital was repaid every two years. A third was receiving 9.5 per cent and the original capital repaid every two years. A fourth was receiving 15 per cent and the original capital repaid every three years. A fifth was receiving 6 per cent and the original capital repaid every four years. This condition had been going on for thirty-five years and was apparently to continue for 999 years less about thirty.

Mr. Ogburn announced that he had requested Stephen J. Miller of the University of Washington to make a comparative study of the operation of the Seattle street railways under private and under municipal ownership and operation. He also expected to have a report from Mr. Bell of the Department of Railways of Canada dealing with the operation of municipally-owned railways in the Dominion. The secretary also read a long telegram from W. H. Dickson, general chairman of the Tramway Adjustment Committee of Fifty-five, of Denver, which told of the work of that committee in endeavoring to find a solution for the street railway problem locally and offering to lay the complete data which it had collected before the Federal Commission. This telegram also asked that the Federal Commission hold a meeting at Denver or send a representative to assist in working out the service-at-cost ordinance which is being prepared there.

Stiles P. Jones, who testified on Thursday and presented the evidence on over-capitalization in behalf of labor, took the stand a second time to challenge the accuracy of the exhibit on this same subject which had been prepared by Mr. Welsh of the American Electric Railway Association. Mr. Warren asked permission of the commission to have Mr. Welsh file a reply to Mr. Jones' criticism, which was granted.

Marion Jackson, representing Mayor Key of Atlanta, Ga., who had been given a hearing several weeks ago, took the stand to present additional information showing the intercorporate complexities and pyramiding of holding companies. He declared that the operating companies were earning very large profits which were being covered up by the complexity of the organizations. This condition was his argument for a general program of municipal ownership.

Friday evening, Marion Jackson resumed the stand and continued his testimony regarding holding companies. On being questioned, he stated that practically all the information which he had presented was not new but was given in financial manuals.

To answer a question from Commissioner Wehle as to what the American Electric Railway Association did to keep its members advised on developments in the art, Mr. Warren filed with the commission a complete set of Proceedings for the last convention, a copy of the Association Year Book, a copy of the Engineering Manual, and a copy of Doolittle's book, "Cost of Urban Transportation Service." Mr. Warren asked that the "Code of Principles" adopted by the association be copied into the record, inasmuch as exception to it had been taken by one of the witnesses.

Secretary Ogburn stated that he had received a considerable number of statements for filing with the commission. Among those that had submitted statements, he mentioned Stone and Webster, Corporation Counsel Burr representing Mayor Hylan of New York and the City of Camden, N. J.

The statement by Mr. Burr reviewed the conflict between the city administration and the traction companies and public service commission, as it has developed since Mr. Burr appeared before the Federal Commission. This conflict was brought about by the increases in fare granted, the abandonment of service on some lines and severing some subsidiary companies from the main operating company.

The statement by the City of Camden appears in abstract elsewhere in this issue.

Saturday's Session

Joseph B. Eastman, Interstate Commerce Commissioner and formerly a member of the Massachusetts Public Service Commission, took the stand Saturday morning and reviewed the Massachusetts situation. He pointed out that the two fundamental weaknesses in that state were the over-mileage and the consolidation of poor roads with good ones on a share for share basis.

The witness referred briefly to the results of the zone system of fare collection as it has worked out in Massachusetts and said that while he had first looked upon this as a good plan for increasing revenues, he had later revised his opinion in view of the experience. He said that the zone plans had not brought the desired revenue and the people apparently preferred a flat-fare increase. This experience had been met with both in Holyoke and Springfield. When the zone system does not produce the necessary revenue, it is necessary to either reduce the central fare area or increase the fare, either process doing away with the advantage of the 5-cent fare.

Turning his thoughts to the problem before the Federal Commission, Commissioner Eastman said that he believed the street railway problem must be solved essentially as a local one. The Federal Commission could only help by diagnosing the disease, having the advantage of a broader view of the situation unbiased by local viewpoint or prejudices.

He then endeavored to suggest a constructive outline of recommendations which it seemed to him the commission should make.

First, he would lay a good groundwork for recommendations by a statement of the present situation, pointing out that there is at present no substitute for the street railways and enlarging upon the importance of urban transportation.

Second, he would state frankly that there has been over-capitalization in the past, exorbitant rentals, mismanagement, etc. He would point out that this has been disreputable in some cases, but would show that at the same time not all companies have been guilty of these practices and others have already cleared up such faults.

Third, he would point out that a more important cause of the present dilemma is the vast increase in expenditures for wages, coal, basic materials, and all items involved in transportation work.

Fourth, he would state the absolute necessity of making larger allowances for depreciation. He was inclined to think that the adequacy of this allowance should be determined by public service commissions and that it should be required. He contended that the only way a company can be in a position to take advantage of improvements in the art is through having a depreciation fund large enough to replace the property.

Fifth, he would point out and analyze the inroads into the business which have been made by the competition of the automobile.

Sixth, he would make clear to the owners, managers, employees, and public, the great opportunities which exist for making improvements in the service. He would point out means of conserving labor by increasing the mileage per hour through skip stops, higher speed and acceleration, elimination of lay-overs, use of trailers, safety cars of proper type, and properly located and equipped power houses and shops. He would also call attention to the advantages of current-measuring devices as a means to conserve power, of fare registering devices, fare boxes, etc. He would also point out the need for enterprise in maintaining attractive equipment, in promoting courteous treatment to passengers, and doing everything possible to attract patronage. He declared that many railway men have been prone to rely too much on increased fares and neglect other means of increasing the net. He would point out to the employees the great need for co-operation and moderation and advise them that they were working for a sick industry. It was essential that the problem be worked out and this was of no greater interest to anyone than the employees. They should therefore do everything possible to attract the public and to conserve expenses by careful handling of equipment. He said he recognized the wisdom of dealing with the organizations of the men and even looked with favor upon representation of labor in the management. But he said labor should not be guilty of any hot-headed or intemperate action.

Seventh, he would point out the great danger of unregulated jitney competition.

Eighth, he would point out the necessity for a restoration of credit so that the industry may be able to attract capital necessary for those improvements already suggested. In this connection Mr. Eastman said that there were two ways of restoring credit, one by supporting and improving the credit of private corporations and the other, by relying on public credit.

RESTORATION OF CREDIT OF THE RAILWAYS

He said that the only way that private credit can be improved is through a process which will make it possible for the corporation to market common stock. He pointed out that the Cleveland Railway was now arbitrating the matter of a 7 per cent return on its capital stock and that Dean M. E. Cooley of the University of Michigan had said that in other cities it would be necessary to guarantee 8 or 9 per cent. Even then, Mr. Eastman feared, the investors would be afraid to put their money in the street railways in view of the past history of earnings. The witness said further that the situation is complicated by the fact that increases of fares do not necessarily bring increased earnings.

The alternative, which seemed to the witness to be practically the only way of restoring credit, was public ownership. He said he was sorry that this question had been shrouded in prejudices on both sides, the one claiming that it was a panacea for all ills, while the other claimed that it was all wrong. The question should be approached from the angle that it is an essential industry, a public function which must be performed. He thought it would be advisable to endeavor to see what the real dangers in public ownership are, and then attempt to find remedies for them, and he believed that the remedies could be found. The street railway service is so important to every element in a community that it is essential that it be operated with the greatest efficiency.

The witness appreciated that the railways must be kept out of politics and believed that this could be done, citing the public schools, fire department, and water works as examples of public ownership which on the whole have been remarkably free from political manipulation. He then turned his thoughts for a moment to various means which might be employed for carrying out these ideas, but said that the Federal Commission should naturally concern itself only with the principles, leaving the details to be worked out by the local people.

The witness said that under public ownership the railways are not entirely dependent on earnings, while under private ownership they are. He thought it was absolutely sound to make the railways pay their own way if they could, but that it might be of advantage to all to pay a part of the expense from tax levies, rather than cut service, this usually also cutting patronage. Such an arrangement might secure the best net result. This could be done under public ownership but not under private.

Questioned by one of the commissioners as to whether the Federal Commission should recommend public ownership, the witness answered that there had hardly been sufficient experience on the subject in this country to warrant such a recommendation, but that that principle might be advocated as representing the only apparent solution, and one to be looked upon as an experiment. And he believed it could be made a successful experiment. Asked about the advisability of subsidizing the railways, Mr. Eastman said that he would not recommend it, that it was a dangerous and undesirable principle. He was of the opinion that if the State lends its resources, it must have full control.

In reply to a question about the excessive rentals with which some companies are burdened, he said that this was one of the dilemmas of the situation and that it was a fault of the management of the company that such contracts had been entered into. The burden should therefore not be placed upon the public but should be borne by the stockholders. But he called attention to the fact that as soon as an effort toward adjustment by this means is made, it affects the credit of the company. This is, of course, most undesirable, but the witness said that perhaps it could not be avoided.

Milo B. Maltbie was the next witness. He took up many phases of the street railway situation and gave his opinions briefly without attempting to elaborate. He spoke of the advantage of regulation over that of operation under a contract, since the latter cannot be changed except by the mutual consent of both parties. A mistake either way may cause no end of trouble and there is no relief if the other party refuses to release the obligations. A fixed contract, he stated, which attempts to provide for changing conditions by leaving points to arbitration by three outsiders is not good and is likely to be unsuccessful.

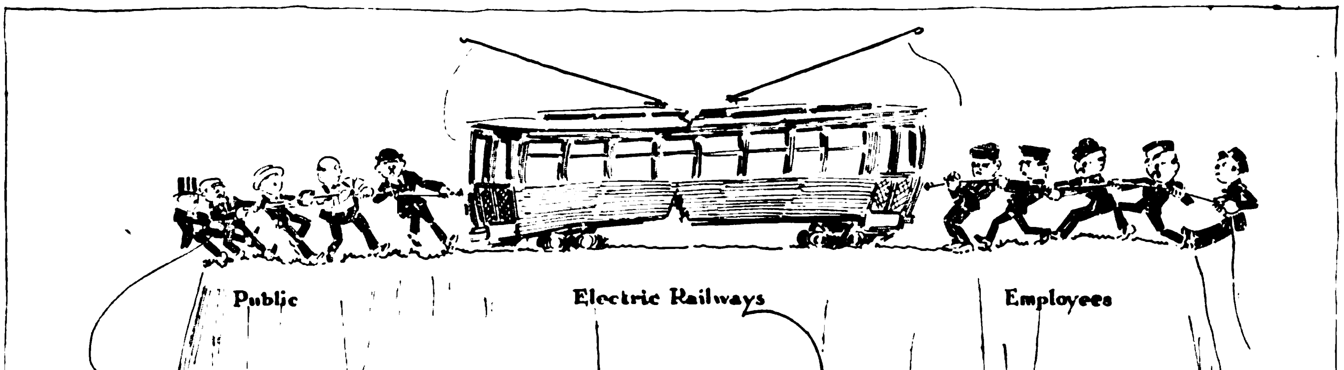
Edward W. Bemis, consulting engineer, Chicago, then took the stand and presented a perpared statement, an abstract of which appears elsewhere.

After Professor Bemis finished his testimony, C. Oscar Beasley, representing the United Business Men's Association of Philadelphia, was called to the stand. He had appeared to amplify the statement previously made by letter from the association.

Mr. Beasley spoke of the excessively large rentals being paid to the underlying companies of the Philadelphia Rapid Transit Company. Asked to outline these leases, he said:

"The most eminent attorneys of our city were employed some thirty-five years ago for the purpose of drawing these leases, and to make them applicable to any street railway. Years ago when I appeared before the Ways and Means Committee here in Washington, one of these lawyers sent down a brief that these leases were in the manner of ground rent, and that has been the theory that they have taught our street railway courts. They are contracts protected from amendment by the contract laws of our constitution. The first ray of light that we had was a decision in the United States Supreme Court in the Northern Utilities case and that said this: 'We cannot recognize the right to do manifest wrong.' That was the first break in the contract laws. This ruling also stated that no manner of contract could be used to deprive the commonwealth of its power; that no one legislature could authorize a contract that could bind another state legislature. The decision was handed down about a month ago that contracts cannot bind the commonwealth."

Secretary Ogburn presented a statement which had been forwarded by Lawson Purdy concerning the assessment of property to pay for street railway extensions. Mr. Purdy offered the view that real property should be taxed for railway extensions in proportion to the benefit derived from the presence of the railway, and that this would provide a means of gradually amortizing the railway investment so that service could ultimately be given for a rate of fare which would produce operating costs only.



If She Breaks We All Lose

Philadelphia's Answer to the Traction Question*

The Co-operative Plan Under Which the Philadelphia Rapid Transit System Operates, Has Enabled the Company to Continue Giving Service on a Five-Cent Fare—The Cure for Present Conditions in Other Cities Lies in Honest Dealing, Efficient Management and Effective Workers

By T. E. MITTEN
President Philadelphia Rapid Transit Company

PENDING the completion of the Philadelphia story, this brief forecast of what the finished story will show is sent.

1. RESULTS SECURED UNDER CO-OPERATIVE PLAN 1911-1919

(a) Eight months report of operation, January-August, 1919, just issued, showing proportionate amount of all yearly charges and the 5 per cent dividend earned with a continued 5-cent fare; operating ratio (excluding taxes) 61.79 per cent.

(b) Eight-year report for period ending Dec. 31, 1918, showing as it does, the result of co-operative effort. Public patronage increased from 188 to over 400 rides per capita since 1910. Fares decreased from average of 4.13 cents to 3.98 cents per passenger. Car equipment modernized and service much improved. Wages increased 154 per cent from average of $622 to $1,589 per annum. Collective bargaining and co-operative welfare established with protection of $1,000 life insurance to every employee. Transformation of the inherited 1910 deficit of $318,006 into surplus of $4,482,119 in 1918; $3,597,578 in addition being meanwhile paid to P. R. T. stockholders in dividends at the rate of 5 per cent per annum commencing in 1916.

(c) Abstract from annual reports of P. R. T. covering the period from formation of the company in 1902 up to incoming of Stotesbury-Mitten management in 1911, showing the trend of events resulting in transformation of earned surplus in 1903, $405,888, to a deficit from operation of $1,222,735 for the year 1910, with accompanying exhaustion of corporate assets and impending bankruptcy. To this will be added extracts from the pamphlet describing "Proposed Loan of 1911" embracing, as it does, the several letters outlining the scope of and reason for Mr. Stotesbury's undertaking the task. It might be well to explain, that as a first bid for public support, the interest of every newspaper was at the outset secured by my personally urging the righteousness of our undertaking and the need of establishing public confidence by a frank and fair statement of every change as made and the actuating reason therefor. The flu campaign, with its aggressive publicity, and the successful fight for skip-stop continuance will be referred to as will also the "Committee of Thirteen" and their wonderful work, as showing the need of broadminded activities and also of untiring persistence in the interest of continuing economies essential to the low operating costs which made possible the basic fare of 5 cents.

2. THE CO-OPERATIVE PLAN OF 1911-1918

(a) Abstract of the printed booklet containing the Co-operative Plan, issued in 1918 following the endorsement of the War Labor Board, will review at some length the struggle of the period 1911-1918 and will describe the collective bargaining feature.

The fact that the election of employee's representatives by secret ballot in 1918 was, at the request of the War Labor Board, conducted under the personal direction of the War Labor Board's representative, is notable, as this completed the performance necessary to the unqualified indorsement evidenced by letter of the War Labor Board's chief examiner, E. B. Woods, under date of Dec. 10, 1918, stating that the plan for collective bargaining established among the workers of the Philadelphia Rapid Transit Company was not only indorsed by Mr. Taft and Mr. Walsh, but that in addition, the entire Board unanimously agreed that the general intent and spirit of its provisions were entirely in accord with the principles of the Board.

(b) The two-day picnic of the employees, Sept. 3 and 4, 1919, at Willow Grove—the 50,000 attendance, the 99½ per cent membership, the expressions of the men as contained in the talks of the employees' representatives, the speeches of Chairman Elmquist and Chairman Ainey, and my own talk at the picnic dinner will be reproduced for the information of the commission. In these troublous times, it will be difficult for the members of the commission to understand how this oasis in the desert can possibly exist and I am only sorry that the whole commission could not have been at the picnic to absorb the atmosphere of confidence and contentment which provoked the notable expression contained in Chairman Elmquist's speech, giving to co-operation an added meaning, in that to us it now also spells patriotism.

(c) The Co-operative Booklet containing the plan of August, 1911, describing the putting aside of 22 per cent of gross earnings into a wage fund, will be in evidence as will also all printed matter significant of the various moves undertaken from time to time to inspire confidence in the good intent of the management, and to show the firm stand maintained in support of the well-defined principles and established policy as set forth in the plan.

In the co-operative plan of 1918 it was made necessary to depart from the idea of participation in proceeds as contained in the co-operative plan of 1911, as a war-time expedient to bridge over a very difficult period. High wages will be continued, and in addition, the return to a plan of participation by our employees in the results of their extraordinarily effective service is now being given careful consideration.

The co-operative plan, as presented to the unions in 1911, and their signed agreement to abide by the vote and thereafter co-operate under the plan will be of interest. The troublous days of misunderstanding and misrepresentation will be reviewed from the Co-operative Bulletins 1 to 27, which carried the men and management through to the clearer understanding and complete confidence of the present day.

---

* Abstract of statement made before Federal Electric Railways Commission, Washington, D. C., Sept. 29, 1919.

(d) As showing progress along the way, there will be introduced an account of the hearings of the earlier Federal Industrial Relations Commission with which Mr. Walsh was so prominently identified and before which I gave evidence at the Philadelphia hearings in 1914.

(e) Dashboard and bulkhead advertising and its effect in spurring on the activities of the men have been most useful in securing co-operation as between men, management and car-rider. The letters issued in folder form to all employees under dates of May 28 and August 13, 1919, urging salesmanship and increased patronage to overcome increased cost, which received such wide publicity through the press, represent a high note in this endeavor. The bulkhead, showing that—*high fares make riders walk—low fares make walkers ride—more fares make low fares*—represents top-notch in keeping the attention of the car-rider on what we are trying to do and creating a desire on his part to co-operate in making it an accomplished fact.

3. PHILADELPHIA'S EXPERIENCE

The view of the Philadelphia situation will be considerably clarified when it is understood that Mr. Stotesbury's interest in the situation is not one of ownership, in that neither he nor I have any financial interest in the securities of the street railway company.

Mr. Stotesbury is interested in accomplishing something worth while for the city of his birth, while my own ambition in this regard is to demonstrate that there is a real and rational way by which the vexed problem may be solved.

Results here secured are thrown into bold relief by comparison with conditions existing elsewhere. P. R. T., with almost 5 per cent less employees than in 1910, is now producing over 98 per cent more effective traffic units per employee; this as against results secured on the Pennsylvania Railroad, contained in a speech by Vice-President W. W. Atterbury as reported in the public press, wherein the number of employees is said to have been increased 14 per cent, the output (or effective traffic units) being 11 per cent less than in pre-war days. The case of the Pennsylvania Railroad, showing decreased production, is but one of the many instances wherein the effort to increase production has given way to the great struggle upon the part of labor to secure a larger wage for a smaller amount of work.

Aside from the urgent necessity of helping to make up for the shortage of necessaries occasioned by the war in Europe, it stands to reason that capital and labor cannot divide that which does not exist and that more of everything essential must now be produced in order that there may be more with which to supply our needs. If the forces of labor and management will combine so effectively as to produce almost 100 per cent more per man, as we are doing here through co-operative effort, much, if not all, that is required to overcome the higher cost of living will have been accomplished.

The keystone of all success as between men and management is confidence. Distrust breeds discontent. Confidence begets confidence and co-operative effort then becomes possible. The confidence of the men in the management, and likewise the confidence of the management in the men is what makes Philadelphia stand out in accomplishment.

Philadelphia is almost alone in its position of antagonism to "cash box fare collection" or any system which tends to show a lack of confidence in the conductor. It can hardly be expected that a self-respecting employee will take seriously the statement that he is our partner if we require the action of the passenger to assure us that the fare collections are being properly made.

So much for confidence and its god-child—co-operation. Frank statement, fair dealing, and honest purpose with patience and perseverance may be counted on in the long run to win the support of a community.

The public have for so long been befooled and bedeviled that they are now in a mood to question the demands not only of capital, but also of labor. This feeling is growing in its intensity as the citizen of inquiring mind discovers that while all about is heard the demand for a living wage, yet all evidence of merchants is to the effect that the wage-earner is now demanding the most expensive class of goods and buying with great prodigality. The owners of automobiles among the wage-earners have become legion, and it would seem that the difficulty now is as much with the higher price of gasoline as with the increased cost of our daily bread.

My own statement before the Pennsylvania Public Service Commission in the 3-cent exchange case may be taken as an example of frank statement showing the willingness of this management to jeopardize its own case rather than refrain from putting forth all of the facts necessary to the knowledge of the Public Service Commission. This statement will also be useful in setting forth our position as against city paving and other burdens of like character being placed on the back of the car-rider and reiterates our conviction that such charges should be covered by general taxation and that the car-rider should be given the fullest value for his 5-cent piece that co-operation between the public, the men and the management can be made to produce.

4. THE EXPERIENCE OF OTHER CITIES

The so-called service-at-cost plans are already proving a disappointment, for the reason that neither men nor management are paid according to the excellence of their work.

Boston is one example where expenses have mounted skyward and no fare, possible of collection, has been found sufficient to meet the added cost of production.

Cleveland has already nullified Tom Johnson's accomplishment of sweating profits from the owners and thus reducing rentals, by showing an inability to now produce its very short ride at 5 cents without charging an extra 1 cent for transfer. The city of Cleveland paves its own streets and in addition pays its street railways in money for services sometimes required to be supplied gratis by the street railways in other cities. The public of Cleveland stands for much latitude in operating methods, in order to keep the fare down, while the contest between the men and the management as to which should get added compensation first, goes merrily on—surely the answer lieth not in this direction.

5. THE FUTURE IN THE LIGHT OF PHILADELPHIA'S EXPERIENCE

Receiverships will in the near future make necessary many adjustments as between companies and communities. Readjustments should be approached in a spirit of fairness by both parties; and no advantage should be sought by communities because of the present condition of the companies in so far as it has been occasioned by the European war and the excessive costs resulting therefrom.

Valuation of properties, when resorted to as a basis of fare adjustment, should be made upon the then-cost of reproduction, together with the added cost of producing a condition of readiness to serve. I have no patience with the contention that any community may now properly expect a valuation to be based on pre-war prices or the costs of earlier years. The only justification for such a claim would lie in the supposition that, instead of enjoying increased values in common with others, the companies were to be in some way assured of a continued reasonable return upon the invested capital. Communities did not give street railway companies any such assurance. The companies took the same risks of profit and loss as did the investor in other kinds of property. Consequently in such a time of readjustment, it seems only just that the communities should be willing to establish a fare sufficient to pay a proper return on that sum representing the amount which it would cost the city itself to reproduce the property used and usable in transporting the people.

Philadelphia's plan is not offered as a cure-all for other cities. Every situation has its own peculiar difficulties to overcome. But in the light of this experience, it is our plain duty to decry the thought that there is any cure for the present trouble excepting that which lies in honest dealing—efficient management—effective workers.

Street Railway Situation in Pittsburgh*

By E. V. Babcock
Mayor of Pittsburgh

PERHAPS the street railway passenger transportation problem in Pittsburgh is more complicated than in any other larger American city. This is brought about largely by the temporary character of the intercorporate relations and by the natural difficulties arising from the topography of the country and the great number of municipal subdivisions. Some original 208 underlying companies have been temporarily unified by leases, mergers and stock ownership arrangements resulting in three principal groups of underlying companies, two of which are operated under short-term operating agreements by the Pittsburgh Railways. These agreements may be terminated on three months' notice so that the unification is not a permanent or stable arrangement and because of various issues of underlying bonds of the original street railway companies there is always a possibility of dissolution of the three main units. This arrangement is unquestionably unsatisfactory both from the point of view of policy of development and of financial arrangements. It would seem to be a fundamental requisite in the situation that there should be a single corporation with actual ownership and control of all the physical property of the railways system. Until this is done we cannot expect to eliminate needless duplication of track or secure adequate routing arrangements in the Pittsburgh district.

That street railway companies need and are entitled to adequate revenue would seem to be a self-evident proposition. The fundamental difficulty arises in ascertaining how revenues shall be furnished. Experience has demonstrated that increases in fare do not produce equivalent increases in returns although the signs in this direction are more hopeful today than they were in Pittsburgh some months ago. There is, however, a larger problem in this situation than can be included in a mere statement of financial needs. It should be the aim of public officials to keep fares as low as may be reasonably possible in order to secure a large riding habit among the people. Transportation is not only essential for business but is a necessity for social life and all the ramifications of the activities of a great city, including amusement and recreation. It seems to be pretty definitely established that a high riding habit is a good index of the general business and social activities of the community and an indication of the general progress and spirit of the citizens thereof.

Assistance in reaching a solution can be rendered by making the whole situation known to the public and making them conscious of the part which they must play in the situation, thereby creating a public psychology which will be friendly and not detrimental to the real needs of the situation. This element would undoubtedly go a long way in increasing the riding habit and in generally supporting and helping the traction companies to answer their problems. Municipalities should also consider the possible suspension or elimination of numerous municipal charges which are really indirect taxes upon the car riders, and in the present crisis it may be advisable, at least temporarily, to relieve the car riders of these forms of indirect taxes.

So far as reasonably possible, definite assurance should be given of a fair return on the capital actually and fairly invested in the property so that new capital may be invited and may understand that it will be fairly treated. Street railways, like all other living and growing enterprises, have a constantly increasing need for more money. They must, therefore, always be in a position to attract new capital to meet the growing necessities of the business, both from the point of view of necessary extensions and from the point of view of keeping the property apace with the development of the mechanical arts. The public will thereby benefit by a lower rate of interest both in return on the existing investment and on future investments if capital is given reasonable assurance of definite returns.

Cities not only compete with other industries for capital in these matters, but they compete with each other, and naturally those cities that give assurance of fair treatment and reasonable return, will have the first call on the monies which may be available for street railway purposes.

FUNDAMENTALS IN THE PROBLEM

There is no panacea for the transportation ills of the present day. Regulation by public service commissions, service at cost plans, or municipal ownership will not usher in the day of the millenium in this respect. The transportation problem will always be one of the great, if not the greatest, problems of our municipal life and must be handled in the same manner that all other great industrial and commercial enterprises have been worked out in the past. It is obvious that State public service commissions, while satisfactory for other forms of public utilities, can never completely solve the large local problems of transportation in our great cities. Transportation uses the local highways and must necessarily conform to all local developments. It is brought into daily touch with the life of the city in such a way that there must be the closest harmony and co-operation between the local street railway company and the municipal authorities. This inevitably points to some operating arrangement whereby the local municipal authorities shall be placed in a position to exercise a large amount of control, giving the city government a voice as to proper standards for transportation service and operating conditions.

The use of the service at cost plan, which is now strenuously proposed in behalf of the street railway companies, has many elements to commend it to favorable consideration. It, however, possesses one element which may prove that it is not the final solution to the difficulties, namely, that it robs the operating company of the incentive to secure the best operating economies and keep down the cost of the service. Yet it may be that no better plan can be evolved to carry the business across from the unregulated age to the present regulated age than that of "service at cost" with arrangements providing for possible municipal ownership under reasonable conditions of purchase. If a service-at-cost plan could be developed whereby good management could be fairly rewarded, then no serious objection could be raised to the plan.

Theoretically it seems that the best possible arrangement to meet the situation would be to have municipal ownership with private operation. I have said, theoretically, because of numerous practical difficulties which present themselves in such a program. It may be plainly demonstrated, however, that such a plan, if definitely stabilized and assured, has very great advantages over any other arrangement and eliminate all of the controversial atmosphere which now exists between private capital and the public. It would permit of financing on much lower interest rates than financing by private interests. It would give the municipality complete control of its own development and place in its hands the key to its own destiny. Coupled with private operation it would produce all of the advantages of private, as contrasted with municipal or public, operation with its associated political entanglements; and if combined with a plan whereby, at fixed periods, say every ten years, the operation of the system was let to the best bidder, it would insure good service at reasonable cost.

---

* Abstract of statement made before Federal Electric Railways Commission, Washington, D. C., Oct. 2, 1919.

Under such a plan and with proper municipal control established, standards of service would be possible and we would still have incentives for effective and economical operation, and good management would have its opportunity to be adequately rewarded. This plan may be criticised as being Utopian, yet at the same time it does not rob the enterprise of incentives for good business management which are likely to be found in a service-at-cost plan or in a municipally operated system.

Speaking for the great industrial district of Pittsburgh I can assure the commission that we are giving careful consideration to the problem which is presented there. We have gone into this matter thoroughly and, at a considerable expense, have presented to the Public Service Commission evidence relating to all matters affecting the fair value of the property and all questions relating to routing, transfers and service generally. We hope, within a short period, to receive a decision from the commission as to the fair value of the properties.

I feel sure that the people of the Pittsburgh district will be willing to pay a fair price for adequate street railway transportation when the matter has been fully presented to them and the ghosts of watered stock and of high finance of past days have been laid. The essential problem is one of public education and of establishing the business upon sound and just financial values with complete harmony between the municipal and company representatives, and the right, in the city, to control its streets and its own development.

Possible Operating Economies and Sales Methods*

The Positive Things in Reducing Costs and Increasing Income That Electric Railways Have Done or Can Do—A Zone-Fare System Is the Logical Means for Securing Even Distribution of Cost for the Service Rendered

BY WALTER JACKSON
Brooklyn, N. Y.

NOT all of the men of the electric railway industry hold the belief that the only way out is in higher fares which lead to diminished utility; or failing to secure enough increase in revenue from greater fares, the direct subsidization of a private industry from public funds. The optimists are agreed that the industry will be able to take care of itself so long as it is granted reasonable relief from unfair burdens and so long as it is granted temporary financial aid upon proof that it is prepared to avail itself of all the technical resources of the art in the manufacture and sale of electric railway transportation. Granted such aid they are confident that they can induce the public to pay whatever the transportation is worth in both quality and quantity without crippling their initiative by guaranteed rates of return equal to or little better than bank interest.

Perhaps, the larger difficulty in which the electric railway industry finds itself is not that of adjusting the selling price to the enhanced cost of the product but that of adjusting itself from the monopolistic to the competitive viewpoint. Since it has had to compete with transportation purveyors who deliberately ignore the long rider, the electric railway realizes that the flat fare of any denomination places it under a terrible handicap. Furthermore, it is learning that the self-propelled vehicle has created an appetite for more and faster transportation. The people who have become acquainted with something quicker than the old-time street car will never permit the gasoline vehicle to be driven off of the streets no matter how unfairly it competes with the street railway. Therefore, the street railway must incorporate this service as a part of its system of popular or mass transportation and it must be prepared to sell each kind of transportation at the appropriate prices.

Although the electric railway can carry most of the people most of the time for the lowest rate of fare, it does not follow that all electric railways are now using the tools that will enable them to do so. What, then, are those tools and to what extent have they been applied?

POWER SAVING EASILY POSSIBLE

It will be simpler to discuss the technical resources of the art first and the selling resources second. Of the technical resources, the item which is naturally in the foreground is the production and use of power. No noteworthy improvements are obvious in generation and distribution except the automatic substation which is an invention of but two years application. But the greatest source of waste is not in the making and distribution of power but in its use on the car. The only way to curb this waste is to use some form of car checking instrument, and such instruments are all purchasable practically upon the basis of payment out of savings. However, only about 20 per cent of the cars in the United States are now equipped with such devices.

THE SAFETY CAR OF GREAT IMPORTANCE

Far and above the savings possible from power economies are the extraordinary results already secured from the automatizing of cars whereby one man can handle a modernized car to better advantage than two men can handle an old-style car. Indeed, the light-weight safety car also has a favorable influence in the further reduction of power costs; but for the present we will consider the subject from the dominant feature of platform expense. It is in this item that an enormous reduction is possible if we apply to the electric car the same principles that are applied to a machine tool, namely, the use of automatic and speed-up appliances to increase output and decrease human attendance. The merits of either new or rehabilitated cars with automatic equipment seem so obvious now that it is hard to see why not more than 5 per cent of our cars are so equipped, although the laborless car has been before the industry for more than three years. It is pleasant to record just the same that this car has already established itself in almost every kind of street railway service from 10,000 population to several million. The case of Terre Haute, Ind., is of special interest because it will be the first city of 75,000 to be operated completely with one-man safety cars. The figures submitted were furnished through the kindness of E. M. Walker, general manager Terre Haute, Indianapolis & Eastern Traction Company.

---

* Abstract of statement made before Federal Electric Railways Commission, Washington, D. C., Sept. 29, 1919.

WHAT THE SAFETY CAR HAS DONE FOR TERRE HAUTE

Terre Haute is an excellent object lesson, for it is not even a good street railway town according to American city standards. Its passengers per car-mile have been little more than four at any time, so that the earnings under the average fare of 4½ cents were but 21.9 cents per car-mile during 1918 and under the straight 5-cent fare of 1919 but 21.95 cents on the older cars and 20.62 cents on the smaller safety cars. A railway which announces its intention to continue on the 5-cent fare despite the comparatively sparse traffic must have done some things worth quoting. It has. On Dec. 1, 1918, the company began the installation of safety cars. At this writing, thirty-one safety cars are on hand of which number twenty-five are in daily use. So popular and economical have these cars proved in comparison with their predecessors and those still left that the company has recently placed an order for twenty-five more to permit all the service in Terre Haute to be safety car service. The most significant feature about this second order is that the money for the cars is being loaned by bankers in Terre Haute and the neighboring city of Indianapolis. This fact surely speaks for itself.

In introducing the new operation, the company substituted six and seven-minute intervals between cars for ten-minute intervals. The improvement in service was made even more marked by an increase in the schedule speed of cars from 8 and 9 m.p.h. to 10 and 11 m.p.h.

The effect of this better service is shown by the reduction of jitneys from twenty-five to a mere five or six, and it is doubtful if any jitneys will be left after all the cars are of the new type. Still more obvious is the great increase in riding—the surest sign of public approbation. During the period Jan. 1-Aug. 31, 1919, the safety cars of Terre Haute were responsible for 53 per cent of the mileage run. In that period the safety car lines had an increase in traffic of 43 per cent, which closely paralleled the increase in service offered to the public. It will be shown later that it would have been financially impossible to have offered this increase in service with the older cars operated with two men and no automatic and up-to-date safety appliances.

SAFETY CAR OPERATION EFFECTS NOTABLE INCREASES IN 1918 OVER PREVIOUS BANNER YEAR

The traffic statistics of Terre Haute show that the banner year of the past was 1913 when the gross earnings from passenger transportation were $435,000. In 1918, with but 4 per cent of the mileage made by safety cars, the approximate gross was only $367,222 on the basis of 4½ cents per passenger. In 1919, however, the estimated gross will be $490,000 to $500,000. In 1913, Terre Haute's population was 66,000 and its average riding index, or rides per inhabitant per annum on the basis of a 4½-cent fare, 118. In the meantime, the number of licensed auto vehicles has gone to 3600 or fivefold and the riding index has gradually decreased. A 53 per cent application of modernized car medicine has already brought the riding index up to 133, and there is no doubt that a 100 per cent application in 1920 will bring it beyond the palmiest days that Terre Haute ever had. Curiously enough, the actual revenue per inhabitant per annum was $6.66 both in 1913 and 1918, the fare being 4½ cents in 1913, and 5 cents in 1918 through the abolition of six-for-25 cent tickets, etc. In 1917 the Terre Haute lines carried 8,366,452 revenue passengers, and in 1918 but 8,160,492 revenue passengers at the same average fare of 4½ cents. The up-to-date operation has definitely stopped that tendency downward. So much, then, for the fear that the electric railway is on the way to Dodo Land.

As the best index to popular approval of the service is the increased riding, it may be of some interest to add that Terre Haute is a strong labor town with two newspapers definitely representing labor interests; also that the cars when first put on the street met with some ridicule and to this day are referred to as "Green Bugs." Nevertheless, they made their way.

These cars have certainly justified their name of safety cars. For the first eight months of 1919, their average accident cost per 1000 car-miles run was $386 compared with $1,351 by the older cars on the basis of 865,000 safety car-miles run. The average cost per safety car accident, including repairs, was $16.72 compared with $65.78 by older cars. Mr. Walker estimates that the saving in accidents alone is equivalent to a return of 5.9 per cent on the investment. Further experience should produce still better records as the operators and the public become better acquainted with the speedier acceleration of these cars. Up to Sept. 16, 1919, Terre Haute's safety cars made 1,000,000 miles without serious trouble with either the electrical or air equipment.

SAFETY CARS ARE POPULAR WITH THE EMPLOYEES

No difficulty has been found in training men for this service. The first operator was a man who has been at the front end as motorman for thirty-two years. The second oldest man gave up the safety car temporarily saying it was a bit too fast for him, but he soon asked to be restored. Safety car runs are now coveted by the men. Platform wages in Terre Haute are 39 cents to 42 cents an hour with 5 cents an hour additional for safety car operators. Of course, other railways are paying higher wages than these, but it must not be forgotten that the gross earnings per car-mile in Terre Haute are also very low.

In addition to the reduction of platform expense and augmentation of revenue, these cars are also very economical in the use of power. A test recently conducted by students of Rose Polytechnic Institute showed only 1.1 kw.-hr. per car-mile covering traction, light, heat and energy for all the air-operated devices. This is easily one-half to one-third of the energy requirements of big cars used throughout the United States, although the old cars of Terre Haute are not exceptionally heavy. With such low energy consumption and the advantage of a moderate-sized car, it is unnecessary to try such unsatisfactory (to the public) expedients as the skip stop.

Summarizing the costs, Mr. Walker finds the following, covering the first six months of 1919:

Safety cars earned 20.62 cents per car-mile and cost 11.25 cents per car-mile, leaving 9.37 cents per car-mile available for taxes, fixed charges, rentals, dividends, etc.

Ordinary cars earned 21.95 cents per car-mile and cost 19.84 cents per car-mile, leaving 2.11 cents for taxes, fixed charges, rentals, dividends, etc.

The charges against safety car operation include the wages of eight crossing flagmen.

The operating ratios, excluding taxes, of the two types of cars compare as follows:

	Safety Cars	Others Cars
January	61.85 per cent	94.66 per cent
February	58.17 per cent	89.82 per cent
March	54.16 per cent	93.09 per cent
April	53.05 per cent	86.76 per cent
May	49.39 per cent	77.74 per cent
June	51.76 per cent	102.25 per cent

The safety car ratios are reminiscent of the good old days; the other ratios spell bankruptcy.

In conclusion, it may be worth while to show just what the change in operation and equipment standards promises to do for Terre Haute based upon the costs of 1919 and 1918.

In 1918, Terre Haute ran 1,802,527 car-miles, and as but 4 per cent were safety car-miles, it is fair to assume that the cost per car-mile should be that then pertaining to the old cars or 17 cents. This would give a cost of $306,429 against an income of $394,824 (21.9 cents per car-mile) leaving available for taxes, fixed charges, rentals, dividends, the sum of $88,395.

Had the same cars exclusively been operated during 1919 with an increase of 10 per cent in mileage at the actual cost of operating such cars during the first six months of 1919 and with the revenue of 21.95 cents per car-mile actually obtained during that period, we would have 1,982,780 car-miles earning 21.95 cents and costing 19.84 cents per car-mile. This would give an income of $435,220 and an outgo of $393,383, leaving available for taxes, fixed charges, rentals, dividends, only $41,837.

Had safety cars exclusively been operated during 1919 with an increase of 33⅓ per cent in mileage at the actual cost (11.25 cents) of operating such cars during the first six months of 1919 and with the revenue (20.62 cents) actually obtained with safety cars during that period, we would have 2,393,360 car-miles costing $269,253 and with an income of $493,510, leaving available for taxes, fixed charges, rentals and dividends $224,257.

As the older cars would have left only $41,837 for the same purposes, the difference between 100 per cent old-style and 100 per cent new-style car operation in 1919 would be $182,420—a sum that would keep a company of this size on a thoroughly sound basis.

WHY HASN'T THE SAFETY CAR BEEN ADOPTED MORE RAPIDLY?

One may well ask in view of the foregoing why the safety car or automatized car operation in general has not been adopted more quickly. Those who have been tardy have offered three reasons, to wit: The objection of the public, the objection of the platform worker and the difficulty of getting new money. These may be dealt with in order.

The objection of the public almost invariably has arisen in those cases where the railway made no noticeable improvement in the equipment of the car or in the headway between cars. On the contrary, such half-hearted and mistaken attempts at one-man car operation were often accompanied by an increase in fare! The scores of safety or automatic car installations now in service surely prove beyond further argument that the public welcomes modern one-man car operation when it is accompanied by better service.

So, too, the platform man has objected very properly to that kind of one-man car operation which simply doubled his labor, causing him to run at a lower rate of speed and yet increasing the hazard of accident. Sometimes, the platform man has objected to actual automatic cars on the ground that they would lose their jobs. It is obvious, so far as this objection is concerned, that electric railways are not run primarily to keep the maximum number of men in employment any more than a shoe factory would refrain from using automatic machinery for the same reason. This fear of losing jobs is not justified by practical results. Continued two-man car operation would deprive all men of their jobs eventually on most of our railways. On the other hand, one-man car operation not only permits the continuous existence of the electric railway but also permits the operation of more service with more cars. The usual situation is that the ordinary rate of turnover on an electric railway is so fast that it outstrips the introduction of the safety car, with the net result of stopping both hiring and firing. At the same time the men that are employed on these cars can be paid a higher wage, while future employees can be engaged with an eye to their ability as salesmen rather than their ability to stop a 35,000-lb. car by brute strength. The conditions of automatic car operation are so much more agreeable than the old-style car that in future we may expect a much slower rate of turnover than in the past. The car platform will then be no longer the last resource of the man looking for a job.

AT SMALL COST, EXISTING CARS COULD BE CONVERTED TO ONE-MAN TYPE

The objection of the railway that it has no money for either rehabilitated or new automatized cars is frequently a valid one, but it does not offer an insuperable obstacle. The losses due to competition would have bought a great many new cars if the persistence of such competition had been realized in time and met by increased service. However, in most cases it is not essential to have new cars although the latter are more economical to run and better traffic magnets. For $400-$500 to $750 it is possible to automatize any car, the lower figure applying to a single-end car already equipped with air brakes. With such equipment a saving of $8 a day can be secured if we assume a sixteen-hour day and 50 cents an hour pay for the superseded second man of each shift. At least 75 per cent of the existing cars could be converted to one-man, laborless car operation in this manner.

So striking have been the savings of these light-weight one-man cars that arrangements have been made to sell them on the car equipment trust plan; but as already indicated in the case of Terre Haute, one home demonstration is sufficient to insure the raising of money for more cars at home. Indeed there is practically no risk in loaning money for safety car installations because the equipment is standard and can be used elsewhere should the first buyer fail to make good.

Hitherto we have considered only the reduction in operating costs afforded by one-man car operation of the right kind. It is in order now to show why it also increases the gross earnings. With the coming of the private auto and the jitney in large numbers, electric railways began to realize that the big-car, long-headway system had failed to secure anything like saturation of traffic. Thus came the thirty-two to thirty-five seat short-headway, one-man car in place of the fifty-seat two-man car. These cars did more than drive out the jitney; they created as well as recaptured traffic. Their work was a hint that no one can foresee just how much riding the public will do until a trial is made. In many cities the increase in patronage has run almost neck and neck with the increase in service offered.

ZONE FARES TO INCREASE PATRONAGE

Frequent service with one-man light-weight cars is by all odds the surest road to decreased costs and increased revenue. There is, however, a second way of more limited application and that is the sale of transportation according to quantity—in other words, the zone system.

So long as the 5-cent fare met the desires of the electric railway operator, little thought was given to the distinction between long and short riders, compulsory riders or voluntary riders and the proportions of each. The same people who received more than their money's worth were also expected to pay for less than their money's worth. They didn't, of course. With the coming of increased flat fares the distinction between the two kinds of riders, or rather the discrimination against the short rider, became aggravated. The losses in traffic showed that even under the 5-cent flat fare there were 10 to 20 per cent of highly profitable riders who did not have to use the street railway. That it might be worth while to retain the 5-cent rate for these riders occurred to a few operators who installed the central area system for lack of acquaintance with true zone systems. The central area system retained the 5-cent riders of the central business district but did not recapture the short riders in other districts.

Realizing that the need for more data on zone systems would soon arise I made a detailed study of fare collection practices on the ground in Great Britain and Ireland. Later I supplemented these personal studies by analyses of zone fare operation in Australia and New Zealand where the conditions of living are declared to be equal to or better than in the United States. The first thing gathered from these studies was that the true zone fare inevitably brings out a large proportion of people who ride 1 mile or less, and this has been found to apply under a great variety of topographical, density and other conditions. This indicates clearly that the minimum fare must be one that will attract the walker. In Great Britain this minimum fare is usually 1 penny; in Australia with conditions closer to our own, it is more likely to be 1½ pence or 3 cents for an initial zone up to 1½ miles or so.

If any American city of reasonably compact population can show only 10 to 20 per cent of its riders within a 1-mile ride, it is obvious that it could do something with a lower fare for the shorter distance. It would be unwise to specify any particular scale of fares for universal application. In many towns, there might be but few situations where the additional revenue from a differential fare system would make the extra cost and complication worth while. It would always be desirable first to exhaust the technical resources of the art.

Again, there is little or no connection between the zone fare and congestion. Zone fares are found abroad in almost every kind of community. The character of housing often appears to be a national characteristic, as the tenements of French cities and the individual homes of English cities indicate. Furthermore, the expansion of American cities has been promoted largely by the ease of securing land, there being no century-old estates to interfere. Where a city has had a zone fare from the beginning, it must be obvious that the higher fare on the outskirts is offset in some measure by the lower cost of land. In the United States, contrariwise, the realty man has fattened upon the expansion of the electric railways. In any event, under a correct zone system the fare is not absolutely cumulative, so that the further a man lives away from the center, the less his fare per mile.

The only serious thing we have to consider is that in changing from a flat to a zone system we necessarily upset the values of a generation. Hence it is wise to make the changes in fare as reasonable as the conditions permit, but it would not be wise to refrain from increasing fares merely because such increase would deprive realty owners of unearned increment unless the community itself is prepared to make up the electric railway deficits.

The third thing gathered from a study of the zone fare in practice is the uselessness of comparing track mileage to population for the purpose of comparing the zone fare versus the universal fare. The old European cities show a comparatively small amount of track to population whether they have flat fares or zone fares. The new American cities and new Australian cities show liberal trackage, although the Americans have flat fares and the Australians have zone fares. A reduction in track mileage would be a healthful blood-letting for many American cities. While British cities have so little track in proportion to population, it does not appear that their operators feel the need for much more. The tendency is to serve the suburbs first with buses or trackless trolleys and to refrain from putting down costly track until the population is dense enough to pay for say a ten-minute headway. This is common sense.

A fourth point gathered from a close study of British practice is that the success of the zone fare depends as much upon close headways as upon a short fare for a short ride. It is obvious that people will not wait ten to fifteen minutes in order to ride ¼ to 1 mile. In Glasgow, where the minimum fare zone is 1.16 miles, fully 63 per cent of the passengers rode within that distance last year, and it must be clear that they would not have done so much short riding if the car service had been infrequent. It does not follow, of course, that the cars themselves are as good as our own in comfort and general furnishing. Generally, they are not, although the provision of cross-seats on the upper decks and permission to smoke there are much appreciated. Jitney experience in this country indicates that people tend to take the first vehicle that offers—a run-down auto being often preferred to a finely-upholstered car because the jitney is there and the car isn't.

The fifth thing gathered from a study of zone fare systems is that they are not to be judged in connection with the wages paid to the carmen unless we were to use the same scale of fares. As a matter of fact, the British carman today is earning pre-war American wages, has an eight-hour day and gets certain privileges like uniforms, payment for reporting time, and vacations that make the platform cost just as dominant as here. On this new basis the fares are still 1 penny or 2 cents minimum. On the other hand, the zone fare in Australia has been applied for years on railways which were paying American wages. No matter what the wages are, a zone system can be worked out on the plan of maximum revenue from maximum riders as against the plan of 8, 9 and 10-cent fares for all who can be compelled to pay them.

THE ZONE SYSTEM IN AMERICA

Until the Public Service Railway of New Jersey installed its zone system beginning Sept. 14, 1919, the United States did not have a single example of an electric railway in which an effort is made to get the same high proportion of less-than-a-mile riders found wherever the zone system has been in use for a number of years. A discussion of the Public Service case may serve to illustrate the traffic-building possibilities of the zone fare as applied to America.

Early in March, 1919, the Public Service Railway at the request of the New Jersey Board of Public Utility Commissioners presented a proposal for a zone system of fares in which 5 cents was established as the fare for the first mile and 1 cent for every mile thereafter. Transfers of the usual time-limit type were to be charged for at the rate of 2 cents for the first mile on the connecting line and 1 cent a mile thereafter.

At the hearings conducted on this proposal before the board, the representatives of the League of Municipalities laid stress on two things: That a zone-fare scheme ought to be one that would recover the enormous losses of traffic to the jitney and motor-bus and that would include a fare low enough to transform walkers to riders. As much as possible of the additional revenue ought to come out of increased patronage instead of being drawn wholly out of the passengers compelled to use the service. Accordingly, the writer suggested a fare of 3 cents for the first mile and 2 cents for each increment of a mile or more thereafter. To shade the fare for the long rider, he suggested in place of a strictly cumulative fare one in which the first additional zone would be say 1 mile, the second say 1½, the third say 1¼ miles and so on. This would not always be practicable because of encroachments upon a series of zones emanating from a neighboring city but indicates the general principle of showing some consideration to the long rider whose fare is so severely increased at best. Electric railways of street railway character ought not to encourage extra long-haul traffic when the faster service of a steam railroad or electric interurban is available. This is peculiarly the case on the Public Service Railway which had been giving some extraordinarily long rides for 5 and 10 cents, so that the change from a flat to a zone system of any kind meant a great increase in fare for people who had no regard for the value of their time. I believe that it is far better for an electric railway to lose the small percentage of such long-distance riders than to lose or fail to attract the enormously greater number of short-distance riders for whom the street railway was created.

The decision handed down by the Board of Public Utility Commissioners covering a 3-cent fare for the first mile and 2 cents a mile thereafter followed a statement by President McCarter of the Public Service Railway in which he declared that a flat fare of 9 cents was one of the alternatives but that he could not favor such a fare because it would still further impair the usefulness of the street railway to the public and that he accepted the 3-cent minimum fare with 2-cent zones.

The introduction of the zone system on the Public Service Railway has not been without its difficulties, but it must be borne in mind that the system of fare collection has been radically altered at the same time and that neither the platform men nor the patrons could be expected to handle it smoothly within a few weeks. The Public Service zone system being operated on the pay-leave plan also loses one of the great advantages that a differential fare possesses on foreign systems, namely, in securing the selfish interest of the passenger in the transaction. On all other zone systems the passenger pays before he gets most of his ride, and he has a selfish interest in seeing that he pays only for what he gets. The regular passenger especially cannot be said to care greatly what the conductor does with his money if he pays upon leaving the car. In any event, no zone system can be as convenient as a one-fare system, but that it can handle extremely heavy traffic is evident from the fact that the average number of fare collections in British cities is fourteen to twenty per mile compared with less than half that number here.

To conclude as to the zone system: A zone-fare street railway with a combination of good-will, low base fares and short headways will get the minimum revenue from a maximum number of patrons and leave little or nothing for the jitney.

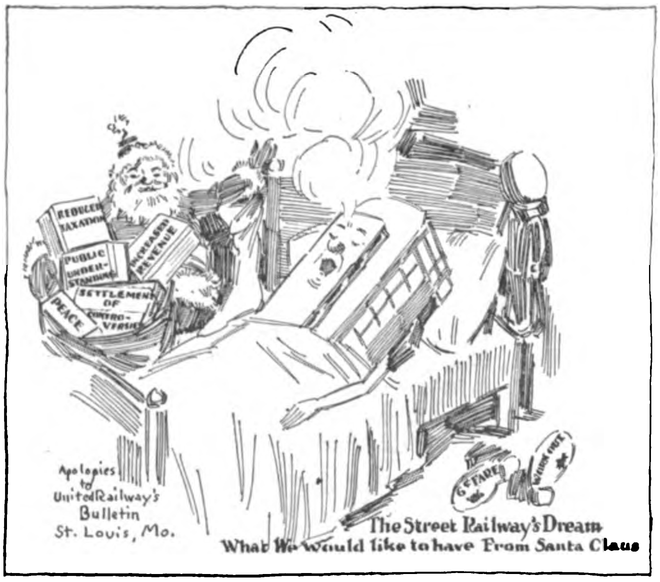
It is natural to ask how one-man car operation and the zone fare can go together. Obviously, we cannot expect one man to handle four or five different kinds of fare in addition to running the car. The way to avoid this will be through the operation of one-zone and two-zone cars with one man, reserving the larger cars for long through runs in multi-zone service. There is no good reason why the service as well as the fares should not be zoned in accordance with the density of traffic. The same route could have through cars with two men each going from one extreme terminal to another, while one-man cars should shuttle back and forth over 1, 2 or 3-mile sections between. On many a two-zone run there could be one collection on entering through a prepayment area and a second collection on leaving the car in the second zone. I have in mind some of our large systems where the present method of operation calls for long through routes with large two-man cars at a sacrifice of local traffic opportunities in the towns through which these cars pass. Such local traffic can be developed only with small, one-man cars operated in town at frequent intervals.

For short-route towns it is not practicable to use a zone or multiple fare system. It is possible, however, to work out various forms of commutation tickets based upon giving a reduced rate to those who average more than two rides a day. In its practical working out, such a ticket or pass gives a fair deal to both the long rider and the short rider, since the short rider has more opportunities to ride, as in going home for lunch where the long rider would lack the time. Such a ticket would be far more convenient to passenger and car operator as it avoids all need for making change, issuing transfers and arguing about the time limits and use of the latter. It would be hoped that such a pass would go a long way toward encouraging off-peak riding and build up the habit of riding short distances. The latter characteristic is already noticeable in bad weather.

It is time for the electric railways of the United States to take a hint from British practice and make more use of the motor bus in handling extensions and giving a *de luxe* service on good shopping and other show streets at a special rate of fare. The greater flexibility and all-around usefulness of the motor bus cannot and should not be ignored by the street railway operator just because it happened to be used by a private competitor first. Because of its experience in routing, scheduling and other transportation technique, the electric railway is the logical operator of bus service. All popular price transportation should be under one head.

I have been asked to offer an opinion as to the relative merits of British and American street railways. The most direct and shortest statement would be to say that America excels in mechanical and electrical equipment standards except in track maintenance and that the British excel in the selling of transportation. The latter, it seems to me, is logical because of the use of a system of fares which compels the growth of a more business-like attitude than where you sell all classes of customers at one price.

I do not find any essential difference in the operating standards of British tramways because of private or public ownership. Most of the larger properties are publicly owned. They are certainly conducted in a most efficient manner, and rather than classing them as extravagant I should say that the tendency is toward parsimony. The middle-class councilmen always want fares that will bring a large surplus for reduction of taxes, while the labor party councilmen strive for low fares regardless of profit. Neither the private nor public railways are in the precarious condition of the American electric railway because they have had more success in raising fares without diminishing traffic, but the increases in operating costs and materials have been even greater than here so that it is only a question of time before the British railways will have to hitch up their fares another notch despite the fact that they are not embarrassed by an adverse public sentiment, a multiplicity of subsidiary corporations and the like.



Apologies to United Railway's Bulletin St. Louis, Mo.

The Street Railway's Dream
What We Would like to have From Santa Claus

What Ails the Street Cars?*

A Review of the Causes for the Present Condition and Some of the Available Remedies—Good Transportation Is Not Only Desirable but Is Indispensable to Community Development

BY JOHN A. BEELER
Consulting Engineer, New York

THE crisis which we are considering today is almost unprecedented in the history of industry. A super-essential business—the electric railway—is literally begging for the right to live. From the popular notion of it as an investor's paradise, where every dollar planted was expected to bring two, it has turned into a slough of despond that is engulfing stocks, notes and bonds with terrifying impartiality. The immediate reason is apparent. The margin between income and outgo has been wiped out by the rise in costs of materials, labor, taxes, and interest. The underlying causes are much more difficult to determine, and having been found the proper remedies must still be applied.

The industry got started wrong. Thirty years ago the street railway man thought he had discovered a bonanza when he replaced the horse that wore out in four to six years with a motor that was supposed to last forever. Electric motors of 10 hp. were attached to the cars overnight and the horses led out to pasture. But the early motors did not last as long as the horse, and 20, 30, 40, and 50-hp. motors followed in rapid succession. Many of these changes were capitalized in the hope that the last one would be final and that perfection had at last been attained. Experience, however, showed that tracks and things generally wore out even more rapidly than before. Light cars passed out with the horse, and mania for weight ran riot. A limit to the length of ride which was to be given for one fare was scarcely thought of. The amount of taxation that the electric railway was supposed to be able to stand was almost unlimited.

PRESENT CONDITIONS DESCRIBED

The situation on the average street railway in the United States today is about as follows: the earnings are 40 cents per car-mile, or $3.36 per car-hour, the speed being 8.4 m. p. h. The trainmen's wages average 55 cents per hour. The operating ratio is 75 per cent, and $4 is invested for each dollar's worth of business done. On most of the systems insufficient provision or none at all is made for replacements to plant and equipment due to obsolescence or made necessary by the progress of the art, it being held that current repairs are all that are required to keep the property in a perpetual 100 per cent operating condition. This is one reason that operating costs are so high today. The junk that is in operation in many of our cities ought to be in a museum for antiquities. No wonder there are sixty automobiles for every street car and that millions ride in jitneys.

The condensed operating statement of a company doing annually a million dollar business under the average conditions cited above, with an allowance of 3 per cent on two-thirds of the investment to cover depreciation or replacement charges that cannot be covered by ordinary repairs, and interest at 6 per cent on the investment, is as shown in the following table:

Gross income		$1,000,000
Operating expenses		750,000
Earnings from operation		$250,000
Deductions:		
Taxes	$50,000	
Replacement fund	80,000	
Interest 6 per cent on $4,000,000	240,000	370,000
Deficit		$120,000

There are but two ways of overcoming the deficit: to increase the receipts and to reduce the expenditures. The most alluring method is to raise the flat fare to 6, 7, 8, or 10 cents, with or without a transfer charge. This procedure often proves like chasing the pot of gold at the end of the rainbow.

TAXATION

The subject of taxation presents a field where the authorities can relieve the situation materially. There seems to be no good reason why a railway should pay more or less than does any other business on its physical property. Special franchise or license taxes should be done away with, as in many cases today the franchise is a liability and not an asset. Paving taxes should be abrogated generally. Then the average rate of taxation would fall from 5 per cent of the gross income to about 2 per cent, reducing the expenditures of a million-dollar company by $30,000. To make both ends meet, this company would have to save the remaining $90,000 of its deficit from operating cost. The condensed statement would then be as follows:

Gross income		$1,000,000
Operating expenses		660,000
Earnings from operation		$340,000
Deductions:		
Taxes	$20,000	
Replacements	80,000	
Interest 6 per cent on $4,000,000	240,000	340,000
Surplus		$000,000

The question of operating economies thus becomes paramount. They are many, and most of them can be applied to every company, regardless of the fetish of local conditions.

SCHEDULES, LAY-OVERS AND ROUTING

The most important items in any company's operations are: (1) frequency, (2) regularity, and (3) speed. With these items right, almost any company will succeed.

The importance and advantages of higher schedule speeds for electric railways has been set forth fully in an article by the writer in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 27, 1919.

The elimination of excessive lay-overs is most important. The ratio of lay-over time to actual running time varies from 2 to 25 per cent. Long lay-overs are given frequently as a concession to labor when if the nature of the resultant trouble were fully understood labor would not want them. As an example, apply the extremes to two systems, each earning 40 cents per car-mile and making a running speed not including lay-overs of 9.33 m. p. h. The line with the 2 per cent lay-over will earn $3.67 per car-hour while that with the 25 per cent lay-over will bring in but $2.79. After paying the trainmen at the rate of $1.10 per car-hour there remain respectively $2.57 and $1.69.

---

* Abstract of statement made before Federal Electric Railways Commission, Washington, D. C., Sept. 30, 1919.

Many cities today maintain routes and service designed for traffic conditions of a generation ago. Rerouting coming under my observation has worked wonders in bettering service for the public and saving money for the company. Short-lining and turn-back service will frequently enable a company to accommodate twice as many people during the rush as where all cars are run through irrespective of the length of line.

Some non-essential non-paying lines may be abandoned profitably. Frequently, however, such lines can be made to carry their operating expenses when run as shuttle lines or with one-man cars. After a line has been built and equipped it should not be abandoned except when it is impossible to earn operating expenses alone, as the interest on the investment will be lost in abandonment anyway.

OBSOLETE EQUIPMENT IS WASTEFUL

Because adequate allowances for replacement were not provided from earnings, many electric railways operate today with dingy, dilapidated equipment that actually repels customers. These cars are usually much heavier than necessary. They pound the track and paving to pieces, while their excessive demands for power eat up the coal pile. In operating such cars an indifferent motorman can waste readily several dollars a day for power alone. Yet only 5 per cent or less of the cars in the United States are equipped with power-saving devices to check up the motorman's skill and assist him in becoming efficient. The older, heavier rolling stock must be replaced by far lighter, faster, and more accessible cars with full automatic equipment before the full degree of success is had.

Standardization of equipment and a complete change in manufacturing methods must come. Cars must be turned out ready to run like automobiles, in large quantities and at a fraction of the present costs. They must be light and attractive. Cross-seats should always be employed. Two or three car types will be sufficient to meet the varying conditions throughout the country. Car trust certificates will then be attractive to the investor. Where older rolling stock is in use it should be segregated by types, so that the cars will not run hit-or-miss in heterogeneous bunches. The motor characteristics and speed should be classified with care and cars used on lines where they best fit the schedule requirements. All equipment should be kept clean and well-painted, brilliantly lighted, and wear an inviting look.

The use of specially constructed light-weight trail cars in rush hours and other periods of heavy traffic has proved of immense value in augmenting the service with a minimum of expense.

POWER AND OTHER POSSIBLE ECONOMIES

Possibilities in power economies include:

Consolidation of power plants, shutting down less efficient ones when demand permits.

Economies in generation.

Purchase of part of the power, if necessary.

Reduction of distribution losses.

Thermostat regulation of car heaters in crowded and over-warmed cars.

Elimination of the use of power as far as possible in shops and elsewhere during the peak. Keep work and freight cars off the line at such times.

A great field also lies in the car itself through the installation of efficient checking devices. To my personal knowledge as high a saving as 25 per cent of the power used to propel the cars was effected by such a means.

In the case of the track, war conditions have shown the need of standardization and how little excuse there is for demanding special rail sections that add many dollars to every ton bought. The fault may sometimes be charged to the city engineer, but it is just as likely to be due to the way the company engineer's theories are aided and abetted by the utterly needless increase in the weight of cars.

Electric switches automatically thrown by manipulation of the motorman's controller save time and money. Automatic signals on single-track lines are vastly more efficient than the hand-operated type so frequently used on many non-progressive lines.

The location of car stops is of prime importance. They should be so placed that a standing car will not interfere with other cars or general street traffic, and where lines branch off they should be placed so as not to block the main line. The exact location of each stopping place should always be indicated plainly by a sign, so that passengers will not delay the car movement unnecessarily by walking to the car after it has stopped. A walk of a car length adds in excess of eight seconds to the regular stopping time, reducing the car's earnings proportionally.

CO-OPERATION BY THE PUBLIC

Staggering of the hours of business could be carried out to a larger extent than now done so as to enable the rush-hour traffic to be spread over a longer period and with a minimum of equipment. Another kind of team-work is the application of the skip stop. Instead of imposing a hardship on the public, the decrease in the number of stops insures a quicker journey and more comfortable riding. It is also most important to secure the co-operation of the local authorities in all matters pertaining to faster operation on the streets, not by increasing the maximum speed but by reducing delays and removing causes of congestion along the tracks.

Loading platforms should be placed at all heavy loading and unloading points where street width permits. They concentrate passengers at the proper point ready for quick loading, reduce the height of the step into the car, save time, provide a safe, comfortable place for the patrons to stand, prevent accidents, and permit the general street traffic to proceed without delay, thus mightily relieving congestion. Few people would guess that the humble loading platform has a direct bearing on the rate of fare, but by enabling the car to make better time operating expenses are kept down. Where raised platforms are impossible the next best substitute is the so-called marked safety zone.

Traffic officers should always give precedence to the street cars over all other classes of traffic, as they carry twenty to one by all other means. The police should assist in keeping tracks clear from trucks and other vehicles. The left-hand turn for all vehicles should be prohibited at congested intersections. The rule of one-way traffic on narrow and congested streets should be enforced. Parking of automobiles should be regulated. Double-berthing of street cars should be the rule in all congested locations. The abolition of steam railroad grade crossings is of great importance. Jitneys should be regulated and their operating requirements made no less onerous than those imposed on the street cars.

These important things, which are of great financial benefit to the electric railways and of equal value to the public, can be done without spending a dollar if there is co-operation between the railways, the local regulating bodies, and the public.

INCREASING THE EARNINGS

Attention will now be turned to methods of increasing the gross earnings which tend to reduce the operating ratio. This subject should have first consideration always.

The street railway is a retailer of transportation. A successful retailer drills his employees to be courteous and polite. Let the operating force of the average street railway take charge of any prosperous department store and accord the same arrogant, uncivil treatment to its patrons that car riders are so accustomed to, and that store will soon have urgent need of the sheriff.

In the past it has been largely considered that people ride from necessity only as in going to and from work. Pleasure riding was supposed to consist principally in taking long trips. Curiously enough, almost the only attempt to induce people to ride aside from strictly necessary purposes was made in the establishment of parks at considerable distances from the homes of the riders. This meant that a large investment was carried for the sake of hauling people a maximum distance perhaps ninety days in the year.

Until recently few have believed that the way to create traffic is to give so frequent a headway with such attractive cars that people would voluntarily quit walking, except for very short distances. Experience in many towns, especially with the automatic safety car, has demonstrated conclusively that there is such a thing as a "riding habit." People will and do ride for short distances that are profitable to the railway many more times a day than was considered possible. In other words, the electric railway is coming around to the standpoint adopted by some of the more enterprising gas and electric companies a decade ago, when they discovered that there are many more ways for selling their products than following the "take-it-or-leave-it" plan.

Often a line is suffering from a too infrequent headway. Patrons walk who might be induced to ride. I have in mind a line that made the following record as the service was gradually increased:

Headway in Minutes	Earnings per Car per Day
8	$21.00
5	25.00
4	29.00
3	35.00
2½	40.00

This line was developed in less than one year from a non-paying line to one of the best on the system simply by giving more service.

Where the headway is comparatively infrequent it should always be some even part of an hour. The rider readily learns when to expect a car under one plan and can tell nothing about it under the other.

Perhaps the most important feature in selling transportation is the human factor of polite employees on the cars. All employees, especially the trainmen and supervisory transportation force, should be trained in the elements of successful salesmanship, courtesy, and politeness. Publicity, smiles, and the same cheerful "thank you" that is customary in a well-regulated store are bound to put the electric railway on more nearly the same plane of good-will as any other business in a community. Platform labor alone amounts to 50 per cent or more of all the operating costs. Wages are now much higher and should attract intelligent, efficient help. Both motorman and conductor should be of the courteous sales type of employee rather than the type found driving a truck or in other unskilled labor.

Intensive, systematic instruction must supplant the slipshod and haphazard methods now employed, and will work wonders with raw material. If wages are to remain at a high level the cost of the turnover should be reduced enormously, because with the higher rate of pay employees will stay and the company can well afford to spend a considerable amount on the instruction of each individual.

THE SAFETY CAR

Few managements today realize the full significance of this car and the tremendous possibilities that lie before it. Probably the best way to give an idea of its worth is to apply the concrete illustration of what should be expected if the average company mentioned in the foregoing part of this paper decided to adopt it in lieu of the present equipment of two-man cars.

The average company doing a $1,000,000 business annually will require available for daily service approximately seventy-five cars, including extra for shops and emergency. To substitute safety cars, 135 would give double service on the basis of a 10 per cent increase in schedule speed (instead of the maximum of 20 per cent obtainable). At the present time this number of cars would cost fully equipped about $6,000 each, or a total of $810,000. The old cars should be sold for whatever they will bring. Meantime the new equipment must be paid for and the increased interest provided. Increased earnings occasioned by the doubled service should be at least 50 per cent. To be conservative, however, an increase of but 33 per cent is assumed. Compare this operating statement with that of the average company under old methods of operation:

Gross income		$1,333,000
Operating expenses	$750,000	
Add 10 per cent purchase price of new cars	81,000	831,000
Earnings from operation		$502,000
Deductions:		
Taxes (adjusted)	$20,000	
Replacement fund	80,000	
Interest on new cars	27,000	
Interest 6 per cent on $4,000,000	240,000	367,000
Surplus		$135,000

In going into the details, it is found that the miles run by the company have increased from 2,500,000 to 5,000,000. The earnings per car-mile have not gone down to half, but are decreased from 40 cents to 26.6 cents. The car-hour earnings have been reduced only from $3.36 to $2.46, and the operating ratio has gone from 75 per cent down to 63 per cent. This is in spite of the change from the theory that cars are going to last indefinitely to using them intensively and obtaining the full value of them in ten years, after which they can be replaced, as you would an automobile, with the latest model.

With the one-man safety car alone an average company now operating with a deficit can be made to carry all its present burdens, pay out for the new cars on a basis of ten-year life and earn a comfortable surplus which can be used to: (1) reduce the fares; (2) still further improve the service.

I believe the safety car has a much wider range of applicability than has yet been attempted. Even large companies can undoubtedly use many of them to advantage.

FARES

If after everything has been done to increase business, effect operating economies, and lower taxes to a normal basis a deficit still remains after providing for the necessary and proper fixed charges a raise in the rates of fare should be granted. There are a number of ways to do this, as follows: (1) a charge for transfers; (2) an increase in the flat rate; (3) zone fares, or fares based on distance.

A 1-cent charge for transfers will usually yield from 3 to 5 per cent additional revenue. An increase in the flat rate of fare can scarcely be called a success as yet. An increase of 1 cent usually leads to 2 or 3, and as the flat rate goes up the number of riders decreases correspondingly. A number of cities have gone to 10 cents with disappointing results financially. High fares encourage walking, and the short-haul patron disappears. He is the only profitable customer the street railway has had in years. Provided the fare has to be raised it should be done so as to retain and encourage the short-haul rider, develop community riding, and increase the receipts. Experience has shown that a high flat rate does not accomplish this. The successful merchant gives an apt illustration when with rising costs he reduces the contents of the package and keeps the price the same or even lowers it.

At present a great deal of publicity is being given to the possibilities of motor buses to replace non-paying street car lines, and it has even been predicted that the street railway industry is doomed. These predictions are based largely on the operations of jitney lines, where the buses are running in competition with the street cars and skimming off the best of the short-haul business, or where operations of the buses are made possible by higher fares, such as on the Fifth Avenue Coach Company of New York City where a 10-cent fare has been charged for years.

The bus, with its limited carrying capacity, requires a higher ratio of man power per passenger carried. The greater number of units increases the congestion and street accidents. The cost of fuel and repairs is much higher per car-mile. The bus has higher depreciation. The street car wears out its own roadway of steel rails while the bus wears out the paving laid at great expense by the public. Where any considerable volume of traffic exists, motor bus service, considering everything, costs more than good street car transportation should. There are many places, however, where the bus can be employed to the great advantage of both public and company. There are other places where the bus should not be allowed. Unquestionably, however, the companies should study this with a view of co-ordinating bus service with the car service, where use is warranted as a part of the general transportation scheme.

FUTURE OF ELECTRIC TRACTION

Today, in spite of the fact that there are upwards of 6,000,000 passenger automobiles in operation in the United States, the demand for rapid, safe transportation was never so great, nor were there so many people to be moved. Good street railway transportation is not only desirable but is indispensable. In fact, on the quality of the service rendered by the local traction systems depends largely the degree of prosperity, importance and growth of the locality served.

In order that the street railway industry be placed on a firm financial footing and be enabled to grow, it must be made to pay. As a whole it is not doing so today. Therefore, either the outgo must be reduced or the income increased, or both. To accomplish this, better methods of financing and operating must be employed. Managements must employ all the arts of successful salesmanship combined with economies.

One of the fundamentals that must be recognized is that repairs alone, no matter how efficiently done, will not make antiquated equipment attractive or efficient. Replacement costs covering obsolescence of rolling stock and plant must be provided the same as any other operating charge.

Co-operation of the public and authorities is important, not only to the company but much more so to the people and the community served. High-class, efficient urban transportation makes for business prosperity.

RECAPITULATION

To enable the street railways to get out of the serious situation in which they now are the following can be done:

Reduce taxation to place the street railways on a par with other industries.

Employ operating economies such as:
  Better and faster schedules;
  Reduction of layovers;
  Improvement of routing;
  Abandonment of non-essential service;
  Standardization of equipment;
  Saving of power;
  Elimination of waste.

Obtain the co-operation of the authorities and the public in the following:
  Installation of loading platforms;
  Co-operation of the police;
  Regulation of street traffic;
  Control of parking;
  Elimination of steam railroad grade crossing;
  Regulation of jitney and bus competition;
  Staggered hours of business;
  Skip stops.

Employ methods to increase the gross receipts, such as:
  Encourage short-haul riding;
  Shorten headways;
  Replace insolence and inattention with courtesy;
  Drill employees in principles of salesmanship;
  Reroute to increase business;
  Use the safety car and more attractive cars generally.

A raise in fare by itself, without employing methods to induce and encourage profitable riding, or without employing more efficient methods of operation will fail.

Automobile and bus transportation is far less economical than efficient electric railway service. By the adoption of the remedies proposed, good street car transportation will be retained and the industry made self-supporting.

Fair Return on Railway Properties*

BY EDWARD W. BEMIS
Consulting Engineer, Chicago

IN DETERMINING whether the street railways are securing a fair return, two tests may be employed. The first is whether the property is earning from 6 per cent to 7 per cent on the estimated cost of reproduction new today less depreciation from physical causes, obsolescence and inadequacy. The second is whether the company is earning a similar fair return on the actual cost of the property now in use, less depreciation and with due regard to the history of the investment. If the company has not earned enough in the past to take care of depreciation, allowance must be made for this in some form. On the other hand, if the company has earned much more than a fair rate of return on the actual investment, weight must be given under this theory to that fact.

Under the first theory, which may be called the "reproduction theory," the company can and does make large claims.

Under the second or "historical theory," adopted to a large degree by some state public service commissions such as those of Massachusetts, New Hampshire, Indiana, Illinois, a valuation is reached which is usually much below the outstanding securities, but which, in my judgment, is an equitable theory. The reproduction theory appears to me unfair and unjust to the public. The historical theory often bears down heavily upon investors, but the number of really innocent investors in such securities must be rapidly diminishing.

AN IMPORTANT CONCLUSION FROM THE HISTORICAL THEORY

From the United States census volume on street railways for 1912 and from the summary of the 1917 volume on pages 46-51 of the *Aera* for August, 1919, it appears that the census bureau has divided all railways into four classes: elevated and subway, and classes A, B and C. Class A includes railways having gross operating income of $1,000,000 or more per year and includes about 100 companies; class B, includes those having from $250,000 to

---

* Abstract of statement made before Federal Electric Railways Commission, Washington, Oct. 4, 1919.

$1,000,000 per year of gross income and includes about 150 companies; class C includes about 700 small companies of less than $250,000 of gross income. It further appears that the net operating revenues available for interest and dividends in 1918 was $192,615,567, in all these companies or 84.1 per cent of the amount, $228,898,968, in the calendar year 1917.

Applying this percentage to the net operating revenues for 1917, as reported on page 5 of the August *Aera*, this result would follow:

NET OPERATING REVENUE PER MILE OF TRACK

Year	Elevated and Subway	Class A	Class B	Class C
1917 (Actual)	$51,485	$7,893	$3,461	$1,877
1918 (Estimated)	43,299	6,638	2,911	1,579

These estimated revenues, if capitalized at 6 per cent would amount to the following, per mile of track:

CAPITALIZATION OF NET EARNINGS AT 6 PER CENT, 1918, PER MILE OF TRACK

	Elevated and Subway	Class A	Class B	Class C
1918	$721,650	$110,633	$48,517	$26,317

My experience in appraisals of surface lines has been that the above amounts are as much as the cost of the property now in use, less depreciation. In other words, the companies are still earning 6 per cent on the average on the fair value according to the historical theory. There are, of course, many exceptions to this. There are three classes of street railways, those not wisely nor prudently built; those once profitable but now incapable at any fare of becoming self-sustaining due in part to competition with other means of transportation; and the majority of our larger roads which have earned during the past five years and during their entire past history, and probably are even now earning, a fair return on their capital investment. Conditions are gradually improving with regard to net operating revenue as well as with regard to gross revenue, since March, 1919.

SOME SUGGESTIONS

The public may buy on a liberal capitalization of recent and prospective earnings and may operate, or it may ignore and replace by buses the companies that are not making any adequate return and are not likely to do so, at any rate of fare, provided the companies retire from business. Even where the companies might make more on a 6-cent or 7-cent fare than on a 5-cent fare, it may be better for the cities to buy them out and operate them than to permit an increased fare. But it is difficult to subsidize these companies when in private hands. The companies should be forced to greater economies in the use of one-man cars, economy in use of electricity, skip stops, honest collection of fares, etc. Under municipal ownership, paving charges could be shifted to the general tax budget and even extensions could be built in part, at least, by special assessments of abutting property.

Most of our larger street railway systems, if not largely over-capitalized can go on successfully, I believe, under a 5-cent fare, but if largely over-capitalized they probably must go through bankruptcy proceedings or must voluntarily readjust interest and rentals.

Fundamental in any system of regulation or ownership is the determination of the cost of the properties now in use, less depreciation from all causes. I have always believed in municipal ownership and operation of public utilities, but dread its coming at an exorbitant valuation.

Camden's View of the New Jersey Zone Plan*

By E. G. C. BLEAKLY

City Counsel, Camden, N. J.

THE zone plan of collecting fares in New Jersey seems to be a complete failure. Of course, we can only speak with certainty for the City of Camden and vicinity. The fact that both political parties in this State condemned the system in their respective platforms simply expresses public sentiment.

We do not want to be understood as saying that *a* zone system is not theoretically a proper system, or that *a* proper zone plan could not be made successful. What we do unhesitatingly say is that *the* zone plan inaugurated here is a complete failure. Our experience is that within the limits of the City of Camden, possibly a 3-mile limit from our ferry terminal, which is the gateway of the city, the present system has caused an average delay of twelve to fifteen minutes in the headway of the various car lines. The chief delay is in the making of change on the pay-as-you-enter plan. If the nickel fare had been a part of the system, of course, the making of change would have been expedited, but the Chamber of Commerce here and the city officials have recommended two propositions which might be used in connection with a proper zoning system.

1. At the heavy loading points, the main one of which is our Pennsylvania Ferry, there should be two or more ticket selling booths to permit passengers to secure tickets in advance of entering the cars, so that all they would have to do would be to hand the ticket to the conductor or drop it in a slot. This would tend to a speedy loading of every car. We, however, made special note that it would be of no avail to open up such ticket booths unless strip tickets were sold at a reduced rate over the normal fare. For instance, if the normal fare were 6 cents, six ticket strips should be sold for 25 cents, or some similar reduction. This would furnish an inducement to passengers to buy in advance of entering. The advantages of such a plan to the company would be that—

(a) It would gain by selling tickets at wholesale, the overhead cost of selling being thus reduced.

(b) It would gain the use of the money because many of the tickets will be a week or more in being used.

(c) Many tickets would be lost or destroyed.

(d) It would encourage the riding habit. A passenger does not think he is spending money when he is dropping in a ticket. He will, therefore, ride more frequently.

2. We recommend commutation tickets for the suburbs. Our problem here is not only to supply the residents of the city, but we have five or six thriving suburbs, all of which have steam railroad connections.

When the present zoning system was put in operation it was found that starting with the 3-cent fare, the increase at the distance of about 14 miles, on a 2 cents a mile increase, ran up to about 30 cents, while the steam railroad company, for a similar distance, was selling a commutation ticket for about 15 or 16 cents, including 2½ cents for ferriage to Philadelphia. So when it was found that nearly all the suburbs had the same steam railroad rates, almost half what the new trolley zone rates were, the suburbanites immediately forsook the trolleys and bought commutation tickets on the steam railroads.

3. It might have been thought that the 3-cent riders would have hailed such a system with joy. The contrary seems to have been the practical result. So much for theory against fact. Some of the 3-cent riders boycotted

---

* Abstract of statement placed before Federal Electric Railways Commission, Washington, Oct. 3, 1919.

the trolleys out of sympathy, refused to ride because they would rather pay a nickel than wait for change, but most of the riders in the 3-cent zone would naturally walk. From a practical standpoint we should say that there is not much travel in a 3-cent zone of 1 mile, except in large cities, where the population is concentrated. Whatever the reason, even the 3-cent zone has not been popular.

Generally speaking, we think the main cause for the failure of the system within the city limits was because of the many objectionable features attending its inauguration. Aside from those enumerated, so-called "bull pens" were provided; that is, shed structures surrounded by fences with turnstiles for entrance and exit. For some reason or other the people were against the use of these pens and resented their installation.

We think also, the conductors and motormen objected to the delays and other complications of the system. We have heard that it was claimed on behalf of the company that some employees objected because the system prevented peculations. On the other hand, some of the employees said that it furnished special inducement and special opportunities for peculations.

Our ferry company handles, at the Pennsylvania terminal, more than 30,000,000 people annually. That is as many as go through the Broad Street Station, Philadelphia. It is the gateway for all south Jersey. A large number of these passengers go through the two ferry entrances, one on the south side and the other on the north side of the street. There is a ticket selling booth about 15 ft. east of each ticket collector. Most people have purchased tickets in advance and they simply tear one off and drop it into a receptacle, stopping hardly a fraction of a second, so that there is no congestion even in the busiest hours. There is no making of change except at the ticket selling booths and the selling of tickets is distributed over a longer period of time, because all people do not run out of tickets at the same moment. This tends to avoid congestion even at the ticket selling booths at the heavy loading hours. Such a system, in our opinion, would be ideal for the local trolley company.

How the Railways Can Be Rehabilitated*

The Evils of the Past are Condemned and the Author Says That Any Program for Rehabilitation of the Electric Railway Properties Must Have Efficient Operation as the Primary Plank

BY MORRIS LLEWELLYN COOKE

Consulting Engineer, Philadelphia, formerly Director of Public Works, Philadelphia

OUR street railways constitute, broadly speaking, the most completely discredited feature in the administration of a city. The public, remembering not only past wrongs but having in mind present-day inefficiencies, does not take any interest in lightening the burdens of the managers, but seems anxious to precipitate what may easily develop into a national tragedy. This antipathy to the owners and the conviction so generally entertained by the public that all adventure has gone out of the street railway business when operated as a private undertaking, this commission, I believe, will find the greatest obstacles to putting into effective operation such constructive suggestions as it may make. Continued adversity might win over the most obdurate director to enlightened management, but without the hearty co-operation of the public almost nothing can be done.

My own impression is that the differences between the public and private interests involved have become irreconcilable. The operators of these properties—and especially their promoters—have erred so grievously against the public that except on isolated properties and where conditions are exceptional no compromise is likely. In most situations it would seem to me highly improper that a compromise should be reached on any basis thus far suggested by the private interests involved.

While I am not opposed to government ownership as such—and especially not for the reasons usually advanced against it—I would view with more than concern any considerable or immediate broadening of the functions and responsibilities of our municipal administrators. We are doing far too much of our present task in an indifferent fashion to make it wise to add to the burden, and for this reason I would welcome any scheme which would permit a further period of private operation. But, frankly, in view of the public attitude I see no adequate solution which does not involve a maximum of public control, or probably of public ownership and public operation.

Before suggesting the constructive steps which I believe must be taken before the street railways can be put on anything approaching a satisfactory basis, I would like to point out a number of specific obstacles which stand in the way of a satisfactory settlement of this problem.

Because the profits have been made through financing these properties rather than through operating them as public services the valuation factor has from the first been over-emphasized. In fact, up to a recent date one hardly ever heard the "efficiency of operation" factor mentioned. As a result of my experience I should estimate that on July 1, 1914, the face value of the outstanding securities of these undertakings represented almost twice what might be considered "fair value" as estimated by fair men unschooled in the equivocations and mirages so assiduously conceived by versatile lawyers and valuation experts during the last twenty years. While my inquiries in the street railway field have not been as conclusive as in the electrical field, everything points to an alleged value bearing to real value a ratio of at least two to one.

The unity of the banking control back of these properties usually speaking through such organizations as the American Electric Railway Association, the American Gas Association, and the National Electric Light Association, makes it possible to determine even illicit policies and plans and put them promptly into pretty general practice throughout the country.

These associations, while nominally distinct and each interested in a different industry, work in the closest possible harmony. Practically the same group of what might be called "investment financiers" virtually control all these associations.

Notwithstanding these organizations for united and nation-wide action on the part of the private interests involved, there is no administrative agency to unite and safeguard the public interest. Because of this, many obvious wrongs have been permitted simply because there was no adequate way of voicing the opposition, although the United States Bureau of Standards, the Association of State Public Service Commissions and the Utilities Bureau have all done what they could with hopelessly inadequate funds.

---

* Abstract of statement made before Federal Electric Railways Commission, Washington, D. C., Sept. 30, 1919.

Further complications were introduced by the valuation of the street railroad properties under several different systems, according to the use to which such valuations were to be put, such as taxation, rate-making, issuing securities, etc.

DIFFICULTIES IN THE WAY OF IMPROVEMENT

It is because those in charge have had their attention centered on financial rather than on operating considerations that past and present untoward tendencies have not been discounted and offset more effectually. The present deplorable state of our street railways was not reached over night and is not due to any one single cause, but if their managers had been "on their jobs" the remedial measures which we are now discussing would have been inaugurated years ago. The point I want to make is that while the situation has doubtless been precipitated by the war, conditions incident to the war had very little to do with it.

The attitude of the owners of these properties is such as to make it very difficult for the public to get at the facts. Propaganda supporting officially authorized theories of valuation, methods of accounting, principles of management, etc., are carried on in every direction. It was the American Electric Railway Association which some years ago startled the country with its plan for influencing education at the source. I criticised this policy in two lectures on utilities delivered in 1915 in several Eastern universities.

It may help to an understanding of the whole situation to mention another difficulty in the path of street railway reconstruction. Owing to the manner in which this industry was developed the engineers who practise in the utility field are almost without exception subordinate to and usually subservient to the financial men. In a paper entitled "Some Factors in Municipal Engineering," read before the American Society of Mechanical Engineers in 1914, this subject was discussed at length.

This situation has improved somewhat recently because of the larger number of engineers employed by the state commissions and on publicly-owned utilities. But as long as the private interests pay salaries so out of proportion to those paid by the public, and so long as they are allowed to discredit and even ostracize those practising as public engineers, the most experienced talent will be found serving the private companies. I am convinced that no engineer or valuation expert has any right to practise on both sides of these questions. There are good men practising on either side, but to practise on both sides with the terminals as far apart as they are today and have that practice fair to the public is a hopeless undertaking.

SUGGESTIONS FOR RELIEF

A good many suggestions for relief have been made which would be acceptable except for the fact that there is no equitable or confidence-inspiring method of putting them into effect. For instance, I would be in favor of paying out of the tax rate such portion of the expense of an obviously desirable and non-self-supporting improvement as the Cambridge subway in Boston as might be shown to belong to the community as a whole rather than to those who use it, if the bookkeeping methods current in the utility world were different from what they are and if the public stood a somewhat better chance in getting dependable technical advice in making the bargain.

At least theoretically we are all for some kind of a cost-of-service plan. But I am opposed to the kind which has been principally stressed before this commission, first because it will have a tendency to validate excessive valuations, and second because it will inevitably capitalize inefficiency. The proposal is quite comparable to the profit-sharing scheme so strenuously urged now as a cure-all for industrial disorders. Labor is not a bit interested in profit-sharing because labor has no confidence that it understands the rules of the game and has had no hand in developing these rules. Any cost-of-service plan initiated now would rest in most instances on a discredited financial base and be operated under accounting methods designed for an altogether different purpose than the one which I take it we all have in mind now, *i. e.*, the service of the public.

I am convinced that any program for the rehabilitation of these properties to be successful must have efficient operation as its primary plank. After all, it is much more fundamental to ask how they are operated than who operates them. One of the best illustrations I can cite of the accomplishment of efficient management is the record which has been made on the Philadelphia Rapid Transit System under the administration of T. E. Mitten.

HOW "WATER" CAN BE ABSORBED

The question of what shall be done about the excess in valuation or "watered stock" remains to be answered. Where there is an excessive difference to be absorbed, as is the case in many cities, I suppose there is nothing to do but "let nature take her course." In any such case the readjustments incident to a receivership and a reduction in the "property investment account" will come as the inevitable retribution for past mistakes. It will be found that our old-time friend the "widow and orphan" will not suffer in this as much as we are sometimes led to believe. Some years ago I examined the investment lists of four of the largest savings funds in Philadelphia and found that among investments totalling hundreds of millions there was not one dollar in municipal utility securities. In other words, careful investors have been shy on these securities for some time.

But where the excess valuation is not too great and where efficient management has been installed, adjustments reasonably fair to all concerned and not involving too radical readjustments should be possible. Here again we can turn to Philadelphia for an illustration. Everyone knows that there is in the P. R. T. a large underlying layer of the purest water running into the tens of millions. I think it is a fair statement that as a result of the past ten years of careful management a part of this overcapitalization may be said to have been absorbed.

If Mr. Mitten continues his activities and along the most promising lines I think that it will be altogether possible for him further to reduce the discrepancy between real and alleged value. If present prices are maintained his task will, of course, be the easier. I can then conceive that at some future date there can be reached some conclusion as to what the "shortage" is and that this can be in part validated in an open and aboveboard manner by a public which is not without some measure of responsibility for its existence and in part carried by a cancellation of outstanding securities. After all, neither the city nor the security holders should advocate the revolutionary route of a receivership if the necessary adjustments can be made by a more orderly process. Any such settlement is contingent upon full evidence of good faith on the part of the company and the establishment of a progressive and efficient management of the property. In this Philadelphia situation unless the adjustment is reached by some such method as suggested, the community will ultimately insist upon a valuation made very largely for the purpose of exposing past wrongs and without any desire to give the management even a sporting chance.

Relief for Present Traction Conditions[*]

Suggestions Include: Valuation and Rate of Return to Be Determined by Disinterested Body, Ownership by Local Stockholders to Be Encouraged, Control of Service by City but Operation on Service-at-Cost Basis

By THOMAS L. SIDLO
Attorney, Cleveland, Ohio

THE street railway is a public utility, existing primarily for public use and convenience and indispensable to an adequate municipal life. The people who have put up the money to make and sustain so useful a social agency are entitled to have their investment treated as a legitimate one and deserving of an adequate return. This is of course platitudinous and yet it will bear repetition in order to emphasize upon everybody's mind the mutuality of interest involved in providing and maintaining modern street railway service. So long as private ownership continues this reciprocal condition will persist, viz., the duty of the utility to serve and the moral obligation of the community to pay, and every effort to disregard it will result in the future, as it has in the past, in costly folly. When municipal ownership comes, if it does come, and the industry is transferred from private to public hands the partnership relation will be terminated, but the fundamental principle will remain. Inasmuch, however, as this eventuality is still quite distant, we may as well confine our attention to things as they are. Municipal ownership is surely no panacea, and there is nothing automatic or assured about its success. It is highly desirable when and where it works, it is highly undesirable when and where it doesn't work. Its desirability is fundamentally a practical question, not necessarily ethical or political.

Underlying the entire situation is the need for a mutual, frank, and openly-arrived-at finding of the real value of each street railway property and a fixing of a proper rate of return thereon. Except in some isolated cases, we have no such plan of procedure today. Valuations and capitalizations usually are simply what they happen to be. Even when fixed judicially, or determined by quasi-public agencies like state commissions, they seldom have a patent for accuracy or equity. Where they have been fixed by politicians, or that elusive thing called public opinion, they have usually been ungenerous and unfair. Where they have been fixed by unrestrained action of the companies, they have been all that the traffic would bear. In any event they now generally appear as a misshapen thing that has grown and expanded mushroom-like in periods of public generosity or carelessness and been dwarfed and stunted during intervals of public unreasonableness or indignation.

Certainly there is nothing scientific or well-balanced about the capital account of the average American street railway. Capital value must be revamped and rewritten, but not necessarily underwritten. It must be simplified and clarified so as to be understandable, must bear some real relation to property or plant value, and when determined be frankly and conclusively accepted by the owners and by the community. Until this is done no street railway property anywhere will do otherwise than continue to stumble along in its public policy, in its rendition of service and in its financing. When it is done, however, the first permanent and tangible step will be taken in the solution of the problem.

To the same body should be left the determination of the question of the rate of return. If left alone the rate would sooner or later be fixed by the sway of economic factors. Consequently, the real function of this board would be to determine what an investment of this character, surrounded by the circumstances and conditions which play upon it, must command in the way of a return in order at all times to invite investing capital. Now as to a "fair" rate of return. Whatever may be said of an unfair rate of return, there is no such thing as a fair rate of return. If so, then which is fair, fairer, or less fair, a 4¼ per cent return on a United States Liberty bond, a 5 per cent return on a Pennsylvania Railroad bond, a 6 per cent return on Cleveland Railway stock, a 7 per cent return on a Monongahela Traction & Light short-term note, or an 8 per cent return on an Empire Gas & Fuel preferred stock. The first is the prime security of the world, the remainder are quasi-public securities of varying standards. From the standpoint purely of return, which represents the fair rate? Can anyone say? He must be a modern oracle of Delphi who would have the temerity to answer.

Frankly, while there are certain rates of return that are manifestly unfair, *i. e.*, such rates as are oppressive or usurious, there is no such thing as a fair rate of return. The task of this body will really be to fix a return (which may vary) that will insure keeping the property financed and growing.

It is unnecessary to rehearse the difficulties, embarrassments and tragedies in street railway history that have resulted from financing by means of mortgage indebtedness. It is pretty generally agreed by everybody who has made a study of street railway finances that it will be a happy day when the lien-holder is eliminated from street railway ownership. His presence has been as hurtful to the company as to the community. He has been the chief cause of the spirit of absenteeism in street railway management and has probably done more to bring the industry into disrepute than the old-fashioned, "public-be-damned" operator. But how eliminate him? With an efficient cost-of-service plan, mortgage bonds are unnecessary as a mode of financing. A property can be financed by selling shares and selling shares exclusively. And these can be sold to purchasers living in the community in which the utility is located and should be so sold. The property will thus acquire an alert, informed body of owners, who will desire, along with security and certainty of return on their investment, that proper and adequate service shall be rendered the community. Such a body of security-holders, and none other, will see to it that the property has a management that recognizes and is able to administer the profit-making aspect of the job not only, but the public service aspect as well. The value of this sort of ownership arrangement has been eminently demonstrated in Cleveland: The fact that at the present time there is relatively no bonded indebtedness but on the contrary a predominant body of resident shareholders, is making the Cleveland plan a success as much as any other factor. The statistics of the ownership of the Cleveland Railway Company are worth incorporating here:

First mortgage 5 per cent bonds, 1931, amount outstanding $5,495,000.
Capital stock outstanding (Aug. 1, 1919) $28,724,400.
Number of stockholders, March 21, 1910, 2,732.
Number of stockholders, June 12, 1919, 5,202.

---

[*] Abstract of statement placed before Federal Electric Railways Commission, Washington, D. C., Oct. 3, 1919.

Average amount per holder, March 21, 1910, $5,372.
Average amount per holder, June 12, 1919, $5,520.

On June 12, 1919, 67 per cent of the stockholders owned less than $5,000 each, of capital stock; 55 per cent owned less than $2,500 each. Those who owned $5,000 or less, each, constituted 75 per cent of the whole number of stockholders; those who owned $2,500 or less, 57 per cent.

A total of 91 per cent of all the stock is owned by residents of Ohio. On Jan. 1, 1919, of a total of 5,168 stockholders, 4,619 were residents of Ohio and of this number 3,522 resided in Cuyahoga County. In other words, about two-thirds of all of the company's stockholders reside in Cleveland or its environs.

It is noteworthy that the settlement plan that has been in process in Toledo, the proposed Community Traction Company, contemplates this type of local ownership as one of the chief arrangements. The time is ideal for creating in each community in this country, through the agency of the stock of the local street railway company, an investment bearing a return larger than that earned by savings bank deposits, possessing inherent certainty and security and providing an open and ready channel for investment funds of those who have neither means nor leisure for studying the investment field.

The arrangement between the community and the company should be founded upon the basis of service at cost and control of service vested in the community. The latter should be permitted to require any quantity or quality of service deemed necessary or desirable for its proper life and growth, provided, however, that it is ready to pay, in the shape of an adequate rate of fare, whatever cost its service requirements shall entail. There should be no limit upon the city's right to prescribe service, except obvious impossibility of performance. At the same time there should be no limit to the company's right to collect such a rate of fare as will pay for the cost of service ordered.

Control of service should be exercised through the agency of a competent technical representative, who should be equipped with the necessary information and facilities to enable him to prescribe the kinds and amounts of service that changing conditions of community life require. Service orders should be final and without appeal by the company, except where they are obviously inordinate or impossible to meet or where the city is unwilling or unable to pay the cost of the service it is requisitioning.

This cost should include the labor charge, the operating charge, the power charge, the maintenance charge, etc., all according to the market. In addition it should include the "money charges," that is, the return to the company's security holders on their investment. This return should not be "fair" or "fixed," but it should be *certain* and in accord with the prevailing cost of money for this kind of capital requirement. In other words, it should be subject to ascension or declension, according to the necessities of the money situation, perhaps, however, with a fixed minimum which should always be assured. The reason for this is obvious. The cost of money is just as important and inevitable an item entering into the cost of service as labor and material and is as susceptible to the control of economic influences. This fact should be recognized and accredited. This applies especially where the type of security is to be common shares, either exclusively or predominantly, and where the effort will be made to keep these shares actively at par or in the region of par or in a price range that will be sufficiently attractive to invite fresh capital. The rate of return should not be susceptible to frequent or violent changes. This might give a gambling quality to the stock, but the rate should not be so immutably fixed as to make it impossible to recognize and meet changing money market conditions.

THE LABOR SITUATION

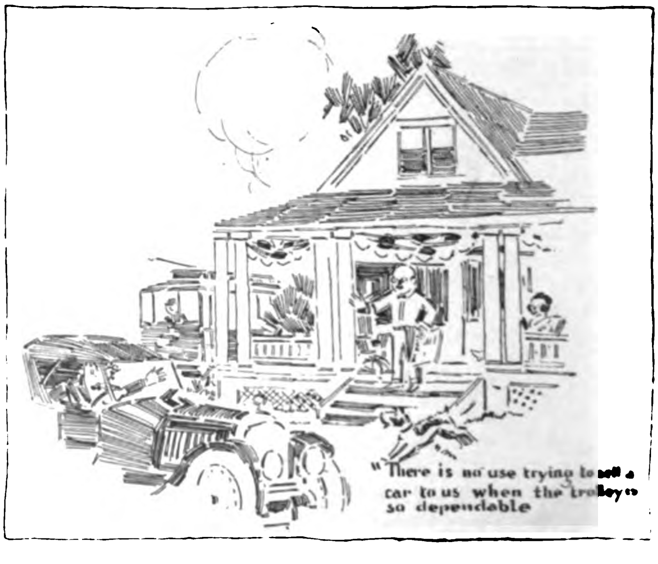
The labor situation is the most vexing and obstreperous problem confronting the street railway industry. From present indications it is likely to be still more troublesome in the future. No adequate solution has yet been found. In recent times street railway employees have found the strike an unfailing weapon to enforce their demands. At present it seems as if there were no definite limit to its possibilities. Some system of bonuses or some plan of profit sharing must be devised to bring the employees into the partnership relation and to force them thus to accept the responsibility their type of employment owes to the public. The need for some such solution is irresistible unless the present situation with regard to wages changes in a very marked way.

An aspect of the problem that is not at all clear relates to the question of the extent to which public officials should take a hand in labor disputes. From one standpoint a "hands-off" policy seems highly desirable. This has the elementary advantage of leaving the decision of the dispute to its merits. On the other hand, allowing the interested parties to fight it out to the bitter end usually means public suffering, an emerging of the mob spirit, violence, etc. For that reason it is necessary for the public interest to be represented. The best way to achieve this recognition of the public interest is through compulsory arbitration of all labor difficulties. This method will settle disputes without general punishment, will protect the rights of the employees, and will not seriously interfere with the employment relation or break down discipline. Its introduction in this country has already been delayed too long.

SUMMARY OF PRINCIPLES

To summarize, then, this memorandum contends for these things as conducive to a permanent and just settlement of the street railway problem in America:

1. A recognition of the inevitable mutuality of public and private interest in producing adequate street railway service and in paying in full for such service.
2. Settling the questions of property value and an adequate return to the owners free from demagogery on the one hand, and private greed on the other, and referring their determination to representative, disinterested citizens.
3. Banishing mortgage indebtedness as rapidly as possible in favor of stock ownership by the people of the community served.
4. Service at cost, but not less than actual cost, and unlimited control of service by the community.
5. Competent, technical administration of the problem of service by a qualified representative of the public.
6. In order to insure uninterrupted service, making the employees responsible partners in the enterprise, by offering adequate money rewards for length of service, and establishing compulsory arbitration of all labor difficulties.



"There is no use trying to sell a car to us when the trolley" so dependable

32101 048988495